April 12, 1960 C. E. HUNT, JR 2,932,692

DEVICE FOR PRINTING A SELECTION CHARACTER ON ADDRESS LABELS

Filed May 7, 1959 2 Sheets-Sheet 1

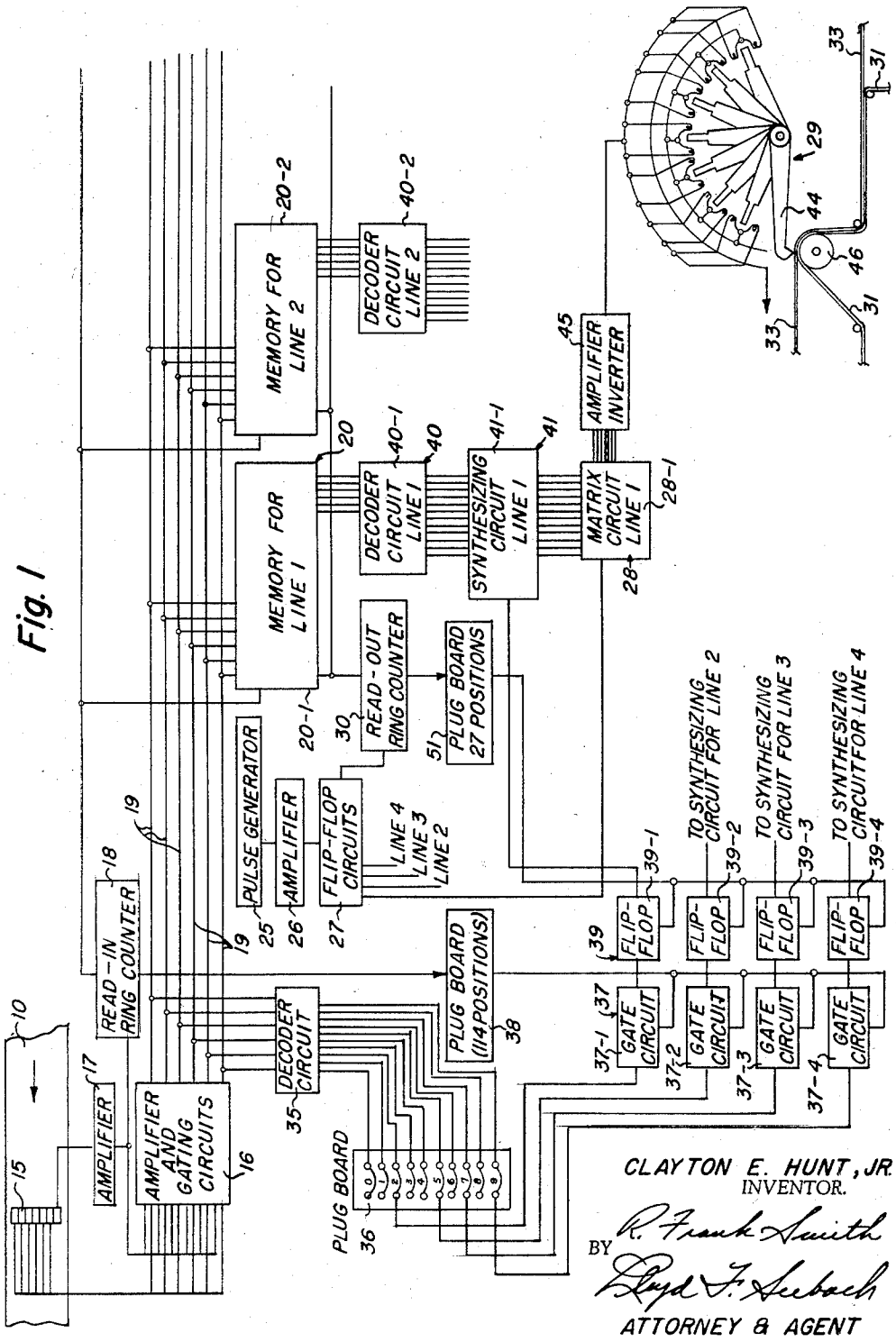

Fig. 1

CLAYTON E. HUNT, JR.
INVENTOR.

