

Nov. 5, 1940.

R. G. THOMAS, JR

2,220,499

CARRIER FOR LEDGER CARDS

Filed Oct. 14, 1938

3 Sheets-Sheet 1

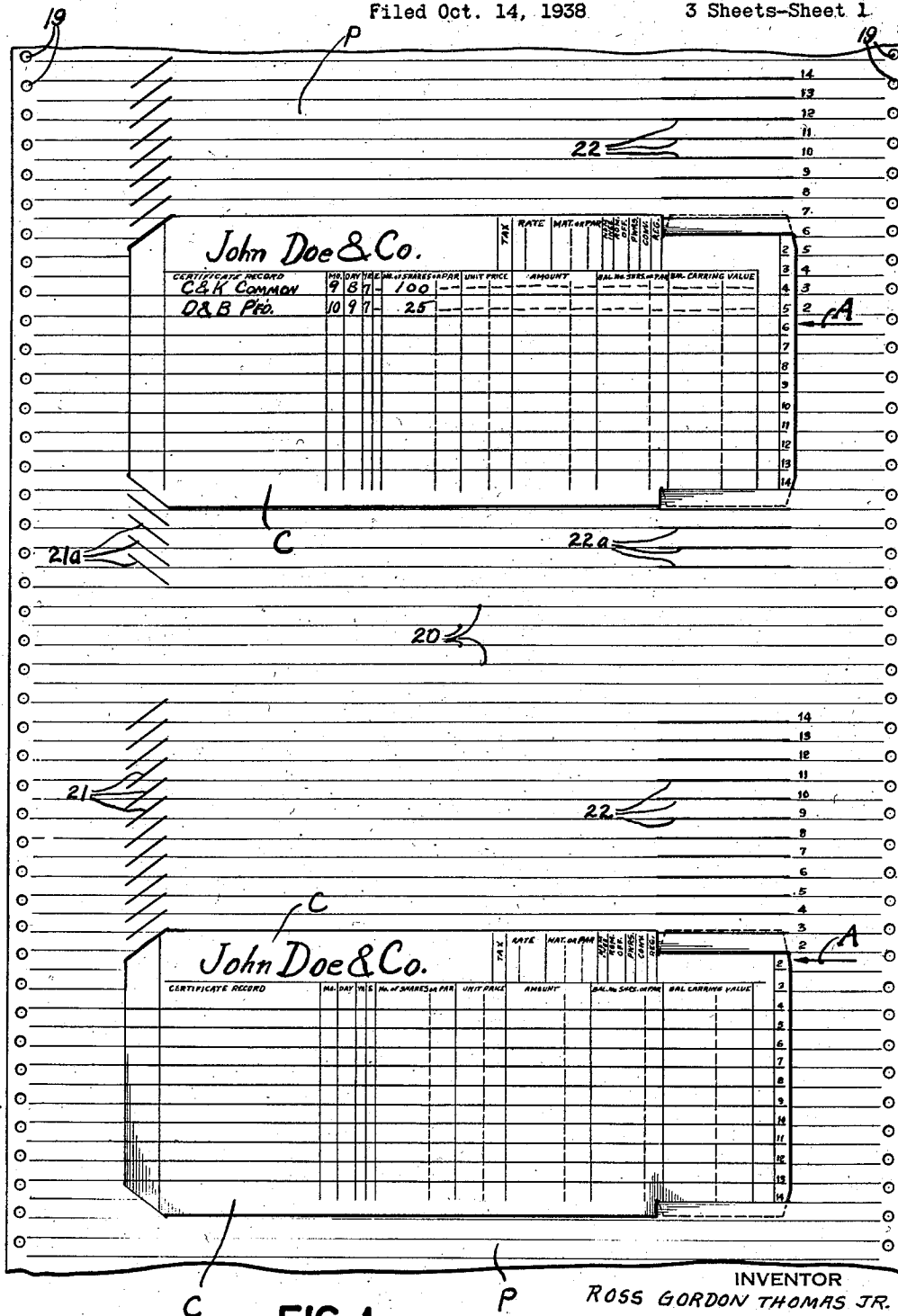


FIG. 1.

INVENTOR
ROSS GORDON THOMAS JR.

