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Cost standards in Shoe manufacturing: A necessary guide to profit-making management

F. Richmond Fletcher

Cost Standards In Shoe Manufacturing

A Necessary Guide to
Profit-Making Management

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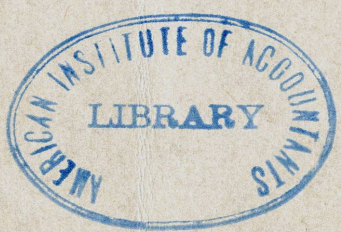

Scovell, Wellington & Company
Accountants—Engineers

Cost Standards In Shoe Manufacturing

A Necessary Guide to
Profit-Making Management

Scovell, Wellington & Company
Accountants—Engineers

From an Address Made by

F. Richmond Fletcher

Resident Engineering Partner, Scovell, Wellington & Company
110 State Street, Boston, Mass.

at the twentieth annual convention of the

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COST STANDARDS IN SHOE MANUFACTURING

A Necessary Guide to Profit-Making Management

In considering the subject assigned to me, I seriously doubted that it would be possible either to entertain or to instruct such a group of men as yourselves, unless I could bring some new conception of what costs and cost standards should mean to management. With this in mind, I departed somewhat from my original plan and possibly from the expectations of your executive officers, and decided not to go into the detail of manufacturing costs.

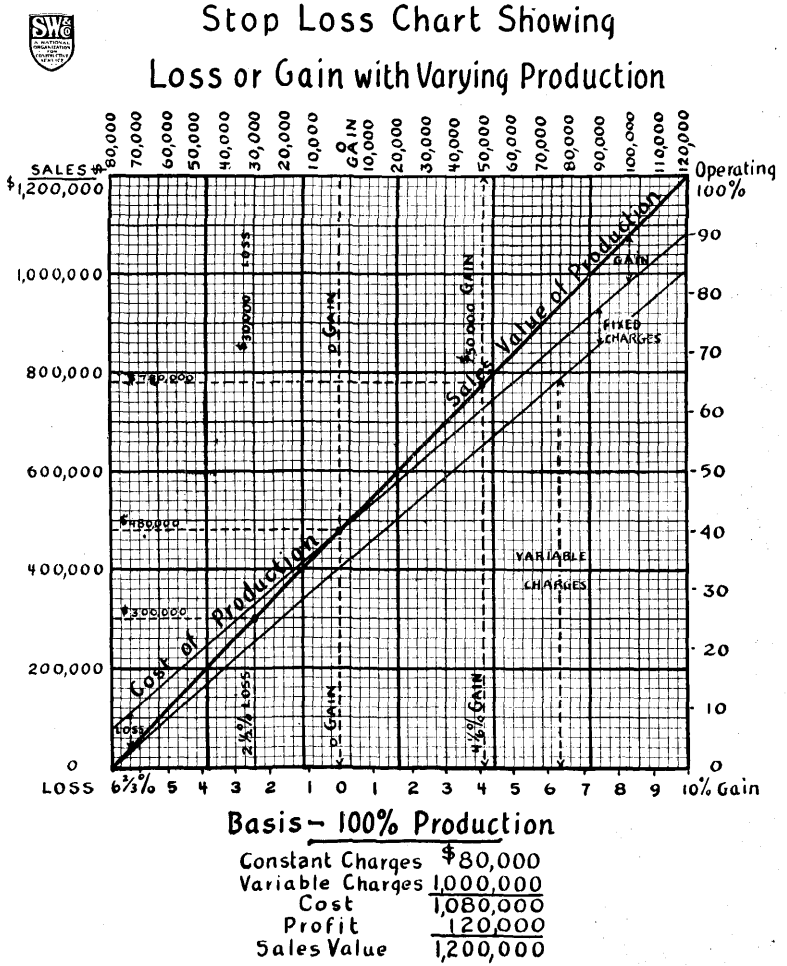
For material in regard to this general subject I refer you to an address I made before the National Association of Cost Accountants, on the Use of Standards in Shoe Manufacturing, which was published in its Year Book for 1922. Your secretary can tell any of you who are interested where this book can be obtained.