BY R. Frank Smith
Floyd F. Seebach

ATTORNEY & AGENT

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Fig. 2

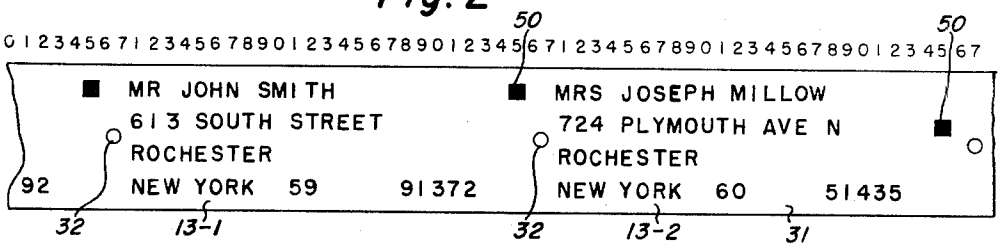


Fig. 3

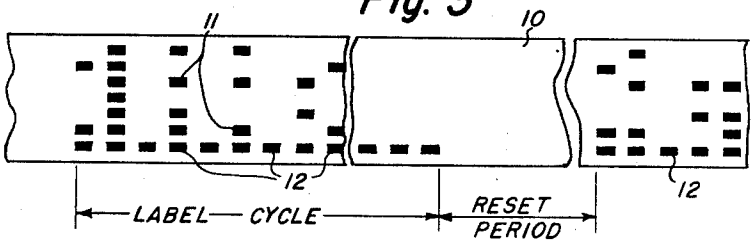


Fig. 5

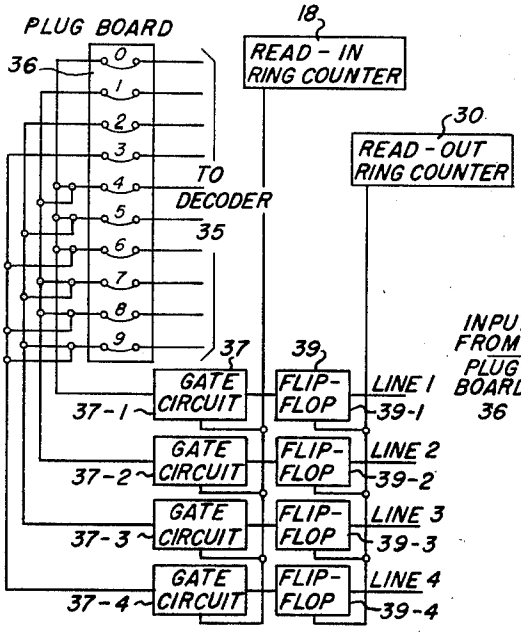
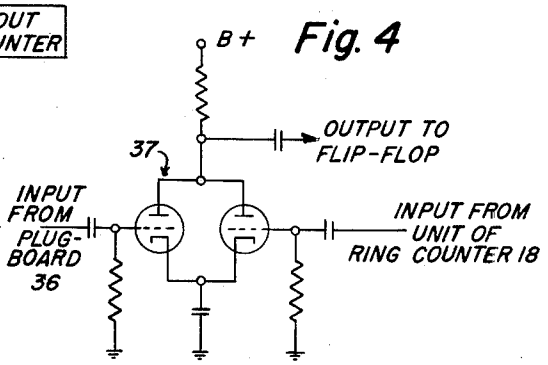


Fig. 4



CLAYTON E. HUNT, JR.
INVENTOR.

BY R. Frank Smith
Lloyd F. Seebach

ATTORNEY & AGENT

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2,932,692

DEVICE FOR PRINTING A SELECTION CHARACTER ON ADDRESS LABELS

Clayton E. Hunt, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey

Application May 7, 1959, Serial No. 811,743

7 Claims. (Cl. 178—30)

The invention relates to facsimile apparatus for printing address labels and more particularly to an arrangement whereby a particular configuration or character is printed in any one or a combination of the lines of a label for subsequent use to selectively transfer the printed address from the tape to the proper mailing piece.

In the mailing of magazines, periodicals, advertisements, etc., it is common practice to adhere an address label to each mailing piece which designates the recipient's name, address, city and State as well as any other pertinent data such as subscription expiration date, location, occupation, etc. The use of such address labels, in many instances, tends to distract from the appearance of the mailing piece, such as with adherence of a label to the front cover of a magazine. To eliminate this distraction, the labels can be printed as a mirror image thereof on the tape and then transferred to the mailing piece by application of heat. One way in which this printing of mirror images of the address on the tape can be accomplished is disclosed in U.S. Patent application Serial No. 469,619, filed November 18, 1954, and now U.S. Patent 2,892,030.

The invention is concerned with the printing of address labels as set forth and described in my copending applications Serial No. 651,752, filed April 9, 1957, now U.S. Patent 2,903,961 and Serial No. 618,005, filed October 24,1956, as well as copending application Serial No. 394,926, filed November 30, 1953, now U.S. Patent 2,899,498 of which I am coinventor with Russell G. Thompson. While the invention is applicable to the production of address labels from record cards (Serial No. 394,926) or from a magnetic tape (Serial No. 618,005), the invention will be described with reference to the latter.

As described in the patent application Serial No. 618,005, a mailing list comprising a large number of punched cards can be transposed to a magnetic tape which is then utilized as a source of input signals for a multiple stylus printer, such as disclosed in any one of the above-mentioned applications. In a magazine subscription fulfillment system utilizing punched cards for each subscriber and a printer arranged to print mailing address labels in accordance with the data derived from such cards, it is desirable to be able to segregate the list into various groups, for example, on the basis of current, expired or about to expire subscriptions. This can be accomplished by recording the data of each group on separate tapes with a single pass of the punched card, as disclosed in said application.