BY J. W. Lowmiller
ATTORNEY

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3 Sheets-Sheet 2

FIG. 2.

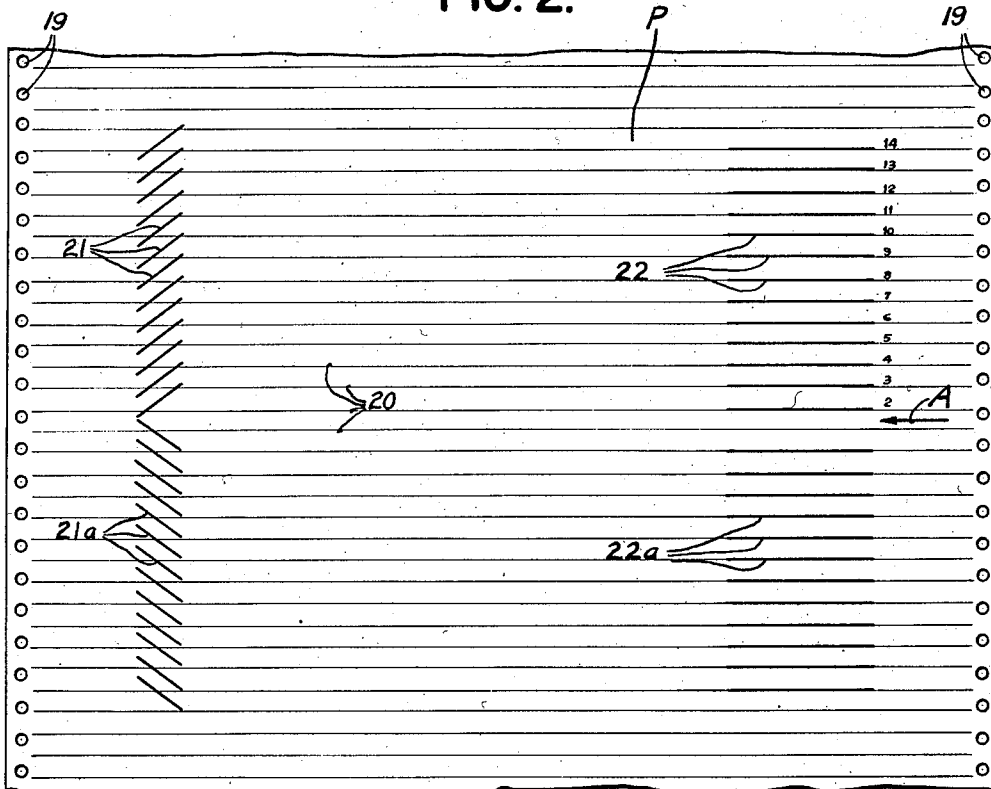


FIG. 3.

FIG. 3 is a diagram of a ledger card with a table structure. The table has 14 columns and 14 rows. The columns are labeled: TAX, RATE, MAT. OR PRIN., BAL. NO. SHARES, BAL. CARRYING VALUE, and SECURITY No. The rows are labeled: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14. A label 20a is located in the first column, row 8. A label 23 is located in the first column, row 1. A label 24 is located in the first column, row 2. A label C is located in the first column, row 14.

TAX	RATE	MAT. OR PRIN.	BAL. NO. SHARES	BAL. CARRYING VALUE	SECURITY No.
					1
					2
					3
					4
					5
					6
					7
					8
					9
					10
					11
					12
					13
					14

INVENTOR
ROSS GORDON THOMAS JR
BY J. W. Lomnitz
ATTORNEY

Nov. 5, 1940.

