Storehouse Methods That Reduce Labor

A Description of a Unique System of Arranging Stock and Keeping Storehouse and Accounting Records Which Have Greatly Increased Efficiency

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A STUDY and an investigation of storekeeping and store department accounting methods, covering a period of more than two years, developed the fact that most of the systems in general use provided for a more or less unsatisfactory arrangement of stock in the storerooms from both the distributing and inventory standpoints. Entirely too much clerical labor was required for the results obtained, both in the storeroom and in the accounting department, and serious inaccuracies in records of prices and quantities of materials frequently occurred. With these points in mind, I endeavored to develop a system for the Columbus Railway, Power & Light Company whereby the storekeepers would be brought into closer touch with their stocks and eliminate as far as possible the clerical labor of keeping records as well as keep the prices approximately correct. At the beginning of this development work, I received very valuable assistance from H. C. Pearce, purchasing agent and general storekeeper of the Seaboard Air Line.

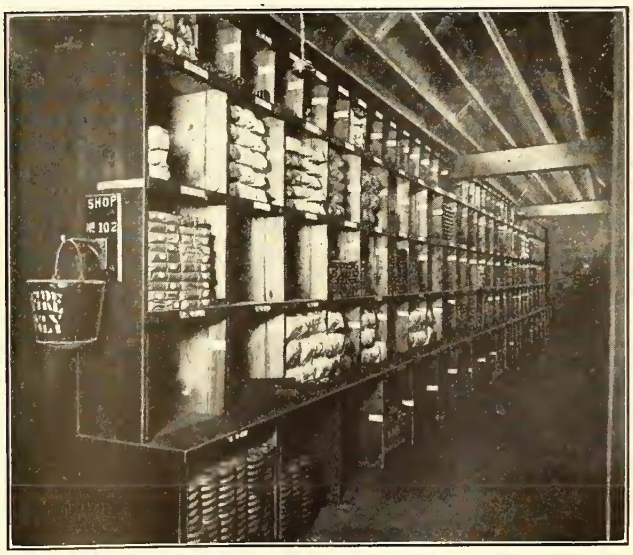
First of all, the materials carried in stock were divided into twenty classifications which were indicated by the letters of the alphabet. The purpose of this is to indicate at any time, just how much money is invested in the different classes of stock, so that any excess stock may be located and that particular classification checked. For convenience these twenty classifications were made logical divisions of the materials generally carried in the stock of a railway and lighting property. For instance, classification *A* indicates electric motor and control apparatus, generators, incandescent lamps, arc lamps and parts; *B* indicates in general, overhead and underground line material; *C* includes material generally classified as station hardware; *D* includes chemicals, paints and oils; *H* includes all wire; *J* all kinds of tools; *N* all metals, including structural steel and pipes, etc. These natural divisions of material readily fix the classification in the minds of those making requisitions on the storehouse. Furthermore, when an inventory is taken of any particular classification the discrepancies found are confined to that class of material, and do not affect the remainder of the storeroom records.

When materials are requisitioned from the purchasing agent by the classification method, all the requirements for any one class of materials are indicated at one time by all the storehouses on the system, thus reducing routine work in the matter of purchasing. Each item in each classification has a number, according to its location in the storeroom bins. It is not necessary to have classification *A* at the beginning of the storeroom and then follow out the alphabetical arrangement. On the contrary, the stocks are arranged in the manner most convenient for receipt and distribution and, with bins properly marked, the greatest flexibility is obtained. It is, however, highly important that a place be provided for every item of stock and that stock located in its proper place, so that if it is not there, that item of stock is exhausted.

STANDARD ARRANGEMENT OF STOCK

Standards of arranging stock were then adopted, so that when inventories are taken the stock is not touched, it being possible to see at a glance just how many items there are in each compartment or pile. This arrangement is clearly shown in the accompanying illustrations. For instance, note the compartment marked 5 L-177 at the left of the view in the opposite column. This compartment contains $1\frac{1}{2}$-in., No. 6, round-head, brass wood-screws. The figure 5 shows the depth arrangement, the L-177 is the stock classification and number. We have adopted a standard pile of five or less, ten, twenty-five, fifty or 100. Five or less can be observed at a glance, and in this case the

COLUMBUS STOREHOUSE SYSTEM—VIEW OF STOCK BINS SHOWING METHOD OF MARKING



COLUMBUS STOREHOUSE SYSTEM—VIEW SHOWING STYLE OF BINS AND STANDARD PACKAGES

boxes are piled five high and five deep, therefore, there are twenty-five boxes of the screws in each full pile. Again referring to the particular bin, it will be noted that there are two full piles, and the third pile is short two boxes on the front row. This stock, therefore, shows immediately that there are seventy-three boxes of these screws in stock.

