

No. 839,458.

PATENTED DEC. 25, 1906.

H. H. CUMMINGS.

TICKET PRINTING AND DELIVERING MACHINE.

APPLICATION FILED APR. 30, 1906.

3 SHEETS—SHEET 1.

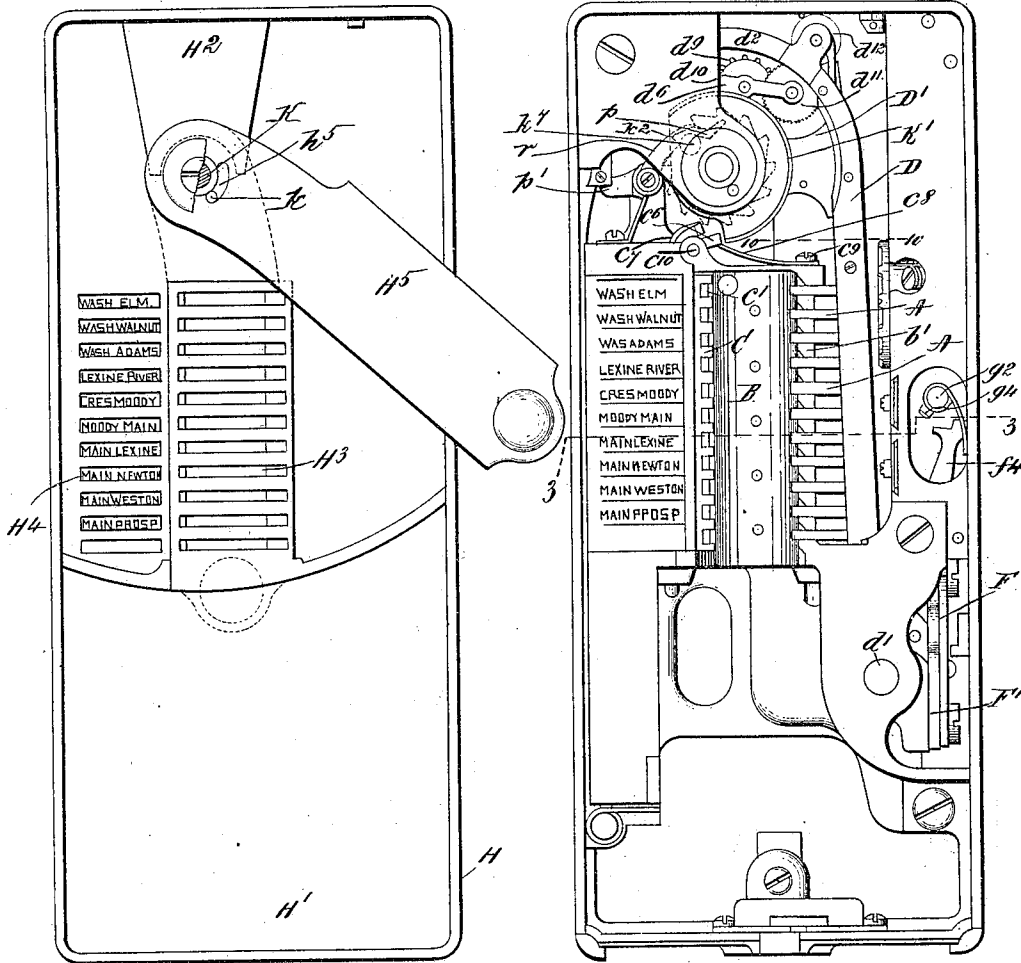


Fig. 1.

Fig. 2.

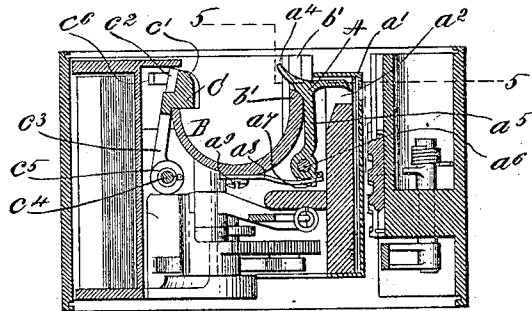


Fig. 3.

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3 SHEETS—SHEET 2.