In addition to the normal data punched into a record card, such as name, street address, etc., a special character can be punched into each card in an allocated line or column for designating the mailing list with which the card is to be associated. If, for example, an individual is a subscriber to more than one magazine or periodical, then a separate card is made for each magazine with a special character on each card designating the magazine with which it is to be associated. Since this character

appears in the same column of each card, it will be recorded on the magnetic tape along with and in proper relation to the other information. In this way a single file of cards can be maintained for a number of magazines having the same mailing date. When the labels are printed from the magnetic tape, each label will be provided with a configuration or special character located in a predetermined line at a predetermined position to designate the magazine to which it is to be applied. The strip of labels is then fed intermittently past a sensing device and in proper relation to the mailing piece for transferring only those labels having the configuration in the line corresponding to the mailing piece. The strip is then rerun to transfer those labels to be transferred to another mailing piece. Configuration, as used herein, is meant to include any symbol, character or mark which is capable of being read or sensed to initiate the transfer operation. Further, such configuration can be printed in any one line of the label, or in any combination of lines to increase the number of mailing lists associated with any one tape.

The primary object of the invention is, therefore, to provide an apparatus for selectively printing a predetermined configuration in a fixed relation to a group of characters in the same line of an address label.

Another object of the invention is to provide an apparatus for translating and printing a visual representation of the characters represented by code arranged on a medium in successive columns and for selectively printing a predetermined configuration in a predetermined position with respect to said representation in accordance with the code of a preselected character in a predetermined position on the medium.

Yet another object of the invention is to provide an apparatus for printing a multiple line label in accordance with characters represented by code arranged on a medium in successive columns and for selectively printing a predetermined configuration in a predetermined position in a predetermined line of the label in accordance with the code of a preselected character in a predetermined position on the medium.

And still another object of the invention is to provide an apparatus for printing a multiple line label in accordance with code arranged on a medium in successive columns and for selectively printing a predetermined configuration in a predetermined position in one or more lines of the label in accordance with the code of a plurality of preselected characters each representative of a combination of said lines and in a predetermined position on the medium.

These and other objects and advantages will be apparent to those skilled in the art by the description which follows:

Reference is now made to the accompanying drawing wherein like reference numerals designate like parts and wherein:

Fig. 1 is a schematic block diagram of the various circuits utilized in an apparatus for printing address labels in accordance with the invention;

Fig. 2 is an elevation view of a portion of the address label tape showing the arrangement of the address lines and the relation of the configuration in different lines;

Fig. 3 is an elevation view of a portion of a strip of magnetic tape showing the arrangement and relationship of the code and timing marks;

Fig. 4 is a schematic view of a form of gating circuit; and

Fig. 5 is a partial schematic diagram of a portion of Fig. 1 showing an arrangement by which the invention may be used to selectively print a configuration in one or more address lines.

The magnetic tape **10**, as shown in Fig. 3, comprises

successive columns of magnetized areas **11** arranged adjacent timing marks **12**. Each column of areas **11** is therefore representative of a character designated in a six position code derived directly from record cards punched in accordance with the same code or a code which is first converted to the six position code before recording on the tape. The first-mentioned record card can be a commercially available card, such as a Remington Rand card, which is provided with forty-five possible code columns in each of the upper and lower halves of the card. In this instance, the upper columns are numbered 1–45 and the lower columns 46–90. When the columns of code are transposed to a magnetic tape, the columns are recorded successively in an order of 1, 46–2, 47 etc. On the other hand, a record card, such as an IBM card has eighty possible code columns and these are recorded on the magnetic tape **10**, after conversion to a six position code, in the same order as presented; namely 1, 2, 3, etc. As shown in Fig. 3, a label cycle will therefore include a fixed length of tape in which 114 or 104 code columns are recorded plus a sufficient space between successive labels to allow for resetting of the circuitry to a condition in which it is receptive to the code of the next label. The numbers 114 and 104 are derived from the 90 and 80 possible code columns on the above-mentioned cards plus an additional 24 columns in which code representative of characters punched in a header card can be recorded. The recorders are of the 7-channel type adapted to record in seven parallel channels of tape **10**, six being used for recording data and the seventh being used to record sync pulses which are continually recorded even though no code is recorded. As a result, tape **10** is provided with timing marks **12** along one edge thereof and the code for each character is recorded across the tape and in alignment with its respective timing mark. A more detailed description of the manner in which the code representative of the characters on the cards is transposed to tape **10** can be obtained with reference to the above application, Serial No. 618,005.

With reference to Fig. 1, tape **10** is moved continuously with respect to magnetic pick-up devices **15** arranged across tape **10**. Each of the devices **15** is aligned with one of the channels on tape **10** including the timing mark channel. The outputs from the code pick-up devices **15** are connected to amplifier-gating circuits **16**, and the output of the timing mark pick-up device is connected to amplifier **17** whose output signal is connected to circuits **16** and to read-in ring counter **18**. Amplifier-gating circuits **16** comprise six units, one of said units being connected to and associated with one of said devices **15**. Upon coincidence of an output signal from its respective device **15** and a signal from amplifier **17**, an electrical signal appears on the corresponding line **19**. As each column of code on tape **10** is moved past devices **15**, a signal will be derived from each timing mark **12** and from any code in the column aligned therewith. If a coded character is sensed by one or some combination of devices **15**, then an electrical signal will be presented on the corresponding one or combination of lines **19**.

