

Oct. 3, 1967

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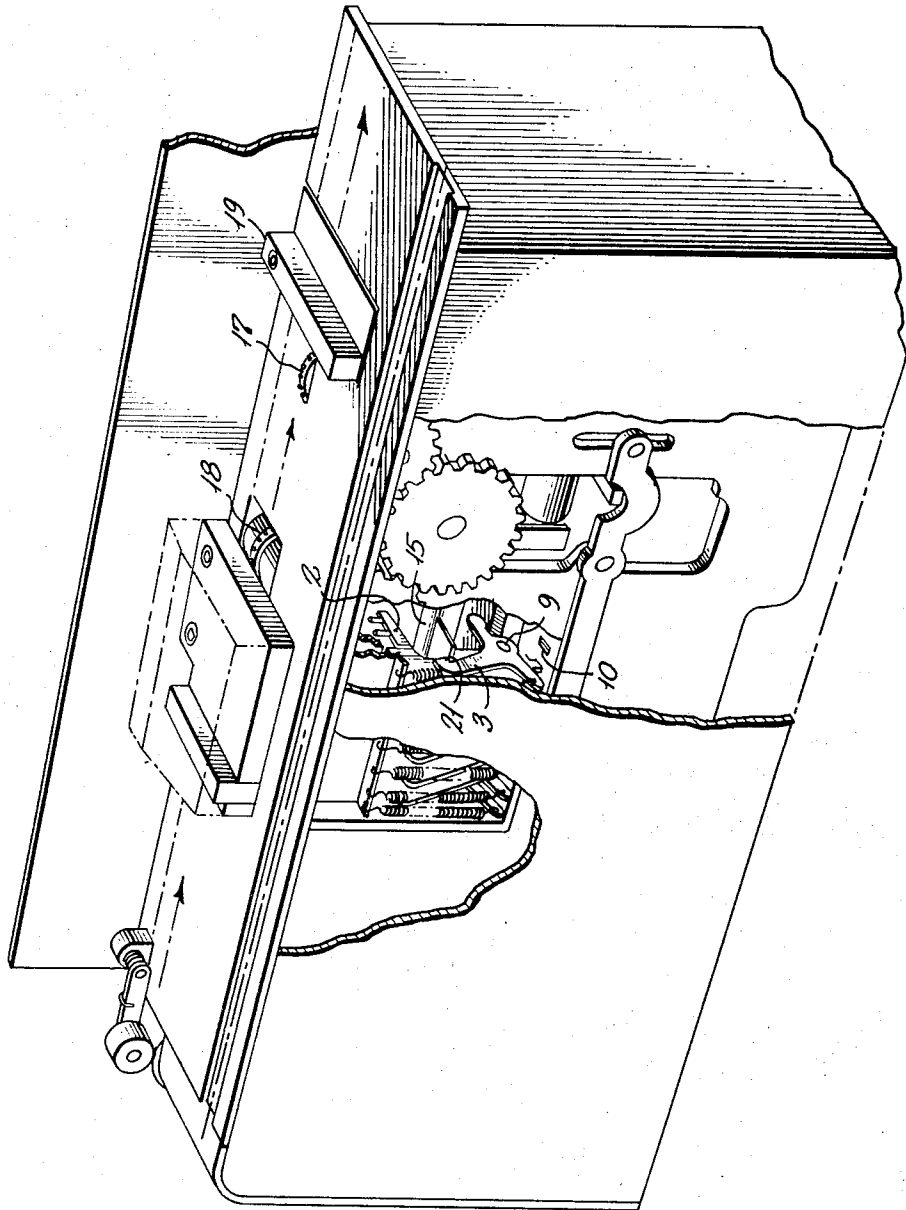
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PUNCHED TICKET PRINTER