In that paper I took for illustration a modern factory manufacturing a medium-priced line of men's welt shoes, and detailed: (1) the process of establishing standards for cost purposes, (2) the method of ascertaining loss or gain on materials, labor and burden, and (3) the necessary accounting practice required to establish perpetual inventories and monthly statements of loss or gain on trading. I commend this article to you for reading, because it explains a plan which, with minor changes, has been successfully operated for many years by a considerable number of shoe manufacturers. It has stood the test of time.

To take up now the first of the points that I wish to discuss today—I think the average manufacturer has laid too much stress on the use of costs as a basis for determining selling prices, when, as a matter of fact, costs should be used primarily to determine the base below which there is no profit.

In determining selling prices, we are prone to overlook the fact that there are certain fixed expenses which do not fluctuate, whether the volume of production be large or small. Consequently, the higher the volume of sales above this line of fixed expenses, the greater the resulting proportion of profits.

Each manufacturer should try to obtain at least such a volume of business as will pay the fixed expenses of operating his plant, plus the variable expenses which rise in proportion to the volume of production. The accompanying stop-loss chart illustrates this idea, and you can apply it by substituting your own figures for those shown.



Basis — 100% Production

Constant Charges	$80,000
Variable Charges	1,000,000
Cost	1,080,000
Profit	120,000
Sales Value	1,200,000

A further suggestion is that in a business like shoe manufacturing, profits should be figured on the cost of labor and burden alone, and exclusive of the cost of materials. The difference in manufacturing cost between shoes of the same grade is principally in the materials used; consequently, if you include in burden a proper carrying charge for materials, it is logical to figure profits only on the conversion cost, or manufacturing effort. These two suggestions lead toward standardization of

the practice of cost figuring for the industry as a whole, so that a uniform plan may be adopted which will apply equally to large or small plants, manufacturing either staple or novelty lines.

COST ESTIMATE SHEET

DESCRIPTION
*1 Mahog Cf Wh Qtr Blu - Unlined - Rajah Last - Single Sole - Nat Grain

