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THESIS

THE APPLICATION OF
CENTRAL MERCHANDISE CONTROL
TO THE
CREDIT AUTHORIZATION PROBLEM
OF A LARGE RETAIL STORE

BY

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Professor A. L. Merrill,
Secretary of the Faculty,
Massachusetts Institute of Technology

Dear Sir:

In accordance with the requirements for graduation we herewith submit a thesis entitled, "The Application of Central Merchandise Control to the Credit Authorization Problem of a Large Retail Store."

We take this occasion to express our appreciation to Professor Woodruff and Mr. Rogal for the opportunity of doing this thesis, to Mr. Harvey of Gilchrist's, Mr. Fay of Jordan Marsh Company, Mr. Towsley and Mr. Robinson of R. H. White Company, Mr. Pierce of Filenes, for their assistance in our field study, and to Professor C. H. Porter for his helpful criticisms and suggestions.

Respectfully submitted,

Thomas J. Noonan

Harold J. Brown

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PREFACE

At the present time there are two serious problems confronting all department stores. In the first place there has been a lack in the development of a method of sales audit which is simpler than the method now in vogue. Secondly, there has been a lack in the development of some method of merchandising control which can be dovetailed with the sales audit.

There are on the market statistical machines which are capable of giving a rapid and mechanically correct audit from punched cards. The apparently insuperable difficulty has been the time and expense involved in the preparation of these cards. The machines, therefore, seem to stop just short of providing a solution to the problems. It is obvious that if economical means can be provided for automatically punching the cards simultaneously with the recording of the sales by the salesperson or cashier, then the key to the solution of the problem will be obtained. A new machine and method has

been devised by Mr. Edw. Royal and Professor S. F. Woodruff, whereby the use of tabulating machines in retail stores is extended to accomplish rapidly and with mechanical accuracy the work of the sales audit, merchandise control and accounts receivable billing, effecting a tie-in among these departments which has never before been economically possible.

The machine which is entirely automatic, with electrically connected branches extending throughout the entire sales area of a store, is designed to operate in conjunction with the adding machines and punched card, sorting and tabulating equipment which are already on the market. The new equipment now under construction performs the function of transmitting the sales information automatically to the central office, where it is mechanically reproduced simultaneously on a punched sales audit card and on an adding machine tape. It is proposed to identify each piece of merchandise with a small printed punched tag, and also to provide each salesperson and each cashier with a punched

identification token. The punched tags and tokens are used as automatic controls when placed in a transmitter, thus eliminating the human error in the recording of a sale.

In order to reduce the large expense which would be involved if each transmitter were provided with its individual recorder punching mechanism, provision is made to have a small group of recorders serve the entire store, connection between a transmitter and a recorder being accomplished by a selector switch which automatically selects an idle recorder.

HOW A SALE IS RECORDED.

The routine can best be accomplished by following the handling of a single item of merchandise and its corresponding records. Two distinct routines are shown: First, the routine recommended for expensive items for which a unit control is desired. Second, a group control recommended for handling less expensive articles and yard goods.

These two typical routines will be designated respectively as the "Unit Serial Method," and the

"Master Total Method." A sale may be "cash take," "cash send," "charge take," "charge send," "c.o.d." "part payment send," "will call," "clerk special," etc. The handling of the cash may be accomplished by a central cash system, distributed cashier or salesperson own cashier. The machines can be used in conjunction with cash register, any tube system or any other system for recording sales. Clerk wrap or inspection wrap may be used. The new system is flexible enough to be applicable to all methods. An understanding of the fundamental principles involved will allow any department store executive to visualize the application of the machine to his own problems. In what follows the aim is to make clear these fundamental principles by citing two typical cases.

The unit serial method is recommended for expensive items. Unit serial numbered merchandise display tags and inventory control cards are simultaneously gang-punched and printed as the merchandise is received. This triple function is performed on a special inventory card, (See Appendix F) which has a fold-over section for the merchandise tag.

Since merchandise tag is superimposed on inventory card and both are punched simultaneously, no discrepancy can exist between them. The correctness of the punchings on both is verified by running the inventory control cards through a tabulator and obtaining automatically a list and totals to be checked against the merchandise invoice. After this check has been obtained, the inventory control cards are filed. This file of unit serial numbered cards constitutes a perpetual inventory record. The printed punched merchandise display tag is attached to its article which is now ready to be sent to the sales department.

ALL INFORMATION CENTRALIZED

For identification purposes in the automatic recording of transactions, each salesperson and cashier is provided, as previously mentioned, with a celluloid token. (See Appendix F) When an article has been sold, the salesperson removes the punched portion of the tag, leaving only a stub, and gives this portion, together with her own identification token and the money, to the cashier. The cashier places the punched merchandise display tag,

the salesperson's punched token and her own punched token in the transmitter. The information is thereby transmitted automatically to a central office, duplicating there on a single card all the information contained on the merchandise tag and on the other identification tokens. At the same time that card is automatically punched in the central office, the amount of the sale is printed and added to the amount of the previous business of the day on the audit tape. After transmitting its information, the merchandise tag is removed from the transmitter and receipted. The salesperson's token is returned, the cashier's remaining in the transmitter.

There is thus immediately made available at the central office a punched sales audit card. The printed record on the adding machine tape indicates the serial numbered cards to be withdrawn to deplete the inventory. The inventory control cards, as they are withdrawn from the perpetual inventory file, are kept in the definite order that the tape indicates. At the end of each grouping, as indicated on the tape, a sub-total is taken. The cards withdrawn are then

put through the tabulator, listed and totaled, and checked with the sub-total that has been obtained from the recording tape. This check is by total of serial numbers as well as total of selling prices. By this dual check the opportunity for compensating errors is effectively eliminated.

INFORMATION AVAILABLE FOR SALES ANALYSIS.

The two sets of cards, the inventory control cards and the sales audit cards, can now be handled by the automatic sorters and tabulators, to provide both merchandise and sales information in any desired segregation. In most cases it will be found that the departmental sales analysis must come first. However, the sequence to be followed depends upon the judgment of the executive in charge as to the relative importance of speed in obtaining the various reports. This departmental analysis can be obtained within an hour after the end of the business day. The total sales of the entire store can be obtained immediately upon finishing the last sale by adding together the sub-totals on the recording tapes.

After the departmental totals have been obtained from the sales audit cards, the cards may be

sorted and tabulated to give totals by salespersons and cashiers. This completes the sales audit and the cards are now available for the merchandise control audit. They are sorted automatically by serial number together with the inventory cards. This is, in effect, an automatic filing. The entire inventory file can be run through the tabulator at any time to obtain a list of merchandise on hand.

THE CHARGE ACCOUNT.

Each charge customer is provided with a punched token (See Appendix F). At the time the charge sale is made, the customer's token is inserted in the transmitter instead of the cashier's token. The procedure is the same as outlined previously, except that the customer's account number is punched on the sales audit card (See Appendix F), in the column headed, "Customer or Cashier." The differentiation on the significance of this column is simple, a certain block of numbers being reserved for cashiers and hence all others are customer numbers.

The sale is recorded, merchandise inventory depleted, and sales analysis made as before. The

last segregation of sales analysis might well be made into cash and charge sales. The sales audit cards representing charges, are sorted by merchandise serial number. Then reference is made to merchandise serial number file and the significance of the serial number determined. The name of the article is punched in the proper column on an alphabetical punch. The cards are now ready for filing in the "Customer's Current Monthly Accounts Receivable File."

In this file are the name and address cards (See Appendix F), which were prepared at the time the charge account was granted. The Alpha punched sales audit cards are filed behind the proper name and address cards, thereby eliminating all bound ledgers.

Billing consists of transferring this file in toto to the hopper of the billing tabulator. This machine automatically heads up bills, spaces and itemizes purchases (see bill in Appendix F). These bills are made out in duplicate, one going to the customer and the other retained for record. The customer's portion is folded and slipped into a window envelope, thereby eliminating the addressograph.

EQUIPMENT NEEDED

An installation consists of automatic gang punches, sorters and tabulators, and of the automatic central office sales audit machine. The amount of equipment required is calculated as follows: The maximum operating speed of the machines are: gang punches 3,600 cards per hour; sorters, 21,000 per hour; and listing tabulators 4,500 per hour. A reasonable amount of lost time must be allowed for due to changes in set up of punches, sorters and tabulators. The sales audit machine consists of a number of transmitting devices distributed at convenient points throughout the sales area, electric circuits from these transmitters to a central office, and automatic selector switches which connect a transmitter to an idle punching printing recorder. An important feature of the apparatus is that a much smaller number of recorders is required than the number of transmitters provided. The number of recording mechanisms to be installed is determined by the peak rate of transactions to be cared for. Distribution of transmitters corresponds closely to the distribution of cash registers. It depends upon the size of floor space, the number of

cashiers and the number of departments. Any number of salespersons can use a single transmitter. The number of recording mechanisms required in a large store is surprisingly small because the time of automatically recording a single sale is only five seconds.

It is also well to note that from the conservative estimates, if the files are well planned and laid out, a clerk can withdraw from the files approximately 5,000 cards a day. A file of the size of an ordinary four drawer letter file will hold approximately 80,000 cards. A unit file of a million items would occupy a wall space of only 13 feet. If the unit serial method is used, it is estimated that the entire cost of the two record cards, the withdrawal of merchandise inventory card, and the automatic sorting and tabulating involved in the various steps will total between one-half and three-quarters of a cent per transaction, in a large store. If a master total card method of inventory control is used, the corresponding cost will be between four-tenths and five-tenths of a cent. The figures in the unit method will hold in any case. The figures in the master total method will become larger if the method is applied to items on which the unit serial method should properly be used.

Summarizing the results which may be obtained, according to the inventors, the following is noted: Continuous sales totals and an automatic sales audit, which eliminates the necessity of flash reports; no possibility of missing sales checks; automatically punched card records for analysis by any predetermined segregations -- analysis by departments, analysis by salespersons, analysis by items of merchandise, analysis by cash, charge and c.o.d., analysis by charge accounts; positive merchandise control of sales audit and markdowns, and a visible follow-up of slow moving items; perpetual unwritten inventory and merchandise analysis practically synchronous with sales; definite identification of missing items at physical inventory check-ups. Provision can be made for transmitting a customer's identification number at the time of its charge transaction, and this would allow an automatic billing of the accounts receivable.*

For construction details and diagram of procedure see "A Central Records Machine and Its Application to Retail Stores," Appendix F.

*Adapted from article in Women's Wear, August 27, 1926.

OBJECT OF INVESTIGATION

The object of this investigation is threefold: First, to study actual credit authorization procedure in a group of typical large retail stores; second, to determine the fundamental essentials of credit authorization; third, to determine the general adaptability of central merchandise control to the credit authorization problem of a large retail store.

SCOPE OF INVESTIGATION

Credit authorization is to include all the necessary steps to complete charge take and charge send sales. While credit authorization is our main consideration, the various other types of sales must be included in the development of a comprehensive department store procedure.

Since an accurate comparison of the relative costs of the present and proposed systems would require more time than is available for this thesis, the problem of cost will be considered only in a general manner.

METHOD OF PROCEDURE

In this investigation no consideration will be given at the outset to the proposed Central Merchandise Control System.

Since credit authorization procedure in department stores is not standardized, and since Central Merchandise Control is so revolutionary in its application, we find that all data and information available is not definitely applicable in our study.

Our source of information, therefore, is confined entirely to the field of activity in which actual observations are being made, and deductions assembled accordingly.

Although credit authorization is our main problem, we find it necessary to include the method or procedure for all types of department store sales.

F I E L D S T U D Y

OBSERVATION OF CREDIT AUTHORIZATION

AT

R. H. WHITE'S

Essential Elements of Any Authorization System.

1. Identification of customer: May be done by token issued for that purpose, salesperson or floorman recognizing customer, or by customer identifying himself by personal possessions, letters, initialed jewelry, etc.
2. Proving Account: Account is proved by sending sales slip to central authorization point via a tube system, where it is stamped and returned to authorize release of bundle.

Forms Used.

(Appendix A). In this store forms are reduced to a minimum. Attached is the form used for all but C.O.D. sales.

1. Address and delivery ticket
2. Charge address
3. Statement of purchases
4. Voucher

Procedure in Charge-Take Sale.

1. Attached form made out in duplicate.
2. Original shot to tube room.
3. (1) thrown away.
4. (2) and (3) stamped and spindled.
5. (4) tubed back to sales point to release bundle.

Exceptions to Procedure.

1. Since about 50% of sales are for less than \$2, the authorization problem is reduced by releasing all such sales without any authorization. This allows speed and service and reduces authorization labor at the expense of protection. Since this policy is known only to store employees and would hardly attract professional thieves, the company feels justified in adopting it. About three years operation of this policy has not resulted in any appreciable loss.
2. The various departments have coin books which are referred to for authorization of charge sales less than the particular limit set for that department, (usually from \$2 - \$10).

Procedure in Charge-Sends.

Handled by adapted drawback system: All bundles are authorized at present but eventually less than \$2 charge sends will not be authorized.

Sends within department coin limits are wrapped, sent to shipping department without positive authorization. Sends above department limit, as well as rugs, jewelry and glassware, are wrapped and held in department for positive authorization.

General Observations

Authorization system must be quick and certain. Authorization of charge sale is most important function in department store. Poorly performed will jeopardize success of store.

The Customer Won't Wait!

Service is present day emphasis in department stores. Speed and service is present trend at expense of accuracy and protection.

OBSERVATION OF CREDIT AUTHORIZATIONATWM. FILENE'S SONS COMPANYTypes of Sales.

Cash Sale. For a "cash-take-with" sale the salesperson makes out a triplicate sales slip (See Appendix B) for certain types of merchandise. In some departments the salesperson completes the sales function for "cash-take-with" sales by using the National Cash Register Recorder, which issues a small check as a customer's receipt. However, when a sales slip is required, the salesperson fills out the inclosed form in triplicate. The original is a combination auditor's voucher and shipping ticket. The latter being necessary for "cash sends" only. The duplicate copy is a combination customer's receipt and duplicate shipping ticket. The triplicate copy is the office copy and is kept in the salesperson's book until nighttime, when they are pulled out and sent to the auditing office. Sales of

this type, that is, cash sales, constitute 85% of Filene's total sales.

Charge-Take-With.

In the Filene system, charge account customer identification is taken care of by "card token" with the customer's signature plainly written on the card. When a customer makes a "charge-take-with" purchase, the salesperson requests the identification card token. If the customer has her card token a further request is made, namely, that of signing a triplicate sales slip. (See Appendix B). Same form for all sales. The salesperson then carries the merchandise and the first two slips to the cashier. The latter immediately looks through a file of "no good" accounts which are daily arranged by the credit department.

If the corresponding account is not on file, the cashier telephones the O Kay board operator. This procedure is carried out irrespective of the purchase price of the merchandise. If the account is O Kay, the operator in the authorization

department dictates a code number to the cashier. This number is written on the sales ticket signifying authorization.

The purpose of using numbers is to eliminate illegal authorization by cashier.

The common occurrence of completing a "charge-take-with" sale without a card token necessitates identification by other means. Identification by personal belongings to the satisfaction of the salesperson is all that is required of the charge customers for purchasing amounts to ten dollars. For purchases amounting to more than ten dollars the customer must be identified by the floor superintendent.

Charge-Send.

