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COST METHODS IN A HOSIERY MILL [1]

During the past three or four years hosiery manufacturers with an effective cost system have had many occasions to rejoice. With the excessive fluctuations of materials and supplies, labor and overhead, and high taxes, it is small wonder that many mills have gone bankrupt. Without a cost system it was next to impossible to determine a financial condition without a general inventory, and even then, in many cases, it was too late to recover. And now when conditions are gradually getting back to normal, competition becoming keener, and buyers demanding honest quality, there is all the more reason why a manufacturer requires an effective cost system.

This article deals with the cost methods in a hosiery mill employing 1,200 operatives, having a daily capacity of 4,000 dozen pairs, making twenty different styles of seamless hosiery of pure silk, fibre silk and cotton, and a combination of these materials.

ORGANIZATION

The office organization consists of the following departments: Executive Offices, Purchasing, Order and Billing, Pay Roll, Cost and Bookkeeping.

The departments in the mill are as follows: Superintendent's Office, Receiving and Shipping, Employment, Machine Shop, Store Room, Cone Winding, Bobbin Winding, Throwing, Knitting, Double Sole Cutting, Examining, Grey Mending, Looping, Seaming, Welting, Inspecting, Dyeing, Boarding, Pairing, Black Mending, Stamping, Folding, Packing, Box Factory, and Printing.

MATERIALS

All materials and supplies are bought by the purchasing department, received in the store room and requisitioned by the several departments as needed. A minimum and maximum figure is observed to insure a constant supply of all materials. Yarns and silks, dyestuffs and chemicals are tested for standard requirements.

LABOR

Most of the machine operations are on a piece rate basis and likewise the hand operations which are constant. Bonuses or

[1] The National Association of Hosiery and Underwear Manufacturers has issued a uniform system entitled "Uniform Hosiery Cost Report." A summary of this system appeared in the May 15, 1922, Bulletin of the National Association of Cost Accountants. The system is not available to anyone who is not a member of the National Association of Hosiery and Underwear Manufacturers.

premiums are paid upon the accomplishment of a certain task with the requirement of a specified degree of good work. Other employees receive hourly rates, and department heads are on a salary and bonus basis.

Overhead

The fixed overhead is calculated and distributed in the usual manner as follows: Depreciation on buildings upon the basis of floor space; depreciation on machinery upon the basis of its life to each department; insurance upon the combined basis of both; power upon basis of horse power employed, and one-third of the steam upon the basis of floor space. The balance of steam cost is distributed to the dyeing and boarding departments upon an estimated basis. The varying or general overhead consisting of administrative and general office expenses, receiving and shipping, store room, employment, and machine shop expense is distributed to each manufacturing department upon the basis of the total labor employed.

Manufacturing Departments

Cone Winding, Bobbin Winding, and Throwing Departments are charged with the raw material issued to each and credited with the production, which is received back into the store room at the accumulated cost, plus waste. The direct labor on each number of yarn and silk is ascertained, upon which is prorated the total department indirect labor, general overhead and supplies.

The Knitting Department is charged with the raw material issued to it and credited with the production in dozens of good knit. A test is made on each style showing the weight in ounces of each number of yarn and silk used per dozen in its composition. Then by taking the total number of dozens knit of each style for the period the total weight of yarns and silks that should have been used is ascertained, and against this figure is prorated the amount charged out by the store room. The store room figure will invariably exceed the test figure, due to waste, but experience establishes a normal waste figure which gives an effective check against possible excesses in the future. The total direct labor is ascertained on each style. The indirect labor, general overhead, needles and sinkers and supplies, are distributed upon the basis of machine hours.

The Double Sole Cutting, Examining, Grey Mending, Looping, Seaming, Welting and Inspecting Departments, are combined into one department for cost purposes which is called the Making Department. The direct labor is determined for these several operations on each style, upon which is prorated the total indirect labor, general overhead and supplies. The unit cost per dozen of this department is arrived at by dividing the total expenses on each style by the total production of that style on the last named operation—inspecting.

The Dyeing Department is charged with dye-stuffs, chemicals

and acids, together with total labor, general overhead and supplies, which is distributed to each style upon the basis of weight. It is true that some colors cost much less than others, but where all styles have practically the same range of colors and are dyed in like proportion, it is found unnecessary to keep separate color costs.

For cost purposes, the Boarding, Pairing, Black Mending, Stamping, Folding and Packing Departments are combined into one department, called the Finishing Department. The direct labor is ascertained for these several operations on each style, upon which is prorated the total indirect labor, general overhead and supplies. The unit cost per dozen of this department is calculated by dividing the total expenses on each style by the total production of that style on the last named operation—packing.

