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Gilbreth field system

John P. Slack

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THE BUSINESS WORLD

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THE "GILBRETH FIELD SYSTEM"

HOW A SUCCESSFUL CONTRACTOR HAS SOLVED THE ACCOUNTING PROBLEM. MEMORANDA TAKE THE PLACE OF CASH BOOK, JOURNAL AND LEDGER. HIGH-PRICED BOOKKEEPERS ARE UNNECESSARY. HOW THE OWNER IS KEPT IN CONSTANT TOUCH WITH EVERY DETAIL IN THE COST OF HIS BUILDING OPERATIONS.

BY

JOHN P. SLACK.

Organization in the contracting field presents two phases which often seem to greatly diverge. One, the possibilities in theory, and the other, the possibilities in practice. It is in the application of theory, in its reduction to an ultimate working basis, that proof lies. The proof of the pudding lies in the eating no less truly than the proof of theory in the result of its application. The factor which varies, and which often brings apparently logical theories to an unfortunate conclusion, is the difference between working conditions which obtain in actuality, and ideal conditions which unfortunately exist only in theory.

The direction of a large body of men of various degrees of intelligence, working in different localities, some perhaps far removed from headquarters, is a proposition requiring experience, brains, and a highly specialized training in the art of handling men. The large contractor executing many contracts simultaneously, has this proposition to face, and the problems which must be solved are many and puzzling.

The manufacturer as a rule groups his tools, human and mechanical, at one location, possibly under one roof, in any case in one plant. His forces, under ef-

fective direction, may work as a unit; one branch of the industry is within sound of the whirl of machinery incident to the next step in the process of manufacture. Such contact makes for unity, and system may more nearly follow the points of least resistance. A contractor has no such grouping of his forces by location to aid him. One structure is erected in one State and another perhaps a thousand miles distant. The one building may be a factory, the other a city skyscraper. Both are structures, but further than this, the analogy may cease. Such conditions, peculiar as they are to the industry, must be met by a completeness of organization, and by an effectiveness and comprehensiveness of systematization, which will make for results in the strenuous competition which obtains in the building trade.

A notable instance of the application of a working system through which field work may be executed from beginning to end, is found in the organization of Frank B. Gilbreth of New York. His "Field System" has become almost a byword in the building trades, since its completeness and effectiveness have been excelled by no contractor's working system which has yet been devised. It is

by no means the work of one man, or any few men. Many of the suggestions contained therein have emanated from the lips of the humblest workmen, and none of its effectiveness is lost through the fact that such suggestions are expressed in the terse, significant language of the workmen themselves.

For several years previous to its recent publication, the Gilbreth "Field System" was open to the inspection only of the men in the employ of that organization. Only a limited number of copies of the volume were in existence, each being numbered, and the possessor of each being accountable for its return even to the extent of being bonded in a small sum to cover its loss. Notwithstanding such precautions, unscrupulous competitors sought in many ways to obtain the information contained in this volume. Office boys were bribed, certain pages were photographed, and discharged superintendents in one or two instances, carried the book with them. However, its publication makes such attempts no longer necessary, and shows a most broad-minded and generous spirit on the part of the contractor as well.

A feature of the Gilbreth "Field System" which is worthy of comment, is the system of accounting without books, which it outlines and which has been in practical use by this organization for some little time. The idea is sufficiently broad in scope to make it adaptable to other than the needs of contractors alone, and is so economical that a number of owners of buildings erected by Frank B. Gilbreth, have adopted it for use in their factories as well. As an illustration of its effectiveness in large contracts, there may be cited three complete industrial towns which the Gilbreth organization erected, each in the phenomenal time of a few months; one at Sprague's Falls, Me., one at Piercefield, N. Y., and another at Canton, North Carolina. On each of these contracts the system of accounting without books, fully described

below, was used, and the size of the contracts alone furnishes eloquent testimony to the excellence of the system. It has been the execution of such contracts as the three above noted which has associated with the Gilbreth name the phrase of "towns to order" and which amply justifies its use.

The Gilbreth system of accounting has been utilized under all kinds of local conditions in nearly all the states, and in the provinces of Canada as well. It provides for no cash book, journal nor ledger, but in their place substitutes what is in fact a systematic set of memoranda. Their completeness is such that the owner may see at a glance each Saturday what the total cost of a given structure has been up to the previous Thursday. The system shows furthermore, what the cost of materials will be for the completion of the job, namely, the materials required in addition to the check bills as compared with the initial estimate on the cost of the undertaking.