At the present time the Filene Company is using the "drawback" system of charge authorization for charge-send sales. All "send" merchandise bundles are conveyed to the Cambridge warehouse where the bundles are sorted and distributed. This is called the "remote delivery system."

Since the delivery department is not in the store building, some automatic means of transmitting "hold" notices must be made use of. This is taken care of in the Filene System by the Teletype Transmitter. The drawback procedure is as follows:- Every fifteen minutes the charge-send tickets as made out by the salesperson (See Appendix B) are collected and sent to the authorization department. This department checks up the name, address and account corresponding to those found on the collected ticket. If an account is not O Kay, or if the information regarding name, address, etc. on the charge ticket does not correspond to the like information in the authorization files, a "hold" message is teletyped to the warehouse. Instead of sending a hold message, it is possible in some cases, such as those of misspelled name, or wrong address, to teletype the correction first.

In either event, the man at the warehouse makes corrections as indicated, or holds the designated

bundles pending further investigation. Within a limited time the authorization department will teletype a correction, release or return on a hold bundle, depending upon the conditions.

C.O.D.

The C.O.D. sale is recorded by the salesperson on the triplicate sales ticket (See Appendix B). She also makes out a duplicate cash slip for part payment C.O.D. sales. Usually the cashier places a C.O.D. sticker on the bundle. The procedure is then similar to the cash send procedure for transferring bundles from the store to the warehouse.

OBSERVATION OF CREDIT AUTHORIZATION

AT

JORDAN MARSH COMPANY

Opening The Charge Account.

The charge account is considered a major factor in the business of retail selling, yet it is the source of the development of one of the most vital problems in department store management, namely, "Charge Authorization." The procedure in the granting of a credit account by a department store is relatively simple. The Jordan Marsh method is as follows:

The prospective charge customer is interviewed by the "credit man" regarding her financial status. (See Application for Charge Account, Appendix C). If the applicant is the possessor of real estate or personal property she is eligible for a charge account. In the absence of either of the above mentioned, it is necessary that she receive a salary of \$1,000 per year, or

in the case of a man, \$1500 per year, before an account is granted. In the absence of all three requisites, it remains for the applicant to find an owner of property who is willing to sign a special agreement with the store. This agreement covers an account in case of default in payment by the applicant. Every account has a set limit, varying from fifty dollars to an indefinite amount. Usually the set limit is about one-half of the allowable credit that will be granted.

At the present time, the Jordan Marsh Company handles approximately 125,000 charge accounts. Of this amount, on an average of 80,000 accounts are billed monthly.

Types of Sales.

Cash Sale.

The "cash sale" procedure is not difficult, and since it is not within the scope of charge authorization, will be discussed but briefly. When a sale is made, the salesperson fills out a sales slip in duplicate. (See Cash Sales Slip, Appendix C). The upper part of the original

is sent to the auditing department. The lower part of the original is retained by the salesperson for the purpose of checking daily sales amounts. The duplicate copy is divided into three parts. The top part is placed on the package for "cash send," the central part serves as a customer receipt, and the lower part is retained by the cashier.

Charge-Take-With.

When a charge customer purchases merchandise with the intention of taking it with her, the cost of the merchandise will dictate whether or not the system of identification and authorization must be fully utilized. In the Jordan Marsh store a charge customer is free to purchase merchandise amounting to two dollars or less with signature identification only. For purchases amounting to ten dollars, the customer without her coin must be identified by the salesperson. All purchases over ten dollars without identification coins require the floorman's signature.

Authorization for charge, not unlike "identification" is dependent upon whether or not the customer brings her identification coin and also upon the sale price of the merchandise purchased. The general rule is that authorization is necessary for purchases from ten to twenty-five dollars without the identification coin, and for purchases amounting to twenty-five dollars with the identification coin. The "charge-take" sale procedure is as follows:

When a customer purchases merchandise which requires credit authorization, the salesperson makes out a sales slip in duplicate. (See Appendix C). She takes the merchandise with both slips to the wrapping desk. The bundle girl takes the slips to a semi-concealed automatic stamp and phone and makes contact with the authorization department. She gives the customer's name and charge number. On the other end of the line the credit girl makes a hasty survey of the Remington-Rand Triple Visible Index system, picks the required charge account and if the account is O Kay, presses a button

which automatically perforates the sales slip in the National Cash Register "Okay" machine. The latter, with the phone, is situated near the bundle girl in the given department. This procedure for authorization takes but a few moments and is usually completed before the merchandise is completely wrapped. The bundle girl then passes the sales slip to the salesperson and the latter completes the sale in the usual manner. The original is filed in a metal box and collected periodically (about every two hours.)

In case the account is not Okay, however, the sales slip is not perforated by the Okay machine. Instead of that, the credit girl in the authorization department informs the bundle girl that the account is closed. Usually the salesperson locates the floor superintendent, who converses with the customer and either patches up the difficulty or gently refers the customer to the credit department.

Charge-Send.

The "charge-send" procedure of the Jordan Marsh Company is somewhat involved. For the purposes of minimizing breakage and crushing and to facilitate the manual handling of merchandise, the latter is divided into two general classes. One class consists of ordinary merchandise which will withstand a normal amount of handling and moving without the possibility of damage in any way. The other class consists of very bulky, fragile, or expensive merchandise. In the latter class are included furniture, rugs, suits, dresses, costly jewelry, etc. For purposes of illustration the first class of merchandise will be considered.

When a purchase is made, the salesperson makes out a sales check in triplicate. (See Appendix C). The yellow and white copies are placed with the merchandise, into a green canvas bag. The bag is collected with others and conveyed by truck to a chute leading to a "central wrap" department. At the "central wrap" the merchandise

is checked for quantity and price and the yellow check is stamped. The check is then shot through the tube system to the authorization department. If the account is not closed, and the information on the check corresponds to the information in the credit files, the check is pigeon-holed with others. This constitutes filing by ledger and serves as memos for journal entries.

On the other hand, however, the authorization department might find that said account is no good, or faulty in some respect. Then the drawback girl attaches a refer slip to the yellow check. (See Appendix C). In this case the account is turned over to a refer clerk for re-check. The refer slips are red and yellow. The red slip is for express and parcel post delivery and must be taken care of within two hours. The yellow slip represents team and clearing house delivery, which requires less haste in authorization.

If the second check shows that the account is not as it should be, a "hold slip" (See Appendix C)

in quadruple is made out in the authorization department. The first three copies, a, b, and c, are shot through the tube to the shipping authorization room. The pink slip (a) is filed in the shipping room and the light yellow slip (b) is placed on the bundle.

Slip (c) is sent to the "hold room" where all information is listed and sent with other hold information to the authorization department every other day. The blue "release" slip (a) is pinned to the sales ticket and held in the authorization department until such time as final disposition is made. When a decision as to final disposition is reached, the "release" slip is sent to the hold room where the bundle is forwarded for delivery.

Quite frequently the authorization department must correct faults such as misspelled words, incorrect address, and so forth. When the investigation is to cover an unusually long period of time, the refer clerk makes out a "further investigation ticket." (See Appendix C.)

The latter indicates that investigation is still in process. A "refer to telephone section" slip (See Appendix C) is sometimes made out by the refer clerk and pinned to the sales ticket with the refer slip. If the investigators have been successful in locating the trouble, a "correction notice," (See Appendix C) is made out in triplicate by the refer clerk. Notice (a) is sent to the adjustment office, notice (b) is sent to the educational department and notice (d) is forwarded to the shipping room so that proper corrections as to the name and address can be made before shipment of the merchandise.

C.O.D.

For a C.O.D. sale the salesperson makes out the C.O.D. sales check in quadruple, (See Appendix C), and also a sales slip in duplicate. Check (a) is placed on the bundle at the wrapping department. Check (b) is sent to the auditing department for records. The third check (c) is sent to the authorization

department for listing. The check is then forwarded to the C.O.D. office where all information is booked. After booking, the **check** is sent to the auditing department. Check (c) is the customer's receipt and is presented to the customer with the bundle by the delivery man.

OBSERVATION OF CREDIT AUTHORIZATION

AT

GILCHRIST COMPANY

Classes of Credit.

Gilchrist Plan.

The Gilchrist Plan of deposit charge accounts is unique, being developed by Mr. Harvey, the credit manager. It is a method to automatically limit the amount of credit extended to a class of customers who ordinarily would not be considered good risks under the ordinary credit system.

The customer signs an agreement (See Appendix D) and makes an initial deposit of 20% of amount of credit she is allowed. This agreement covers time and method of payment and amount of carrying charge. The customer is then given a coupon book containing stamps to the amount of her credit. With each purchase, stamps to the nearest even dollar are removed.

In this manner the amount of credit is automatically limited both for the protection of the store and customer alike.

Payments are weekly and continuity of credit depends upon prompt payment. This plan is designed for a special need and works very well in this store. It allows close control and is justified for that reason. This is a special plan used in no other store in Boston, is independent of and involves no charge authorization, is applicable to any system and presents no difficulty to the installation of a Central Merchandise Control System.

Lease Plan.

The Lease Plan is used for such costly goods as furniture, radios, automobiles, etc. A conditional sale form of agreement (See Appendix D) which is in reality a lease, is signed by the purchaser. This is of the usual watertight form by which Gilchrist keeps title until all payments have been made.

From the Memoranda Stub of lease (See Appendix D) an addressograph link is prepared. This plate

is used to address Customer's Receipt Book, (Appendix D), Ledger Card (Appendix D), and subsequent statements. The Receipt Book is interesting in that the name and address are printed on the first page. By means of a cutout section of the cover it is visible when the book is closed. It is then placed in window envelope and sent to the customer. As payments are made both Ledger Card and Receipt Book are inserted in Special National Cash Register and amount entered simultaneously on both. This too, is a special plan or exception, and since it is certainly independent, requires no sales authorization.

Regular Charge Accounts.

An application for credit is made in the usual manner on the application for credit (Appendix D). Credit is granted when risk is judged satisfactory and arbitrary limit is fixed by credit manager. The notable feature is that the credit limit is observed in this case, whereas in other studies it had no great significance except during a sort of probationary period where credit was first granted.

Authorization Procedure.

In general, it may be said that all charge sales are pre-authorized. By this is meant that authorization is completed at time of sale in all cases. The National Cash Register Okay phone system is used in all cases, but is supplemented by Lamson Conveyor tube system for refers. Sales for less than \$2.00 require no authorization. The procedure has so many variations and protective measures that it can best be understood by a detailed consideration.

CHARGE TAKE (involving one person, that is, purchasing customer uses own charge account)

WITH COIN

Amount	Up to \$5.00	\$5.00 to \$10.00	Above \$10.00
Authorization	Coin #	Coin # O'Kay phone	Coin # O'Kay phone Floor manager's signature

WITHOUT COIN

Amount	0 - \$2.00	\$2.00 - over
Authorization	Customer's signature	Customer's sig- nature. Floor mgrs. signature. O'Kay phone

CHARGE TAKE (involving two people, that is, purchaser uses another's charge account).

Amount	Under \$2.00	\$2.00 - over
Authorization	Coin or signature Floor mgrs. "	Coin or signature Floor mgrs. " O'Kay phone

CHARGE SEND (one person)

Amount	All Amounts
Authorization	O'Kay phone

CHARGE SEND (two persons, that is, purchaser uses another's charge account).

Amount	All Amounts
Authorization	Purchasing customer's signature Floor manager's signature O'Kay phone

CHARGE AND C.O.D. SALES CHECKS (Appendix D)

1. Address or shipping ticket; for both charge take, charge send, or C.O.D. this portion must bear the O.K. perforation or authorizer's stamp in case of refer, for release of bundle by wrapper. In the case of charge taken, this portion has no further significance. For charge send, it authorizes the shipping department to deliver the bundle.

2. Billing medium.

This part is retained by cashier.

3. Audit voucher.

Give meagre information for sales audit
and analysis.

White duplicate.

(1) Filed at bundle desk on sends, destroyed
on takes.

(2) Customer's receipt enclosed in bundle.

(3) Customer's check given in send to cus-
tomer to be presented in case of non-
delivery.

White tissue.

Salesperson's tally.

Pink duplicate.

Warehouse pickup.

Cash Sales Check follows much the same procedure,
except that it bears cashier's stamp instead of
O'Kay perforation.

DISCUSSION OF INVESTIGATION

Credit Policies.

Before starting this investigation, some preliminary reading was undertaken, but it soon developed that none of it was at all applicable and its only effect was to confuse. Upon completing our investigation of the Credit Authorization phase, it became quite evident that this seeming obscurity was in reality but a reflection of actual conditions.

The first characteristic observed was the lack of uniformity and standardization. With the exception of the practically universal sales slip, there is hardly a point of similarity in either plan, procedure or nomenclature. This is due to the fact that each store capitalizes its individuality in customer relations. Thus, being different from its neighbors, it is the common argument that its problems are individual and peculiar to itself. Working on this fallacious hypothesis each store has solved its own problems and installed its own systems.

That each store is more or less individual and entitled to capitalize its distinctiveness, we do not deny. However, we do contend that the fundamental

underlying problems are not unlike, and that variances are in degree and not in kind.

In considering the credit authorization phase it is well to start with the initial contact between the charge customer and the store. After this point, there is seldom any personal contact with the charge customer, except in case of complaint for one reason or another. It is obvious, then, that the customer must be given at that time complete information and instructions covering the use of the charge account. Since under the existing methods nearly every customer is more or less acquainted with charge coins and the like, very little is done in the way of instruction, outside of casual reference to charge coin as a method of identification. The result is that approximately 25% of charge transactions are put through without the coin identification. This would indicate that at present too little emphasis is given to instructing the customer at the time of granting the charge account.

The question of limits upon charge accounts is at once interesting and characteristic. Each store has a limit, fixed by the credit manager.

Such a limit must be arbitrary at the best, but it would be expected that persons of a certain class would receive comparable credit limits at similar stores. Such, however, is not the case. It would also be expected that credit limits once imposed would be strictly observed. The policy in this respect varies from absolute observance on one end, to almost total disregard on the other.

Distribution of Sales.

Cash transactions numerically constitute the largest proportion of sales. This proportion varies from 60% to 80% (See Appendix E), the average being about 70%.

In our study of the distribution of sales, the most pertinent fact unearthed was that from 50% to 60% of the cash sales were for amounts of less than two dollars. This fact in itself is not of particular significance in our problem, but, since a similar condition exists in charge sales, it may mean that authorization procedure might very well be broken down into two classes, one procedure for amounts of less than two dollars, and another more protective procedure for amounts in excess of two dollars.

Charge sales vary from 15% to 35% of the total number of transactions. The C.O.D. is the other important class of transactions, and varies from 1½% to 5%. From our investigation the typical sales distribution is as indicated: cash sales uniformly comprising the largest groups, charge sales a slightly smaller group, and C.O.D. sales the smallest of these three main types. The several other types of transactions, such as dealer's discount, salesperson discount, clergy discount, and so forth, are usually a very small factor, and are treated as exceptions to the general procedure.

Cash-Take Sales.

The cash-take procedure is more or less basic and other types of sales are developed from it. In all stores the salesperson makes out a duplicate or triplicate sales slip, the original being for store record, the duplicate for customer's receipt, and the triplicate, when used, a warehouse pick-up. In this type of sale the triplicate is obviously unnecessary and is torn out and destroyed by the salesperson.

The salesperson's tally is either kept on a separate recapitulation card or a tissue prepared from a double carbon in the sales book.