Read-in ring counter **18** consists of a number of units equivalent to the code columns on tape **10** comprising a label. In the embodiment being described the number can be 114 to correspond to the maximum number of code columns per label when using a 90 column record card. Such a ring counter can be of the type disclosed in my pending application, Serial No. 704,472, or in the text "Pulse and Digital Circuits," Millman and Taub, published by McGraw-Hill Publishing Company and is analogous to a stepping switch in that each output pulse from amplifier **17** causes the counter to advance one unit and provide an output pulse. Since the timing marks **12** are arranged in identical spaced relation along tape **10** and tape **10** is moved at a uniform rate past devices **15**, the output pulses from ring counter **18** are periodic in their occurrence.

Memory means **20** is provided for each line of the label and comprises a number of units at least equivalent to the number of characters which can be printed on a single line of the label. Each memory unit is therefore associated with a possible character or space on the label and comprises six elements in accordance with the six position code. As disclosed in the above-mentioned application, Serial No. 394,926, each unit of memory means **20** can be connected to lines **19** in any order to produce the required label. For example, the name, address, and any other information punched into the record cards can and are located in different areas of the cards in accordance with the filing, accounting, or any other system used. However, in printing an address label it is customary for the name to appear in the first line, the address in the second line, the city and possibly the state in the third line, and the state alone or with other data in the fourth line as shown in Fig. 2. For example, each unit of memory means **20–1** is therefore connected to lines **19** and to a unit of ring counter **18** in accordance with the desired appearance of the label, the unit of the ring counter determining the unit of the memory means which is to be rendered receptive to the storage of signals. This may be best explained by assuming the location of a character on the card, the tape and the label. If the first digit of the street number is punched into column 1 of either of the above-mentioned types of cards, the corresponding code will appear in the first column of tape **10**. The digit, however, is to be printed in the first position of the second line on the label, see Fig. 2. The first unit of memory means **20–2** will therefore be connected to lines **19** and the first unit of ring counter **18**. The electrical signals presented on some predetermined combination of lines **19** and representative of the digit will then be stored in the first unit of memory means **20–2** associated with the second line because this is the only unit which has been rendered receptive to signals by the first pulse from ring counter **18**. By this arrangement, any system utilized for encoding the data or information on the cards can be readily adapted to the device. While each of memory means **20** in Fig. 1 is shown as being connected to each of lines **19** and to ring counter **18**, it is to be understood that this showing is only schematic and that each unit of each memory means **20–1**, **20–2**, **20–3** and **20–4** (the latter two not being shown) is connected to lines **19** and to a unit of counter **18**.

Upon completing the scanning or reading of the code columns associated with a label whereby all the code is stored in the respective memory means **20**, the tape **10** comes to a stop at the area designated reset period, see Fig. 3, at which time read-out of the stored signals takes place to print the label. Upon completion of the read-out and printing of the label, tape **10** again starts to move past heads **15**. At this time, the area between the code of successive labels provides an interval for resetting of the various circuits, such as the ring counter **18**, so the circuits will be conditioned and rendered receptive to the code for the next label which follows the reset area on tape **10**.

A pulse generator **25** supplies a series of periodic pulses to amplifier **26** which, in turn, supplies a signal to a group of seven flip-flop circuits **27** connected so as to obtain an output from each in turn. Five of these output pulses are connected to each of the matrices **28** to sequentially operate printer **29** and the seventh pulse is utilized to step read-out ring counter **30** once for every seven pulses and to pulse a voltage source in memory means **20**. Read-out ring counter **30** is the same as read-in ring counter **18** with the exception that the number of units is equivalent to the number of characters which can be printed in a label line. Since each of the labels **13–1** and **13–2**, as shown in Fig. 2 provide for

twenty-seven possible character positions, counter 30 will comprise twenty-seven units. It will be noted however the label tape 31 is provided with spaced perforations 32 which necessitate the printing of fewer characters. The output pulses from ring counter 30 are connected to each of memory means 20 and serve to release the electrical signals stored therein in successive order. Since the electrical signals were read into the proper units of memory means 20 for printing in their designated position on the label, they are read out of the corresponding units of each of memory means 20–1, 20–2, etc. simultaneously and successively. With this arrangement each line of the label is printed at the same time, that is, characters or spaces in each line are provided at the same time. For example, with reference to Fig. 2, the first characters in each line, of label 13–2 namely, "M," "7," "R" and "N" are printed simultaneously, whereas in the fourth position spaces are provided in lines 1, 2 and 4 and "H" is printed in line 3. Spaces are automatically provided by those memory units in which no signals have been stored.

The signal or signals read out of memory means 20 and individual to each character are converted by a decoder circuit 40 into a single electrical signal which is representative of the character. This electrical signal is then transmitted to a synthesizing circuit 41 in which each electrical signal is directed to the proper elements of matrix circuit 28 for obtaining outputs to ultimately produce a visual representation of the character corresponding to each electrical signal. The outputs from matrix 28 are applied to styli 44 of printer 29 through amplifier inverters 45. The printer 29 comprises four units, one unit being associated with each line and comprising seven styli 44. The styli are actuated singly or in any combination by the outputs of matrix 28 delivered through inverters 45. In response to a signal, the respective stylus is moved toward anvil roll 46 over which paper tape 31 and a carbon tape 33 are moved in synchronism with the movement of magnetic tape 10, the carbon tape being arranged over the paper tape whereby the carbon is transferred to the paper tape by movement of one or more of styli 44 into engagement with roll 46. It is to be understood that a memory means 20, a decoder circuit 40, a synthesizing circuit 41, a matrix circuit 28, an amplifier inverter 45 and a printer 29 are associated with each label line and that ring counter 30 and flip-flop circuits 27 are common to each label line to provide for printing of all label lines simultaneously. The circuitry described thus far is substantially the same as that disclosed in the above-mentioned application Serial No. 394,926, with the exception that the signals are derived from a magnetic tape by magnetic pick-ups rather than from punched cards by light-responsive devices.