The method of procedure is as follows:

When the organization is awarded a contract, an estimate of the total cost is compiled and itemized in detail. Cost of labor and cost of the materials for each item that enters into the estimate are separated. When this has been done, a copy of the estimate book is given to the owner for his information as well. When materials are to be purchased, the regular form of order (see 0424) is given to the man furnishing the materials and a duplicate of this order is sent to the clerk on the job, and by him is placed on a Shannon File alphabetically, under the name of the firm furnishing the materials. On their receipt, the job clerk gives the person furnishing such materials a ticket for each portion of the shipment (see P. 543) retaining a duplicate copy of the partial receipt on a Shannon File.

When goods are shipped, the firm furnishing the materials is required to forward duplicate bills to the job. These

FRANK B. GILBRETH

SEND THIS TO NEW YORK OFFICE

MAIN OFFICE
34 WEST 26TH STREET, NEW YORK CITY

COST REPORT CONTRACT No. _____ **LOCATION**

TB				M MADE UP ON JOB				M MADE UP AT OFFICE				PORTION OF CONTRACTS NOT ENTERED				TOTAL OF CONTRACTS NOT ENTERED			
SHEET No.	DATE MONTH DAY	AMOUNT DOLLS.	CTS.	SHEET No.	DATE MONTH DAY	AMOUNT DOLLS.	CTS.	SHEET No.	DATE MONTH DAY	AMOUNT DOLLS.	CTS.	INITIAL OF SHEET	No. OF SHEET	AMOUNT DOLLS.	CTS.	NAME OF SUB CONTRACTOR	No. OF SHEET	AMOUNT DOLLS.	CTS.
TOTAL TB				TOTAL M MADE UP ON JOB				TOTAL M MADE UP AT OFFICE				PORTION NOT ENTERED				TOTAL NOT ENTERED			

MADE UP BY _____ DATE _____

APPROVED BY _____ DATE _____

CHECKED BY _____ DATE _____

CR _____ DATE _____

TOTAL TB, JOB M, AND OFFICE M PREVIOUSLY ENTERED _____

ENTERED TO DATE _____

THIS SHEET NO. **1857**

EVERY ONE OF THESE SHEETS MUST BE ACCOUNTED FOR.

IF ANY SHEET IS MISSING, THE SHEET NUMBER MUST BE REPORTED.

IF ANY SHEET IS MISSING, THE SHEET NUMBER MUST BE REPORTED.

IF ANY SHEET IS MISSING, THE SHEET NUMBER MUST BE REPORTED.

bills are immediately filed alphabetically on a Shannon File. The clerk permanently attaches the order 0424 to the file, and thus checks and approves "prices correct," and the terms and conditions of the order. The bill does not receive its final checking until he has attached as well a "final shipment" form such as P. 543, or the stub of 0424, to the bill. After the clerk has attached to the bill the "order" which checks the price, terms and conditions, the "final shipment" receipt which proves the goods received on the

nently located on the check bill file numerically, and may be referred to only by their number.

It is desirable, for many reasons other than that of checking up actual cost of the work as compared with the estimate, to have labor and material separated in the accounts. Consequently, the "M" sheet has been devised (see M 518), on which bills for material are listed. It will be seen that one line is sufficient for any one bill, and that the name of the party furnishing the materials may be placed

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THIS COPY IS FOR THE TEAMSTER.

FRANK B. GILBRETH, GENERAL CONTRACTOR,
 NEW YORK,
 34 W. 26TH ST.

DELIVER NO GOODS WITHOUT A TICKET. NO CHARGES FOR STOCK OR TEAMING WILL BE ALLOWED UNLESS ACCOMPANIED WITH THIS TICKET.

THIS CERTIFIES THAT THERE HAS BEEN TEAMED FOR US

TEAM'S
 NAME DATE **190**

..... KIND OF MATERIAL

SINGLE.	DOUBLE.	HOURS.
— " X	— " X	=
		TOTAL CUBIC FEET
CHARGED ON M.		
CON.	SUB.	
NO.	DIV.	
CAR NUMBER		
FRANK B. GILBRETH, AGENT FOR THE OWNER		THIS TEAMING TICKET IS NO.
BY		T 80601

FORM N. Y. 12727-08-400 8KG.

job with quantities and cost correct, it is then checked and approved by the time-keeper (see bill stamp). The bill is then numbered beginning with one, and as the bills are checked, the latest number is placed on the top of the file and then bound with McGill fasteners. These bills, in packages of one to fifty, correspond to the journal pages in an ordinary set of books, and are permanently filed numerically, whereas on the index file they were placed alphabetically under the name of the man furnishing the goods. All bills of the job are then either on index file where they can readily be found alphabetically, or else they are perma-

under the "Remarks" column. The bill number column serves as the posted column of a ledger, while material sheet number will be seen on the bill stamp on the next to the last line.