The amount of information on the sales slip varies, but usually consists of salesperson's number, description and amount of sale, type of sale, time of day, department and date, as well as serial number of sales slip. All of this data must be hurriedly entered by salesperson in at least three different places on the sales slip. Naturally enough it is quite generally illegible and not infrequently erroneous. The possibility of human error is present in every phase of the transaction and many expensive checks and counter-checks are necessary to control them. This is at once one of the weak and costly points of all present day sales procedure.

Cash-Send Sales.

This type of sale requires all of the information of the previous one, in addition to the name and address of the customer. The necessity of checks and counter-checks is even more pronounced

in this type of sale on account of the additional complication of shipping. At the shipping point, bundles are sorted and booked for delivery by routes and the responsibility for delivery fixed.

Charge Transactions.

The requirements for charge transactions procedure are practically the same as for cash transactions, except that authorization is necessary. This type is second in number to the cash sale. In importance, however, it is second to none, for it is the channel through which the department store makes contact with its steady customers. It is through the charge account that the store extends its greatest conveniences and services to the purchaser. However, it is the charge transaction which complicates the store procedure and affords executives the greatest concern.

Authorization for a charge sale must be positive, accurate and quick. This combination of essentials has resulted in the development of confusing, time-wasting, and expensive charge authorization procedures in some stores. Other stores have succeeded in alleviating these evils to some

extent. It is very obvious, however, that the problem is a very vital one under the best of conditions.

Formulation of Essentials.

The purpose of our study has been to reduce the current practises to a general basis, and reduce some of the general requirements of a Charge Authorization Procedure. In the final analysis it boils down to two aspects: the store on one hand and the customer on the other. The two main divisions then, fall into the following classes: (1) the protection of the customer, and (2) the protection of the store.

Protection of Customer. This phase has been only considered in the light of identifying the customer at the time of purchase. The identification is usually done through the medium of the charge coin. Right away it becomes obvious that laxity under existing conditions has nullified, to a great extent, the effectiveness of the charge coin as a means of identification. That this is so, is borne out by the additional

precautions which are now taken to check against fraudulent use of coins. In respect to identification and protection of the customer all present systems fall short of actual attainment. However, in all cases speed and accuracy are essential. At present accuracy and protection are sacrificed for speed. Therefore, any method that gives accuracy and protection, and operates as quickly as present methods, will be superior to any of the present methods.

Protection of the Store. Though the purpose of Charge Authorization is two-fold, the protection of the store is its most important function. Under this heading the points it must cover are as follows:

- (1) Protection against fraud. When it is considered that from 30% to 35% of the gross sales are charge transactions, it becomes very necessary to eliminate all chances for fraud, either from the public or from the employee.

- (2) Prompt service; uniformity of policy in regard to customer relations; imperative that Credit Authorization requirements will in no way detain the customer after the sale is decided upon. It is a maxim of the stores that 'the customer won't wait.'
- (3) Control of purchases made. This is perhaps the main function of credit authorization and probably the most expensive item at present.
- (4) Elimination of unnecessary authorization. Nothing has been done along this line by the majority of stores, though they realize that the authorization of small purchases is costly and slows up the more necessary authorization of larger amounts.
- (5) Reduction of "refer" to a minimum. Referring authorization is one thing which slows down production and introduces uncertainty and chance for a wrong decision.

PROPOSED SALES PROCEDURES

I UTILIZING NATIONAL CASH REGISTER O'KAY

Charge-Take Sale.

Requisites for credit authorization:

Speed (must be almost instantaneous).

Accuracy.

Protection.

Functions of credit authorization.

Identify customer (by token).

Prove account.

Procedure.

Three tokens required (See Appendix F)

(1) Customer

(2) Salesperson

(3) Merchandise

Two steps in completing sale.

(1) Three punched cards transmit to
central records.

(2) Credit authorization by independent system

National C. R. Co.

Interphone adaption

Contact is made with credit authorization point by one of above means. The authorization stamp is put on punched merchandise tag. Printed section is checked against goods and fastened to outside of bundle. One-half of the O'Kayed punch section is presented by the salesperson to wrapper for release of bundle, then dropped in box for department records. The other half is given to the customer for receipt.

This system would be adaptable to almost all of the present systems of credit authorization, and would involve no complication, for if it were satisfactory originally, it would be no less satisfactory and effective when used in conjunction with central records.

Cash-Take Sales.

Requires no credit authorization.

Does require (bundle authorization
(speed, accuracy, protection

Procedure.

Three tokens required (See Appendix F)

Cashier

Salesperson

Merchandise

Data transmitted to central records.

Authorization for bundle release stamped on punched merchandise tag by cashier in one of three ways:

- (1) Hand stamp
- (2) Cash register stamp
- (3) Transmitter stamp. This way would involve a mechanical complication to the transmitter which would be more or less unnecessary as cash register could more easily be used in this type of sale.

Bundle inspection and release same as charge-take.

Send-Sales.

Require positive channels that will get bundle to shipping point with minimum effort and maximum speed and accuracy.

Charge-Send.

Four tokens requires (See Appendix F)

- (1) Salesperson
- (2) Customer
- (3) Merchandise
- (4) Delivery ticket (charge).

Charge Delivery Ticket. (See Appendix F).

These delivery tickets are heavy gummed address labels of the proper size to fit the transmitter. They are numbered consecutively in printing and the same number is punched on the lower section of the card. In effecting a sale, the delivery ticket is printed by salesperson, copying data directly from customer's token. Then the four tokens are placed in transmitter and bundle number is reproduced in one of the columns of the sales audit cards. (See Appendix F). This fourth slot introduces no difficulty or complexity in transmitting, for it is individual and no other token can be inserted. When not used, the slot remains empty. A circuit with proper relays is connected in such a fashion that with no card inserted certain segments are closed and the delivery number is blanked. When a delivery ticket is inserted the blanking circuit is kept open by the ticket and the punched delivery number is transmitted. By proper sequence and timing the delivery ticket slot will take care of itself whether empty or occupied, whereas the other slots must be properly filled to actuate the transmitting mechanism.

With this plan the printed merchandise ticket is stamped by inspector, one-half wrapped with goods and bundle ticket pasted on outside of package. It is then sent to shipping point by conveyor chute or hamper, where a "drawback" or bundle authorization procedure may be used. Within a certain time after the sale is effected, the credit authorization function must be performed from the sales audit cards. The first requisite is that central records and credit authorization must be adjacent to insure quickest authorization. Sales audit cards are collected from automatic punches periodically. The frequency of collection and subsequent working of the cards depends upon the interval between the sale and the shipment of goods. The sales audit cards are sorted for bundle numbers, the cards then being tabulated. This tabulation would be in duplicate, one copy for records and one for shipping authorization. At this point credit authorization would be necessary and since the customer's number alone is printed by tabulator, credit authorization files would have to be arranged numerically by customer numbers. This is quite different from the present methods, but is far simpler from this point of accurate

filing and reference to file. Of course, the expense of changing over the present filing systems deserves considerable thought, but the numerous alphabetical and phonetical systems seem to indicate which may be handled one way or another without detracting from the effectiveness of central records, and this discussion will consider only the numerical filing of credit authorization files.

In this layout, bundle authorization seems more adaptable than the "drawback." The drawback at its best is a negative procedure because it attempts only to recall bundles that are specifically known to be N. G. The balance are assumed to be OK and no check is made on them. The weakness of such a system to fraudulent practices is all too obvious. On the other hand, bundle authorization is an exact positive check of all out-going bundles.

In the case under consideration an effective and satisfactory bundle authorization would work somewhat after this fashion: All bundles, whether wrapped in the department or at central wrap, would have to be held for a certain period to allow credit authorization to be completed and data sent to bundle

authorization point. At the expiration of this period, bundles would be advanced on slow-moving belt to checkers. One man would call the number and another refer to numerically arranged authorization sheet prepared from tabulator tape. Good bundles would be stamped and tossed on another belt for conveyance to shipping room sorting case. This checker's stamp on the bundle would inform shipping room that bundle was OK and would fix responsibility on checker. In the shipping room all bundles would be booked on route sheets which, when compared with original tabulator tape in the credit authorization office would furnish a positive check on every bundle.

Cash-Send Sale.

Four Tokens required. (See Appendix F)

- (1) Cashier
- (2) Salesperson
- (3) Merchandise
- (4) Bundle ticket (cash)

Procedure

For simplicity and uniformity and consequently greater accuracy, the cash send procedure bears

identical relation to cash-take that charge-send bears to charge-take.

The four tokens are used to transmit data to Central Records. Cashier stamps punched merchandise ticket and cash bundle ticket. The inspector-wrap stamps the printed merchandise ticket and incloses in bundle. The punched merchandise tag stamp in department, and cash delivery ticket goes on the bundle. Whether department wrap or central wrap, the foregoing holds. The bundles are sent to authorization point along with charges and C.O.D's, but are passed through without check to shipping room, where they are sorted and booked, the cashier's stamp on the delivery ticket giving authority to bundle.

At the central records, the sales audit cards are sorted for cash bundle numbers, as were the charges. Lists of cash-send bundles are taken off the tabulator and checked against the driver's route sheets.

C.O.D. Sales.

Three tokens required.

- (1) Salesperson
- (2) Merchandise
- (3) C.O.D. bundle ticket

Procedure.

The C.O.D. sale is put through much as the cash-send. The bundle is delayed, then goes to the bundle authorization point where it is checked against C.O.D. list prepared from the sales audit cards at the central records. Drivers are booked for C.O.D. received and must account for them by money or returned bundles. This is taken care of by the C.O.D. section, which is furnished C.O.D. tabulations by central records.

II. PRE-AUTHORIZATION PROCEDURE

Featuring pre-authorization, every charge authorization is made before the sale is completed. This must be done quickly as charge-sends and charge takes are handled identically.

This method involves a separate group of punches to handle all charge accounts. (May mean increased number of punches, say 20%).

The insertion of the customer's token automatically links the transmitter with the credit authorization bank of punches. At each adding machine an operator is stationed. The circuit is so arranged that the transmitter does not open automatically after data is transmitted. This allows the authorization clerk to start hunting up the account as soon as the customer's number appears. The customer data would be in tub files so placed that the operator could refer to them most efficiently. If the account is listed N. G., she throws a key which gives N. G. signal on transmitter, rejects tokens, and punches N. G. position on the sales audit card. In case she does not find the customer number

listed as N. G. she operates a key to stamp the merchandise tag and release the transmitter cover. This stamped portion authorizes the release of the bundle.

This, briefly, is an outline of pre-authorization as an integral part of central records. It can be seen that it will tend to increase the number of central recorders. It will also require all sent bundles to be authorized with the same dispatch as take-withs. This, instead of being a disadvantage is a distinct advantage, for it quickly and accurately completes the authorization at the time of sale.

DETAILS OF SALES PROCEDURE

Charge-Take.

Three tokens required. (See Appendix F)

- (1) Customer
- (2) Salesperson
- (3) Merchandise

Procedure.

- (1) Salesperson puts in tokens.
- (2) Customer's number and amount are transmitted to the adding machine tape on

"charge recorders." If account is OK, authorizer pushes a key OK, the punched merchandise tag is then stamped by transmitter to show authenticity, and cover opens to release tokens.

- (3) Meanwhile goods are checked against printed merchandise tag, which is stamped and inclosed in bundle.
- (4) Authorized punched merchandise tag is presented by salesperson for release of bundle, then one-half dropped into box by wrapper and the other half given to customer.
- (5) In the event of rejection by authorizer, transmitter opens and gives N.G. signal and punches sales audit card in reject position. At this time it becomes necessary to either ask the customer to go to the credit office, or else have the floorman get the story over the interphone and make his own decision. In either event, the rejected token is handed over to the floorman, who is

authorized to handle such irregularities. When a charge is rejected, the token should not be surrendered to customer until account is straightened out. This would seem to offer a chance to injure the customer's sensibilities, so the affair must be very diplomatically handled. At any rate, it differs in no respect from present practise.

Charge-Send Sale.

Four tokens required. (See Appendix F)

- (1) Salesperson
- (2) Customer
- (3) Merchandise
- (4) Charge bundle ticket

Procedure.

Serial numbered and punched charge bundle ticket is addressed by salesperson from customer's token data. As before, three tokens are put in respective slots and bundle ticket put in special slot. Data is transmitted and authorization secured on punched merchandise tag. Salesperson surrenders punched merchandise tag and delivery ticket to wrapper who stamps delivery ticket and posts on bundle and starts

bundle to shipping point. It might be advisable to have the transmitter put OK stamp on bundle ticket. This would be more authoritative than hand stamp of inspector wrap. The stamped bundle ticket would be sufficient authorization to ship the bundle. The weakness of this method arises from the lack of positive assurance that the bundle gets to the shipping point, as well as lack of records of bundles sent out of each department.

For this reason it is necessary that credit authorization send list of authorized bundle to shipping point where final bundle authorization is performed. This does not mean that bundles must be held at shipping point until arrival of credit authorization list. The bundles proceed to shipping point and are booked by sorters to drivers routes. Driver signs one route slip and duplicate is used to check against credit authorization list to make sure no bundles are side-tracked inside of store. In this procedure the wrapping clerk will have to register all bundles to provide a department record of sent bundles.

Cash-Take Sale.

Similar to proposed sales procedure I.

Three tokens required.

- (1) Customer
- (2) Salesperson
- (3) Merchandise

Procedure.

(1) Cash drawer or change machine; no cash register required, is one option. This means that the cashier has no automatic record of cash received, which does not seem feasible, for it would mean that the cashier's record would consist of total at end of day - original bank = money received during day. This is by no means a satisfactory method of handling money and some additional record must be kept. It might be possible to use a change machine that collects totals. If there is a machine of this sort it will tie in nicely with this procedure. If cash drawer is used, some recording device must be used to carry along cash received totals. The one disadvantage that occurs to us is that the transmitter stamp on punched merchandise tag will be alike for all types of

sales, and will not print the amount.

This may be argued as not a disadvantage, for there may be some good reasons for not discriminating.

(2) Another and more practicable method would be to use an inexpensive type of cash register to keep cash in and record amounts of cash sales. These registers would be of the simplest sort and cost around \$150, compared with the \$900 machine now in general use.

Cash-Send Sale.

Four tokens required.

- (1) Salesperson
- (2) Cashier
- (3) Merchandise
- (4) Cash bundle ticket

Procedure

Tokens deposited after bundle ticket is filled out and checked. Transmitter stamp on both merchandise tag and bundle ticket. Punched merchandise tag authorizes release of bundle. Bundle ticket pasted on and bundle listed in

department before being sent to shipping room. This department record is considered essential in all department stores. It may be permissible to allow bundles to be shipped out without any additional check except listing at shipping point.

C.O.D. Sales.

Four tokens required.

- (1) Salesperson
- (2) Cashier C.O.D.
- (3) Merchandise
- (4) C.O.D. bundle ticket

It might be advisable to have all C.O.D.'s punched up on a particular bank of central records machines to allow closer control. In any event, the sales procedure would be quite as before. The difference would occur at shipping point where all C.O.D.'s would be listed more carefully and would be signed for by drivers.

Another feature that might be effective is to have the shipping room work "blind" on all bundles. That is, list them and account for them independently of central records data.

Then a bundle audit section would check the previous day's shipping records against tabulator lists. This might result in greater accuracy in shipping room routine.

Paid C.O.D.