In accordance with the switching arrangement disclosed in a co-pending application in the name of Russell G. Thompson, Serial No. 469,619, filed November 18, 1954, now U.S. Patent 2,892,030, mirror images of the address label are printed on tape 31 for transferring the complete label to the mailing piece by the application of a heated anvil to the portion of the tape containing the label to be transferred to the mailing piece. As described hereinabove, it has been found that in many instances, a tape comprising 18,000–20,000 labels to be affixed to more than one mailing piece necessitated handling and matching each mailing piece to the label. This operation was very time consuming. In order to eliminate this matching of label and mailing piece, it was found that by identifying each label with a particular mailing piece, all of the labels on a reel associated with a particular mailing piece could be automatically affixed and then by repeating the run for each other mailing only one mailing piece need be concerned with each run thereby greatly increasing the rate at which transfers can be made.

This has been accomplished by punching a character in a predetermined position of the card to identify it with a particular mailing and resulting in a configuration being printed in a line of the label to permit selecting the label for affixing it to the proper mailing piece. In Fig. 2, the last digit of "91372" is label 13–1 and of "51435" in label 13–2 that is "2" and "5," are each representative of different mailings for printing the configuration 50 in the first and second lines of their respective labels. Since the code of these identifying digits "2" and "5" as well as any other identifying digit is located in the same column of its respective card, such code will also appear in the same column on tape 10 for each label.

In order to utilize the identifying code for printing the configuration in the proper line of the label, decoder circuit 35 is connected to lines 19 for receiving the electrical signals derived from each code column on tape 10 and may be of the same type as decoder circuit 40. Since configuration 50 can be printed in any one line or any combination of the lines, decode circuit 35 need only be required to decode sixteen characters based on the combinations of lines possible with a four-line address label. It is to be understood, of course, that this number of combinations can be increased or decreased depending on the number of label lines and the system with which the cards are associated. In Fig. 1 of the drawings, an arrangement is disclosed in which configuration 50 is selectively printed in only one line of the label in accordance with a predetermined character. Decoder 35 provides a single electrical signal individual to each character in accordance with the electrical signals presented on the lines 19. These signals from decoder 35 are connected to their respective terminals on plugboard 36. Gate circuits 37, as shown in Fig. 4, are coincidence type circuits which provide an output signal only upon coincidence of input signals to the respective grids. Each of gating circuits 37 is associated with a line of the label and have one input side connected to the terminal of plugboard 36 corresponding to the character identifiable with the line and the other input of each gating circuit connected to the same unit of ring counter 18 via plugboard 38. The output from each gating circuit 37 is connected to one side of a flip-flop circuit 39 which can be of a type disclosed in the above-mentioned application Serial No. 394,926. The other side of each flip-flop circuit 39 is connected via plugboard 51 to the same unit of ring counter 30. The output signal from each flip-flop circuit 39 is connected to the matrix circuit 28 associated with its respective line and by proper choice of the circuit parameters the output signal is individual to the configuration 50.

As described above, the preselected character is punched into a predetermined column or position on the card and, hence, is recorded in the same predetermined column on tape 10. Since the column is therefore readily determined, the output signal or pulse derived from the unit of ring counter 18 corresponding to this column is also connected either directly or via plugboard 38 to each of gate circuits 37. The other inputs of gate circuits 37 are connected to the contacts of plugboard 36 in accordance with the character to be identified with its respective line. As shown in Fig. 1, "2" is connected to gate 37–1 of line 1, "5" is connected to gate 37–2 of line 2, "7" is connected to gate 37–3 of line 3 and "9" is connected to gate 37–4 of line 4. Since any one of gates 37 will provide an output pulse only with coincidence of two signals, a signal from decoder circuit 35 individual to any one of the above identifying characters which appears in any other column of tape 10, aside from the predetermined column, will not result in a configuration being printed in a normal manner. This may best be explained by assuming certain positions of the characters and following the logic by means of an example.

Assuming that the code representative of the preselected characters "2" is punched in the 51st column of an IBM card, the code will first be converted to its equivalent