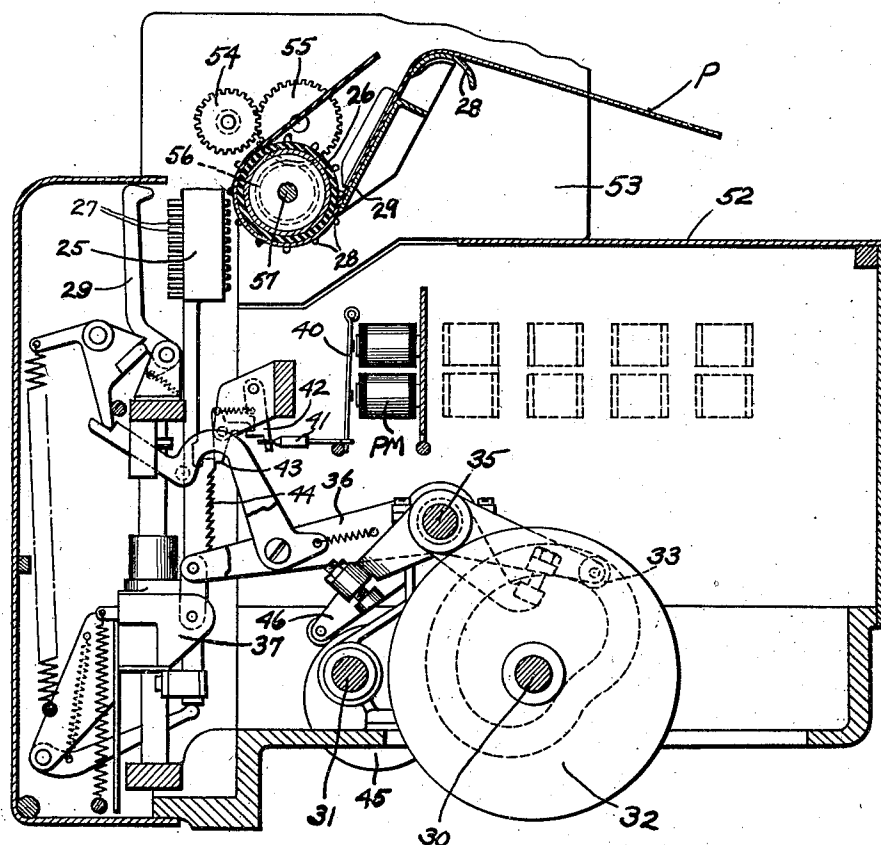
R. G. THOMAS, JR
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3 Sheets-Sheet 3

FIG. 4.



ROSS GORDON THOMAS JR.
INVENTOR

BY *J. W. Lomnitz*
ATTORNEY

UNITED STATES PATENT OFFICE

2,220,499

CARRIER FOR LEDGER CARDS

Ross Gordon Thomas, Jr., Cleveland, Ohio, assignor to International Business Machines Corporation, New York, N. Y., a corporation of New York

Application October 14, 1938, Serial No. 234,861

1 Claim. (Cl. 281—2)

This invention relates to continuous paper forms such as are used in connection with printing mechanisms of tabulating machines and the like and has for its object the provision of a novel carrier or conveyor for ledger cards whereby said cards are successively and automatically presented at a printing station each there to receive a data registration on a predetermined portion thereof according to the relative positions of the cards on the carrier.

Heretofore, it has been the general practice where data are desired to be printed directly on ledger cards to insert said cards manually one at a time between the platen and the type elements of a printing mechanism. This operation requires a great amount of supervision and care on the part of the operator to prevent errors in the locating of the printed data.

In accordance with the present invention, this condition is remedied by the provision whereby ledger cards are manually attached to a conveyor, such as a long paper sheet, so that when the sheet is fed into the printing mechanism the cards are successively presented at the printing line thereof. A paper feeding device such as the well known Carroll carriage shown in U. S. Patent No. 2,066,305, dated December 29, 1936, may be used to advance the sheet a predetermined distance or line by line after each printing operation and also to advance the sheet a multiple line distance after a series of printing operations. The portion of each card which is to receive printed data is determined by the location of the card on the sheet. A plurality of numerically designated spaced lines on the sheet form a chart by which the card can be quickly positioned in relation to the sheet so that the printed data may be received on the desired portion of the card. The cards, after receiving the printed data, may then be easily removed from the sheet and placed in the office files. These same cards may be removed from the files at any later time and located on the sheet in a different relative position so that another portion of the card will receive further printed data.

The advantages of card filing systems over systems wherein the records are kept on paper sheets have become well recognized in the business world. Cards are firmer and more durable and therefore need not be put in binders as are paper sheets. They may also be provided with classifying extensions so as to indicate the class or group to which they belong. Another and probably the most important advantage is that they may be used over and over again as de-

scribed above. The provision of a continuous conveyor upon which a great number of cards may be mounted at one time has a double advantage over the individual card insert method in that it saves operating time and automatically insures proper printing in the proper space on the card.

