

C. B. LIVERMORE.  
TICKET PUNCH.  
APPLICATION FILED APR. 16, 1908.

912,142.

Patented Feb. 9, 1909.

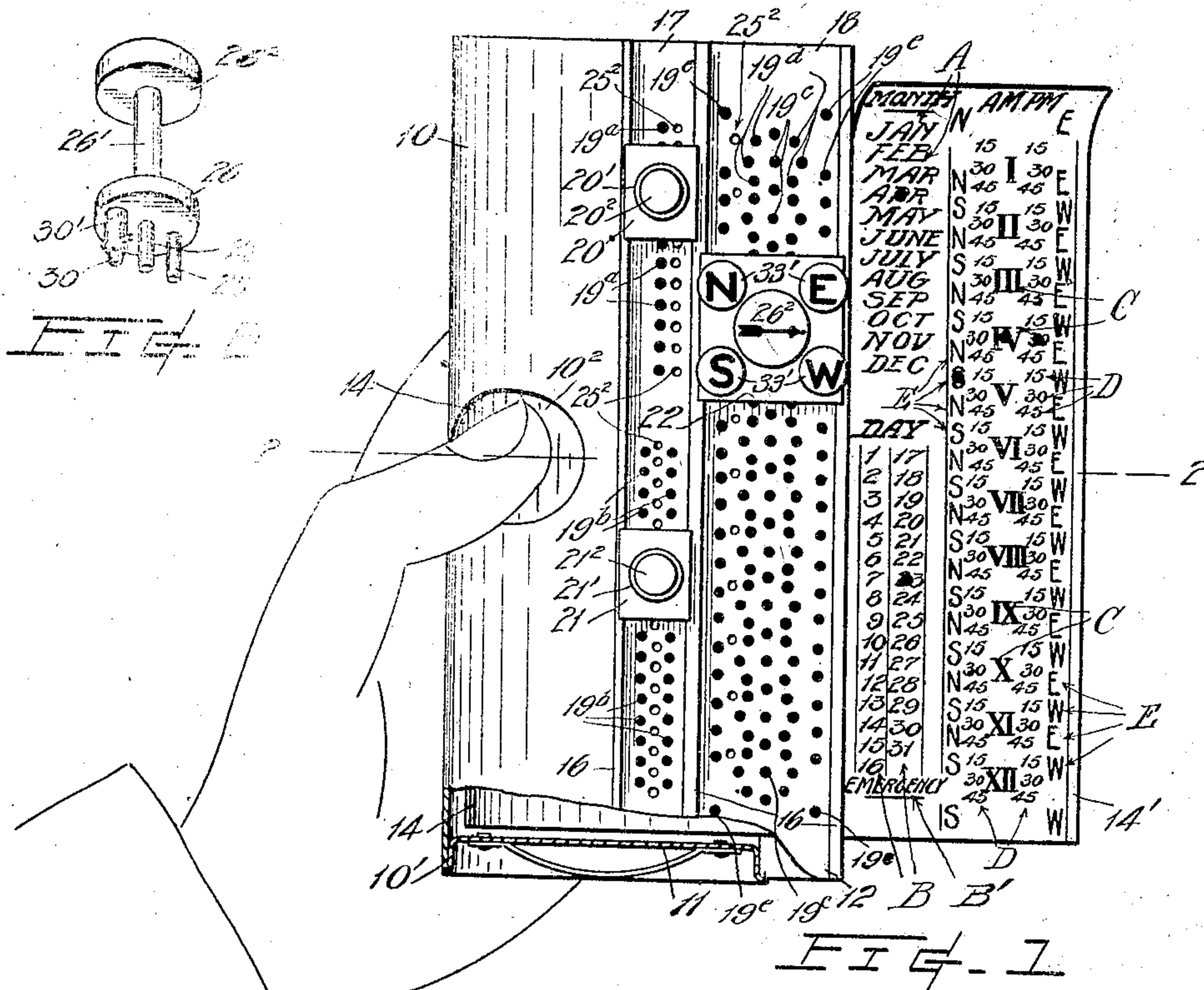


FIG. 1

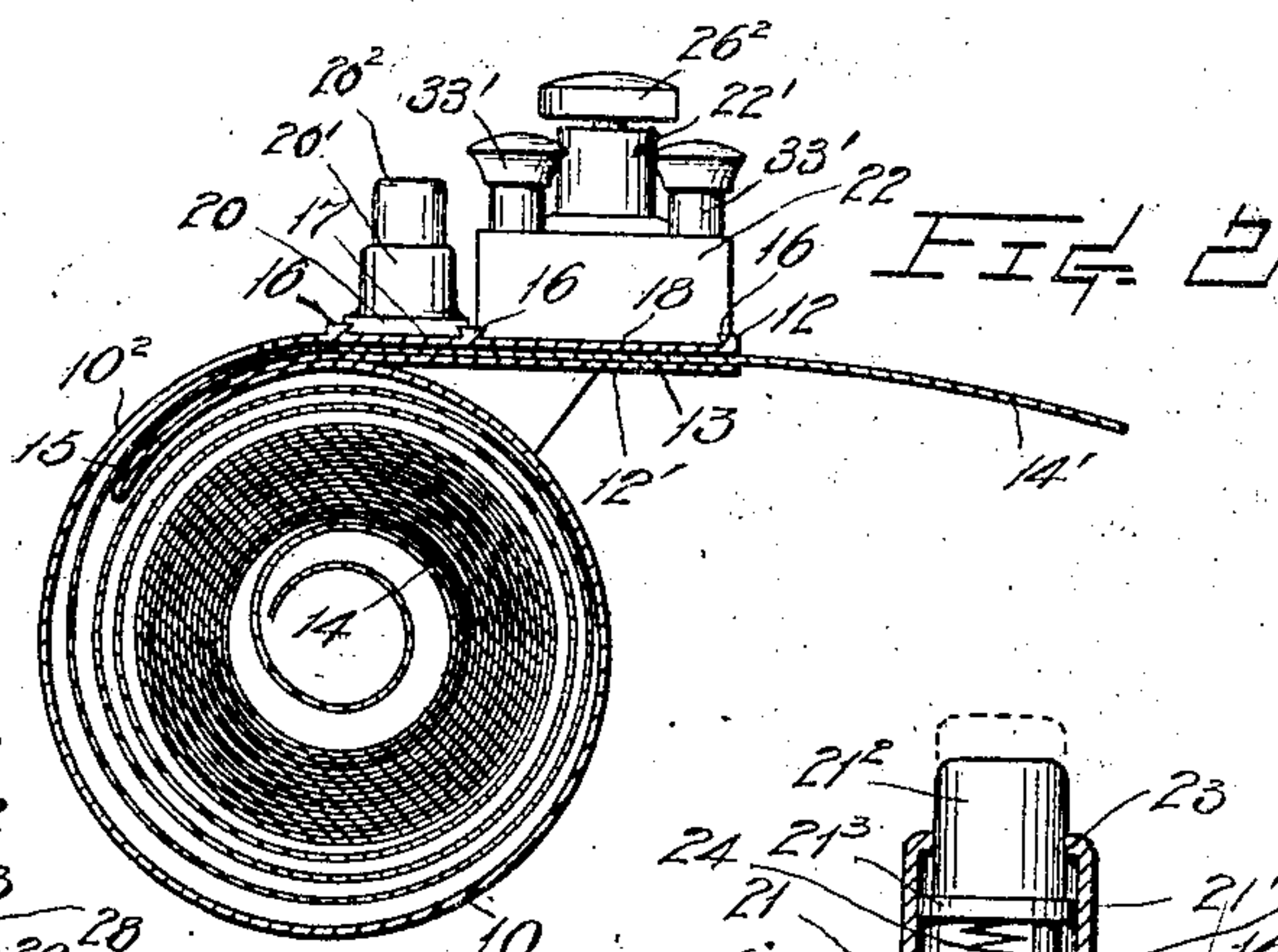


FIG. 2

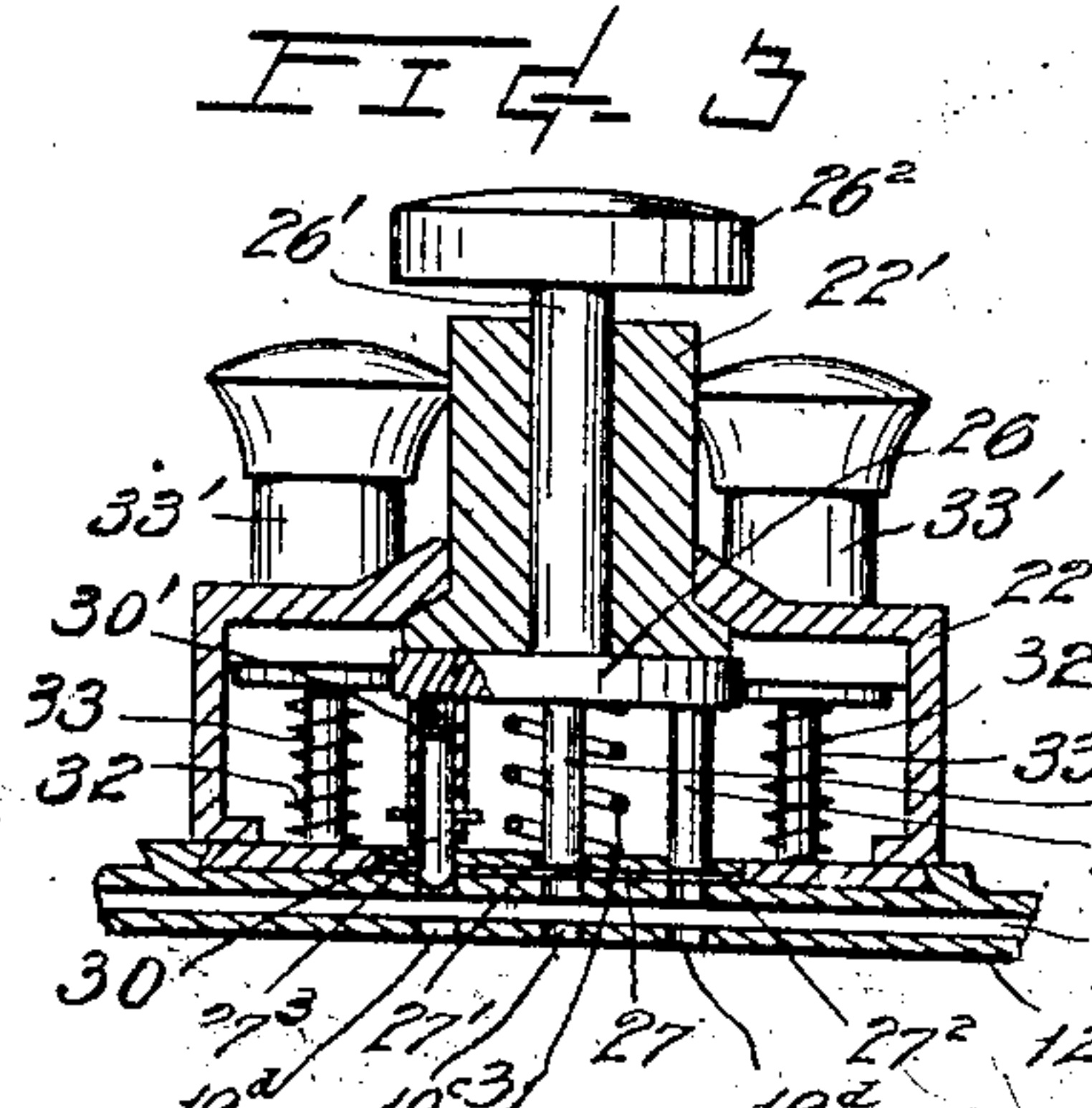


FIG. 3

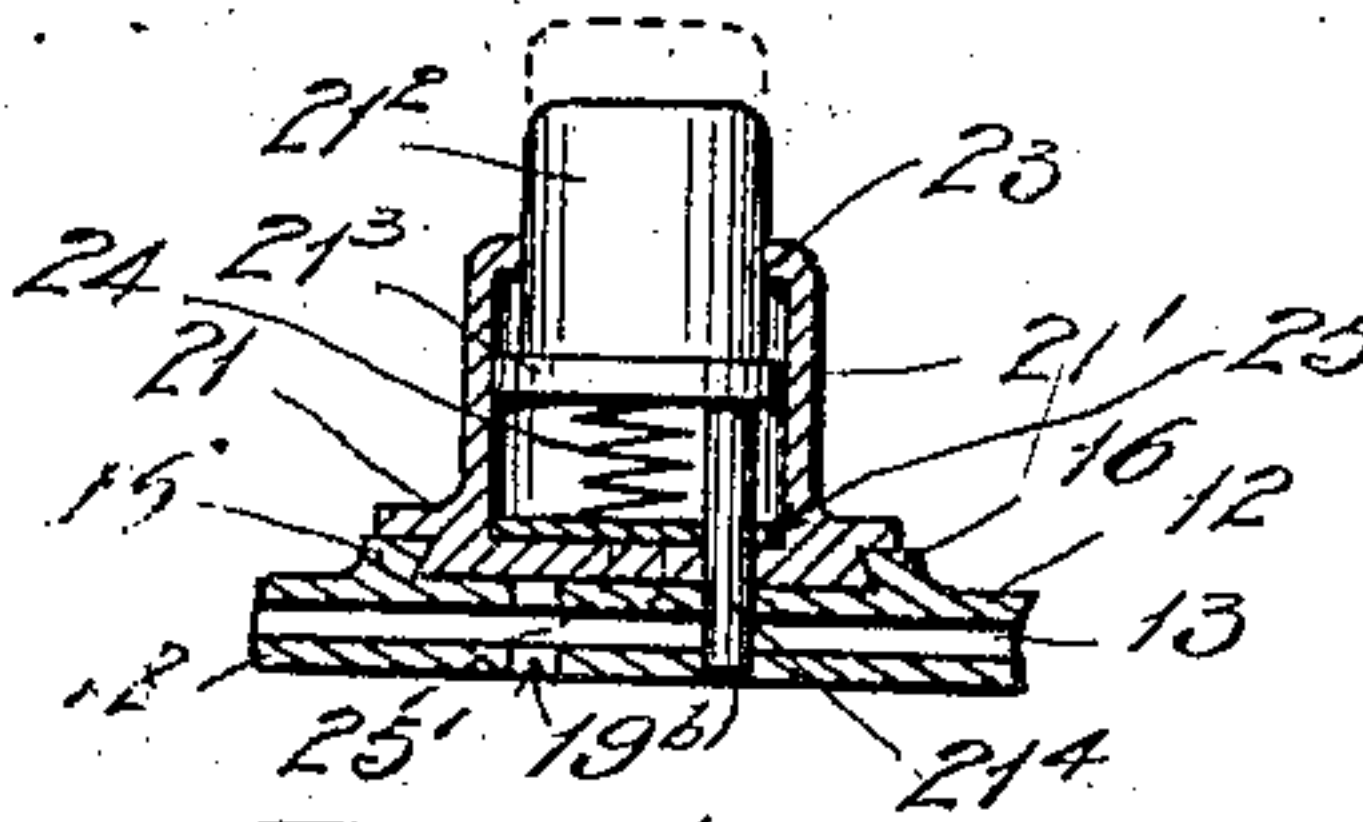


FIG. 4

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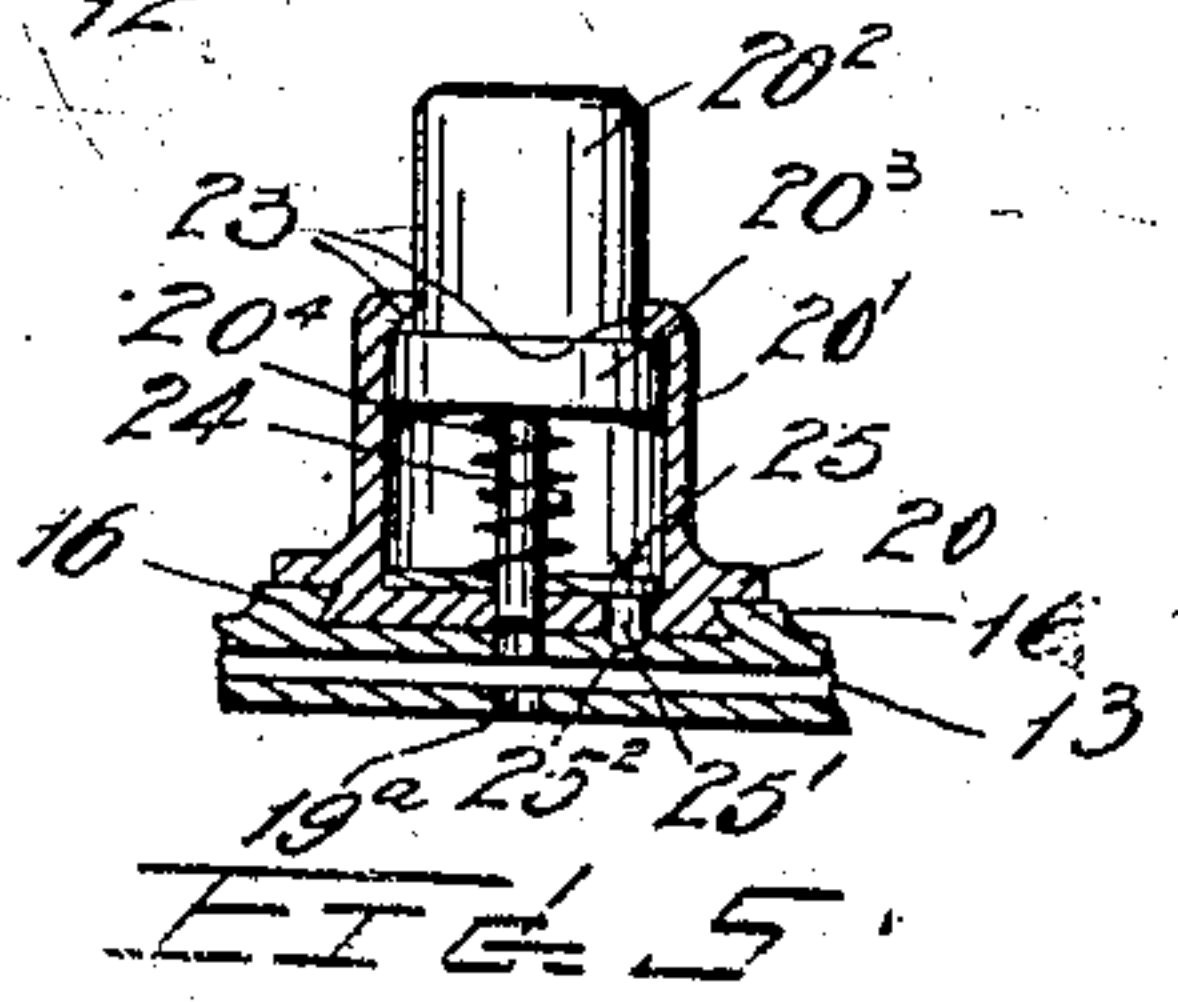


FIG. 5



# UNITED STATES PATENT OFFICE.

CHARLES B. LIVERMORE, OF SEATTLE, WASHINGTON.

