

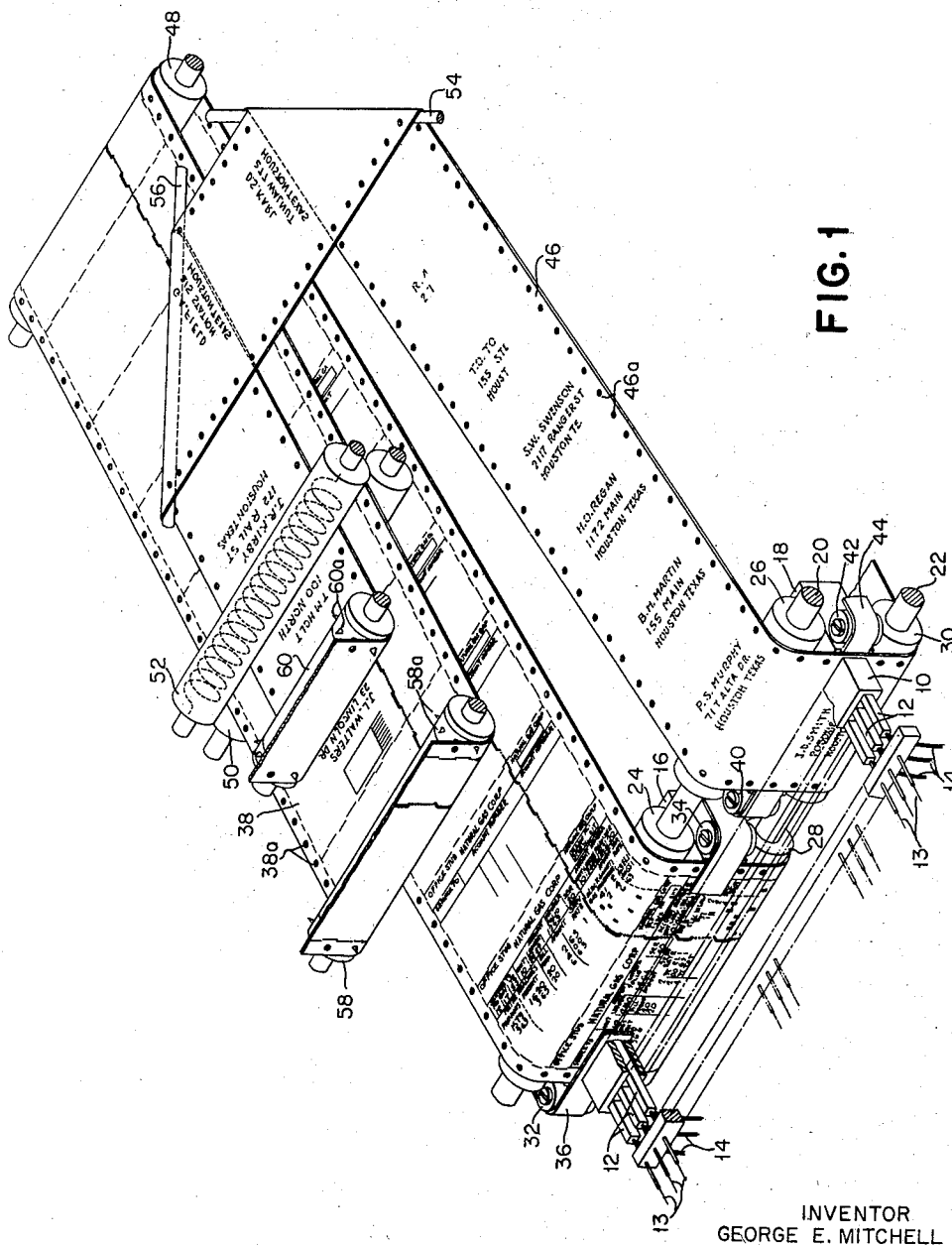
Jan. 6, 1959

G. E. MITCHELL
PRINTING MECHANISM

2,867,167

Filed Dec. 27, 1956

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

OFFICE STUB										NATURAL GAS CORP.									
SERVICE TO										ACCOUNT NUMBER									
MO.	DAY	YR.	UNIT	LEDGER	FOLIO	SER.					UNIT	LEDGER	FOLIO	SER.					
12	17	55	10	2450	1264	20					10	2450	1264	20					
METER READINGS						BILL PERIOD				CONSUMPTION				ELEC.-KILOWATT HRS					
PREVIOUS		PRESENT						AMOUNT		SERV. RATE				GAS-HUNDREDS CU. FT.		AMOUNT SERV. RATE			
1581		1618				20		2		37 EL 1				0.37		2.37 EL 1			
365		366				20		2		00 GS 1				1		2.00 GS 1			
								4		37 TOT						4.37 TOT			
OFFICE STUB										NATURAL GAS CORP.									
										PLEASE MAIL THIS STUB WITH PAYMENT									