Filed Nov. 29, 1965

3 Sheets-Sheet 1

*Fig. 1.*



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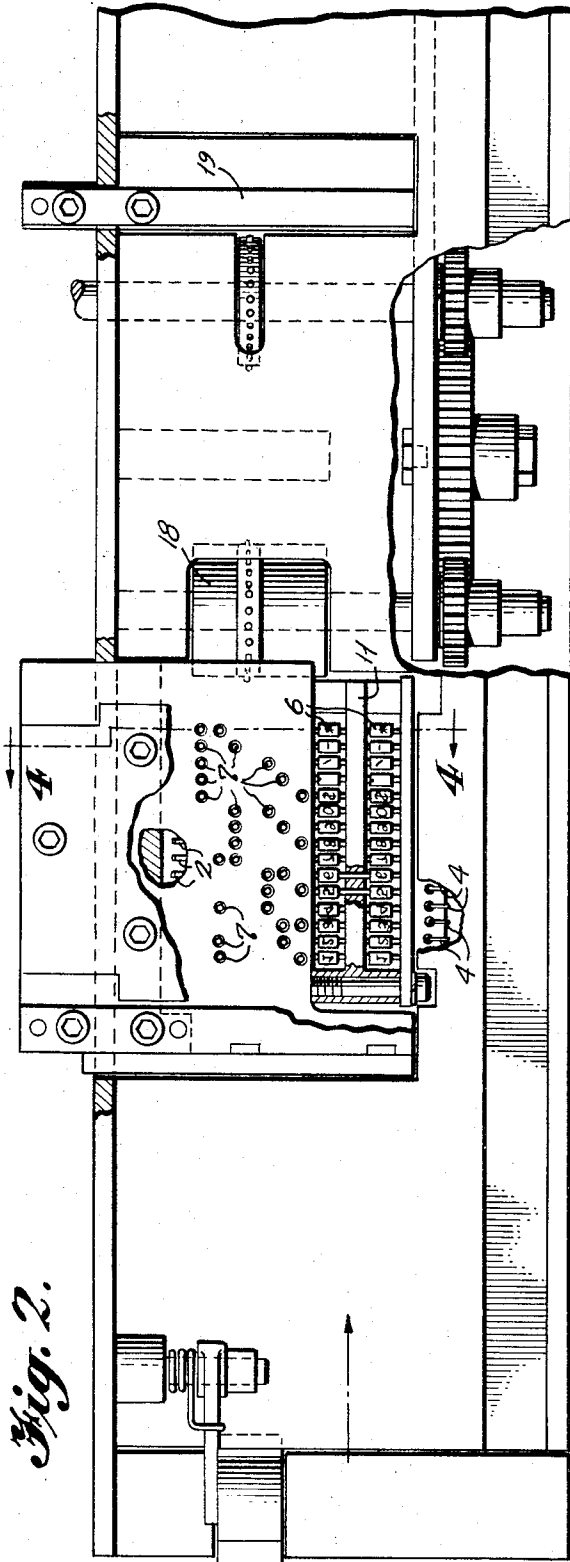
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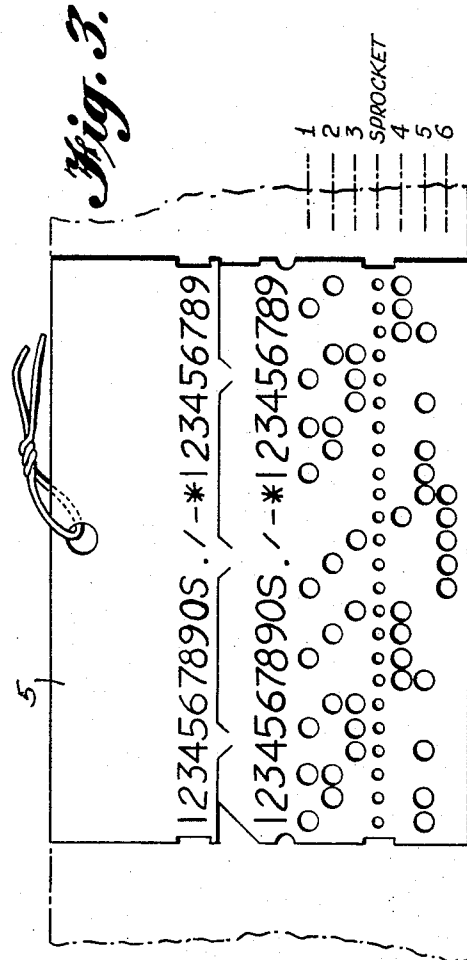
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*Fig. 2.*