Very often an initial payment or deposit is required on certain C.O.D's. While at present this amount is usually based upon a percentage of the value of the article purchased, this could be reduced to even dollars and handled like this:

Cashier's C.O.D. tokens would be for \$0, 1, 2,3,4, etc., initial payments. The proper C.O.D. token would be inserted and sales audit card punched. Merchandise tag would be stamped as for any other sale and balance due entered upon bundle ticket. This could be tabulated and differences or amounts due determined independently. Another way would be to use a complimentary relation that would cause punch to show balance due and eliminate outside subtraction. The C.O.D.'s, of course,

would be registered in department as are all sent bundles. This registering plan may seem needless, but is considered important to have department records. It entails but little extra work and will mean that valuable bundles can be handled by regular routine instead of an exceptional procedure as is now the case.

III PRE-AUTHORIZATION PROCEDURE

Pre-authorization for the release of merchandise is usually termed "bundle authorization." This method, together with "sales ticket authorization" constitutes the principal methods used in department stores at the present time. With due respect to the advantages and disadvantages of each method, we will consider the pre-authorization merely in the light of its applicability to "Central Record."

The outstanding feature of the following procedure is the segregation of "charge-take-with" sales recording and authorization from charge-send sales recording and authorization.

The principal motive for segregating is to facilitate the handling of charge-take-with and charge-send sales so that the immediate requirements of charge-take-with authorization will be satisfied without unnecessary tying up the central records machine.

Charge-Take-With

Three tokens required. (See Appendix F)

- (1) Customer
- (2) Salesperson's "charge-take-with"
- (3) Merchandise tag

Procedure

- (1) Salesperson places tokens in transmitter.
- (2) Charge-take-with recorder situated near O.K. files records, customer's number and amount of sale.
- (3) O.K. girl checks account.
- (4) If account is O.K., she presses a key which
 - (a) Stamps or perforates the punched portion of the merchandise card, and
 - (b) Opens the transmitter cover.

After the salesperson places the tokens in the transmitter, she takes the goods to the wrap counter (if such exists). The goods are checked against the printed portion of the merchandise tag. The latter is stamped and enclosed in the bundle.

For "no good accounts" the O.K. girl presses a special button which automatically opens the transmitter cover without perforating the punched portion of the merchandise card.

Charge-Send.

Three tokens required.

- (1) Merchandise tag
- (2) Salesperson's charge-send
- (3) Customer

Procedure.

- (1) Salesperson places tokens in transmitter.
- (2) Charge-send recorder situated near O.K., files records, charge-send data.
- (3) O.K. girl checks account.
- (4) If account is O.K., she presses a key which operates a National Cash Register O.K. punch. The latter perforates the delivery bundle tickets made out in duplicate by the salesperson at the time of sale. The duplicate is retained for records, all sends being entered in the department register.

Goods may be checked at wrap in a manner similar to that used in charge-take-with sales.

If the National Cash Register O.K. machine is used for "charge-send sales" it would be necessary to allow the transmitter to complete its function immediately. The reason for this is to keep the transmitters as free as possible for charge-take-with transactions.

For all "charge-send sales" then, a sales audit card will be made out. This means that sales audit cards for referred or no good accounts must be separated from the sales audit cards which are to be filed for billing. The process of elimination can be done in one of two ways, namely:

- (1) O.K. board operator checks "refers" "no goods" on tape. The cards can be pulled immediately. A check-up can be made at the end of the day by comparing the pulled cards with the duplicate delivery tickets (not O'Kayed) from each department.

(2) "Refer" and "no goods" may be segregated at the end of the day by sorting according to the duplicate bundle delivery tickets (not O'Kayed) as collected from each department, or by reject position on sales audit card. In either case these sales audit cards would be kept for future reference.

ADVANTAGES OF USING NATIONAL CASH REGISTER

O.KAY PUNCH FOR CHARGE SEND SALES

(1) Since the audit card is made out immediately, the customer's token is released from the transmitter in a very short time. This prevents unnecessary delay to customers who expect an immediate get-a-way after making a charge-send purchase.

(2) Makes use of delivery bundle ticket duplicate perforated by National Cash Register O.K. punch.

ADVANTAGES OF USING STRAIGHT TRANSMITTER
FOR CHARGE TAKE WITH SALES

(1) Immediate and noticeable authorization due to automatic action of the transmitter.

USE OF INTERPHONE INSTEAD OF
NATIONAL CASH REGISTER O.K. MACHINE

The segregation of charge-take-with and charge send recording and authorization can readily adapt itself to the "Interphone" method of authorizing charge-sends. The whole procedure as outlined would remain the same except that the delivery tickets would not be perforated by the National Cash Register O,Kay. In the "interphone" system an authorization number is phoned from the credit authorization end of the telephone. This signifies authorization. Sales audit cards which are not to be filed for billing may be pulled out or sorted as before.

The one great disadvantage of the "Inter-phone is that the salesperson must remain at the phone. With the National Cash Register machine it is possible to spend the time wrapping the bundle. It is true, however, that the inter-phones give a positive and reliable authorization.

DISCUSSION AND CONCLUSIONS

In the foregoing procedures no attempt has been made to decide upon the exact method of Credit Authorization. The plan was rather to consider several of the more common credit authorization systems in conjunction with Central Records and thereby bring out the flexibility and adaptability of the Central Records System.

The first plan considered the use of an authorization system independent of Central Records. It was shown that all of the three existing systems, National Cash Register O'Kay, Interphone, or Lamson Conveyor, were applicable to Central Records and would involve no complication, for if they were satisfactory originally, they would be no less satisfactory when used in conjunction with Central Records.

In this plan the four slot transmitter and punched delivery ticket were utilized to effect a tie-in between sales department, Central

Records and the Shipping Room. This plan has many advantages, but a way to effect the same tie in with but a three slot transmitter will later be considered.

In the second proposed procedure is outlined a pre-authorization plan whereby every charge transaction is authorized at the time of sale. Though this has never been feasible in stores handling large volume of charges, it can readily be done with Central Records. It will, however, necessitate tying up a transmitter selector and central records machine for more than the nine seconds required for complete transmission of data. In some measure this may prove to be a slight disadvantage, for it will tend to decrease the ratio of transmitters to central records machines. With a properly designed file adjacent to credit authorizer, it will be quite possible to check customer's account and make decision in less than three seconds. This three second period was obtained from observation of a credit authorizer at the Jordan Marsh Company.

A pile of unsorted yellow sales slips were referred to a Remington Rand Triple Visible Alphabetical Index, stamped and pigeon-holed. It seems reasonable to assume that if an authorizer can perform these operations in three seconds, no more time will be required for Central Records Authorization. If anything, the Central Records Authorization time will be considerably less, for the girl will read the printed tape, refer to numerical tab file and press key instead of the present, more lengthy operations of reading the scrawled sales check, walking to proper file, pulling proper drawer and opening proper section, finding one of six Mrs. J. H. Smiths, stamping slip by hand and placing it in proper pigeon-hole. The increase in time then may be conservatively assumed to be in the neighborhood of three seconds, which, added to the present transmitting time of nine seconds, makes a total of twelve seconds, for a charge sale. This is by no means a very long interval, but when considered from the point of view of maximum rate of sales, may necessitate an increase in the number of central records machines.

Rather than abandon this method of authorization, it is far more simple to increase the rate of transmission, say reduce transmitting time to six seconds and let the authorization time stand.

It has been argued that a method of authorization which would release central records machines as soon as data was transmitted and tie up only selector and transmitter, would be preferable. This, however, is not the case. If we were to do this it would mean that authorizer had no control over sales audit cards. Then rejects would have to be sorted out by hand and punched in the reject position as an extra operation. This is not advisable for it rejects as exceptions and handles them in a manner that invites mistakes and hence detracts from the effectiveness of Central Records.

A method of handling charge sales on a three slot transmitter has been mentioned. Such a plan is workable and operates in the following manner: At the time of a send sale, the salesperson makes out an address ticket, enters the customer's number and amount of sale, whether cash or charge.

The wrapper's inspection stamp authorizes the bundle through the shipping room. A duplicate tissue remaining in salesperson's pad is used to check against shipping room route sheets.

This, in brief, is the plan. Its advantages are that it does not require a four slot transmitter or a column on the sales audit card.

The four slot transmitter would be more complicated and have no particular advantage over the present three slot transmitter. The question of a bundle number column is more easily decided, for there is barely room on the forty-five column card for all the required information without adding an item such as bundle number, which is not used in more than 30% of the transactions.

In the light of our study of four typical large retail stores, we therefore conclude that

- (1) Credit authorization can be more quickly, effectively, and accurately performed with a numerical customer's file in conjunction with the Central Records Machine, than by any of the present sales slip procedures.

- (2) Central Records is flexible enough to be adapted to any one of the independent authorization systems, National Cash Register O'Kay, Interphone, or Lamson Conveyor.
- (3) The most effective plan is Pre-Authorization, as an integral part of Central Records, requiring
 - (a) Separate bank of central records machines for all charge transactions.
 - (b) Three slot transmitter that automatically stamps merchandise tag.
 - (c) Transmitter, selector and punch remain in circuit until authorizer makes decision on charge.
 - (d) Separate delivery tickets for send packages.

A P P E N D I C E S

A P P E N D I X A

R. H. WHITE COMPANY'S FORMS

SALES SLIP

R. H. White Co.			STAMP TRAINING DEPT.
BOSTON			
DEP'T	SALES NO.	DATE	
Name			
Address			
21			
J 18926 Suite No.			

Name				
Address				
21 2				
J 18926 Pur. by				
DEP'T	SALES NO.	DATE	COIN-NO.	How Sold or Am't Rec'd
37				
EXTRA PKGS.	VALUE	TRAINING DEPT.		TOTAL
CASHIER'S VOUCHER		DEP'T	SALES NO.	TOTAL AMOUNT OF SALE
21				
J 18926		HOW SOLD OR AMOUNT REC'D		

A P P E N D I X B

WM. FILENE'S SONS COMPANY'S FORMS

RECEIPT FROM COMMON CARRIER

Received from WM. FILENE'S SONS CO.

No 70320

Date

By

Express Co., in Good Order

FORM 117

KIND OF SALE

NAME

ADDRESS

DEPT.

VALUATION

REMARKS

Waukegan
Waukegan
(Illinois) ^{Ill}
and
have same
post

TOTAL NUMBER OF PKGS.

DRIVER'S SIGNATURE

25025-5

AUDITOR'S VOUCHER

KIND OF SALE		DEPT. NO.	S. P. NO.	AMOUNT OF SALE	
		525A			

IF CASH AM'T REC'D

SALES *Filene's* TICKET

NAME

STREET

CITY AND STATE

KIND OF SALE	DEPT. NO.	S. P. NO.	DATE
	525A		

25025-5

CARD NO. AND CUSTOMER'S SIGNATURE

EXTRA PKGS

SHIPPING

TICKET

Filene's

SEND TO

STREET

CITY

KIND OF SALE

STATE

CHARGED TO

25025-5
9720

DEPT. NO.
525A

S. P. NO.

DATE

A P P E N D I X C

JORDAN MARSH COMPANY'S FORMS

OX-70
JORDAN MARSH COMPANY
APPLICATION FOR CHARGE ACCOUNT

NO.19.....

NAME.....
FIRST NAME IN FULL

HOME
ADDRESS.....

BUSINESS
ADDRESS.....

BUSINESS
ENGAGED IN.....

WHAT
CAPACITY.....

CORPORATION.....

IF EMPLOYE
SALARY.....

REAL
ESTATE.....

PERSONAL
PROPERTY.....

BANK
REFERENCE.....

OTHER
REFERENCES.....

UPON THE ABOVE STATEMENT, IF ACCOUNT IS OPENED,
IT IS AGREED THAT BILLS WILL BE PAID PROMPTLY EACH
MONTH.

SIGN
HERE.....

COIN..... LIMIT.....

C AND L

SALES SLIP

JORDAN MARSH COMPANY

NAME
ADDRESS

SUITE NO.

R. R. OR EXPRESS

STAMP HERE

DEPARTMENT

SALES NUMBER

DATE

PACKED BY

NO. OF PIECES

PRIVATE PACKAGES

TIME

9

10

11

12

1

2

3

4

5

6

11555 2

PRIVATE PACKAGES

TOTAL

DATE

AM'T REC'D

DEPT NO.

SALES NO.

AM'T REC'D

Am't of Sale

DOLLARS

CENTS

CHANGE

11555 2

ONE OF THESE SLIPS MUST ACCOMPANY EVERY REFERRED TICKET.
 INSTRUCTIONS TO AUTHORIZER: CHECK REASON AND STAMP IN SPACE ALLOTTED.

AUTHORIZER		CREDIT AUTHORIZATION	
NO CARD		OK ★ SHOULD BE IN INDEX	
NAME OR INITIAL			
ADDRESS		NAME OR ADDRESS	
STOP		DEPT. SALE.	
LARGE AMOUNT			
ONEX			
RESTRICTIONS		CHANGE ADDRESS	
		POSTAL CHARGE	
		GENERAL LEDGER	
		NO ACCOUNT	
		LARGE AMOUNT	
		NEW ACCOUNT	
		RESTRICTION	
		STOP	
		NO MORE (OWES)	
AUTHORIZER STAMP HERE			
DON'T FORGET THE REASON		PASSED	
		SENT C. O. D.	
		REOPEN	
		RETURN TO STOCK	

NAME

ADDRESS



OX 436-A

S MUST ACCOMPANY EVERY REFERRED TICKET.
 AUTHORIZER: CHECK REASON AND STAMP IN SPACE ALLOTTED.

AUTHORIZER		CREDIT AUTHORIZATION	
		OK ★ SHOULD BE IN INDEX	
		DEPT. SALE.	
		CHANGE ADDRESS	
		POSTAL CHARGE	
		GENERAL LEDGER	
		NO ACCOUNT	
		LARGE AMOUNT	
		NEW ACCOUNT	
		RESTRICTION	
		STOP	
		NO MORE (OWES)	
DON'T FORGET THE REASON		PASSED	
		SENT C. O. D.	
		REOPEN	
		RETURN TO STOCK	

NAME

ADDRESS



58388

3559

OB-75

HOLD

THIS PACKAGE AND ALL OTHERS
JORDAN MARSH COMPANY
TO SHIPPING DEPT. FROM CREDIT AUTH.

DATE _____ 192_____

SEND _____
ADDRESS _____

CHARGE _____
ADDRESS _____

DEPT.	SALES NO.	AMOUNT	CREDIT AUTHORIZATION

REASON BUNDLE IS TO BE HELD

HOLD ROOM COPY

WIZPAKIT—PAT. APRIL 21, 1925 (OTHER PATENTS PENDING), AMERICAN SALES BOOK CO., LTD., NIAGARA FALLS, N. Y.

SHIPPING ROOM COPY

WIZPAKIT—PAT. APRIL 21, 1925 (OTHER PATENTS PENDING), AMERICAN SALES BOOK CO., LTD., NIAGARA FALLS, N. Y.

SHIPPING ROOM COPY

WIZPAKIT—PAT. APRIL 21, 1925 (OTHER PATENTS PENDING), AMERICAN SALES BOOK CO., LTD., NIAGARA FALLS, N. Y.

ATTACH TO SALES TICKET UNTIL PASSED

WIZPAKIT—PAT. APRIL 21, 1925 (OTHER PATENTS PENDING), AMERICAN SALES BOOK CO., LTD., NIAGARA FALLS, N. Y.