## TICKET-PUNCH.

No. 912,142.

Specification of Letters Patent.

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Application filed April 16, 1908. Serial No. 427,559.

*To all whom it may concern:*

Be it known that I, CHARLES B. LIVERMORE, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful improvements in Ticket-Punches, of which the following is a specification.

This invention relates to holders and punches for that class of railway tickets known as transfers; and the object of the invention is to produce a device combining these functions, which will be efficient and convenient in use, and whereby the issuance of transfers is greatly facilitated.

With these ends in view, the invention consists in a holder of a roll of paper which is printed to afford a plurality of transfer tickets, together with means for perforating the tickets as they are individually fed through a guideway.

The invention further consists in the novel construction, adaptation and combination of devices, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of devices embodying my invention. Fig. 2 is a cross sectional view taken through 2—2 of Fig. 1. Figs. 3, 4 and 5 are detail cross sectional views; and Fig. 6 is a perspective view of a portion of the time-punch to illustrate the construction of its die.

According to this invention, I employ a casing having a cylindrical body 10 with an open end 10' which is provided with a removable closure 11. Integral with the body is a tangentially arranged plate 12 formed in a plane for at least the width of a ticket and is provided with a slot or guideway 13 of at least the length of a ticket. This slot communicates with the interior of the casing body, and the end 14' of a roll of paper 14 which is inserted within the casing is threaded into said slot.