*Fig. 3.*

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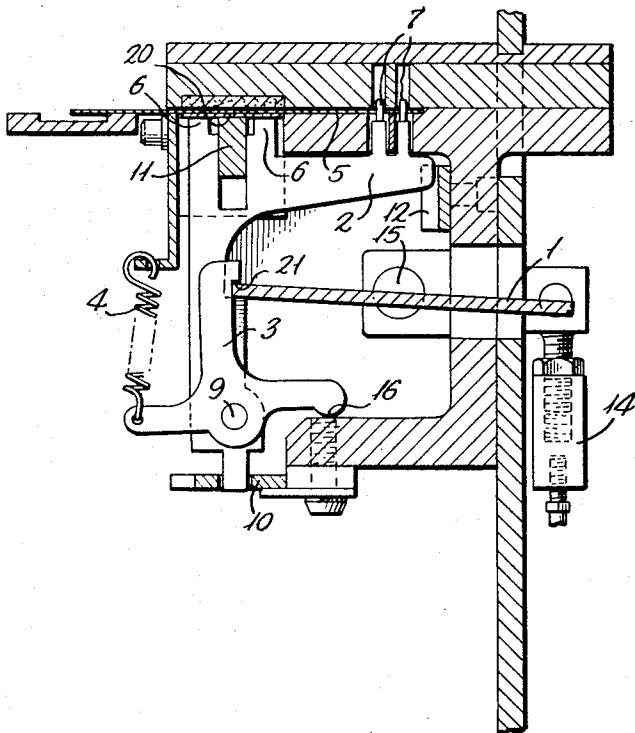
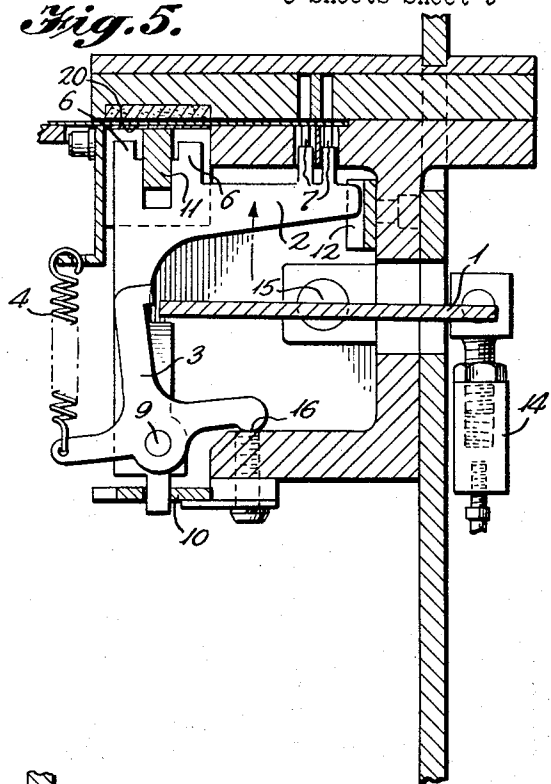
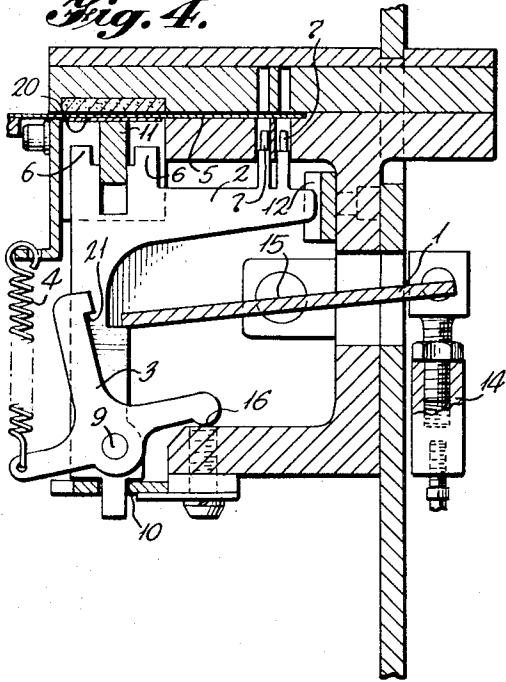
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3 Sheets-Sheet 3