FURTHER INVESTIGATION TICKET

TWO COPIES

CHARGE TO

N
A
M
E

A
D
D
R
E
S
S

DEPT.	SALES NO.	DATE	SERIAL NO.	CHECK NO.

TICKET 2

--	--	--	--	--

TICKET 3

--	--	--	--	--

TICKET 4

--	--	--	--	--

TICKET 5

--	--	--	--	--

TICKET 6

--	--	--	--	--

DEPT. INVESTIGATION TICKET

SIGNATURE _____

OX-455

DATE _____

S8189

TELEPHONE SECTION

TELEPHONE No. _____

CALLS	TIME CALLED	STORY
1ST DAY		
2ND DAY		

REFER TO DEPT. READ BEFORE CALLING AGAIN

3RD DAY		
---------	--	--

FINAL DISPOSITION

OX-453

S8380-C

OX-438

**CORRECTION NOTICE
TO SHIPPING DEPARTMENT FROM
CREDIT AUTHORIZATION**

DATE _____

BUNDLE _____
ADDRESSED TO _____

DATE _____

TO BE CHANGED TO _____

DEPT.	SALES NO.	AMOUNT	CREDIT AUTHORIZER

CORRECTION ON BUNDLE

SIGNATURE

CORRECTION ON ROUTE SHEET

SIGNATURE

ADJUSTMENT OFFICE COPY

SIGNATURE

CORRECTION ON ROUTE SHEET

SIGNATURE

SHIPPING ROOM COPY

SIGNATURE

CORRECTION ON ROUTE SHEET

SIGNATURE

EDUCATIONAL DEPT. COPY

A P P E N D I X D

GILCHRIST COMPANY'S FORMS

GILCHRIST PLAN AGREEMENT

F344-9m-10-24-27

Account No.

GILCHRIST CO.

.....192.....

DEPARTMENT OF ACCOUNTS

MEMORANDUM RECEIPT

Note: Delivery is not promised in less than 10 days from the time the entire initial deposit is paid.

Name

Address

Type of Account.....

Purchased \$.....

Insurance \$.....

Carrying Charge \$.....

Total \$.....

Deposit Required \$.....

Amount Paid \$.....

Balance of Deposit \$..... Due.....

Received Payment of \$.....

GILCHRIST CO.

By.....

This is only a memorandum of your initial payment. It does not constitute acceptance of your order. A regular receipt, duplicating this entry will be made in your Pass Book which will be mailed to you in a few days when this memorandum may be destroyed.

.....192.....

GILCHRIST CO.

Account No.....

I, the undersigned, make the following statements:

Name Miss Wife's or
in full Mr..... Husband's
Mrs. Name

Street Position

City..... Phone..... How Long.....

Former Residence..... How Long.....

Employer Position..... Lodge
Union

Address..... How Long..... Salary..... Rent.....

Auto..... Paid for in full..... From whom
purchased

Real Estate located..... Mortgage \$.....

Banks

Store accounts.....

Nearest relative..... Address

Personal references.....

Applied for by..... Interviewed by.....

Type of Mdse.	Amt. of Sale	Length of Time	Due weekly or monthly	Amt. of weekly or monthly pay.	Payments begin			
Rating	Lease File	Reg. File	Brad.	Dun.	C. R. Co.	City Dir.	Tel. Dir.	Miscellaneous
Listing								

I acknowledge receipt of book No.....covering.....dollar checks on which I have paid \$.....

For value received, I promise to pay Gilchrist Company or order \$.....in..... payments of \$.....each, beginning..... If said payments are not made in full within ten weeks from the date hereof, I promise to pay on demand, in addition to the amount specified above, as a carrying charge, a sum equal to 5% of the entire amount of purchases made.

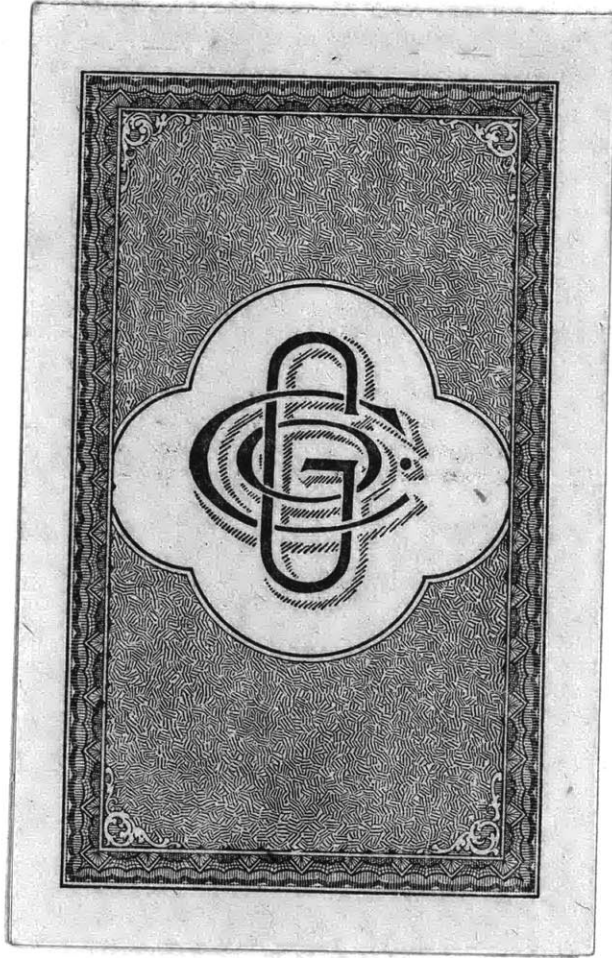
(Signed)

(Street and Number)

(City or Town)

Approved by..... (Date)..... Amount Passed \$..... Addressograph
Checked by.....

COUPON BOOK FOR "GILCHRIST PLAN"



The Gilchrist Plan
OF
Deposit Charge Account

NOT GOOD IN BASEMENT

Folio No. -----

Good for purchases up to \$-----

Until ----- 19-----

When shopping in person, coupon book must be presented to sales person, who will detach coupons to cover the amount of each purchase. For charging by mail or phone, see inside of back cover.

In case of loss of this book, please give immediate written notice to Charge Manager, Gilchrist Company.

Not good unless authorized below.

GILCHRIST COMPANY

"THE FRIENDLY STORE"

Authorized by -----

CHARGE DEPT.



AN"

RADIO LEASE AGREEMENT

Shipping Service

Account No. GILCHRIST CO.

192

DEPARTMENT OF ACCOUNTS MEMORANDUM RECEIPT

Note: Delivery is not promised in less than 10 days from the time the entire initial deposit is paid.

Name

Address

Type of Account

Purchased \$

Insurance \$

Carrying Charge \$

Total \$

Deposit Required \$

Amount Paid \$

Balance of Deposit \$ Due

Received Payment of \$

GILCHRIST CO.

By

This is only a memorandum of your initial payment. It does not constitute acceptance of your order. A regular receipt, duplicating this entry will be made in your Pass Book which will be mailed to you in a few days when this memorandum may be destroyed.

F708

GILCHRIST CO. CONDITIONAL SALE

Account No.

192

Agreement made between GILCHRIST COMPANY, hereinafter called "the Company"

and

In consideration of mutual promises and covenants herein contained the Company agrees to deliver to me at the following goods:

I have this day made a payment of and agree to pay on the day of every hereafter until said Company shall have received the full sum of including a carrying charge at Gilchrist Co.'s usual rates.

- And further I, for myself, my heirs, executors and administrators, AGREE AS FOLLOWS: (1) That title to said property shall remain in the Company until all said payments, including carrying charge, are paid in full by me; and any notes given by me covering such payments in whole or in part are not intended and shall not be considered as given in payment for said property, but only as provision for collection of sums represented thereby: (2) That I will keep the said property in good condition, insured at my own expense, loss, if any, payable to the Company as its interest may appear, and will indemnify and save harmless the Company from any damage to or destruction of said property; (3) That I will not remove said property from the premises aforesaid without consent of the Company first had in writing and I will not attempt to sell, mortgage, pledge, let, lease or raise money upon said property prior to full and final payment or otherwise attempt in any way to prejudice or jeopardize the title of the Company thereto; (4) That if I fail to make any of said payments, principal or carrying charge or to perform any of my agreements in this contract contained, the Company, by its officers or agents, shall have the absolute right, without further notice or demand, to retake possession of said property and to enter my premises for the purpose of removal or examination of same; and upon any such retaking of possession all my rights hereunder shall cease and all sums paid by me, the Company shall have the absolute right to retain as payment for my use of said property; and I further hold them harmless from any claim of any nature that might arise from the retaking of this property; (5) That the whole agreement between the Company and myself is herein stated and no change or modification whatsoever of the terms hereof shall be effective unless made in writing and signed by the Company; and (6) That the Company may rescind its agreement to deliver said property and cancel this contract at any time before the property is delivered and actually in my custody. (7) That the Company under no circumstances will take back for credit any tubes, batteries, or aerial equipment. (8) That the Company does not guarantee that this set will receive other than local stations. This does not mean, however, that it is incapable of doing so, but this will depend mainly on the particular location of the residence and atmospheric conditions. (9) I have always been faithful in paying my obligations and am making this statement for the purpose of inducing you to grant me these terms, and I give you my pledge that you may feel safe in trusting me to pay as agreed. I acknowledge receipt of a copy of this contract.

WITNESS my hand the day shown above.

Miss Mrs. Mr.

Witness Street

Salesman City or Town Tel.

Table with columns: Rating Listing, Lease File, Reg. File, Brad., Dun., C. R. Co., City Dir., Tel. Dir., Miscellaneous

Employed by How Long

Address Bank Reference

Trade References

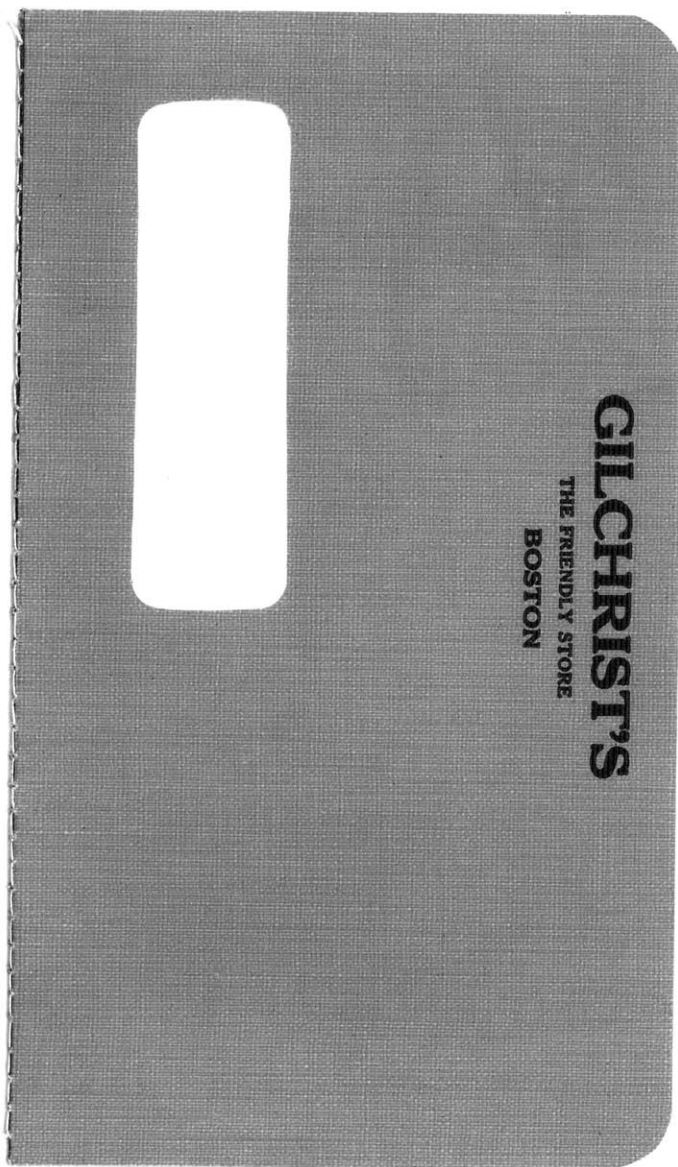
Personal References

Do you own Real Estate? Where?

Name of Nearest Relative

Address

RECEIPT BOOK FOR LEASE PAYMENTS



ALWAYS PRESENT THIS BOOK WHEN MAKING A PURCHASE OR A PAYMENT

By Mail or in Person

The acceptance of this receipt book constitutes a part of copy of contract numbered below and each entry of payment made herein has the same affect as if written upon said copy.

RENEWAL ACCOUNTS

Amt. of weekly or monthly payments.....day due.....
Amt. of weekly or monthly payments.....day due.....
Amt. of weekly or monthly payments.....day due.....

Account Number
Type of merchandise
Amt. of consecutive pay't
Due weekly or monthly
Day payments are due
Date payments start



Our Thrift Payment and Gilchrist Plans encourage thrift. They enable you to pay for purchases out of current income without disturbing your savings.

RECEIPT BOOK

ALWAYS GIVE ACCOUNT NO. WHEN REFERRING TO THIS ACCOUNT

RECEIPT BOOK FOR LEASE PAYMENTS

	DATE	ITEMS	DEBITS	CREDITS	BAL. DUE	ACCT. NO.
1						
A						
B						
2						
3						
4						
5						
6						
7						
8						
9						
10						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

	DATE	ITEMS	DEBITS	CREDITS	BAL. DUE	ACCT. NO.
1						
A						
B						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Sections 70 and 73 of Chapter 208 of the Revised Laws of Massachusetts.

A Vendee of Goods and Chattels who sells them without the written consent of the Vendor and without informing the purchaser of the Conditional Contract of Sale and whoever having goods and chattels in his possession received upon a written Conditional Contract of Sale with intent to defraud, sells, conceals or aids in concealing same before performance of the conditions, is liable to a fine of \$100, or by imprisonment for one year.

NOTICE

Customers must not move merchandise without notifying us.

REMITTANCES BY MAIL

Use registered letter, money order, or check. Never send currency by mail unless registered.

Sender assumes the risk of sending currency through mail.

When remitting by mail, please enclose pass book and address it to the

CHARGE OFFICE, GILCHRIST CO.,

417 Washington Street

Boston, Mass.

Our cashier will return it at once.

WE ARE HERE TO SERVE YOU AND WANT YOU TO ENJOY VISITING US.

LEDGER CARD FOR LEASE PAYMENTS

NAME ADDRESS		MDSE. CODE MONTHLY PAY		ACCOUNT No. DATE		
	DATE	ITEM	PURCHASES	PAYMENTS	BAL. DUE	ACCT. NO.
1						
A						
B						
2						
3						
4						
5						
6						
7						
8						
9						
10						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

F 224 28M 7-7-27-A.E.C.O. 830

APPLICATION FOR CREDIT

F286 25M FURNITURE 1-3-28-4-81

CONTRACT No.

GILCHRIST CO.

Application for Credit

Kind Date

Name in Full

Wife's Name

Present Address

Firm

Address of Firm Firm's Business

Position How Long Years

Salary Rent

Encumbrances

Rating Listing	BRAD.	DUN	C. R. C.
	CITY DIR.	TEL. DIR.	DEROGATORY FILE LEASE REG.

REFERENCES

Bank

Accounts his hers

Nearest Relative

Address

Persons Authorized to Charge

Real Estate Where

Applied for Interviewed
By By

Remarks

AGREEMENT:—In consideration of your extending credit to me or my (husband) (wife) (the above), I am submitting the above information and agree to pay any sum that may be justly due on such account.