in a six position code and recorded on tape 10 in alignment with the 51st timing mark 12 for the label. Also assuming that the character "2" is to be printed in the 22nd position of line 4 on the label and the configuration 50 representative thereof is to be printed in the first line of the label and in the 25th position, as shown in label 13–1, then the output of the 51st unit of ring counter 18 is connected to the 22nd unit of memory means 20–4 (not shown), for line 4 and via plugboard 38 to each of gating circuits 37. Also, the output of the 25th unit of ring counter 30 is connected either directly or via plugboard 51 to each of flip-flop circuits 39, as well as the 25th unit of each of memory means 20. As a result, signals on one or a combination of lines 19 corresponding to and representative of the digit "2" will be directed to decoder 35 and the proper unit of one of memory means 20. If these signals occur with an output pulse from any unit of ring counter 18 other than the 51st unit, the signals are stored in the corresponding and proper unit of one of memory means 20 but the signal from decoder 35 to gate circuit 37–1 has no effect. However, when these signals for the digit "2" appear on lines 19 with the stepping of the 51st unit of counter 18, gate 37–1 receives a signal from decoder 35 together with a signal from the 51st unit of counter 18 and an output pulse is transmitted to flip-flop 39–1 to trigger this circuit. At the same time, these same signals appearing on lines 19 are stored in the 22nd unit of memory 20–4. Since flip-flops 39 are bistable circuits, flip-flop 39–1 remains in the triggered state until read out of the memory means 20 takes place. During the read-out interval and upon stepping of the 22nd unit of ring counter 30, any stored signals in the 22nd units of memory means 20–1, 20–2, 20–3 and 20–4 are released and result in printing of the digit "2" in line 4, as shown in Fig. 2. Upon stepping of the 25th unit of ring counter 30, an output signal is transmitted to the corresponding units of memory means 20 as well as to the flip-flops 39. This output signal causes flip-flop 39–1 to reverse its state and to provide an output signal individual to the configuration which is transmitted to matrix 28–1 and results in the configuration being printed in the 25th position of the first line. As shown in Fig. 5, a plurality of preselected characters can be utilized by connecting gating circuits 37 to more than one of said characters. As a result, various combinations of the configuration printed in one or more lines of the label can be utilized to obtain a greater degree of selection.

From the above description, it is evident that the apparatus is capable of printing a multiple line label in accordance with characters represented by code arranged in a medium in successive columns and of selectively printing a predetermined configuration in a predetermined position in one or more predetermined lines of the label in accordance with the code of a preselected character or characters in a predetermined column on the medium. Although the invention has been described with the use of a digit or a number as the preselected character, it is to be understood that any number, letter, symbol or representation can be used. Likewise, the printed configuration can take any form which will permit it to be used for the purpose of either visual or sensed selection.

Since many modifications of the invention will be apparent to those skillled in the art, the invention is not to be limited to the described disclosure but is defined by the appended claims.

Having now particularly described my invention, what I desire to secure by Letters Patent of the United States and what I claim is:

1. Apparatus for translating into visual representation the characters represented by code arranged on a medium in successive columns, each column of code being arranged with respect to a timing mark on said medium, and for selectively printing a predetermined configuration in a predetermined position with respect to said representation in accordance with the code of a preselected character in a predetermined position on said medium, the combination comprising means for scanning said medium and deriving output pulses in accordance with the code in each column and individual to the character represented thereby and a sync pulse from each of said timing marks, a ring counter having a predetermined number of units for providing a series of periodic output pulses, each unit being responsive to one of said sync pulses, distribution means responsive to said output pulses and the corresponding sync pulse for delivering successive electrical signals representative of the coded characters in each of said scanned columns, memory means connected to said distribution means and responsive to said periodic output pulses for read-in and storage of the electrical signals in any predetermined order, pulse generating means for providing a series of periodic pulses to said memory means for successively reading out the stored electrical signals in a fixed order and in a predetermined relation to the electrical signals being stored, means responsive to the electrical signals successively read out of said memory means for converting said signals into an electrical signal individual to the character represented thereby, decoder means responsive to the electrical signals of said distribution means for converting said electrical signals into an electrical signal individual to the character represented thereby, means connected to said decoder means, said ring counter and said pulse generating means and responsive to coincidence of the decoder electrical signal corresponding to the preselected character with one of the output pulses from the unit of said ring counter corresponding to the predetermined position of the code representative of the preselected character on said medium and to the one of said pulse generating periodic pulses corresponding to the position of said configuration with respect to said character for supplying an electrical signal individual to said configuration, and means responsive to said electrical signals derived from said converting means and to said electrical signal representative of said configuration for printing the characters and the configuration in accordance with the predetermined arrangement.

2. Apparatus for translating into visual representation the characters represented by code arranged on a medium in successive columns, each column of code being arranged with respect to a timing mark on said medium, and for selectively printing a predetermined configuration in a predetermined position with respect to said representation in accordance with the code of a preselected character in a predetermined position on said medium, the combination comprising means for scanning said medium and deriving output pulses in accordance with the code in each column and individual to the character represented thereby and a sync pulse from each of said timing marks, a ring counter having a predetermined number of units for providing a series of periodic output pulses, each unit being responsive to one of said sync pulses, distribution means responsive to said output pulses and the corresponding sync pulse for delivering successive electrical signals representative of the coded characters in each of said scanned columns, memory means connected to said distribution means and responsive to said periodic output pulses for read-in and storage of the electrical signals in any predetermined order, pulse generating means for providing a series of periodic pulses to said memory means for successively reading out the stored electrical signals in a fixed order and in a predetermined relation to the electrical signals being stored, means responsive to the electrical signals successively read out of said memory means for converting said signals into an electrical signal individual to the character represented thereby, decoder means responsive to the electrical signals of said distribution means for converting said electrical signals into an electrical signal individual to the character represented thereby, means connected to said

decoder means and said ring counter and responsive to coincidence of the decoder electrical signal corresponding to the preselected character with the one of the output pulses from the unit of said ring counter corresponding to the predetermined position on said medium of the code representative of the preselected character for supplying an output signal, bistable circuit means responsive to the output signal from said supplying means and to the one of said pulse generating periodic pulse corresponding to the position of said configuration with respect to said characters for releasing an electrical signal individual to said configuration, and means responsive to said electrical signals derived from said converting means and to said electrical signal representative of said configuration for printing the characters and the configuration in accordance with the predetermined arrangement.