Within the casing and contiguous with that part 12' of said plate which is below the slot is a curved shield 15 which serves to direct the paper into the slot and also affords a backing so that the conductor can frictionally engage the paper with his thumb through an aperture 10<sup>2</sup> in the casing for causing the paper to be progressively shifted through said slot 13.

Upon the top side of the plate 12 are longitudinal ridges 16 which are undercut to furnish dove-tail lateral edges or guideways 17 and 18, and within which ways the plate

is provided with spaced holes 19<sup>a</sup>, 19<sup>b</sup>, 19<sup>c</sup>, 19<sup>d</sup>, and 19<sup>e</sup> which register with the respective markings upon the ticket when the latter is suitably located in the slot 13 for appropriately perforating the same.

The paper is properly printed to furnish a stock for a plurality of tickets severally provided with certain designating characters, as for example, such as illustrated in the protruding portion thereof in Fig. 1. These characters desirably include the names of the months, as A, arranged in a single row and immediately above a double row of numbers B indicating the days of the month. In another column is indicated by numbers C the hours of a day, and others, D, certain aliquot parts thereof, as the quarter hours, preferably expressed in minutes, as "15", "30" and "45", disposed in duplicate and in close relation with the respective hour marks C. The tickets are likewise provided with marks E indicative of the four cardinal points of the compass, and which are grouped about each of the hour marks. Each ticket is also advantageously provided with a mark, or name, as B', for use in designating special services not otherwise provided for.

In carrying out my invention I provide punch devices for perforating the tickets. These punch devices are respectively mounted in chamfered blocks 20, 21, and 22 which are formed at their lower ends with dovetails and of such sizes that the first two will slidably fit in the way 17 and the other in the way 18. The blocks for the punches for perforating the selected month and day marks of a ticket are formed with cylindrical heads 20' and 21' which are open at the top with inwardly directed marginal flanges 23 upon each, and seated slidably in the respective heads are plungers 20<sup>2</sup> and 21<sup>2</sup> which are provided with peripheral collars 20<sup>3</sup> and 21<sup>3</sup>. A spring 24 is provided in each of the block chambers to serve to normally retain said plungers in their uppermost positions. Connected with each of said plungers is a downwardly extending pin, as 20<sup>4</sup> and 21<sup>4</sup>, forming the punches proper and which when caused to pass through the selected holes 19<sup>a</sup> and 19<sup>b</sup> effect the perforation of the ticket.

In order to adjust the pins in axial alignment with the selected of said holes, stop devices are employed. These devices may comprise a plate 25 in each of the blocks which is yieldingly pressed down by the re-



spective springs 24 and have a stud 25' on each plate which is arranged to catch in spaced cavities or indentations 25<sup>2</sup> in the plate, 12.

5 To correspond with the illustrated arrangement of the ticket the pin 20<sup>4</sup> of the month perforator is disposed axially with the plunger 20'; and the one for the day marks 21<sup>4</sup> is disposed eccentrically, as shown  
 10 in Fig. 4, so as to allow of its registering with the holes over either of the vertical rows 19<sup>b</sup> and, in consequence, necessitates the block 21 being turned about, by withdrawing from the way 17, when the pin 21<sup>4</sup>  
 15 is not in the proper row. The other block 22 carries the punches for accomplishing the perforations of the marks upon the ticket to designate the time and compass directions. Of these punches the one for punching the  
 20 hour and the subdivisions thereof consists of a disk 26 having an axially arranged stem 26' which passes through a plunger 22' and terminates in a head 26<sup>2</sup>. Seated for rotation in the bottom of the chamber of  
 25 block 22 is a disk 27 which is perforated with a central hole 27' and symmetrically disposed holes 27<sup>2</sup> which are respectively spaced to register with a group of the holes 19<sup>c</sup> and 19<sup>d</sup> of the casing plate. Extending down-  
 30 wardly from the disk 26 and fitted for reciprocation in holes 27' and 27<sup>2</sup> in the disk 27 are pins 28 and 29 arranged so that the former, 28, will take with the selected of the holes 19<sup>c</sup> and the other, 29, with the appro-  
 35 priate one of the holes 19<sup>d</sup>. Diametrically opposite the pin 29 is a spring pressed stud 30 having a semi-globular extremity which is seated in a socket 30' secured to disk 26 and extends through a hole 27<sup>2</sup> in disk 27  
 40 and yieldingly engages in one of the holes, 19<sup>d</sup>. This stud serves to retain the pin 29 in set position. The position of the pin 29 with relation to the pin 28 is indicated by an index mark, such as an arrow, upon the  
 45 head 26<sup>2</sup> so that it may be rotatively adjusted to coincide with a predetermined mark D of the ticket. 31 is a spring interposed between the disks 26 and 27 for resiliently retaining the latter in operative  
 50 condition and the other in a raised inoperative position. Also carried by this block are punches, such as 33, arranged to be in the rows of holes 19<sup>c</sup> which correspond with the ticket marks E and are operated by  
 55 plungers 33' against the action of springs 32. These plungers are designated by index marks N, S, E and W denoting the cardinal compass points and are spaced so as to coincide with the marks E of the ticket which  
 60 are in proximity of the hour mark to which the block is set.