After bills have been listed on the "M" sheet, they are filed away for reference only in case of dispute, since the "M" sheet will give all the information required to the owner or the representative of the contractor who is responsible for the cost of the job not exceeding the estimate.

As quickly as these "M" sheets have been filled out, they are listed on a cost report (see C. R. 1 to 8). This cost re-

SEND THIS COPY TO NEW YORK OFFICE PROMPTLY.

THIS ACCOUNT IS CORRECT.

FRANK B. GILBRETH, BUILDING CONTRACTOR.

..... SUPT.

MAIN OFFICE,
NEW YORK,
34 W. 26TH ST.

SIoux CITY,
WATER ST.

BOSTON,
178 FEDERAL ST.

..... TIME KEEPER.

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DATE	BILL NUMBER	MATERIALS AND PLANT USED		PRICE A PIECE		AMOUNT		REMARKS
				DOLLARS	CENTS	DOLLARS	CENTS	
1								
2								
35								
36								
THIS ACCOUNT APPROVED.								
AGENT FOR OWNER.								
NATURE OF WORK.								
				TOTAL				THIS SHEET IS CONTINUED FROM SHEET NUMBER M
				ADD FOR PER CENTAGE				
				TOTAL DUE F. B. GILBRETH.				THIS SHEET IS NUMBER M 6909
CON NO.	ORD NO.	LET.....		IMPORTANT.				
FILL OUT THE ORD. LET.								

port simply deals with the "M" sheet number, its date and its total. The system for labor accounting is still more simple than the method of recording the cost of material. The time book is made in triplicate, one copy of which is forwarded to the owner each week, one copy retained in the book on the job, and one copy forwarded to the main office of the contractor.

The problem of eliminating the cost of entering footings from the time book into an ordinary ledger and then handling in accordance with the usual methods, is met as follows:

The time book sheet is filed according to date, the most recent on top, and is secured with McGill fasteners. These time sheets are then entered in the first column of the cost report, merely by writing in the T.B. sheet, the number, the date and the amount. It will be seen that the total of column number one in the cost report is then the total cost of the labor to date. Added to the total of column number two in the cost report (the total cost of materials which has been actually checked as to quantities, prices and extensions), the cost of all checked and approved items to date, is given. Thus far, the cost report does not differ in great degree from the usual form of book-keeping as found in every well-conducted contractor's office. It is, however, incomplete in that it does not contain full particulars for the information of the owner as to the real cost and liability of the contract to date. Therefore, columns numbers three, four and five have been added to this cost report for the following data:

Column three is the same as column two, except that it contains the record of materials bought and delivered to the office direct instead of to the job. This column is seldom used, but occasionally it becomes necessary.

Column four is for such items as, for instance, the balance of \$2,000 on a \$5,000 plumbing contract, \$3,000 of

which, as payment on account, has been approved and entered on the "M" sheets as included in column two.

Column five is to include the full complement of "orders." Copies of these are sent by the purchasing department of the contractor's main office to the job for items such as interior marble work, etc., the materials for which have been purchased, and the work on which is being executed in some shop or quarry, perhaps many miles from the site of the building. At the same time, such an item eventually becomes a liability, and consequently, each week, the time-keeper goes through his Shannon File of "O's" or orders, and sees that each and every one not yet attached to a bill is listed in column five, taking care to include all items of the previous week's cost report, minus those attached to checked bills during the week following. The cost report thus compiled becomes useful to a great many people who are interested in the contract. The superintendent is constantly reminded how the labor item is running on his contract as compared with what is expected of him on the cost of labor.

Columns number one, two and three show the total cost of check items to date, and so far as the actual book-keeping is concerned, the accounting department uses only these first three columns. The superintendent, contractor and owner are able to see at a glance how the fractional cost of the contract to date is comparing with the estimate made and given by the contractor to the owner. The item of unfinished labor is the only indefinite one, and variation from that source is narrowed down more and more closely each week.

"O's" or orders show the actual price for which materials will be delivered. They also show the comparison with the contractors' original estimate. It is customary with the Gilbreth organization to have the owner approve each "O" before the contract is awarded, thus enabling the owner to see exactly what expendi-

RETAIN ON JOB FOR CHECKING BILLS

FRANK B. GILBRETH, M. Am. Soc. M. E.
34 WEST 26TH STREET, NEW YORK.

PARTIAL SHIPMENT, AS ENUMERATED BELOW, CALLED FOR ON ORDER O _____
WAS RECEIVED ON _____ DATE _____ FROM _____ BY _____
GIVE SHIPPERS NAME

IF SHORTAGE OR MISTAKE IN SHIPMENT GIVE FULL PARTICULARS.