SAMPLE No. 7254
CASE No. _____ PRICE $3 80

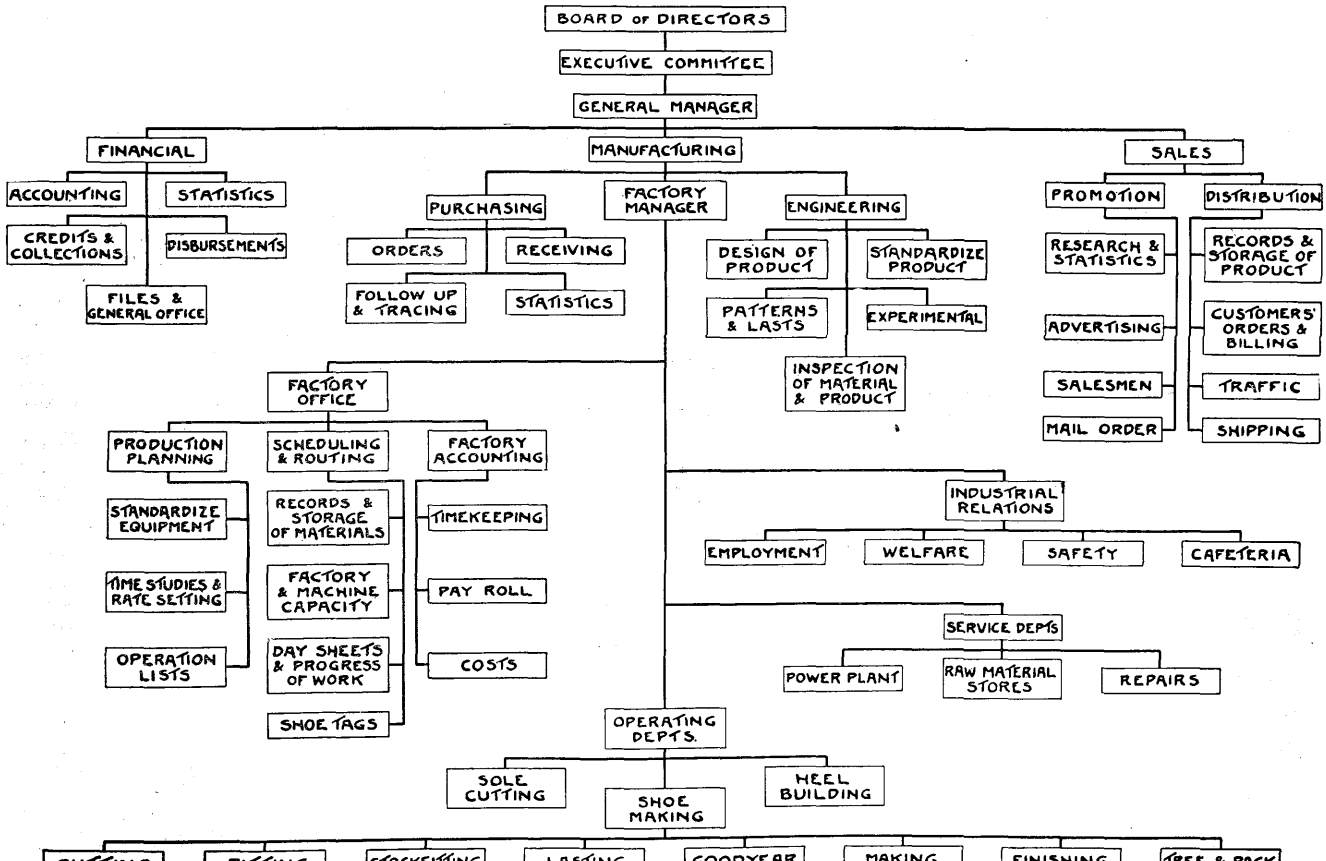
MATERIALS					SUMMARY		
VAMP 2qr x 35	10	20			MATERIALS	222	95
TOP							
TIP					DIRECT LABOR	43	75
FOXING					MFG. BURDEN 40%	17	50
BUTTON FLY					MATERIAL BURDEN 3%	6	69
TONGUE					LASTS-PATTERNS	3	75
TRIMMING					ROYALTY	8	00
TOP FACING	3	40			CONVERSION COST	19	69
CLOTH LINING							
LEA. QTR. LIN.					MFG. COST	302	64
SOCK LINING							
EYELET STAY	6	60			SELLING 10%	38	00
BACK STAY	5	60					
STRAP					ADMINISTRATIVE 5%	19	00
COVERS			111	80	PROFIT (25% OF CONVERSION)	19	92
OUTSOLE	42	00					
INSOLE	11	00			SELLING PRICE	379	56
COUNTER	1	75					
HEEL	7	50			DEPT. LABOR BURDEN		
TOP LIFT	7	50					
SHANK	1	50	71	25			
BOX TOE	3	00			CUTTING 6 80		
FILLER		55			FITTING 8 07		
TONGUE LIN.					STOCK FITTING 1 37		
EYELETS		750			LASTING 6 77		
BUTTONS					GOODYEAR 7 88		
LACES	1	65			MAKING 3 62		
HEEL PAD		35			FINISHING 4 04		
BINDING				N	TREE - PACK 5 20		
BRAID							
WELT	6	15					
LINING LABEL							
FINDINGS-IND.	17	25					
CARTONS-CASES	6	95	33	90			
TOTAL			222	95	TOTAL 43 75		

I want to emphasize the statement that the figuring of profits on conversion cost alone, is the only logical basis in such lines as most of you men are producing. Where but one kind and grade of material is used, the argument is not important.

Furthermore, I am convinced that a budget program can be developed in any business so that the management will have an intelligent financial plan, and know what expenditures will have to be made each month, and what receipts are to be expected from various sources. The requirements for fixed capital and working capital can be determined, and steps taken to provide the funds necessary to operate the business successfully, without tying up too much capital in inventories.

Budgetary control will never take the place of administration and management. Its purpose is not to deprive executives of the freedom of

ORGANIZATION CHART
SHOE MANUFACTURING



action essential to progressive management, but rather to provide information on which to base administrative decisions and administrative control.