Further objects of the instant invention reside in any novel feature of construction or operation or novel combination of parts present in the embodiment of the invention described and shown in the accompanying drawings whether within or without the scope of the appended claim and irrespective of other specific statements as to the scope of the invention contained herein.

In the drawings:

Fig. 1 is a view showing a portion of the conveyor sheet with two typical ledger cards mounted thereon.

Fig. 2 is a view of a portion of the sheet by itself.

Fig. 3 is an enlarged view of the ledger card.

Fig. 4 is a side elevation partly in section of a printing means and illustrates diagrammatically a paper feeding device associated therewith.

It is understood that the carrier sheet and the ledger cards carried thereby may be fed by any suitable feeding device, but for purposes of disclosure it is preferred to explain the invention in connection with the paper feeding mechanism of the aforementioned patent to Carroll et al. No. 2,066,305. In order to explain the application of the invention to the Carroll feeding mechanism, a brief description of the latter and the printing mechanism with which it cooperates will first be given.

Referring now to Fig. 4, the purpose of the printing mechanism shown there is to bring a type bar 25 into position relatively to a platen 26 so that the proper type element 27 is opposite the platen. A carrier sheet P is fed over and through suitable paper guides such as 28 and 29, respectively, and around the platen 26 so as to pass between the platen and the type bars 25.

As is usual in tabulating machines, perforated records (not shown) are run through the machine in groups, and items represented by the perforations thereon may be listed and totals printed at the end of each group; or the items may be tabulated and merely the group totals printed. To effect the listing of items on the sheet P or on ledger cards to be carried thereby in a manner explained hereinafter, listing shaft 30 is operated by a motor (not shown). A cam 32 is mounted on the shaft 30 and cooperates with a

roller 33 carried by an arm 34 operatively connected to a shaft 35. As the cam 32 rotates, shaft 35 is rocked in a clockwise direction and an arm 36 secured thereto and linked at its free end to a printing crosshead 37 serves to raise the type bars 25 in synchronism with the movement of the perforated records so that the type elements 27 successively pass the printing position opposite platen 26. The type bar 25 is arrested under control of printing magnet PM, which, when energized, attracts its armature 40 and through a call wire 41 releases the latch member 42, normally holding stop pawl 43. When the pawl is so released, it is spring operated to engage the ratchet teeth 44 formed on the type bar 25 to prevent further upward movement of the type bar, thus holding a particular type 27 in printing position. The usual hammers 29 are provided to impel the type against the platen.

During total taking cycles the shaft 31 is operated by another motor (not shown). A cam 45 on this shaft co-operates with an arm 46 on shaft 35 to lift the type bars 25 in synchronism with the operation of total readout mechanism (not shown). Printing magnets PM are energized at differential times to effect the stopping of the type bars in the proper printing position in the same manner as previously described.

As for the paper feeding device, it is noted that the platen 51 is mounted on the carriage unit which in turn is supported on the frame 52 in position adjacent the type bars 25. A casting, generally designated 53, forms a support for the carriage parts including a drive motor (not shown). The motor is clutched in at the proper times to rotate a platen drive gear 54. As gear 54 rotates, it drives idler gear 55 and therefore, also clutch gear 56. The clutch gear 56 is loosely mounted on the platen shaft 57 but is adapted to be clutched in to drive the latter shaft at the proper times. The rotation of shaft 57, and hence of the platen 26, causes the feeding of the paper. Pins 28 may be provided on the platen to insure more positive feeding of the paper. The pins mesh with the rows of holes 19 (Fig. 2) in the paper. The device is settable for a predetermined length of sheet feed so that where the paper is in effect a continuous series of similar forms, the paper will be fed from a selected printing line on one form to a corresponding printing line on the succeeding form. Also, normal line-to-line feeding is provided for when listing. The normal action of the feeding device is to space the listed items in the usual manner until a total is printed and then automatically to feed the next form into printing position.