3. Apparatus for translating into visual representation the characters represented by code arranged on a medium in successive columns, each column of code being arranged with respect to a timing mark on said medium, and for selectively printing a predetermined configuration in a predetermined position with respect to said representation in accordance with the code of a preselected character in a predetermined position on said medium, the combination comprising means for scanning said medium and driving output pulses in accordance with the code in each column and individual to the character represented thereby and a sync pulse from each of said timing marks, a ring counter having a predetermined number of units for providing a series of periodic output pulses, each unit being responsive to one of said sync pulses, distribution means responsive to said output pulses and the corresponding sync pulse for delivering successive electrical signals representative of the coded characters in each of said scanned columns, memory means connected to said distribution means and responsive to said periodic output pulses for read-in and storage of the electrical signals in any predetermined order, pulse generating means for providing a series of periodic pulses to said memory means for successively reading out the stored electrical signals in a fixed order and in a predetermined relation to the electrical signals being stored, means responsive to the electrical signals successively read out of said memory means for converting said signals into an electrical signal individual to the character represented thereby, decoder means responsive to the electrical signals of said distribution means for converting said electrical signals into an electrical signal individual to the character represented thereby, a gating circuit connected to said decoder means and said ring counter and responsive to coincidence of the decoder electrical signal corresponding to the preselected character with the one of the output pulses from the unit of said ring counter corresponding to the predetermined position on said medium of the code representative of the preselected character for supplying an output signal, bistable circuit means triggered in one direction in response to the output signal from said gating circuit and in the other direction in response to the one of said pulse generating periodic pulses corresponding to the position of said configuration with respect to the characters for providing an electrical signal individual to said configuration, and means responsive to said electrical signals derived from said converting means and to said electrical signal representative of said configuration for printing the characters and the configuration in accordance with the predetermined arrangement.

4. Apparatus for printing a multiple line label in accordance with characters represented by code arranged on a medium in successive columns, each column of code being arranged with respect to a timing mark on said medium, and for selectively printing a predetermined configuration in a predetermined position in a predetermined line of said label in accordance with the code of a preselected character in a predetermined column on said medium, the combination comprising means for scanning said medium and deriving output pulses in accordance with the code in each column and individual to the character represented thereby and a sync pulse derived from each of said timing marks, a ring counter having a number of units at least equal to the number of code columns comprising said label for providing a series of periodic output pulses, each unit being responsive successively to one of said sync pulses, distribution means responsive to said output pulses and the corresponding sync pulse for delivering successive electrical signals representative of the coded characters in each of said scanned columns, memory means associated with each of said label lines and connected to said distribution means, said memory means being responsive to said periodic output pulses for read-in and storage of the electrical signals associated with its respective line, pulse generating means for providing a series of periodic pulses, each of said periodic pulses being applied simultaneously to each of said memory means for successively reading out the stored electrical signals in a fixed order and in a predetermined relation to said electrical signals being stored, means responsive to the electrical signals successively read out of said memory means for converting said signals into an electrical signal individual to the character represented thereby, decoder means responsive to the electrical signals of said distribution means for converting said electrical signals into an electrical signal individual to the character represented thereby, means associated with each line of said label and connected to said decoder means, said ring counter and said pulse generating means and responsive to coincidence of the decoder electrical signal corresponding to the preselected character with one of the output pulses from said ring counter corresponding to the predetermined position of the code of the preselected character on said medium and to the one of said pulse generating periodic pulses corresponding to the predetermined position of said configuration in the line of the label for supplying an electrical signal individual to said configuration, and means responsive to said electrical signals derived from converting means and to said electrical signal representative of said configuration for printing the characters and the configuration in accordance with the predetermined relation.

5. Apparatus for printing a multiple line label in accordance with characters represented by code arranged on a medium in successive columns, each column of code being arranged with respect to a timing mark on said medium, and for selectively printing a predetermined configuration in a predetermined position in a predetermined line of said label in accordance with the code of a preselected character in a predetermined position on said medium, the combination comprising means for scanning said medium and deriving output pulses in accordance with the code in each column and individual to the character represented thereby and a sync pulse derived from each of said timing marks, a ring counter having a number of units at least equal to the number of code columns comprising said label for providing a series of periodic output pulses, each unit being responsive successively to one of said sync pulses, distribution means responsive to said output pulses and the corresponding sync pulse for delivering successive electrical signals representative of the coded characters in each of said scanned columns, memory means associated with each of said label lines and connected to said distribution means, said memory means being responsive to said periodic output pulses for read-in and storage of the electrical signals associated with its respective line, pulse generating means for providing a series of periodic pulses, each of said periodic pulses being applied simultaneously to each of said memory means for successively reading out the stored electrical signals in a fixed order and in a predetermined relation to said electrical signals being stored, means responsive to the electrical signals successively