It is generally recognized that there must be a clear definition of functional responsibilities and duties before budgetary control can be truly effective. The business must be divided into its logical departments, and the scope of each must be understood.

In the organization chart submitted herewith, I have endeavored to indicate a logical grouping of functions for a typical shoe factory, while realizing that in the administration of these functions the size and the character of the business will affect the grouping to some extent.

I think this organization chart is fairly typical. It brings out the three major functions, financing, manufacturing and sales, which must be co-ordinated in order to work out any practical budget plan. We cannot ask the Sales Department to present a budget of what it expects to sell, and go ahead and develop our budget program on that basis alone. We must co-ordinate what the Sales Department thinks it can sell with what the factory is able to manufacture, for those plants which operate from the sales point alone are never in the same profit-making class with others which co-ordinate factory capacity with sales effort.

The finances of the business must also be co-ordinated with the sales and manufacturing program. Consequently, the development of a budget program must include detailed estimates of expenses from each department so that the Financial Department may determine its ability to finance the entire plan.

Some of you may question certain of the functional groupings shown on the chart, and yet it is fairly typical. It brings into the sales group those functions which are peculiarly sales functions. It brings into what may be called the factory office, something which you may not have recognized but which we feel is essential—that is, the combining of cost accounting and production planning under one able head.

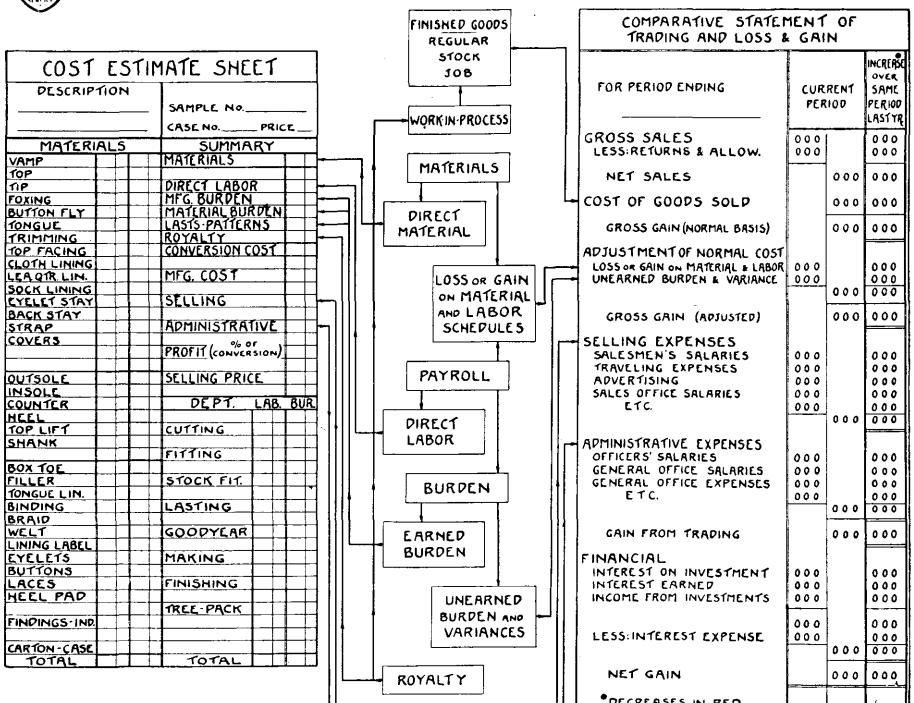
In constructing the budget the first thing for management to determine is the amount of net profits that should be earned on the invested capital. In other words, if a concern desires to make 20% on its invested capital of $500,000, its net profits before taxes must amount to $100,000. If profits are calculated as 25% of the combined labor and burden cost, then the volume of sales necessary to produce $100,000 of profit is equivalent to $400,000 of labor and burden. If the average cost per pair for labor and burden is $1.33, then the yearly output must be 300,000 pairs, or 1,200 pair a day on a basis of 250 working days.