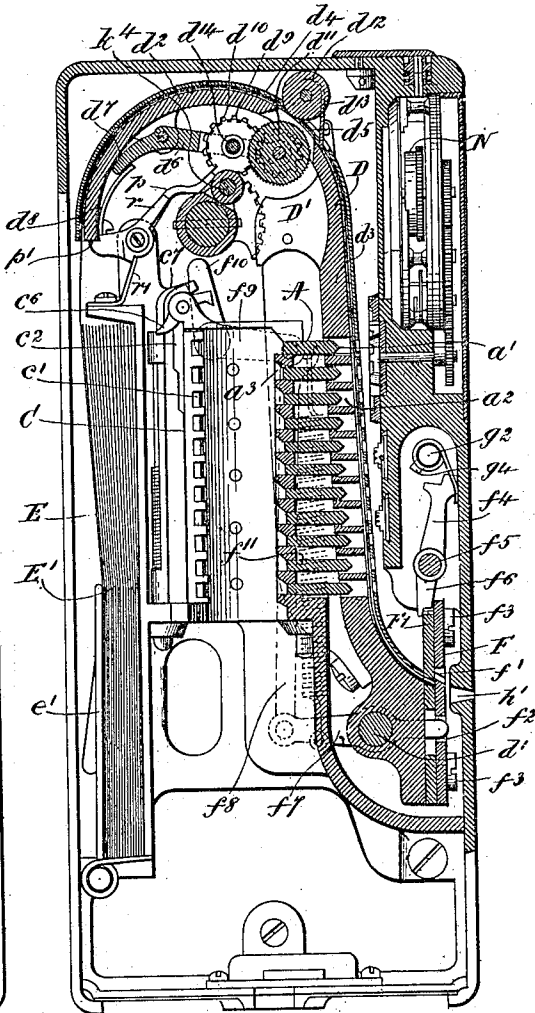
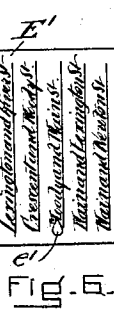


Fig-5.



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3 SHEETS—SHEET 3.

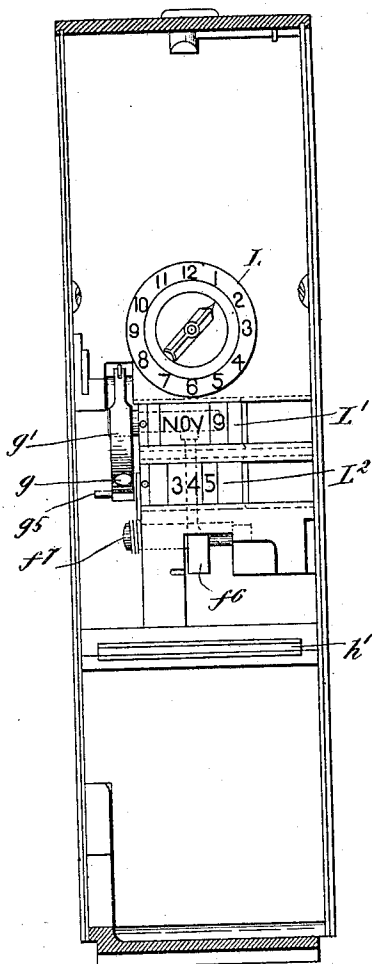


Fig. 7.

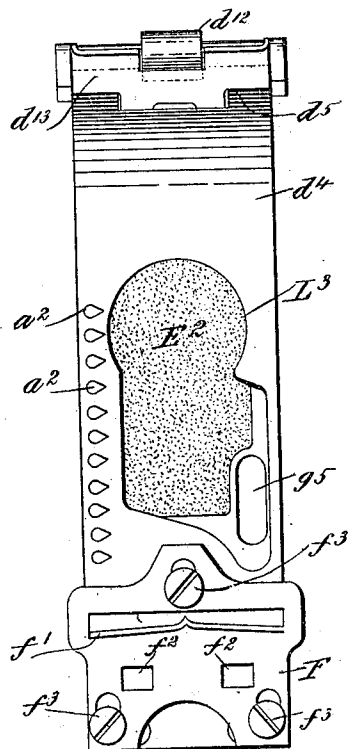


Fig. 8.