DESCRIPTION

CON. NO.	SUB. DIV.	P 9551
-------------	--------------	--------

USE FORM NO. 37 C. FOR FINAL SHIPMENT.
FORM NO. 38A. 12,500, 2-08.

SEND THIS SHEET TO THE NEW YORK OFFICE.

**FRANK B. GILBRETH,
GENERAL CONTRACTOR,**

THIS ACCOUNT IS CORRECT.

..... SUPT.

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MAIN OFFICE, NEW YORK,
34 WEST 26TH ST.

..... TIME KEEPER.

WRITE LAST NAMES FIRST	TRADE	DAYS							AMOUNT		REMARKS.		
		SUN	MON	TUES	WED	THUR	FRI	TOTAL HOURS	RATE	DOLLARS		CENTS	
1													1
2													2

47														47
48														48

NATURE OF WORK.

THIS ACCOUNT APPROVED

190

FOR WEEK ENDING

CON SUB. NO DIV.

FORM 65

IMPORTANT.-FILL OUT YOUR SUB. DIV.

THIS SHEET IS CONTINUED FROM SHEET NUMBER

TB

THIS TIME BOOK SHEET IS

TB No 9795

SEND THIS COPY TO CONTRACT TO ATTACH TO AND CHECK BILLS

FRANK B. GILBRETH,
GENERAL CONTRACTOR
NEW YORK,
34 WEST 26th ST.

TO _____ DATE,
ADDRESS _____
SHIP TO _____
BILL TO _____
SEND BILL IN _____ TO _____
THIS ORDER _____ FILLS REQUISITION
TO BE USED FOR _____

PLEASE DELIVER TO US AS AGENTS FOR,

WE RESERVE RIGHT TO CANCEL ORDER IF DELIVERY IS NOT MADE AS PROMISED

PRICE _____
DELIVERED, F. O. B. _____
DATE OF DELIVERY _____
SHIP VIA _____

O 9566

SUPERINTENDENT AND TIMEKEEPER ARE TO COMPARE THIS ORDER IMMEDIATELY WITH REQUISITION AND NOTIFY OFFICE AT ONCE IF ANY MISTAKES ARE FOUND.

CON: _____ SUB. _____
NO. _____ DIV. _____

EVERYONE OF THESE SHEETS MUST BE ACCOUNTED FOR. MARK EVERY SHEET VOID THAT HAS BEEN SPOILED. COPIES MUST BE PRESERVED WHETHER SPOILED OR NOT AND RETURNED TO NEW YORK OFFICE.

FRANK B. GILBRETH, AGENT

BY

TEAR OFF THIS STUB WHEN FINAL SHIPMENT IS RECEIVED AND USE FOR CHECKING BILLS

FRANK B. GILBRETH,

34 WEST 26TH STREET, NEW YORK.

FINAL SHIPMENT, AS ENUMERATED BELOW, CALLED FOR ON ORDER **O 9566**

WAS RECEIVED ON _____ DATE _____ FROM _____ GIVE SHIPPERS NAME _____ BY _____

DESCRIPTION

IF SHORTAGE OR MISTAKE IN SHIPMENT GIVE FULL PARTICULARS

DO NOT SEND IN THIS STUB UNTIL COMPLETE SHIPMENT IS RECEIVED WHEN PARTIAL SHIPMENTS ARE RECEIVED USE FORM NO. 38

FORM N. Y. 372-15101-40764

CON.	SUB.
NO.	DIV.

ture will be made for materials, as compared with figures in estimate book, before such materials are actually purchased. Therefore, the only item left in question is the eventual total of column one, viz., the labor column.

In summarizing this system as a unit, and the functions for which it has been devised, it will be seen that the check bill file becomes the journal. Listing of bills on the "M" sheet is the same as a ledger made up of footings of columns, while the clerk who simply follows out the directions written in the blank spaces on these manifold books, has, perhaps unconsciously, become a book-keeper. This phase of the system has proved especially advantageous, since few book-keepers are good outside men, and outside men are almost never good book-keepers. Furthermore, it comes within the comprehension of the practical superintendent of the job, who has probably worked his

way up from apprentice-boy or a technical graduate, and has never had real training in the principles of practical book-keeping.

The Gilbreth system of accounting without books accomplishes, then, six things:

1. It does away with experienced or high-priced book-keepers.

2. It shows the cost of the job each Saturday up to the previous Thursday night.

3. It shows the owner the cost of the materials before they are bought.

4. It shows constantly the comparative cost of the work with the contractor's estimate book.

5. It is a system of book-keeping without books. It files the original memorandum and saves cost of copying and errors of copying.

6. It saves the cost of expert book-keeping.