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**PUNCHED TICKET PRINTER**

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Filed Nov. 29, 1965, Ser. No. 510,303

3 Claims. (Cl. 101-69)

This invention relates to a device for imprinting selected characters on an already punched paper tape. Mechanisms for punching the paper tape are known and one type is disclosed in my co-pending United States patent application entitled, "Tape Punch," filed Dec. 6, 1965, Ser. No. 511,824.

The invention will be further described in one specific embodiment. This embodiment is a machine to print the now common merchandise tag used in most retail stores. The ticket is attached to each garment offered for sale. The ticket is perforated so the half with only printing may stay with the garment while the lower half containing both printing and punched holes can be retained for inventory and accounting purposes. It will be apparent that this printing mechanism may be used in connection with many other types of coded punched cards where it is desired for the code to actuate a printing or other operation.

This invention utilizes an entirely mechanical sensing system as opposed to prior printing mechanisms which use rather complex electrical and electronic sensing systems. Furthermore, this invention, through the simplicity of its parts, offers much greater printing speed than heretofore achieved.

The invention will be further described in relation to the accompanying drawings in which:

FIGURE 1 is a perspective view of the machine with part of its cover removed to show the printing mechanism;

FIGURE 2 is a plan view of the machine with part of the cover above the printer removed;

FIGURE 3 is a typical punched ticket;

FIGURE 4 is a section taken on lines 4-4 of FIGURE 2 showing the particular print bar in the withdrawn position;

FIGURE 5 is the same print bar as FIGURE 2 in the raised position but prevented from printing as hereinafter explained; and

FIGURE 6 is the same view as FIGURE 5 but with the print bar actually printing on the card.

The printing mechanism of this invention is most useful in systems which require only a limited number of characters. As illustrated in FIG. 3, the particular embodiment is designed to imprint fifteen different symbols, the ten numerals, and five other symbols. On this machine the card or ticket which is printed may be any length. The card shown in FIG. 3 has 24 characters which is sufficient for most purposes.

The card shown in FIG. 3 has 6 channels (numbered on the side of the ticket) as well as the drive channel or sprocket holes which holes cooperate with sprocket wheels 17 and 18. The card shown in FIG. 3 is one of a series of cards forming a tape. If the code called for one hole in any of the 6 channels there would be a total of 6 characters represented on the ticket. The various possible combinations of two holes, as shown here, in the 6 channels yield 15 possible characters.

A conventional printing mechanism senses holes and adjusts its printing mechanism to the character corresponding to the code, and then prints. The present device, however, has a much simpler multi-station mechanism. Each mechanism senses only whether or not there is present in the tape at that station the combination of holes or code for which it is designed. If those holes

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are present the mechanism prints that particular character, and if not it does nothing. Thus to print 15 characters, it is necessary to have 15 printing mechanisms in adjacent printing stations.

5 This invention eliminates the large movements of conventional printers in which a printing wheel or bar must be moved to the selected character. The present invention therefore allows much higher printing speeds.

The card in FIG. 3 shows a printing code by way of example in which holes in channels 1 and 5 are the signal for numeral 1, while holes in channels 1 and 2 are the signal for numeral 3. This same order of holes is reproduced in the arrangement shown in FIG. 2 where, however, the card is fed through upside down for printing and therefore the code appears inverted from that shown in FIG. 1.

Thus, if a card with a code punched as in FIG. 3, after being punched at a punch station 19 with punching mechanisms such as disclosed in my co-pending application entitled, "Tape Punch," were fed through the machine of FIG. 2 in its normal sequence from right to left, no printing would occur as the card indexed over the first 14 stations. Each printing mechanism would sense for a code different than the one presented. On the fifteenth indexing cycle, however, each pair of holes would correspond to the code on the print bar at that station and all 15 characters would be printed at that moment. The card would then pass through 8 succeeding stations without printing, but on the 9th cycle would print the next 9 characters simultaneously. Thus during any indexing cycle any or all of the 15 print bars may operate depending on the code contained in the card.