Signature

Passed Code


Amount Coin

Signed Rand

Ledger Card Index Card

Coin Book Shop Serv.

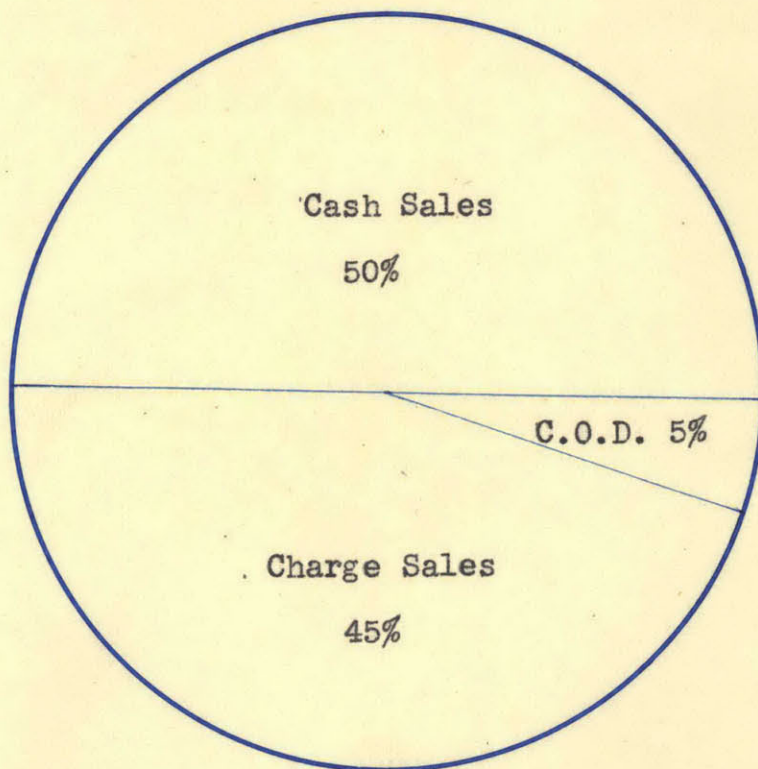
CASH SALES CHECK

	GILCHRIST CO.		CASHIER'S STAMP																																																			
	BOSTON, MASS.																																																					
S. P. NO.		DATE																																																				
Name																																																						
Street																																																						
City																																																						
State																																																						
17993		Code		3																																																		
Name																																																						
Street																																																						
City																																																						
State																																																						
17993		3																																																				
S. P. NO.		DATE																																																				
EXTRA PCKGS.		AM'T REC'D																																																				
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CONTINUOUS (TRADE MARK) — MFD. BY AM. SALES BOOK CO., LTD., NIAGARA FALLS, N.Y.																																																						
S. P. NO.		AM'T REC'D		AM'T SALE																																																		
17993		NEVER AL		3																																																		
SALESPERSON'S VOUCHER		Have it made void, and make out a New Check.		3																																																		

A P P E N D I X E

R. H. WHITE COMPANY

Percentage Distribution of Sales

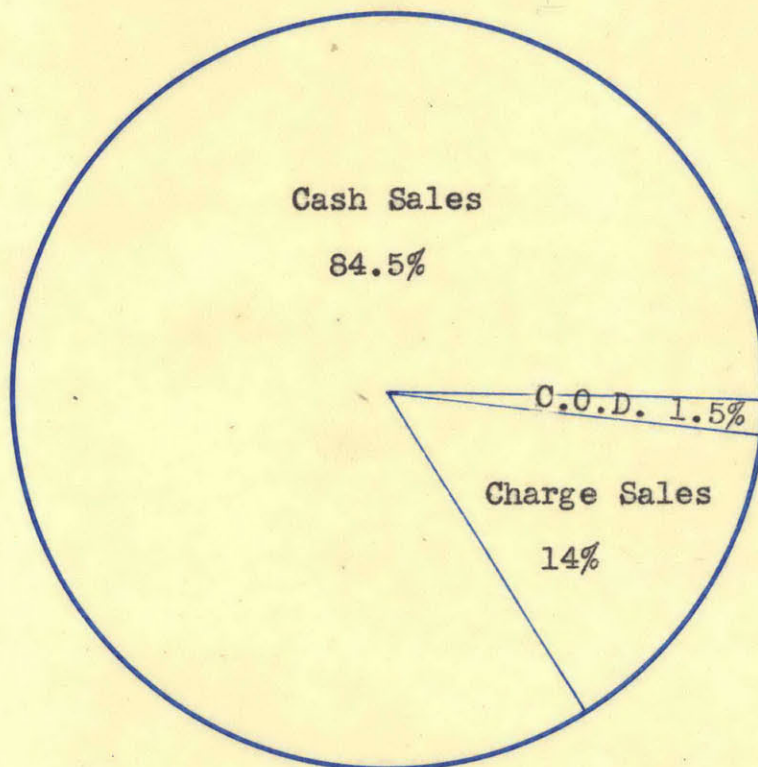


Estimated charge sales without tokens 35%

Estimated sales for less than two dollars 50%

Wm. Filene's Sons Company

Percentage Distribution of Sales

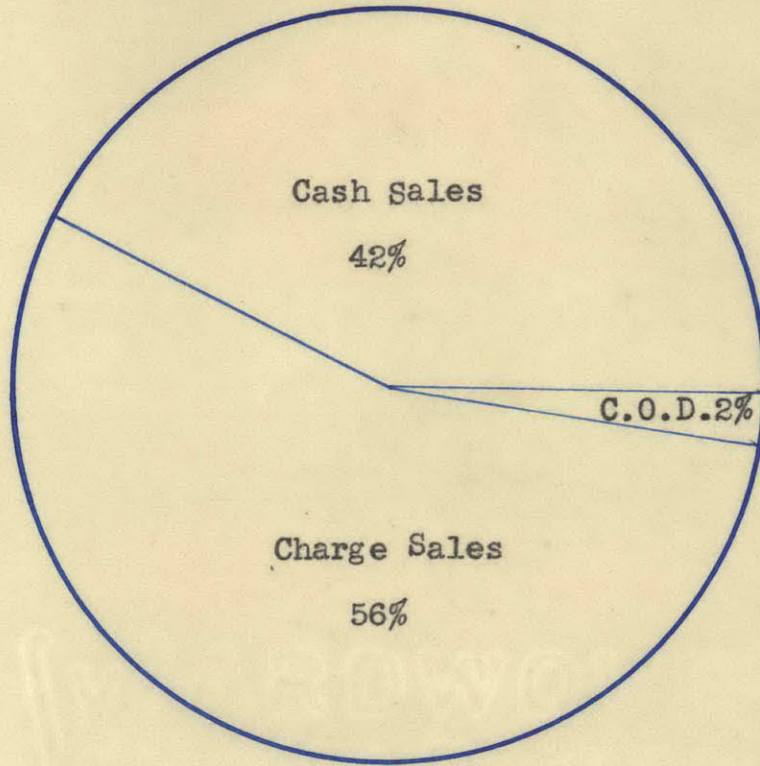


Estimated charge sales without tokens 20%

Estimated cash sales less than two dollars 35%

JORDAN MARSH COMPANY

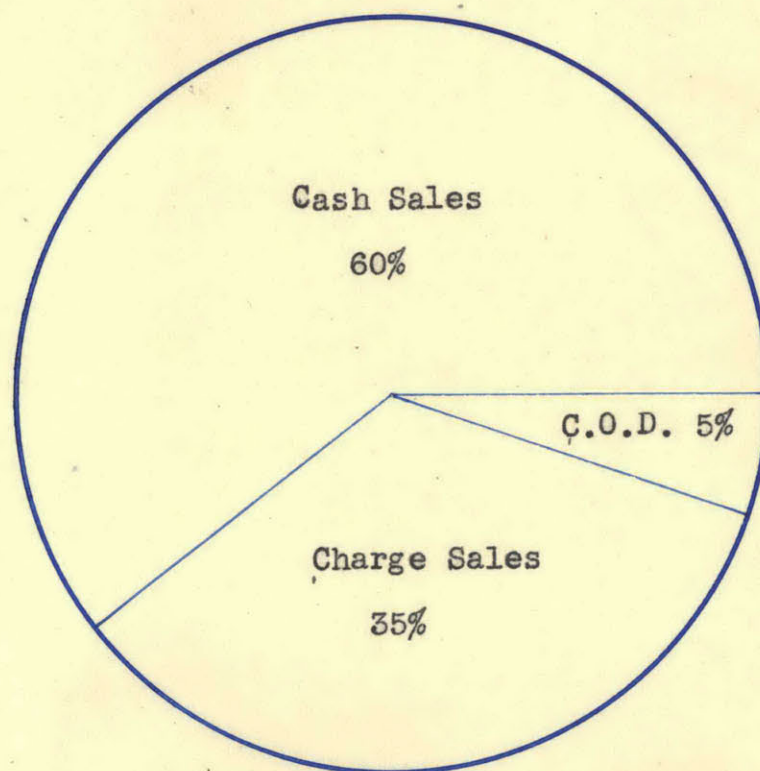
Percentage Distribution of Sales



Estimated charge sales without tokens 45%
Estimated sales for less than two dollars —

GILCHRIST COMPANY

Percentage Distribution of Sales



NOTE: The above charge sales are estimated from regular charge accounts only.

Estimated charge sales without tokens 25%

Estimated cash sales less than two dollars 60%

A P P E N D I X F

**A Central
Records Machine**

*and its Application to
Retail Stores*



A CENTRAL
RECORDS MACHINE

*and its Application to
Retail Stores*

BY
L. F. WOODRUFF
AND
EDWARD ROGAL

PREFACE

THE following pages describe a machine and system of operation which have been developed in the Research Laboratories of the Massachusetts Institute of Technology. The goal has been the making possible the practical application of the powerful business tool of punched-card tabulating machinery to the main problems of department-store accounting.

In their development the authors have received the most generous coöperation from retail-store executives and from the manufacturers of equipment. Especial thanks for coöperation in the analyzing of store operating and accounting problems are due to Mr. E. Katz and Mrs. Helen Anderson of R. H. Macy & Co.; to Messrs. Osgood, Stone, Brown, and Saunders of the Jordan Marsh Co. and the C. F. Hovey Co.; to Messrs. Kelly, Towsley, and Robinson of the R. H. White Co.; to Mr. Foster of the Houghton-Dutton Co.; to Messrs. Benton and Pierce of Wm. Filene's Sons Co.; to Mr. Giese of R. H. Stearns Co.; to Mr. Carroll of Conrad's; and to Messrs. French and Belknap of the Herbert A. French Co., Auditors. Most of the stores named have also coöperated with the Massachusetts Institute of Technology in the working out of several theses on certain details of operating procedure.

Equipment has been loaned and constructed by the Automatic Electric Company, the International Business Machines Company, the Remington-Rand Business Service, and the Sundstrand Adding Machine Company. Very great assistance has been freely rendered by Mr. L. A. de Berard and Mr. Martin L. Nelson of the Automatic Electric Company.

We are indebted to Mr. R. H. White and Mr. Bailey Townshend, both of the class of 1916 of the Massachusetts Institute of Technology, for assisting

us in the demonstration before the 1928 Convention of the Controllers Congress, N. R. D. G. A.

The sound advice and helpful criticisms of Mr. H. R. Russell of the Remington-Rand Co. have been particularly valuable.

Cambridge, Mass.,
May 16, 1928

EDW. ROGAL
L. F. WOODRUFF

[4]

A Central Records Machine and Its Application to Retail Stores

Synopsis. — *A new machine and method are described whereby the use of tabulating equipment in retail stores is extended to accomplish rapidly and with mechanical accuracy the work of sales audit, merchandise control, and accounts receivable billing, effecting a tie-in among these departments which has never before been economically possible.*

THE ECONOMICAL APPLICATION OF THE PUNCHED-CARD METHOD

The punched-card method is economical of application where large masses of numerical data must be handled accurately and totaled in numerous groupings. In the punched-card method there are four operations, namely:

1. Punching the cards.
2. Verifying the accuracy of the punching.
3. Sorting.
4. Tabulating.

The most expensive part of the work has been the preparation and verification of the original punched record. This usually involves a hand punching (on a 10-key keyboard) and a separate checking operation before the cards are ready for use. Unless, therefore, these cards are subsequently to be used for at least three sets of totals by different groupings, it is impossible to absorb economically the expense of the automatic equipment and cards. The work of sales audit in department stores requires only a few groupings, and some of these are merely subdivisions of others. For example, totals by salesperson can usually be combined to give totals by department. For this reason tabulating machines have not afforded any great saving in this work.

[5]

With the realization of the expense and also the delay in getting the cards correctly punched by hand, the **Central Records Machine** has been developed. In brief, this is a machine which makes possible in a retail store the *automatic* production of a *standard punched card* at the time of origin of the record, namely, at the sale. This is accomplished without any hand punching. The punched sales-record card is a duplicate of previously prepared gang-punched records which identify each of the various factors that enter into the sales transaction.

The design of the central records machine and the layout of the system of operation necessarily had to be carried along together, because they are mutually dependent. However, it is hardly reasonable to hope that the most carefully planned preliminary system layout will coincide in all details with the eventual method of operation that will be proved by experience. It is with this realization, but at the same time with the fullest confidence in the soundness of the fundamental plan (that of producing a central punched record simultaneously with a sale without manual recording operations) that the following outline of proposed operating routine is presented. It is earnestly hoped that any criticisms or suggestions concerning the operating routine, or any questions involving uses which are not brought out or not made clear in this booklet, will be submitted to the authors.

OPERATING ROUTINE

The Sale

The factors involved in a sale are: (1) the merchandise and its selling price, (2) the customer, (3) the salesperson, and (4) the cashier. Each of the factors is identified by a small punched tag (see samples in back of book).

In a charge transaction, identification of the cashier is unnecessary. In a cash transaction, identification of the customer is unnecessary. In any one sale it is therefore necessary to identify only three of the four factors. When a sale has been made, the three punched tags representing the three factors are placed in the **Transmitter** and the top is closed.

[6]

After eight seconds the **Transmitter** opens automatically, permitting the removal of the three identifying tags. The transmitting portion of the merchandise tag is separated into its two parts. One part is initialed by the salesperson and given to the customer as a sales slip.

The Record of the Sale

The operation of the **Transmitter** causes the production at the central office of a standard punched **Sales Audit Card** (see samples) containing all the information on the three identifying tags and in addition the department number and the date. This same information is also recorded on an adding machine tape and in the totalizers of the adding machine.

The Sales Audit

The **Sales Audit Cards** are run through standard sorting and tabulating machines to obtain totals by department, by salesperson, by type of sale, and by cashier.

Merchandise Record

For each piece of merchandise going into stock there is punched an **Inventory Card** (see sample). By the same operation which prepares the **Inventory Card**, a punched and printed **Merchandise Tag** containing the sales price and serial number is prepared.

Merchandise Control

The merchandise serial number is part of the sales record obtained from the merchandise tag. The inventory cards are withdrawn from the files by means of the serial number appearing on the sales record. These inventory cards may be run through standard sorting and tabulating machines to obtain totals by manufacturer, style, size, color, material, mark-down, purchase date, and by price range.

Analysis of Merchandise on Hand

The punched-card inventory file furnishes a ready means for analyzing merchandise on hand.