The operation of the invention may be described as follows: A strip of paper with the  
 65 aforescribed printed matter thereupon to constitute a plurality of transfer-tickets is

introduced into the casing-part 10 in the form of a roll and its outer end 14' threaded into and fed by the conductor's thumb through the guide-slot 13 of the casing-plate 12 until the extremity of the strip is flush with the  
 70 mouth of the slot. When the strip is in this condition one of the tickets is in the slot so that the various markings thereon will be immediately below the correspond-  
 75 ingly spaced holes in the upper part of the plate 12. The blocks, if not already in proper position are shifted to bring the punch thereof into registering position with respect to those of the holes through which the sev-  
 80 eral punch pins will pass to perforate the ticket to predeterminately designate the same according to the special require-  
 85 ments of the particular ticket. For example, assuming that the ticket is to indicate that the transferee is to employ the ticket at a  
 90 junction point upon a south-bound car and it must be used upon the day of issue, say April 23rd, before a certain time limit, as four-thirty, p. m.

To punch the ticket to conform with such  
 90 requirements the blocks 20 and 21 are shifted along the groove 17 until the punch-pins 20<sup>4</sup> and 21<sup>4</sup> will respectively be in position to register with the holes of 19<sup>a</sup> and 19<sup>b</sup>  
 95 which will be directly in line with the month name "April" and the number "23" of the ticket; the block 22 is then slid in its groove 18 to bring the punch-pin 28 over  
 100 the hole in the row 19<sup>c</sup> which corresponds with the "IV" mark on the ticket and by manipulating the head 26<sup>2</sup> of this block, as indicated by the arrow, so as to present the  
 105 punch-pin 29 in line with the hole of group 19<sup>d</sup> which will indicate "30" upon the ticket and toward the right, for afternoon. The  
 110 punches are now in perforating position.

With thumb pressure exerted successively downwardly upon the plungers 20<sup>2</sup>, 21<sup>2</sup> the month and day are perforated upon the ticket and the like pressure upon the head 26<sup>2</sup> and  
 115 the plunger 33' denoted by "S" will effect the perforation of the ticket for the hour, minute and compass direction. After the ticket is thus punched, it is protruded from the slot and torn off from the strip by a  
 120 shearing cut along the outer edge of the plate 12.

The invention is easy to operate, and may be carried in the coat pocket of a car conductor. The adjusting of the blocks will  
 125 obviously not have to be done with every transfer issued, in fact, they may be positioned for an entire trip before leaving the place of departure, and from time to time simply rotating the head 26<sup>2</sup> to progress-  
 130 ively mark off the time.

Having described my invention, what I claim, is—

1. In a device of the class described provided with a perforated plate with a slot 130



extending therethrough, a chambered block arranged to be adjustably moved upon the plate, a plunger carried by the block and extending within the chamber of the block, 5 a stem extending axially through the plunger and provided with an operating head exteriorly of the plunger and a disk situated within the block chamber and below the plunger, punch pins carried by the disk and 10 disposed so that one will be in axially of said stem and the other eccentric thereto, a socket member carried by the head, a spring-pressed stud carried by said socket member, a rotatable disk having holes to 15 receive the ends of said pins and the stud, and a spring interposed between the aforesaid disks.