In preparing the budget program it should be borne in mind that this volume of production is the minimum that will provide the desired profit. It sets a mark which must at least be equalled in the final correlation of the budget estimates.

It seems to me that this determination, first of all, of the profit that must be earned, gives the logical measuring stick for the whole budget program. If a manufacturer will determine the amount of profit he should earn in order to pay a proper return to his stockholders on the invested capital, and provide for some surplus in keeping with the risk involved, he has a definite basis for judging the effectiveness of the budget estimates of both the sales and the manufacturing departments. He then knows the minimum point to which he can afford to reduce profits for the sake

DIAGRAM OF COST AND ACCOUNTING STRUCTURE

SHOE MANUFACTURING



of increased volume, and he has a definite control by which to judge the effectiveness of the whole budget program, both in its inception and in its operation.

The next step in the budget program is to secure a series of estimates from all divisions of the business to cover a period of three or possibly six months. The budget period should not be shorter than the merchandise turnover period of the business. These estimates include:

Sales
Production
Purchases
Labor cost
Manufacturing expense
Plant and equipment
Administrative expense
Selling expense
Funds necessary to finance this program.

The next step is to combine these figures into a working program based on proper correlation of all activities of the business. As an illustration, the manufacturing and sales divisions must adjust their estimates so that the volume of business for each style or class is in line with both sales possibilities and manufacturing capacity. Finally, the whole estimate must be in line with the possible financing.

Scientific management, as I understand it, is management based on facts. Cost records provide the only means I know of for visualizing the facts pertaining to every activity of a business, so that the management can gauge its accomplishments.

Through the development of standard costs it is possible to prepare monthly statements of operations and financial condition. These main statements and supporting details provide comparisons with the budget or estimated program, by months and by items, and show how close each department of the business is coming to expectations. The causes for variances are indicated in these statements, so that steps can be taken to correct either the budget or the conditions, whichever may be at fault.

The diagram of cost and accounting structure, which I am presenting to illustrate this practice, shows (1) the elements of cost that are to be used in making up an estimate, (2) the method of accounting for the actual cost of the elements consumed each month, and (3) the relation of loss or gain on estimates to the statement of trading loss or gain for the month.

In my article on cost standards, published in the 1922 Year Book of the National Association of Cost Accountants, I explained the establishing of standard measures for materials, standard costs for materials, standard costs for labor and standard costs for burden—the three elements which make up the manufacturing cost—but I want to add just a word on that score in passing.

Direct materials include those items which are figured individually in the shoe. The estimate sheet includes the direct materials at estimated cost, based on cutting allowances and on predetermined standards for soles, heels and other parts. Each month the Cost Department summarizes the value of the direct materials used, at estimated and at actual cost; and the summaries carry into Work-in-Process the estimated cost, and to loss

or gain on material standards the difference between the estimated and the actual costs. In this manner we set up Work-in-Process on the basis of standard costs, so that the account can be inventoried at any time on the basis of standard costs; and we show in the section for Loss or Gain on Standard Costs, as it appears on the comparative statement at the right of the diagram, the difference between the actual and the estimated costs.

Labor and burden summaries are worked out in the same manner, the idea being that the comparative statement of trading loss or gain shall show the gross profit based on the sales, at standard cost of sales, less or plus the adjustments of normal costs due to manufacturing losses or gains for the month.

This loss or gain on estimates is accumulated by departments, on summary sheets, which show both the actual and the estimated costs of materials, labor and burden consumed, for the month, and to date. These statements show the management how successfully the factory is maintaining its program, and they indicate tendencies which are affecting the actual profits of the business.

I have included a Comparative Statement of Burden as an illustration, because burden, more than any other factor of cost, is misunderstood and commonly misapplied.

In developing burden standards it is necessary to ascertain a normal working capacity of the plant and, in some cases, of each department of the plant. This normal is based on the capacity of the equipment tempered by good judgment. In other words, if maximum capacity is 1,500 pairs a day but the normal sales and factory budget calls for 1,200 pairs, then 1,200 pairs is the normal basis on which burden rates should be determined. If the factory produces more than 1,200 pairs, there will be a resultant overearned burden; if it produces less than 1,200, an unearned burden. Moreover, the actual cost of certain burden items will be more or less than the amounts estimated, so that a gain or loss on estimates will result.