FIG. 2

NATURAL GAS CORP. P.O. BOX 1188 HOUSTON, TEXAS		HOUSTON TEXAS		FIRST CLASS MAIL U.S. POSTAGE PAID 2 CTS PERMIT NO. 1451	
				J.D. SMITH P.O. BOX 1872 HOUSTON, TEXAS	
NATURAL GAS CORP. P.O. BOX 1188 HOUSTON, TEXAS		HOUSTON TEXAS		FIRST CLASS MAIL U.S. POSTAGE PAID 2 CTS	

FIG. 3

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2,867,167

PRINTING MECHANISM

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Application December 27, 1956, Serial No. 630,834

6 Claims. (Cl. 101-47)

This invention relates to printers and more particularly to post card billing machines which print the billing data on the back and the address data on the front of a post card in one pass through the machine.

Printing of the two sides of a post card in one pass through the machine, using two separate stations to print the respective sides, is well known. The printing of the billing and address data on the respective sides of post cards by using only one printing station in order to simplify and reduce the cost of construction of post card billing machines has already been proposed, too. Thus, in Patent No. 2,720,833, issued October 18, 1955, to J. B. Lindon, certain type wheels were modified so that they also bore type on which characters were reversed or mirror-imaged with respect to the rest. Carbon paper was placed on the platen side of the post cards to cause regular printing (name and address) to appear on the remote or front surfaces of the cards. Such construction required not only a masking strip between the carbon paper and the remote side of the card to prevent the printing of unwanted reverse characters on the front card surface but also unsightly cross-hatched areas on the back of the card to prevent unwanted reverse characters on the near or back side of the card or an additional movable mask which added to the thickness of the material through which impressions to print the address must be made, thereby further reducing the quality of the already poor address printing.

Another disadvantage of the Lindon mechanism resides in the fact that each line of print requires a separate print cycle, and this includes the lines in the address on the remote side of the card. Thus, as compared with two-station printing, the single station biller was slower because print cycles which could occur simultaneously in the two-station printer now had been performed serially in one-station printer. This is significant time-wise because a new card can be fed in approximately the time it takes to set up and effect printing of a line of data.

Accordingly, it is an object of this invention to provide a printer of the single station type which not only produces a billing card which is neat and pleasing in appearance but also has clearly legible billing and address data.

A further object of the invention is to provide a printer of the single station type which can print the name and address simultaneously with the printing of the other data on a card.

A further object of the invention is to provide a post card biller which utilizes the normal type of a printer so as to preclude the requirement of expensive special type and the consequent omission of regular type bearing desired characters.

The invention makes use of the principle that a post card does not use up all of the available printing capacity of a printer. Thus, a post card is passed through a printing station at one side thereof, and the billing data is printed on the back surface in normal fashion. Simul-

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aneous printing with regular type of the relevant name and address is effected in mirror image on the remote side of a transfer tape backed up with a carbon ribbon. Subsequently, the name and address on the transfer tape is copied onto the corresponding post card by bringing the unprinted side of the post card and the printed side of the transfer tape together and passing them between a pair of heat and pressure rollers operative to transfer carbon to produce legible printing.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode which has been contemplated of applying that principle.

In the drawings:

Fig. 1 is a view in perspective of printing mechanism embodying the instant invention.

Fig. 2 is a view of the back or billing data side of a post card.

Fig. 3 is a view of the front or name and address side of the post card.