The Box Factory is charged with the raw materials issued to it and credited with boxes made. The accumulated cost of material, labor, general overhead and supplies, divided by the total number of boxes produced gives the unit cost per box. As only four sizes of boxes are made in the plant under consideration, and two of them in small quantities, it has not proved feasible to keep separate costs on each, and the simple method just outlined has been very satisfactory, as the difference in cost is very small. The finished boxes are disbursed to the Finishing Department at cost, a record being kept of the number of boxes used on each style of hosiery.

The Printing Department has a job card system, where a card is provided for each job on which is noted the labor time and material used. These items are extended by the cost department, addition being made for overhead, which is applied upon the direct labor basis. The several departments are then charged and the printing department credited for the work done each period.

Accounts

The following expense accounts for each department appear in the general ledger: Direct Labor, Indirect Labor, General Overhead, Fixed Charges, and Supplies.

All accounts are closed every four weeks at the end of a pay period, and a cost analysis is made, showing the detailed production with the unit cost for labor, indirect labor and burden for each department. The total expenses on the cost analysis sheets are then charged to each style in a "Goods in Process Ledger." This furnishes an accumulated cost for each style of material, labor and burden in the "Goods in Process Ledger," from which the cost of sales is disbursed. This disbursement is made from the analysis of finishing production, which will show sales and transfers to warehouse or consignments, of firsts, seconds, thirds and waste. The seconds and thirds are sold below cost and of course the waste is a total loss. Therefore the loss on these items is an added cost of the firsts. The methods of arriving at the cost of seconds (or added cost of firsts) is to determine the total number of dozens finished of each style, and apply the per dozen cost for the period

including material, labor and burden. From this figure deduct the sales value of the seconds and thirds, and the difference gives the total cost of the firsts. Dividing this total cost by the number of dozens finished the unit cost of the firsts is obtained. Subtracting from this figure the unit cost of material, labor and burden, the cost of seconds (or added costs of firsts) is determined. During a six months' period a reasonable estimate can be made of the percentage of seconds of the total production that is made. This figure is a very necessary requirement in determining a selling price, because the seconds on one style may be double that on another owing to peculiar manufacturing conditions.

The predetermined costs used in determining selling prices come within five cents per unit of our actual cost figures. The physical inventories taken every six months have been invariably within one-half of one per cent of the book figures. The following is a sample of the cost analysis sheet:

Material	Cost per lb.	Cost per oz.	Weight in ozs.	Total Cost
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
			Waste	
Total material cost per dozen			.....	$
Knitting			.....	
Making			.....	
Dyeing			.....	
Finishing			.....	
Boxes			.....	
Seconds				.....
Burden				.....
Total Cost				.....
Selling Expense				.....
Profit				.....
Selling Price				.....
Per cent of Profit				.....

These cost analysis sheets are compared each period with the predetermined costs on each style. This comparison will readily disclose excessive waste or cost of materials, an increase or decrease in manufacturing costs, and an increase or decrease of seconds and burden. The reasons for the conditions are then thoroughly analyzed.

Semi-annually the normal burden figure per dozen which is used in determining selling prices is checked up. This figure is based upon a 90% day capacity production, and takes into account the current market costs of supplies and labor. The costs then are based upon this normal figure and are compared each four week period with the actual costs. If the plant is operated at less than 90% a manufacturing loss is shown, but if the plant is operated

at night or over 90%, a manufacturing profit results, in addition to the regular profit shown on a normal basis.

The following are samples of the most important forms used in the system described in this article:

YARN AND SILK DISTRIBUTION

Period Ending

YARN NO.

STYLE	DOZENS KNIT	Test	Actual	Test	Actual	Test	Actual	Test	Actual	Test	Actual	Test	Actual
TOTALS													
% WASTE													

GOODS IN PROCESS LEDGER

STYLE DESCRIPTION

Dr.						Cr.					
Date	Dozs. Knit	Material Value	Expense	Total	Date	Dozs. Disb.	To	Total Value	A/C No.

Cost Analysis Sheet

DEPT. PERIOD ENDING

Style	Dozs.	Direct Labor	Indirect Labor	Burden	Total	Cost Per Doz.
TOTALS						

Summary of Unit Costs

STYLE NO.

Date	Dozs. Knit	Material	Knitting	Making	Dyeing	Finishing	Total Expense	Total Material and Expense	Cost of 2nds	Total Cost	Selling Price	Trading Profit	Selling Expense	Net Profit

Production Chart[1]

Thousand Dozen	Period Ending					
	4/5/22					
120						
110						
100						
90						
80						

[1] A blue line on the chart indicates Knitting Production, a red line, Sales; and a yellow line, In Process. Production, sales and goods in process are shown for each four-week period.

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