2. In a device of the class described provided with a perforated plate with a slot extending therethrough, a chambered block arranged to be adjustably moved upon the plate, a plunger carried by the block and extending within the chamber of the block, a stem extending axially through the plunger 25 and provided with an operating head exteriorly of the plunger and a disk situated within the block chamber and below the plunger, punch pins carried by the disk and disposed so that one will be in axially of said 30 stem and the other eccentric thereto, a socket member carried by the head, a spring-pressed stud carried by said socket, a rotatable disk having holes to receive the ends of said pins and the stud, a spring interposed 35 between the aforesaid disks, four other plungers carried by the head and respectively provided with punch-pins, and a spring for each of the last named plungers.

3. In apparatus of the class described, the combination with a strip of paper having 40 transfer tickets marked thereon, of a casing for such strip of paper and comprising a chambered body provided with an openable end, an aperture in said body, and a plate extending from said body and provided with 45 a slot which communicates with the interior of the body, said plate being formed with longitudinal ways and provided with a plurality of spaced holes, a chambered block arranged to be adjustably mounted upon the 50 plate, a plunger carried by the block and extending within the chamber of the block, a stem extending axially through the plunger and provided with an operating head exteriorly of the plunger and a disk situated within the block chamber and below the plunger, punch pins carried by the disk and disposed 55 so that one will be axially of said stem and the other eccentric thereto, a socket member carried by the head, a spring pressed stud carried by said socket member, a rotatable disk having holes to receive the ends of said pins and the stud, and a spring interposed 60 between the aforesaid disks.

4. In combination with a casing formed 65 with a chambered body and a perforated plate extending therefrom, said plate being provided with a slot extending its entire width and communicating with the interior of the body, a chambered block arranged to 70 be adjustably mounted upon the plate, a plunger carried by the block and extending within the chamber of the block, a stem extending axially through the plunger and provided with an operating head exteriorly of 75 the plunger and a disk situated within the block chamber and below the plunger, punch pins carried by the disk and disposed so that one will be axially of said stem and the other eccentric thereto, a socket member carried 80 by the head, a spring pressed stud carried by said ticket member, a rotatable disk having holes to receive the ends of said pins and the stud, and a spring interposed between the aforesaid disks. 85

5. In combination with a casing formed with a chambered body and a perforated plate extending therefrom, said plate being provided with a slot extending its entire width and communicating with the interior 90 of the body, a chambered block arranged to be adjustably moved upon the plate, a plunger carried by the block and extending within the chamber of the block, a stem extending axially through the plunger and provided 95 with an operating head exteriorly of the plunger and a disk situated within the block chamber and below the plunger, punch pins carried by the disk and one disposed axially of said stem and the other eccentric thereto, 100 a socket member carried by the head, a spring pressed stud carried by said socket, a rotatable disk having holes to receive the ends of the pins and the stud, a spring interposed between the aforesaid disks, four other 105 plungers carried by the head and respectively provided with punch pins, and a spring for each of the last named plungers.

6. In apparatus of the class described, the combination with a strip of paper having 110 transfer tickets marked thereon, of a casing for such strip of paper and comprising a chambered body provided with an openable end, an aperture in said body, a plate extending from said body and provided with a 115 slot which communicates with the interior of the body, said plate being formed with longitudinal ways and provided with a plurality of spaced holes, a chambered block arranged to be adjustably moved upon the 120 plate, a plunger carried by the block and extending within the chamber of the block, a stem extending axially through the plunger and provided with an operating head exteriorly of the plunger and a disk situated within 125 the block chamber and below the plunger, punch pins carried by the disk and one disposed axially of said stem and the other

eccentric thereto, a socket member carried by the head, a spring pressed stud carried by said socket, a rotatable disk having holes to receive the ends of the pins and the stud,  
5 a spring interposed between the aforesaid disks, four other plungers carried by the head and respectively provided with punch

pins, and a spring for each of the last named plungers.

CHARLES B. LIVERMORE.

Witnesses:

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HORACE BARNES.