The theory is that burden should be figured on a capacity basis which will produce the lowest practical cost, and that in times of sub-normal production the unit cost of goods should nevertheless remain at the normal, and the unearned burden should be deducted from the profits.

The burden sheet used as an illustration, shows in the first column the standard monthly burden. This is based on an estimate of what each of the items should cost, and results from a careful analysis of the particular business. Included therein are indirect labor, supplies, and one or two other items, which make up the direct charges. All of these are items which a foreman can affect. The next group (steam, power, compensation insurance, general burden, machine rentals, and fixed charges) also includes certain items you can discuss advantageously with foremen; but when you get down to fixed charges, it is a question how much any foreman can help.

The total, $10,888, represents the monthly standard burden. For the same period the direct labor, on which burden should be figured, amounted to $27,220, and resulted in a rate of 40% on the direct labor. This we have used as the standard burden rate.

In the month of January, we show the actual burden expenses, item by item, in comparison with the standard, and in the next column, the gain or loss. Each month the burden earned is calculated and entered in comparison with the actual expenses, and the difference appears at the foot of each month's column as gain or loss on burden standard.

COMPARATIVE STATEMENT OF BURDEN

DEPARTMENT - SHOE MANUFACTURING

ANALYSIS	Period Ended Standard	Jan. 28, 1922 Amount	Gain	Feb. 25, 1922 Amount	Gain
Indirect Labor	2,652	2,889	237*	2,764	112* 349*
Supplies	463	449	14	475	12* 2
Repairs to Buildings	250	273	23*	191	59 36
Repairs to Machinery and Equipment	400	321	79	363	37 116
Total Direct Charges	3,765	3,932	167*	3,793	28* 195*
Steam (Heat & Process)	343	387	44*	404	61* 105*
Power	252	270	18*	283	31* 49*
Compensation Insurance	85	90	5*	87	2* 7*
General Burden	3,208	2,815	393	2,973	235 628
Machine Rentals	200	196	4	208	8* 4*
Fixed Charges	3,035	3,035	-	3,035	-
Total Burden	10,888	10,725	163	10,783	105 268
Burden Earned		9,188	1,700*	10,734	154* 1,854*
Burden Unearned		1,537*	1,537*	49*	49* 1,586*
Rate = 40% of Direct Labor					
Direct Labor Charged to Cost	$ 27,220	22,970	4,250*	26,835	385* 4,636*

*Indicates loss

This, in my opinion, is one of the most important of the summary sheets, because the manufacturer with this record before him can tell positively the effect of manufacturing burden on profits from month to month.

In establishing a burden rate it is customary to use that factor which most nearly represents the time consumed in producing a given unit. In industries like machine-tool building, the machine hour is generally used. In shoe manufacturing, if but one type and quality is produced, a burden rate per pair is acceptable; but where there is a wide difference in types and qualities, a percentage of the direct labor cost is more accurate. The reason for this is that practically all labor is piece work and, if rates are properly set, fairly represents the value of elapsed time, so that a rate based on the percentage of total manufacturing burden to the total direct labor spreads the burden charge with reasonable accuracy. Under this plan the shoe which involves the most labor carries the greatest burden.