read out of said memory means for converting said signals into an electrical signal individual to the character represented thereby, decoder means responsive to the electrical signals of said distribution means for converting said electrical signals into an electrical signal individual to the character represented thereby, means associated with each line of said label and connected to said decoder means and said ring counter and responsive to coincidence of the decoder electrical signal corresponding to the preselected character with the one of the output pulses from the unit of said ring counter corresponding to the predetermined position on said medium of the code representative of the preselected character for supplying an output signal, bistable circuit means associated with each of said supplying means and responsive to the output signal therefrom and to the one of said pulse generating periodic pulses corresponding to the position of said configuration with respect to said characters for releasing an electrical signal individual to said configuration, and means responsive to said electrical signals derived from said converting means and to said electrical signal representative of said configuration for printing the characters and the configuration in accordance with the predetermined relation.

6. Apparatus for printing a multiple line label in accordance with characters represented by code arranged on a medium in successive columns, each column of code being arranged with respect to a timing mark on said medium, and for selectively printing a predetermined configuration in a predetermined position in a predetermined line of said label in accordance with the code of a preselected character in a predetermined position on said medium, the combination comprising means for scanning said medium and deriving output pulses in accordance with the code in each column and individual to the character represented thereby and a sync pulse derived from each of said timing marks, a ring counter having a number of units at least equal to the number of code columns comprising said label for providing a series of periodic output pulses each unit being responsive successively to one of said sync pulses, distribution means responsive to said output pulses and the corresponding sync pulse for delivering successive electrical signals representative of the coded characters in each of said scanned columns, memory means associated with each of said label lines and connected to said distribution means, said memory means being responsive to said periodic output pulses for read-in and storage of the electrical signals associated with its respective line, pulse generating means for providing a series of periodic pulses, each of said periodic pulses being applied simultaneously to each of said memory means for successively reading out the stored electrical signals in a fixed order and in a predetermined relation to said electrical signals being stored, means responsive to the electrical signals successively read out of said memory means for converting said signals into an electrical signal individual to the character represented thereby, decoder means responsive to the electrical signals of said distribution means for converting said electrical signals into an electrical signal individual to the character represented thereby, a gating circuit associated with each line of said label and connected to said decoder means and said ring counter and responsive to coincidence of the decoder electrical signal corresponding to the preselected character with the one of the output pulses from the unit of said ring counter corresponding to the predetermined position on said medium of the code representative of the preselected character for supplying an output signal, bistable circuit means associated with each of said gating circuits and triggered in one direction in response to the output signal from its respective gating circuit and in the other direction in response to the one of said pulse generating periodic pulses corresponding to the position of said configuration with respect to the predetermined position in said predetermined line for providing an electrical signal individual to said configuration, and means responsive to said electrical signals derived from said converting means and to said electrical signal representative of said configuration for printing the characters and the configuration in accordance with the predetermined relation.

7. Apparatus for printing a multiple line label in accordance with characters represented by code arranged on a medium in successive columns, each column of code being arranged with respect to a timing mark on said medium, and for selectively printing a predetermined configuration in a predetermined position in one or more lines of said label in accordance with the code of a plurality of preselected characters each representative of a combination of said lines and in a predetermined position on said medium, the combination comprising means for scanning said medium and deriving output pulses in accordance with the code in each column and individual to the character represented thereby and a sync pulse derived from each of said timing marks, a ring counter having a number of units at least equal to the number of code columns comprising said label for providing a series of periodic output pulses, each unit being responsive successively to one of said sync pulses, distribution means responsive to said output pulses and the corresponding sync pulse for delivering successive electrical signals representative of the coded characters in each of said scanned columns, memory means associated with each of said label lines and connected to said distribution means, said memory means being responsive to said periodic output pulses for read-in and storage of the electrical signals associated with its respective line, pulse generating means for providing a series of periodic pulses, each of said periodic pulses being applied simultaneously to each of said memory means for successively reading out the stored electrical signals in a fixed order and in a predetermined relation to said electrical signals being stored, means responsive to the electrical signals successively read out of said memory means for converting said signals into an electrical signal individual to the character represented thereby, decoder means responsive to the electrical signals of said distribution means for converting said electrical signals into an electrical signal individual to the character represented thereby, a plugboard having two sets of contacts, one set of contacts being connected to said decoder means for posting the electrical signals corresponding to said preselected characters, a plurality of gating circuits equivalent in number to the number of label lines, each gating circuit having a first input connected to the other set of those contacts of said plugboard corresponding to the preselected characters associated with its respective line and a second input connected to the unit of said ring counter corresponding to the predetermined position on said medium of the preselected characters and providing an output signal only upon coincidence of an electrical signal corresponding to one of the preselected characters with the output pulse from the connected unit of said ring counter, bistable circuit means associated with each of said gating circuits and triggered in one direction in response to the output pulse from its respective gating circuit and in the other direction in response to the one of said pulse generating periodic pulses corresponding to the position of said configuration with respect to the predetermined position in the line for providing an electrical signal individual to said configuration, and means responsive to said electrical signals derived from said converting means to said electrical signal representative of said configuration for printing the characters and the configurations in accordance with the predetermined relation.

No references cited.