Referring to the drawings, the invention is shown as being applied to a wire printer of the type disclosed in the patent application of Henry A. Jurgens and Martin J. Kelly, filed December 31, 1954, under Serial No. 479,107. In this wire printer a print bar 10 carries a plurality of laterally spaced print heads 12 which are individually, though simultaneously, movable by drive wires 13 towards and away from a platen to cause print wires 14 which have been preset to form a character pattern on the print head end faces to undergo printing impact with recording material. The print bar 10 is reciprocable laterally in one direction during the printing of one line and in another direction in the printing of the second line, so that the print heads 12 may each operate successively to collectively print a complete line by individually printing in the adjacent character spaces between the individual print heads. The platen cooperating with these print heads 12 is shown as composed of a long left-hand block 16 and a relatively short right-hand block 18, the lengths of these blocks being respectively determined by the length of the post card to be printed and the width of the transfer tape used for the address printing.

The handling of the recording material in the printing station is effected through feed rolls mounted on upper and lower shafts 20 and 22. The upper shaft 20 has a left-hand roll 24 corresponding in length to the width of the post cards used and a right-hand feed roll 26 corresponding in length to the width of the transfer tape used. The lower shaft 22 mounts similar left-hand and right-hand feed rolls 28 and 30, respectively.

Mounted adjacent each end of the left-hand platen 16 are vertical rolls 32 and 34. These rolls serve to guide an ink transfer medium 36, such as inking ribbon or carbon paper, over the back side of post card continuous web 38, which would be entrained over the vertically spaced rolls 28 and 24. It will be evident that, from the operation of the print heads 12, ordinary legible printing would take place on the back sides of the post cards. Conventionally, this printed data would constitute the billing data.

The right-hand platen 18 has mounted adjacent its ends two vertical rolls 40 and 42, over which are adapted to be entrained a carbon ribbon 44 passing between the platen 18 and the transfer tape 46 passing through the print station over the rolls 30 and 26. The ribbon 44 and the transfer tape 46 are formed of such material that when the print wires 14 of print heads 12 strike the tape 46 a carbon transfer will take place from the ribbon 44 and onto the adjacent side of the tape 46 to

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form a reverse or mirror image of the characters which would have appeared on the print head side of the tape 46 had an inking ribbon been present between the print heads and the tape 46.

For a detailed description of the material of which the carbon ribbon 44 and the transfer tape 46 may be formed, reference is made to Patent No. 2,501,495, issued March 21, 1950, to F. M. Carroll et al. The carbon ribbon 44 of the instant device corresponds to the hectograph carbon disclosed in Fig. 1 of that patent, while the transfer tape 46 of the instant device corresponds to the master sheet disclosed in Fig. 2. The principles of creating a printed master sheet with the aid of the hectograph carbon is disclosed in Fig. 3 of that patent, while Fig. 4 thereof discloses how the characters carried by the master sheet may be transferred to a record sheet through the use of suitably heated and refrigerated pressure rollers. Applicant advantageously utilizes the transfer system disclosed in Fig. 4 by bringing together the unprinted or front surfaces of the post card continuous web 38 with the side of the transfer tape 46 bearing the carbon received from the ribbon 44.

The post card continuous web 38, shown leaving the printing station as passing over the feed roll 24, is passed around another feed roll 48 for 180° reversal in direction and then through a pair of pressure rollers 50 and 52 corresponding to the heated pressure roller 36 and the refrigerated pressure roller 35, respectively, of the aforementioned Carroll et al. patent. The transfer tape 46, upon leaving the printing station by passing over the feed roll 26, is guided over a diagonally fixed bar 54 so as to change its direction 90° and towards a position over the path of the post card continuous web 38 now reversed 180° in direction. Here a second diagonally fixed bar 56 is mounted, and the transfer tape 46 is guided around it to again change its direction 90° and so that it, too, moves in the same direction and in step with the post card material 38, so that the relevant addresses lie over the corresponding post cards in the web 38. As now disposed, the side of the transfer tape having carbon material will now lie adjacent the blank or unprinted side of the post card continuous web 38 so that when both together are passed between the rollers 50 and 52, transfers of carbon will take place from the tape 46 to the post card continuous web 38 to print the names and address legibly on the fronts of the proper post cards. It is to be noted that the path of the post card continuous web 38 between the platen 16 and the rollers 50 and 52 is of the same length as the path of the transfer tape 46 from the platen 18 to the rollers 50 and 52, the lateral displacement of the web 38 and the transfer tape 46 being accommodated by locating the roller 48 at a greater distance from the printing station than the guide bars 54 and 56. Synchronism between the post card continuous web 38 and the transfer tape 46 is obtained through the use of the holes 38a in the continuous web 38 and holes 46a on the transfer tape 46 which cooperate with sprockets 58a formed on a take-up roller 58 and sprockets 60a formed on a synchronized take-up roller 60.