BALANCE SHEET as at

Assets

Current Assets				
10	Cash in Banks			$ 000.00
11	Office Fund			000.00
15.1	Accounts Receivable - Customers		000.00	
15.3	Suspense Accounts Receivable		000.00	
	Total		000.00	
	15.5 Less Reserve for Doubtful Accounts		000.00	
	Net Customers Accounts Receivable			000.00
16	Personal Accounts Receivable			000.00
17	Notes Receivable			000.00
18	R. R. Claims			000.00
19	Accounts Receivable - Vendors			000.00
	Total Current Assets			000.00
Inventories				
20	Factory Ledger - Schedule A-1		000.00	
32	Insurance Unexpired		000.00	
33	Mercantile Service Prepaid		000.00	
34	Advanced Commission		000.00	
35	Interest Prepaid		000.00	
36	Miscellaneous Prepaid Expense		000.00	
37	Stationery and Supplies		000.00	
	Total Inventories			000.00
	Total Current and Inventory Assets			000.00
Fixed Assets				
40.1	Land (Factory Site)		000.00	
40.2	Land (Home Building Sites)		000.00	
41	Buildings	000.00		
	41.5 Less Reserve for Deprec.	000.00		000.00
42	Building Equipment	000.00		
	42.5 Less Reserve for Deprec.	000.00		000.00
43	Machinery and Equipment	000.00		
44	General Factory Equipment	000.00		
45	Office Equipment and Devices	000.00		
	Total	000.00		
	45.5 Less Reserve for Deprec.	000.00		000.00
46	Lasts, Patterns and Dies	000.00		
	46.5 Less Reserve for Deprec.	000.00		000.00
47	Automobiles		000.00	
	Total Fixed Assets			000.00
49	Goodwill			000.00
	Total Assets			$ 000.00

Exhibit A

Liabilities and Net Worth

Current Liabilities			
50	Accounts Payable - Vendors	$ 000.00	
51	" " - Personal	000.00	
52	Notes Payable	000.00	
54	Accrued Taxes	000.00	
55	" Interest	000.00	
56	" Commissions	000.00	
57	" Royalties	000.00	
	Total Current Liabilities		000.00
Reserves for			
59.2	Repairs to Buildings & Building Equipment	000.00	
59.3	" " Machinery and Equipment	000.00	
59.4	" " General Factory Equipment	000.00	
59.5	" " Office Equipment	000.00	
59.6	" " Lasts, Patterns and Dies	000.00	000.00
	Total Liabilities and Reserves		000.00
Net Worth			
60.1	Capital Stock - Common	000.00	
60.2	" " - 1st Preferred	000.00	
60.3	" " - 2nd "	000.00	
	Total	000.00	
61	Surplus	000.00	
62	Profit & Loss for the --- Periods ended ------ 191	000.00	
	Current Period - Exhibit B	000.00	000.00
	Total Liabilities and Net Worth		$ 000.00

Schedule A-1

FACTORY LEDGER INVENTORIES

As at _____

Stores Raw Materials				
21.	Upper Department Materials	$ 000.00		
21.01	Reserve for Purchase Loss or Gain on Upper Department Materials	000.00	000.00	
22.	Sole Department Materials	000.00		
22.01	Reserve for Purchase Loss or Gain on Sole Department Materials	000.00	000.00	
22.2	Heel Department Materials		000.00	
23.	Findings, Direct		000.00	
24.	Findings, Indirect		000.00	
25.	Supplies		000.00	
26.	Machine Parts		000.00	
27.	Cartons		000.00	
28.	Cases		000.00	
29.	Coal		000.00	000.00
Work-in-Process				
30.	Shoe Manufacturing Work-in-Process			000.00
30.11	Sole Manufacturing Materials-in-Process		000.00	
30.12	" " Cutting Labor-in-Process		000.00	
30.13	" " General "		000.00	
30.15	" " Burden "		000.00	000.00
30.21	Heel Manufacturing Materials-in-Process		000.00	
30.22	" " Scrap Sorting & Cutting Labor-in-Precess		000.00	
30.23	" " General Labor-in-Process		000.00	
30.24	" " Building "		000.00	
30.25	" " Burden "		000.00	000.00
Stores Finished Shoes				
31.11	Finished Stock Shoes		000.00	
31.12	Sample "		000.00	
31.13	Job "		000.00	
31.14	Damaged "		000.00	
31.15	Worn and Mismated "		000.00	000.00
Stores Sole Leather Product				
31.21	Sole Storage		000.00	
31.31	Heel and Counter Storage		000.00	000.00
	Total - Exhibit A			$ 000.00