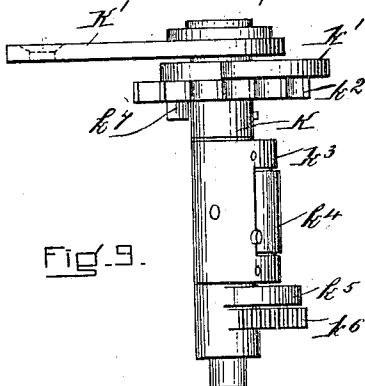


Fig. 9.

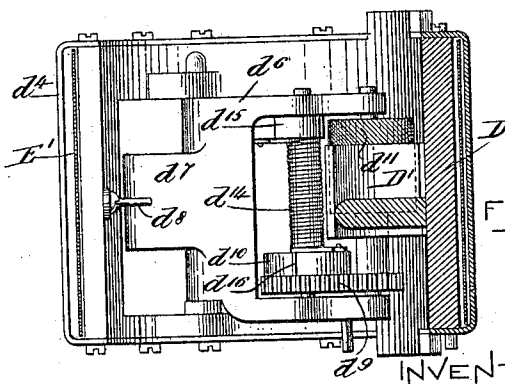


Fig. 10.

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UNITED STATES PATENT OFFICE.

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TICKET PRINTING AND DELIVERING MACHINE.

No. 839,458.

Specification of Letters Patent.

Patented Dec. 25, 1906.

Original application filed November 15, 1905, Serial No. 287,438. Divided and this application filed April 30, 1906.
Serial No. 314,399.

To all whom it may concern.

Be it known that I, HENRY H. CUMMINGS, a citizen of the United States, and a resident of Newton, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Ticket Printing and Delivering Machines, of which the following is a specification.

My invention relates to ticket impressing, printing, and delivering apparatus; and it consists in sundry mechanical improvements by the aid of which a ticket-strip is stamped or printed, delivered, and severed into convenient lengths by the automatic operation of a train of mechanical devices. In the embodiment of my invention illustrated in the drawings and described hereinbelow these operations are accomplished in a stated cycle which cannot be initiated or repeated until a coin is introduced into the mechanism, as my inventions and improvements are designed and adapted to furnish the operators of railway-cars or other public conveyances with an efficient, convenient, reliable, mechanical safeguard against the fraudulent use by employees of transfer-slips which are at the present time so generally used. It will be found preferable, and in most cases, I believe, practically necessary, to have the ticket stamping, delivering, and severing mechanism associated with a coin-controlled mechanism, so that only under the condition of introducing a coin, check, or other object can the train of mechanism be set in motion. The coin-controlled apparatus which forms a part of the mechanism in which my invention is embodied and with which it is associated is the subject-matter of another application for patent filed by me November 15, 1905, of which the present application is a division, and while the said coin-controlled apparatus is reserved for claim in the said prior application as the ticket printing, delivering, and severing mechanism and is intimately associated mechanically with the said coin-controlled mechanism it will be described hereinbelow.

In the drawings hereto annexed, Figure 1 is a front elevation of the casing of my ticket marking and delivering mechanism, showing the operating-handle and the coin-apertures. Fig. 2 is a view of the same with one of its

covers removed. Fig. 3 is a section taken on the line 3 3 of Fig. 2. Fig. 4 is a view of the rear of the device with the cover removed from the casing. Fig. 5 is a section along the line 5 5 of Fig. 3. Fig. 6 illustrates one of the tickets after it has been marked and severed from the strip, the time-stamp impression upon said ticket not being shown in this figure. Fig. 7 is a view of the interior of the casing, showing the side of the timepiece-compartment, the slot wherethrough the ticket-slip emerges, and the time-stamp dial and other stamping-type which may be supplied, if desired. Fig. 8 is a view of the strip-holder and strip-severing devices shown removed from the casing. Fig. 9 is an elevation, on an enlarged scale, of the main operating-shaft of the machine; and Fig. 10 is a sectional view from below, on a similar enlarged scale, along the line 10 10, Fig. 2, showing the inside of the upper and curved portion of the strip-holder.