In the second view will be noted another example of how time can be saved in taking an inventory. The end compartment in the third row from the bottom, marked "3 G-227," contains a certain kind of brake-hanger spring. In each of the packages there are twenty-five of these springs, and the packages are stacked ten high and three deep, therefore, there are 750 of these springs in each full stack. Two full stacks can be noted in the illustration, therefore, these contain 1500 springs. There are also seven packages which can be observed when one stands directly in front of

COLUMBUS STOREHOUSE SYSTEM—VIEW SHOWING METHOD OF MARKING ON ENDS OF BINS

the bin or in the position occupied when an inventory is taken. These contain 175 more springs, and three springs are shown in the photograph, these being less than a standard package. Taken all together, 1678 of these springs can be counted almost at a glance.

Advantages of Standard Arrangement

After all the different items of stock had been classified and numbered, an alphabetical index of the stock was prepared in loose-leaf form, so that it can be corrected from time to time and kept up to date and distributed to each of the operating department heads. I will not enumerate the forms that we use, as these necessarily must differ for various locations and conditions, I will simply state that when any materials are required from stock it is only necessary to indicate the quantity and the stock number, the latter being obtained from the catalog of stock. The requisition thus prepared, upon being presented to the storekeeper, indicates automatically just where that stock is located, so that the storekeeper or his helpers can go immediately to the compartment and withdraw the material required without any doubt or delay. This system furthermore guarantees that the operating department is charged for just the material it obtains, and not what the accounting department must guess was obtained in cases where improper names are used to indicate a material taken from the storeroom.

It will further be noted that the only marking on the bins is the depth number and stock number, which show in bold letters and figures, and greatly facilitate the location of stock. For instance, referring again to the first view, suppose that stock number L-185 should be desired. By a glance at the numbers on the end of the bin section, it will be noted that the marking on the top row is L-133, on the next row, L-155, then L-177, then L-199, L-221 and L-243. Now, inasmuch as L-185 must be in the row commencing with L-177, the eye follows along this until L-185 is reached.

The third view gives a general idea of how the bins are arranged, their form of construction and the index tags which appear on the ends of the bins toward the main aisles. It will also be noted that the bins are constructed on the stair principle. This eliminates the use of step ladders with their resultant danger and lack of efficiency. Furthermore, there are no retaining strips or other obstructions at the bottoms of the compartments, and the numbering strips are placed at the top of each bin. In the first illustration, it will be observed that at the compartment to the right of L-203 there is no back wall to the bin. All bins are built double so that the storekeeper can see at a glance when a compartment is entirely empty or nearly so. In addition, this style of construction facilitates cleaning of the bins.

Storehouse Records Simplified

The only record that the storekeeper has to keep is the stock ledger, which simply shows the quantity consumed for the previous year (this being a yearly record), the average monthly consumption, and, of course, the stock number and a brief description. The results of the monthly inventories, referred to later, receipts of materials and open orders are also shown in his record. It will be noted that the issuances of materials are not recorded, and as this constitutes the bulk of the clerical work in the storeroom where the card system is used, considerable work is saved. The entire stock is inventoried every month so that it may be replenished. This taking of inventories is divided into eight periods, requisitions being received in the purchasing department on the four Tuesdays and the four Fridays in each month. In like manner, the annual inventory is dispensed with, this being distributed over a period of eight months in the year, and once in each month the inventory, which is taken for the purpose of replenishing stock, is forwarded to the accounting department where it is priced.

This plan eliminates any duplication of work and further obviates the prodigious task incident to the pricing and adjusting of a complete inventory. Inasmuch as the time required for making the inventory has been reduced in the storeroom illustrated from approximately 600 hours for one man to forty-two hours for one man, it will be seen that this monthly inventory consumes very little time. Moreover, considerable time is saved in requisitioning and ordering supplies under the new plan. By this method the storekeeper must see just how his stock actually stands in each item twelve times each year, and there is no excuse for a storekeeper running out of stock on account of the errors on the cards. Then, there being twenty-five items to a page, by referring to the stock ledger it is possible to check at a glance just how much twenty-five different items have moved in a period of two years.

The operating departments, in preparing estimates for work to be done, are now furnished with the prices at which they will be charged for materials taken from stock. These prices are kept up to date by supplements issued by the purchasing department on the first of

each month. These supplements also cover cancellations from or additions to the stock. Inasmuch as all department heads have a complete, up-to-date list of all materials in stock, this helps in a large measure to keep the obsolete stock at a minimum.