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Accounts Receivable

After the sales audit has been obtained, the **Safe Audit Cards** bearing customer charge numbers are sorted by the first three digits of the merchandise serial number. By a prearranged name code each combination of these three digits represents a certain class of merchandise, such as dress, coat, shoes, etc. An alphabetical gang punch is set up to punch the name of the article corresponding to the code number, and the entire group of cards bearing this code number is run through the punch. If numerical designation of items purchased is to be used, this step is dispensed with. All charge transaction sales audit cards pass through this punch and have the names of the items punched in. *They are then sorted by customer number* and filed away behind the three punched cards (see sample) which form the stencil for the customer's name and address. The accounts-receivable billing may be rotated, one twenty-fifth of the bills being sent out each working day. The portion of the file to be billed is run through an alphabetical tabulator using printed billheads, which produces the customers bills in duplicate, complete with their totals, as well as carrying along a grand total of all the bills. Window envelopes are used with these bills so that addressograph plates may be entirely dispensed with. For numerical item designation the name and address of the customer are addressographed on the billhead.

Credits

To enter a credit on the books, a sales audit card form is used. The complement of the credit is punched in the sales price field, columns 36 to 40. The amount of the credit is punched in credit field. "Cr" is punched in column 4. The rest of the card is punched up as for sales audit, except that all the punching is done by hand. This card is used in the sales audit in the usual way and in the preparation of the customers' bills it causes the printing of the amount of credit and the automatic subtraction of this amount from the total debit.

[8]

THE CENTRAL RECORDS MACHINE

The Mechanism of the Central Records Machine

The central records machine consists of three main portions, all of which are interconnected by electric wiring. A number of **Transmitters** (usually one to a department) are distributed over the sales area of a store; a much smaller number of **Recorders** are located at a central office; and automatic **Selector Switches** at the central office, equal in number to the **Transmitters**, act to connect each **Transmitter** as it comes into action with an idle **Recorder**.

Economics of the Central Records Machine

The use of automatic selector switches in the central records machine has made it possible to reduce to an absolute minimum the number of recorder mechanisms necessary. The recorder units are the most expensive parts of the machine. The selector switches and the transmitters, which are the parts required in greatest number, have been simplified to the greatest possible degree. All necessary relays and controls which could possibly be located at the recorders rather than at the transmitters, are located at the recorders, since the number of these machines is much smaller than the number of transmitters.

The Transmitter

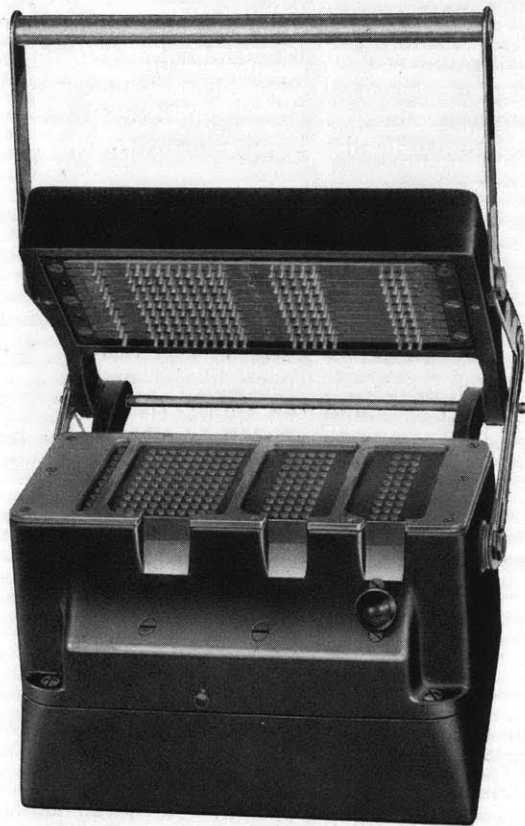
The requirements in the transmitter design were simplicity of operation by salespersons or cashiers, dependability, and reasonable cost. The operation requires merely the insertion of the proper punched tags and the closing of the top of the transmitter. Automatic safeguards are provided against misplaced cards, failure to insert one or more cards, and against cards lacking one or more punched holes. The operator cannot stop the transmitter midway through the message. There is no chance of a card jam, because neither the cards nor the electrical

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contacts through the holes in the cards have any movement during the transmitting.

The Selector

An automatic selector is connected with each transmitter, and is set in motion by the operation of the transmitter lever, provided all the cards are in

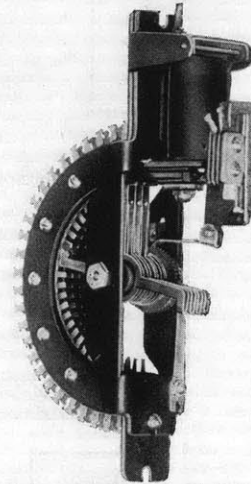


TRANSMITTER showing three card pockets. Any number of pockets may be provided.

place in the transmitter. The selector fingers rotate until they come in contact with a position on the stationary contact bank leading to an idle recorder.

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The fingers stop at this position, thus establishing electrical connection between the transmitter and the idle recorder. At the same time a relay acts to cause the prepunched information which is on the cards in the transmitter to be transmitted to the recorder. The complete transmitting takes eight seconds, after which the selector automatically disconnects the recorder, leaving it ready for another record from another department. The selector also automatically opens a circuit which allows the transmitter cover to open by spring force, ready for the operator to remove the tags.

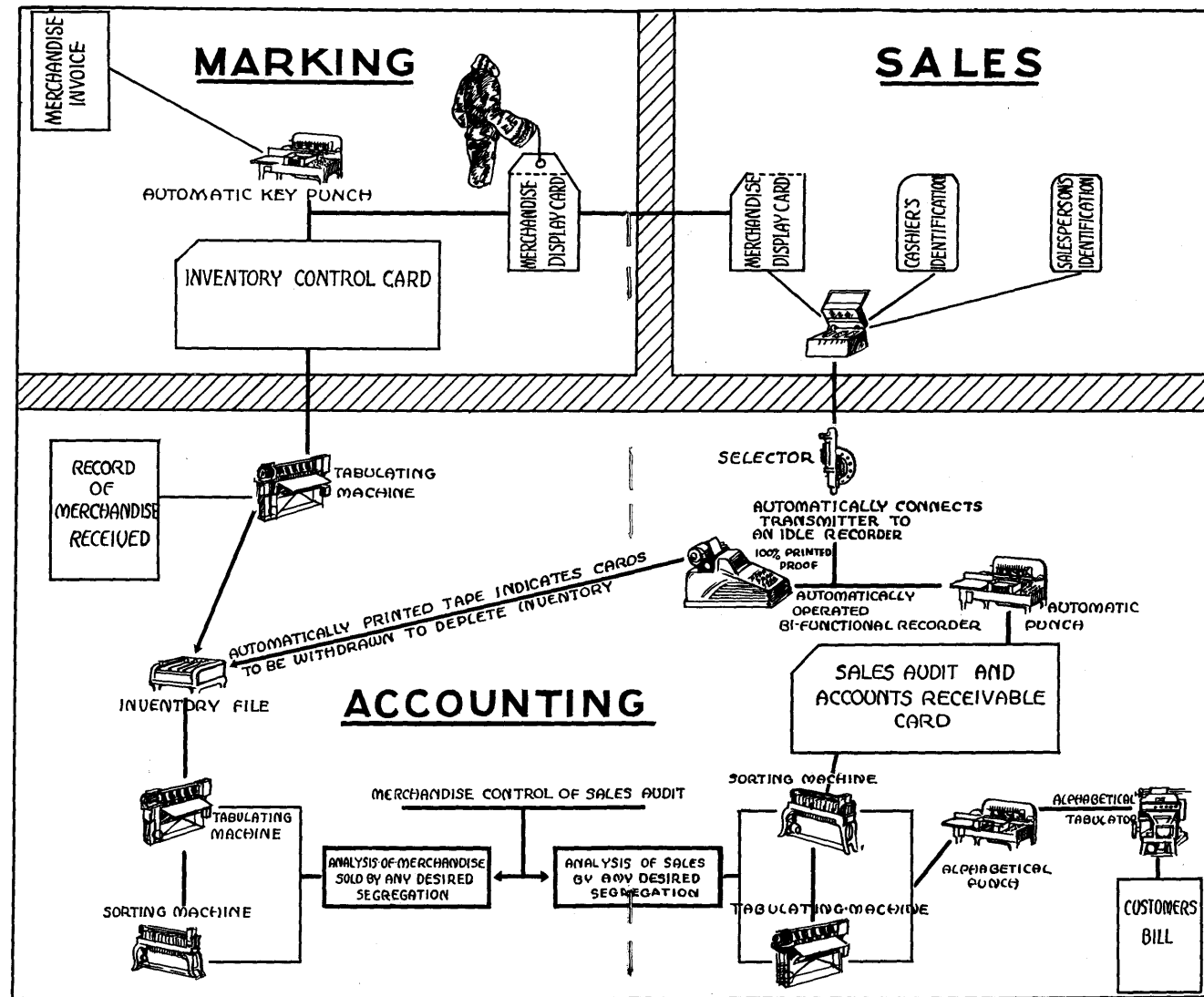


Automatic Selector Switch which connects a transmitter to an idle recorder

The Recorder

The recorder consists of two machines connected electrically in parallel so that each receives the same message and records the same facts. The machines are: (1) an automatic standard card punch, and (2) a 10-key adding machine of the twoplex or two-totalizer type. The punch has the date set up on its dies at the beginning of each day. Additional information received electrically from the transmitter is set up on additional dies. At the end of the message the card is punched, ejected from the machine, a new card is put into place, and the dies set up by the message are cleared, all automatically. The punch is then ready for another message. The adding machine lists on a tape all the information received from the transmitter, and in addition carries along two totals, — one of the sale prices, and one of the serial numbers of the items sold. The serial-number total is required for checking purposes, while the sales-price totals afford at any time of the day a total of the gross business up to that instant.

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SKELETON CHART OF OPERATING PROCEDURE

In the marking room, merchandise tags and standard inventory cards are simultaneously punched and printed. Accuracy of punching is checked by tabulator. Inventory cards go to stock file and tags with merchandise to sales department. When a sale is made, the prepunched merchandise tag and prepunched identification tags of salesperson and cashier (or charge customer, if a charge sale is made) are used to reproduce mechanically a punched sales audit card in a central accounting office.

QUESTIONS AND ANSWERS

The following questions and answers have been prepared to show possible methods of handling certain of the more important details of store routine. Additional questions and comments are earnestly solicited from men with store operating experience. Such comments should be addressed to Prof. L. F. Woodruff, Massachusetts Institute of Technology, Cambridge, Mass.

QUESTION 1. *What provision can be made for locating extra transmitters temporarily in departments where special sales are to take place?*

ANSWER. Extra outlet plugs can be readily and economically installed throughout the store, and a number of spare transmitters can be shifted from department to department to take care of the local peak loads by plugging these extra machines into the sockets where needed.

QUESTION 2. *How many transmitters can be used for each recorder?*

ANSWER. The number of recorders required bears no direct relation to the number of transmitters. The determining factor in the number of recorders required is the peak rate of sales of the entire store. For example, in a store having an average of 30,000 transactions per day or about 4000 transactions per hour, the peak rate will be approximately 10,000 transactions per hour. It takes about 8 seconds for one sale to be recorded. One recorder therefore can handle 500 transactions per hour. The number of recorders required in this store is therefore 10,000 divided by 500, or 20 recorders. Such a store would probably have in the neighborhood of 200 or 300 transmitters. When special sales take place in different departments of the store, the same recorders at the central office are always available to take care of the extra load, no matter what part of the store it may be coming from.

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QUESTION 3. *What determines the number of transmitters which are needed in a given store?*

ANSWER. The number of transmitters needed is determined in the same way that the number of cash registers would be determined in a straight cash register system. That is, they should be located near enough together so that the time used by salespersons in walking to a machine should not outweigh the expense of adding a few more machines. Ordinarily one transmitter per department would be required, although some large departments might require two or more. Two small departments which are adjacent in the store could use one common transmitter. There is no limit, excepting operating convenience, to the number of salespersons who can use one transmitter.

QUESTION 4. *What will happen if all the recorders are busy when a transmitter operator attempts to record a sale?*

ANSWER. The selector switch associated with this transmitter will automatically continue to search for an idle recorder until one is found. When all recorders are busy recording sales these sales will be completely recorded within 8 seconds. Therefore the maximum wait before at least one recorder becomes free is 8 seconds and the average wait is only a fraction of a second. There is no difference in the operator's routine when all recorders are busy, necessitating this short wait, from her routine when a connection is immediately made. It is to be understood that the number of recorders should be such that these delays take place only very rarely and even then the delay is only for a second or two.

QUESTION 5. *How are the cards withdrawn from the inventory file?*

ANSWER. The cards are withdrawn by serial number or item number. In a fairly small store the serial numbers printed on the adding machine tape would be used by the withdrawing clerks. An absolute check on the accuracy of the withdrawing is obtainable by a comparison of two automatically obtained totals. The central records adding machine carries along a serial number total. When a number

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of sales have been listed on this machine, say 50 sales, a total is taken of the serial numbers. The length of tape bearing these 50 sales records is torn off and used by the clerk, who withdraws the corresponding 50 inventory cards from the inventory file. The 50 cards withdrawn are next run through a tabulator which will take totals of the serial numbers punched on these cards. A check of these two totals indicates the accuracy of the withdrawing process, and no item-by-item check is necessary except in case an error has been made in withdrawing. The size of the group of cards to be withdrawn at one time is made small enough so that excessive work in locating errors is avoided.

In very large stores it is not economical to let the withdrawing clerk work from an unsorted list of serial numbers. Consequently, a group of sales cards representing approximately an hour's business of the store is sorted by serial number and a list tabulated for the use of the withdrawing clerk. This preliminary sort greatly speeds up the withdrawing operation.

QUESTION 6. *Is each separate item of merchandise to be assigned an individual serial number?*

ANSWER. If a number of items of the same description are received, they should all be given a common item number. An individual serial number should be used only where an individual control is desired. For example, fur coats, diamond rings, and oriental rugs of the better classes are items which possess individuality, and should be assigned individual serial numbers.

QUESTION 7. *How are the inventory cards filed?*

ANSWER. Either by serial number alone or by department by serial number.

QUESTION 8. *Will returned goods be handled on the central records machine?*

ANSWER. No. Returned goods will be recorded on a slip provided for that purpose. These slips will be sent to a punch operator, who will punch up cards with the necessary information.

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QUESTION 9. *Are the accounts receivable bills to be kept posted up to date at all times?*

ANSWER. No. The accounts receivable record for the current month will consist of the file of punched sales audit cards, arranged by customer number and filed back of the three punched stencil cards bearing the customer's name and address and account number. If a customer during the month requests her bill up to date, the cards are readily located by the customer's name or account number and the bill may be run off automatically on a tabulator in a few seconds.

QUESTION 10. *How will allowances be handled? For example, in the yard goods section maybe the customer sold $2\frac{3}{4}$ yards as $2\frac{1}{2}$ yards? When she takes the last piece on a bolt how would this be recorded?*

ANSWER. The floorman must approve all allowances. Since allowances are made only at the end of a bolt there is no further use for the bolt identification token and this token will be used by the floorman to indicate the amount of allowance made. The token is then sent to the central records room where it acts as authorization for the withdrawing of the inventory card for that bolt.