Exhibit B

COMPARATIVE STATEMENT OF TRADING AND LOSS OR GAIN

January, 1923

	Current Period		Weeks to Date		This Period Last Year	Last Year to Date
Sales	Prs.	Amount	Prs.	Amount		
Regular Shoes	000	$ 0000	000	$ 0000		
Less Returns	000	0000	000	0000	(Same data	
Net Sales	000	0000	000	0000	for last	
Standard Cost of Goods Sold		0000		0000	year as for current	
Gross Gain		0000		0000	year)	
Job Shoes	000	0000	000	0000		
Less Returns	000	0000	000	0000		
Net Sales	000	0000	000	0000		
Standard Cost of Goods Sold		0000		0000		
Gross Gain		0000		0000		
Miscel. Materials and Scrap		0000		0000		
Cost of Materials Sold		0000		0000		
Gross Gain		0000		0000		
Total Standard Gross Gain		0000		0000		
Less Standard Selling Expenses		0000		0000		
Net Standard Gain on Sales		0000		0000		
Gain or Loss on Standard Costs						
Sole Manufacturing	$ 0000		$ 0000			
Sole Burden	0000		0000			
Heel Manufacturing	0000		0000			
Heel Burden	0000		0000			
Shoe Manufacturing						
Materials	0000		0000			
Labor	0000		0000			
Burden	0000		0000			
Purchases	0000		0000			
Selling Expenses	0000	0000	0000	0000		
Net Actual Gain on Sales		0000		0000		
Other Income						
Discounts Taken		0000		0000		
Interest Earned		0000		0000		
Interest Charged to Cost		0000		0000		
Total		0000		0000		
Other Expense						
Interest Expense		0000		0000		
Total		0000		0000		
Total Net Gain for Period		$ 0000		$ 0000		

COMPARATIVE STATEMENT OF SELLING EXPENSE

For the Period ended _____

		Current Year		Previous Year	
		Period	To Date	Period	To Date
70.10	Salesmen's Commission	$ 000.00	000.00	000.00	000.00
70.11	" Bonus	000.00	000.00	000.00	000.00
70.20	Sample Expense	000.00	000.00	000.00	000.00
70.21	Advertising	000.00	000.00	000.00	000.00
70.31	Freight & Express on Sales	000.00	000.00	000.00	000.00
70.33	Collection & Exchange	000.00	000.00	000.00	000.00
70.34	Policy	000.00	000.00	000.00	000.00
70.35	Mercantile Agency Service	000.00	000.00	000.00	000.00
70.36	Bad Debts	000.00	000.00	000.00	000.00
70.40	Sales Office Salaries	000.00	000.00	000.00	000.00
70.41	Salaries Credit Dept.	000.00	000.00	000.00	000.00
70.43	Steam, Power & Light, and Prorated Fixed Charges	000.00	000.00	000.00	000.00
70.50	Postage	000.00	000.00	000.00	000.00
70.51	Supplies	000.00	000.00	000.00	000.00
70.53	Telephone and Telegraph	000.00	000.00	000.00	000.00
70.60	Miscellaneous	000.00	000.00	000.00	000.00
70.70	Discounts Allowed	000.00	000.00	000.00	000.00
70.75	Repairs and Allowances	000.00	000.00	000.00	000.00
70.80	Loss on Job Shoes	000.00	000.00	000.00	000.00
70.81	Loss on Worn Shoes	000.00	000.00	000.00	000.00
	Total Selling Expense - Exhibit B	$ 000.00	000.00	000.00	000.00

Although the summary sheets referred to are the index to operating conditions and show how accurately the plant is maintaining its budget, the final story is in the Balance Sheet and the Statement of Trading and Loss or Gain These statements, shown herewith, are the final story of the success or failure of business management. They represent the results of budgetary control, and show how accurately the forecasts of sales, manufacturing and financing have been executed. To my mind, they indicate the purpose and the worth of proper cost accounting, and the need of cost standards as a guide to profit-making management.

Scovell, Wellington & Company

ACCOUNTANTS—ENGINEERS

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110 State Street, Boston, Mass.

Stearns Building, Springfield, Mass.

270 Madison Avenue, New York, N. Y.

Dillaye Building, Syracuse, N. Y.

Hanna Building, Cleveland, Ohio

360 North Michigan Avenue, Chicago, Ill.