ADVANTAGES TO ACCOUNTING DEPARTMENT

In the accounting department where the stock ledgers were formerly carried, by far the larger part of the clerical labor has been eliminated by the use of the classification accounts. It is no longer necessary to open a separate account for each item of stock and to enter all receipts of materials, total price, unit price, etc., as well as all issuances with the necessary subtractions, etc. This is entirely taken care of now by what is termed regular and supplemental classification accounts. In an article of this kind it is impossible to describe in detail just how these accounts are operated, except to say that the regular account is credited and charged for all materials issued and received at the unit prices as shown in the catalog of stock and catalog of prices. These catalogs, of course, are the same, the former having an alphabetical and the latter a numerical arrangement.

In the event that materials are purchased at prices in excess of those shown in the catalog, the regular classification account is charged at the catalog price and the excess takes the form of a debit in the supplemental classification account. If materials are purchased at less than the catalog prices, the regular classification account is charged at the catalog prices, and the difference becomes a credit in the supplemental classification account. Of course, all materials are issued at the catalog prices, therefore the supplemental classification account is only used by the accounting department. If it is necessary to increase the catalog prices a credit requisition is issued, on which the quantity of material affected on hand at the time of adjustment is shown. In the event of a decrease in the catalog prices, the same procedure is followed except that a debit requisition is used. These differences are then either credited or charged to the supplemental classification account, as the case may be. Therefore, the regular classification indicates at all times the value of material in stock, as the units multiplied by the unit prices should equal this amount, and the supplemental classification indicates fluctuations in prices of materials.

In this way the supplemental classification has no bearing on the amount of material in stock but constantly indicates whether materials are being charged out at the proper values. At the same time the total of the regular and supplemental classifications indicates the current market values of the materials in stock. In actual operation this system, so far, has met and even exceeded our expectations. It has also developed many desirable features that were not apparent when the work, preliminary to the installation of this system, was being laid out.

Manganese-Tread Wheel

In an article describing the new Davis cast-steel wheel with manganese tread recently put upon the market by the American Steel Foundries of Chicago, and printed on page 69 of last week's issue, through a typographical error a misleading statement appears in the third sentence. This should read "Its wear life is more than twice that of a cast-iron wheel because of the toughness given to both the wheel treads and flanges by manufacturing them of manganese steel."

The Last New York Horse Car

The accompanying illustration is reproduced as an appropriate valedictory to the closing era of transportation in New York City. While agreeing heartily with any timely sentiment that may attend the departure of this form of locomotion, one cannot suppress a

THE LAST NEW YORK HORSE CAR

little exultation at the thought that the storage-battery car has supplanted the horse car in New York. It will not be so common now to pass through moments of nervous panic when time is scarce and the passenger endeavors to "make" the Fall River boat via a cross-town horse car line.

Steam Railroad Statistics for 1915

The Interstate Commerce Commission has issued an abstract based upon its compilation of steam railroad statistics for the twenty-eighth annual statistical report covering the fiscal year ended June 30, 1915. The advance figures given in this abstract may be slightly modified by revision before final publication. On June 30, 1915, the roads represented 257,569.32 miles of line operated, including 11,279.64 miles used under trackage right. The aggregate mileage of railroad tracks of all kinds was 391,151.51 miles.

The total steam railroad capital actually outstanding on the above-mentioned date was $19,719,893,944, consisting of $8,635,319,368 of stock and $11,084,574,576 of funded debt. The total amount of railroad capital, including the securities held by the companies concerned, was $21,127,959,078, divided $8,994,894,721 for stock and $12,133,064,357 for funded debt. Of the total capital stock actually outstanding $3,415,472,806, or 39.55 per cent, paid no dividends. The amount of dividends declared during the year was $328,477,938, being equivalent to 6.29 per cent on dividend-paying stock. The average rate of dividends paid on all stocks actually outstanding, was 3.80. The investment in road and equipment as of June 30, 1915, for companies with annual operating revenues of more than $100,000 was $17,247,101,881, this being an increase of $263,155,774 over the preceding year.

The operating revenues of all railroads for the year ended June 30, 1915, were $2,956,193,202, or $11,538 per mile of line operated. Operating expenses were $2,088,682,956, or $8,152 per line of mile operated. For companies with annual revenues of more than $100,000, the number of passengers carried in 1915 was 976,303,602 as compared to 1,053,138,718 in 1914, while the number of tons of revenue freight carried, including freight received from connections, was 1,802,018,177 in 1915 as compared to 1,976,138,155 in 1914. The operating ratio showed a decrease from 72.22 per cent in 1914 to 70.52 per cent in 1915.