QUESTION 11. *Does the central record machine provide any method of charge authorization?*

ANSWER. Identification of the customer must be accomplished in the sales department. Approval of the account can be obtained through use of the central records machine by providing a means of routing all charge transactions records to a specific recorder at which charge authorizing clerks can be located. As the account number appears on the adding machine tape of the recorder the authorizing clerk will look up the account in a visible file and signify whether the account is good or bad by pressing a button. If the account is not approved a red light will flash at the transmitter, and also a hole will be punched in the sales audit card indicating that this card is to be voided. The "refer" of the account indicated by the transmitter light should not be re-

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garded as a final disapproval but should be checked in every case by telephone communication.

QUESTION 12. *What will be the routine of handling purchases made by shoppers employed by the store to purchase articles telephoned for by customers?*

ANSWER. The shopper will be provided with a punched identification token bearing the number of the charge customer for whom she is making the purchase, and in addition another punched hole identifying her as having made the purchase. Salespersons will be instructed that purchases made by means of these shoppers' tokens are to be "send" transactions only. The punched sales audit card will bear the proper identifying number, and this number will appear on the bill rendered to the customer.

QUESTION 13. *What is done when a customer brings a bundle into the store and asks that it be delivered to her home?*

ANSWER. Since this type of transaction does not enter into either the cash audit or the accounts receivable audit, no record of it need be made on the central records machine. A hand-written record of each item should be prepared in triplicate, preferably by the customer. One copy should be given to the customer as a memorandum, one copy should accompany the package to the shipping room, and the third copy should be kept by the store as a record in case of lost articles or any other trouble.

QUESTION 14. *What is the procedure for authorizing in the shipping room the delivery of a "send" parcel?*

ANSWER. A "send" sale is handled at the transmitter in exactly the same way as a "take-with" sale, except that in the "send" sale one extra tag is inserted in the transmitter. At the cashier's desk where the transmitter is located will be a box or pad of small address labels. These labels will be printed and punched with a three digit serial number, and will be gummed on the back. After the customer's name and address have been written on the label, the label is inserted in the transmitter along

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with the identifications of the salesperson, the merchandise, and the cashier (if a cash sale) or the customer (if a charge sale). The address label serial number is reproduced at the central records room on the sales audit cards, and these cards are sorted by department and by "send" serial number at frequent intervals during the day. All "send" cards are listed on a tape by department by "send" serial number, and this list is sent to the shipping room. Here it acts as an authorization for the shipping of the bundles, because the appearance of any item on this list is a guarantee that such item has been charged on the central records machine, and hence either that the cash is in the hands of some cashier in the store or that some account number has been charged with the item.

QUESTION 15. *What is the procedure for handling "send" transactions which are to be shipped not from the sales floor but from a warehouse?*

ANSWER. An address label is made out in the selling department. This address label is printed and punched with a serial number, and is gummed on the back. The serial numbers for this type of transaction will occupy only a certain range, while "send from stock" address labels will occupy another range of numbers. At the central office all cards representing sales to be sent from the warehouse are sorted out in accordance with the range of "send" serial numbers assigned, and a list of items is run off by department by "send" serial number. This list, together with the address labels from the selling departments, is sent to the warehouse. If desirable a second sort of the sales cards by item number is made and a tabulation prepared to assist the warehouse manager in withdrawing merchandise from stock for shipment.

QUESTION 16. *Is the punched identification token the only method of identification recommended?*

ANSWER. Not necessarily. It is not necessary to change the present routine in this respect. For small purchases, up to five or ten or fifteen dollars, the token may be accepted as sufficient identification by the salesperson. For larger purchases additional

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identification may be required if the merchandise is to be taken away by the customer or if it is to be sent to some person other than the charge customer.

QUESTION 17. *What is done when a charge customer fails to bring in her punched charge identification token?*

ANSWER. This is a matter of individual store policy. The recommended procedure which follows coincides with what is already being done in some large stores. When a charge customer has forgotten the charge token, the customer is required to go to a credit desk and procure there a duplicate punched shopping token good for that day only. This duplicate token is used in a transmitter in the usual way and is obtained by "transmitting" from a central credit room.

QUESTION 18. *How is a cash take sale handled?*

ANSWER. Under a distributed cashier distributed wrap the salesperson will hand to the cashier her own identification token and the perforated merchandise tag together with the money received from the customer and the merchandise. Note that the tag must not be torn from the merchandise before the merchandise is handed to the cashier. The cashier's token is already in the transmitter. The cashier takes the perforated punched merchandise tag from the article and places it and the salesperson's identification token in the transmitter. The cashier makes change from her cash drawer. By this time the transmitting is complete and the transmitter automatically opens. The cashier returns the salesperson's token and divides the merchandise tag. Half of it is given to the wrapper and goes into the bundle while the other half remains with the cashier.

QUESTION 19. *How is a charge take sale handled?*

ANSWER. The charge customer after making a purchase presents to the salesperson her charge identification token. This together with the salesperson's own token and the merchandise is handed to the cashier. The cashier detaches the merchandise tag and places it with the two tokens received from the salesperson in the transmitter. After the trans-

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mitting is completed the tokens are returned to their owners and the merchandise tag is torn in two, one half remaining with the merchandise and one half with the cashier.

In all charge take transactions the customer will sign her name in a book provided for that purpose.

QUESTION 20. *How is a sale handled when it is charged to one person and sent to another?*

ANSWER. The name of the person by whom the goods were purchased should be noted on the address label.

QUESTION 21. *How is a charge send transaction handled?*

ANSWER. This type of transaction is handled in the same way that the charge take transaction is, except that the serial number address labels are inserted in the transmitter.

QUESTION 22. *How is a cash send sale handled?*

ANSWER. A cash send sale is handled like a cash take sale except that the cashier places in the transmitter in a fourth pocket a serial number printed and punched address label. After the transmission has been completed this address label is glued to the outside of the package.

QUESTION 23. *How is a cash sale paid by check handled?*

ANSWER. It is handled like an ordinary cash sale except that the check should be approved by the floorman and have the address of the person presenting the check on the reverse side of the check.

QUESTION 24. *How are mail order sales made by salesperson to hired shoppers handled?*

ANSWER. The shopper is provided with an identification token similar to a customer's identification token and presents this in the same manner that a charge customer would present her token.

QUESTION 25. *What is the procedure for handling a partial delivery; that is, a purchase in which the*

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customer takes part of the goods and asks to have the remainder delivered?

ANSWER. The address label is left in the transmitter only while sales of items to be sent are being transmitted.

QUESTION 26. *Will the value of parcels being sent be indicated on the parcels in any way?*

ANSWER. The total amount will be indicated on the address label either directly or in code.

QUESTION 27. *How will discounts be handled; that is, when dressmakers or store employees who are allowed a discount make purchases, how is correction made for this discount in the auditing and billing procedures?*

ANSWER. Persons entitled to discount, if they are regular charge customers, will be provided with a charge identification card bearing one of a pre-assigned range of numbers which will identify them as being entitled to receive discount. If they are not regular charge customers, or if they have failed to bring their special tokens, they will be asked to procure a temporary token at a central desk.

In the audit and billing all cards bearing a customer's number within this preassigned range will be sorted out separate from the rest and all totals from this group multiplied by one minus the discount allowed. In the billing the amounts can be printed in normal retail and at the end of the bill the total figure only multiplied by the proper factor.

QUESTION 28. *What is done when a customer makes a purchase, saying that she will take the merchandise with her, but later changes her mind after a "take" sale has been recorded on the transmitter?*

ANSWER. This case should be handled just as if the customer had brought the merchandise into the store and had requested that the store deliver the merchandise for her. That is, a written record of the articles should be prepared in triplicate, one copy for the customer's memorandum, one for the shipping room and delivery ticket, and the third as a store record.

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QUESTION 29. *When merchandise is to be sent is it not necessary to write out a sales slip?*

ANSWER. For "send" transactions it is of course necessary to write the name and address to which the package is to be sent, but it is not necessary to write out a complete sales slip as is done at the present time where hand methods are used. The salesperson merely writes once the name and address on a small pad with a carbon copy to be given to the customer and a tissue carbon copy in the book. The original copy is sent to the shipping room with the merchandise, and is used as the address label.

QUESTION 30. *Does the plan outlined require the tagging of every item in this store?*

ANSWER. No. Items which are ordinarily sorted in quantities would be provided with "bin" tags. For example, a certain style and size of collar would have located near the box a pocket of merchandise tags each bearing the serial number of this collar. We will say that the price of the collar is 35 cents each, three for \$1. Then there would be provided a tag for a collar punched for the sales amount of 35 cents; a tag for two collars punched with a sales amount of 70 cents; a tag for three collars punched for the sales amount of \$1. Tags for four, five, and six collars should also be provided, prices \$1.35, \$1.70, and \$2.00. Larger purchases can be handled by transmitting twice. This method of control not only carries the proper merchandise control but also automatically takes care of the price reduction for quantity purchases.

QUESTION 31. *How are yard goods handled on the central records machine?*

ANSWER. For each price line of cloth a set of tags is prepared, each tag containing in punched holes a length and the price extension. Each bolt of cloth is accompanied by a single tag bearing in punched holes the serial number assigned to that bolt. Special transmitters capable of holding and transmitting from the extra tag have to be installed in the yard goods department.

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QUESTION 32. *What is done in case the merchandise tag becomes lost?*

ANSWER. The floorman makes a complete written memorandum of the sale, from which a sales audit card is later punched up by hand and the inventory record depleted. However, lost tags should be replaced, where noticed, by a new tag bearing a new serial number, and the inventory file corrected to correspond.

QUESTION 33. *What is done in case the merchandise tag becomes torn?*

ANSWER. The tag is repaired with adhesive tape and can be used in the transmitter.

QUESTION 34. *How is a part-paid C.O.D. sale handled?*

ANSWER. The cashier has a pad of prepunched serially numbered C.O.D. address labels bearing a different range of numbers from ordinary send labels for cash or charge transactions. She transmits with her token, the salesperson's token, the merchandise tag, and the serially numbered C.O.D. address label. Then she replaces the merchandise tag by one of a small file of "part-payment" tokens, for the amount of cash received. The sale card and part-payment card are tied together by the serial number on the address label. The amount of C.O.D. is the difference, and is also noted on the address label.

CASHIER TOKEN

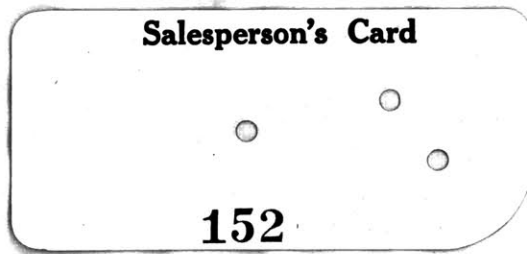


CASH

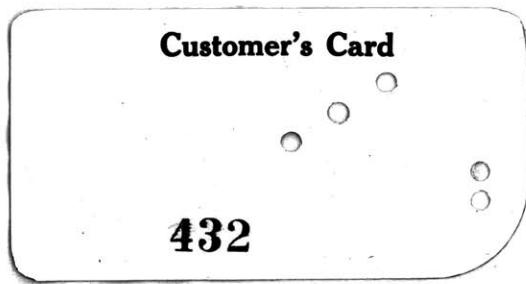


C.O.D.

SALESPERSON TOKEN



CUSTOMER'S TOKEN



BUNDLE DELIVERY TICKET

MODEL DEPARTMENT STORES BOSTON	
<i>To</i>	
<i>Postmaster</i> —This parcel may be opened for postal inspection if necessary.	Customer's Acct. No.
<i>Return postage guaranteed.</i>	Dept. Order No.
Contents Mdse. 4th Class	SERIAL NUMBER

MODEL DEPARTMENT STORES BOSTON	
<i>To</i>	
<i>Postmaster</i> —This parcel may be opened for postal inspection if necessary.	Customer's Acct. No.
<i>Return postage guaranteed.</i>	Dept. Order No.
Contents Mdse. 4th Class	SERIAL NUMBER

COMBINED MERCHANDISE TAG
and
INVENTORY CONTROL CARD

INVENTORY CARD

COMPLEMENT OF REDUCTION SALES PRICE	SERIAL NO.	PURCHASE DATE	MFG. NO.	DEPT.	STYLE NO.	SIZE	MARK DOWN AMT.		QUANTITY	COST PRICE
							COLOR	MATERL		
0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
1 1 1	1 1 1 1	1 1 1	1 1 1	1 1 1	1 1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1
2 2 2	2 2 2 2	2 2 2	2 2 2	2 2 2	2 2 2 2	2 2 2	2 2 2	2 2 2	2 2 2	2 2 2
3 3 3	3 3 3 3	3 3 3	3 3 3	3 3 3	3 3 3 3	3 3 3	3 3 3	3 3 3	3 3 3	3 3 3
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6 6 6	6 6 6 6	6 6 6	6 6 6	6 6 6	6 6 6 6	6 6 6	6 6 6	6 6 6	6 6 6	6 6 6
7 7 7	7 7 7 7	7 7 7	7 7 7	7 7 7	7 7 7 7	7 7 7	7 7 7	7 7 7	7 7 7	7 7 7
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900127

PATENTED AUGUST 14th, 1917, AND PATENTS PENDING

900127

SALES AUDIT CARD

SALES AUDIT AND ACCOUNTS RECEIVABLE CARD											
No.	Day	Name of Article	Credit Amount	Day of Year	Dept.	Clerk	Customer or Cashier	Sales Price	Serial Number	RETAIL STORES DEMONSTRATION CARD	
0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5
<p>THIS CARD AUTOMATICALLY PUNCHED AT THE CENTRAL RECORDS ROOM AT TIME</p> <p>OF SALE. MANUAL PUNCHING OPERATION ENTIRELY ELIMINATED BY MEANS OF TRANSMITTER IN SALES DEPARTMENT</p>											
SALES AUDIT AND ACCOUNTS RECEIVABLE CARD											
No.	Day	Name of Article	Credit Amount	Day of Year	Dept.	Clerk	Customer or Cashier	Sales Price	Serial Number	RETAIL STORES DEMONSTRATION CARD	
0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5
<p>THIS CARD AUTOMATICALLY PUNCHED AT THE CENTRAL RECORDS ROOM AT TIME</p> <p>OF SALE. MANUAL PUNCHING OPERATION ENTIRELY ELIMINATED BY MEANS OF TRANSMITTER IN SALES DEPARTMENT</p>											

Printed in U.S.A. POWERS-5410

MODEL DEPARTMENT STORES

BOSTON

SOLD TO

MRS PAUL D CHANDLER
1289 BEACON STREET
CAMBRIDGE MASS

ACCOUNT NO.

50036

CUSTOMER'S BILL

AMOUNT

Detach
Here

PLEASE ENCLOSE THIS STUB WITH YOUR REMITTANCE. YOUR CANCELLED CHECK
BEARING OUR ENDORSEMENT IS A RECEIPT.

MODEL DEPARTMENT STORES		ACCOUNT NO. 50036		PAY LAST AMOUNT IN THIS COLUMN	
DATE	ITEM	DEPT.	CLERK	CREDITS	CHARGES
Mr 04	SCARF	280	32		4 50
Mr 05	HAT	472	19		12 00
Mr 05	PAJAMAS	891	27		10 50
Mr 08	DRESS	980	26		25 00
Mr 09	PR HOSE	384	21		2 95
Mr 12 Cr	SCARF	280	32	4 50	
NET AMOUNT DUE					50 45

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