Referring now to Fig. 2, it is noted that the sheet P is provided with spaced lines 20 running parallel across the width of the sheet. On the left-hand side of the sheet are obliquely running slits 21 and 21a and on the right-hand side of the sheet are longer slits 22 and 22a each of the latter lying along one of the horizontal lines 20. Immediately to the right of slits 22 and 22a is an indicating arrow A. The printing spaces immediately above the arrow and between the slits 22 are numbered, in this particular case, from 2 to 14 inclusive. Arrow A occupies the initial printing space and it is assumed for purposes of illustration that provision is made for a total of fourteen different printing spaces, as indicated by the numbering.

The card C may be of any convenient shape or size and not necessarily limited to that form disclosed in the drawings. The headings and markings thereon, as shown in Figs. 1 and 3, are merely for illustration. Parallel lines 20a on the card correspond to the horizontal lines 20 on sheet P, being spaced apart the same amount. Fourteen printing spaces are divided off on the card shown in the drawings, this corresponding with the number of printing spaces laid off on the sheet. It will be noted that the left-hand upper and lower corners of the card are square but that the right-hand upper and lower edges are beveled. Cut-out portions 23 and 23a, located near the right end of the card, and the beveled edges of the card form tabs 24 and 24a, respectively, which are used in holding the card to the sheet.

In attaching the card to the sheet, as shown in Fig. 1, it is necessary to locate the card in such a manner that the space in which the data are to be printed is aligned with the indicating arrow A. The upper left-hand corner of the card is fitted in one of the slits 21 and the lower left-hand corner is fitted in the corresponding slit 21a. Concurrently, tabs 24 and 24a are inserted in slits 22 and 22a which are located opposite the already filled slits 21 and 21a so that the card is firmly held by the sheet in a position wherein lines 20a on the card coincide with lines 20 of the sheet and the desired printing space on the card is correctly aligned with the arrow A on the sheet. The beveled edges on the tabs 24 and 24a provide a wedging effect which securely fixes the location of the card on the sheet and also tends to keep it from buckling out from the sheet during the normal paper feeding operation.

After other cards have been attached to the sheet in the manner described above, the sheet is advanced manually until an indicating arrow A becomes aligned with the printing line of the print mechanism already described. It might be well to mention here that the automatic feeding device has been preset to give a feed stroke equal to the distance between the arrows A. The occurrence of the printing of data on the card in the space aligned with the arrow is followed by a feed stroke to advance the sheet until the next arrow A comes up to the printing line and, therefore, until the succeeding card is conveyed to the printing position with respect to the platen 26 and the type 27 and is ready to receive printed data in the proper space thereon.

The cards C shown in Fig. 1 have the name of the firm and the headings of the various columns thereon. The upper card has been used before as is evidenced by the fact that printing spaces 4 and 5 contain printed data. Consequently, when this card is inserted, the next space below the previously printed data, or in other words space 6, is aligned with the indicating arrow A. When the sheet is fed past the printing means, space 6 will receive the data. The lower card, on the other hand, is a fresh card having no printed data thereon, and thus space 2 is aligned with the arrow A so that certain heading data, for example, may be received in this space.

Although the description just presented appears to adapt the carrier sheet with ledger cards more for conditions where one item or one total is to be received by each card immediately followed by a feeding stroke to the next card, it is to be remembered that the listing of spaced items

on the cards may be also accomplished, in which case the indicating arrow A represents the first space on each card in which printing is to occur. The feed stroke generally occurs automatically after a group total of the listed items has been printed on the card.

It is obvious that printed data also may be received by sheet P along with the printing on the ledger cards if two sets of statistical reports are desired. For example, the listed items may be received by the sheet and the totals on the cards or vice versa. In any event the first printing line on each card is predetermined by its relative location on the sheet.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation

may be made by those skilled in the art without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claim.

What is claimed is:

A continuous feed sheet for record cards having a plurality of card locating sections and including, in each section, a chart comprising indexing means representing a plurality of line positions, a plurality of groups of slits co-related with said line positions, each group being adapted to interfit with predetermined portions of a record card removably insertible therein to hold the record card firmly against the surface of the sheet in a selected one of the aforesaid line positions as represented by the indexing means, said card, when so held by the sheet, being incapable of relative movement laterally with respect to the surface of said sheet.

ROSS GORDON THOMAS, JR.

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