It will be apparent that applicant has devised an arrangement wherein ordinary printers may be utilized through slight modification to print the billing data and name and address data on the respective sides of a post card on one pass through the machine. It will also be apparent that the printing of the names and address may take place at the same time that the lines of billing data are being printed so as to save printing cycles and materially speed up a post card billing operation. For example, the printing of the three lines of the name and address on the transfer tape and as it will eventually appear on the front of the post card as in Fig. 3 may be done in the same print cycles as are used to print the three lines of billing data on the back of the post card as shown in Fig. 2. The subsequent copying of the name and address on the front of the card does not involve

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any loss of time as it overlaps subsequent printing of billing data on other cards.

Further, no cross-hatching or otherwise unsightly areas need appear on cards printed by the instant mechanism, and the name and address will appear quite legibly on the front thereof.

A feature of this invention is that the location of the name and address on the front of the post card can be varied to suit the individual user. Thus, if it is desired that the name and address appear near the bottom of the front of the post card, a slight adjustment in the synchronism between the take-up rollers 58 and 60, so as to allow the roller 60 to trail the roller 58, will bring the carbon portion of the transfer tape 46 to the copy station between the rollers 50 and 52 at a slightly later point than would normally obtain. The converse adjustment would be equally as feasible. Transverse adjustment of the address could be accomplished by suitable transverse adjustment of the rod 56 and the take-up roller 60, suitable adjustments in synchronism between the rollers 58 and 60 being made to compensate for the change in the length of the card path if the address is to be held at the same height on the card.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, 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 claims.

What is claimed is:

1. In an apparatus having a print station, means for feeding a record material and a transfer material through the print station, means for concurrently printing data on said record material and related data on said transfer material, means for thereafter bringing the record material and the transfer material together, and means to effect the copying of the printed data on the transfer material onto the record material in a predetermined spatial relationship to the related data on said record material.
2. In an apparatus having a print station, means for feeding a record material and a transfer material through the print station, means for concurrently printing data on said record material and related data on said transfer material, means for thereafter bringing the unprinted side of the record material and the printed side of the transfer material together, and means to effect the copying of the printed data on the transfer material onto the record material in a predetermined spatial relationship to the related data on said record material.
3. In an apparatus having a print station, means for feeding a record material and a transfer material side by side through the print station, means for concurrently printing data on said record material and related data on said transfer material, means for thereafter bringing the unprinted side of said record material and the printed side of said transfer material together and transfer means to cause the transfer of printed data on said transfer material onto said record material in a predetermined spatial relationship to the related data on said record material.
4. In an apparatus having a print station, means for feeding a continuous web material separable into individual sheets and a continuous transfer tape through the print station, means for concurrently printing legible data on one side of the respective sheets and related mirror-image data on the tape, and means for thereafter bringing the unprinted side of the sheets and the printed side of the transfer tape together, and transfer means to cause the transfer of the data in mirror-image on the transfer tape onto the unprinted side of the sheet having related data.

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5. In an apparatus having a print station including a row of type elements, and related platen means, means for feeding a transfer tape and a record material comprised of continuous web material separable into individual sheets side by side through the print station, an ink transfer medium located between the continuous web material and the type elements therefor, an ink transfer medium located between the transfer tape and the platen therefor, means to operate the type elements to print related data concurrently on the continuous web material and the transfer tape, means for thereafter bringing together the unprinted side of the continuous web material and the printed side of the transfer tape, and transfer means to cause transfer of data from the transfer tape onto a sheet in the continuous web material having related data.

6. Apparatus for printing related data on opposite sides of a record, comprising a print station and a transfer station, means for feeding a record web separable into individual records and a transfer web through the print station, means for printing data on the record web in a legible form and for concurrently printing related data on the transfer web in a reverse image form, transport

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means for bringing the record web and the transport web into and through the transfer station in superimposed relationship so that the printed data on the transfer web related to the printed data on an individual record will be in a predetermined spatial relationship to the data on said record and transfer means at said transfer station for transferring the said related printed data from the transfer web to said individual record.

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