The principal elements of my printing mechanism as shown in FIGS. 4-6 are a print bail 1 which contacts all of the print bars 2. Rotatably attached to each print bar through its pin 9 is an interposer 3.

The print bail 1 moves about the shaft 15 and is driven by the oscillating drive link 14. This drive link is interconnected with the ticket feeding mechanism which advances the ticket 1 column per oscillating cycle.

The lower end of each print bar 2 fits through an appropriately placed hole in the lower guide 10. Each print bar 2 is also held in place by suitably placed notches in a single upper guide 11 and by a similarly notched comb 12.

The interposer 3 contains two arms, one terminating in a knuckle 16 which rests on and pivots on the lower housing. The other arm provides an attachment for the biasing spring 4. This biasing spring 4 thus urges the interposer upward and through the pivot pin 9, also forces the print bar 2 upward.

When the print bail is in its lower position as shown in FIG. 4 it restrains the print bar and through it the interposer from moving upward and contacting the ticket. It is during this position of the cycle that the ticket is advanced one station.

As the print bail moves upward as shown in FIG. 5 or 6 the biasing spring 4 continues to urge the interposer 3 and print bar 2 upward until the sensing fingers 7 contact the ticket 5. The sensing fingers 7 shown in FIGS. 4, 5 and 6 are set for channels 5 and 6. Using the code in FIGS. 2 and 3 the illustrated print bar would contain the asterisk character (\*) on its printing surfaces 6.

In FIG. 5 the fingers 7 do not find holes in channels 5 and 6 and therefore rest on the ticket, held there by only the force of biasing spring 4. The print bar 2 can go no further up and therefore the printing surfaces 6 do not contact the ticket 5. The print bail continues its upward or clockwise motion without further engaging the print bar or interposer of this station. After the

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print bail reaches its maximum upward position, it returns, re-engaging the print bar 2, and forcing it and the interposer back to the position of FIG. 4.

FIG. 6 shows the upward position of the print bail 1 when the fingers 7 have detected holes in both channels 5 and 6. These fingers pass through the holes allowing the print bar 2 to follow the print bail up until the two printing surfaces 6 rest against the ink ribbon 20 and ticket 5. As the print bar 2 moves upward the interposer 3 pivots around its knuckle 16 and the upper lip 21 engages the print bail just short of the maximum upward position. This allows the print bail to give the additional force to the printing operation required when using conventional inked ribbons between the printing characters and the ticket. After printing the ticket, the print bail again withdraws the print bar during the downward cycle before the ticket is indexed to the next station.

I have described as required by law a specific embodiment of my invention which is the best mode known to me at present. Variations and improvements on this particular embodiment and other applications of the disclosed mechanism without parting from the broader aspects of my invention will be apparent to those skilled in the art. I desire, therefore, not to be limited by the foregoing specification but only by the following claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A mechanism for printing selected characters corresponding to coded punched holes on paper tape comprising a separate print bar for each character, said print

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bars being in parallel alignment and spaced apart a distance equal to the spacing of the characters to be printed on said tape, each print bar having a character type and spaced fingers extending beyond and in a code corresponding to said character type for passing through the coded punched holes corresponding to that character, means for positioning and holding the paper tape in the path of the coded fingers and character types, means for simultaneously urging all print bars against the paper tape, whereby only the character types of those print bars which have print bar fingers passing through correspondingly coded holes in the tape will imprint their characters on the tape.

2. The mechanism of claim 1, including means for indexing the tape at successive stations and reciprocating means to withdraw the print bars from the tape while the tape is indexed from one station to another.

3. The mechanism of claim 2 wherein said reciprocating means include means to force the character type of the print bars against the tape with additional force, said means being engaged by the movement of said fingers through said paper tape.

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30 ROBERT E. PULFREY, *Primary Examiner*.

W. McCARTHY, *Assistant Examiner*.