The ticket marking and delivering mechanism is inclosed in a metallic case or box H, Fig. 1, provided with sliding covers, as H', which may be locked in position. For convenience the casing may be supplied externally with clips or links (not shown) whereby to suspend it around the neck of the railway-car conductor or other official. In the front cover H', I provide a number of parallel slots H³, each of which is of the proper size to admit of the passage of a coin—say a five-cent piece—and alongside of the slots H³ I provide also a series of slots H⁴, through which may be displayed to view a tablet, which rests just under the cover H' and on which may be printed, as shown, the appropriate names or abbreviations thereof of as many streets or routes as may be provided for by transfers to be issued by the railway-conductor carrying this ticket stamping, marking, and delivering device. The handle H⁵ is pivoted to swing externally over the sliding cover H', carrying the shaft K, and is provided with a segmental slot h⁵, through which projects the driving-pin k of the shaft K, this slot permitting the handle H⁵ to be swung freely back and forth through the angular distance subtended by the slot h⁵. A cut-away portion of the cover H' is filled by the plate H², so that the cover H' may be slid outward under the han-

dle H⁵ and past the shaft K. Referring to Fig. 5, it will be seen that inside the casing H, I provide a compartment or receptacle E, in which is laid the ticket-strip E', the same being folded back and forth upon itself, so that a considerable length of strip may be laid compactly in a small space. A light spring e' holds the folded strip E' in proper position. The end of this strip is led upward and through the strip-holder D under the thin sheet-metal cover d⁴ and down the substantially vertical portion d³ of the strip-holder to a point near the cutting mechanism F. At regular intervals along the strip E' perforations E³ are made. (See Fig. 6.) Each measured space on the ticket-strip E' is printed with the matter appropriate to the situation, the transfer destinations being printed in a column to correspond with the column of coin-apertures H³.

Preliminary marking of the ticket-strip.—Directly beneath the coin-apertures H³ there is placed a semicylindrical coin-receptacle B, Figs. 2 and 3, and at one side of this coin-receptacle (to the right thereof as viewed in Fig. 2) appear the series of ticket markers or perforators A, whereof the perforating or marking points a' lie in the apertures a² in the strip-holder D, the wipers a⁴ standing in the path of one edge of the inserted coin and the standards a⁵ being pivoted to a rod a⁶ and provided with feet a⁷, against which press the leaves a⁸ of the spring secured to the base of the coin-receptacle B by screws, as a⁹. When a passenger on handing his fare to the conductor says, for instance, that he wishes a transfer to Moody and Main streets, the conductor slips a five-cent piece into the slot H³, which stands abreast of the words "Moody-Main" which shows through one of the slots H⁴, as illustrated in Figs. 1 and 2. This act of insertion of the coin causes one edge of the coin to press against the wiper a⁴ and to thrust the marker A sidewise, so that the marking-point a' passes into the aperture a² and makes a mark or perforation in the ticket-strip, which after the ticket has been removed and severed in the manner to be described will show somewhat as the mark e' in Fig. 6.

Release of the stamping and feeding mechanism.—As the coin inserted in one of the slots H³ is further pressed into the coin-receptacle B it must pass into and through one of the notches c' in the rocker-plate C, and to accomplish this the rocker-plate C will rock to the left, as shown in Fig. 3, the other side of the coin pressing upon the edge b' of the receptacle B as an abutment. The rocker C is provided with a wiper c² and with arms c³ and pivot-pin c⁴ and a spring c⁵, which normally urges the rocker-plate C to the position shown in Figs. 2 and 3. When the rocker-plate C is in this normal position, the latch c⁶, Fig. 2, is held upward by the spring c⁸ (se-

cured by the screw c⁹) into the path of the segmental disk k', so that the shaft K, to which the segmental disk e' is secured, may not rotate. The rotation of the shaft K in the opposite direction is controlled and restrained by the pawl r, which is controlled by the spring r', this pawl r working in the ratchet-wheel k². When the rocker-plate C is moved by the insertion of a coin, the wiper c² thereon presses against the tail of the latch c⁶, depressing the outer end of the same against the stress of the spring c⁸, thus releasing the shaft K and allowing the segmental disk k' to turn as the handle H⁵ is rotated clockwise, Fig. 1.

Successive operations of the main shaft.—The first office performed by the rotating shaft K is the release of the coin from the grip of the rocker-plate C. This rocker-plate is provided with a finger e', Figs. 2 and 5, which stands in the path of the segmental disk k', and as this disk is rotated it presses against the said finger and thrusts the rocker-plate C still farther from its normal position, freeing the coin, which then drops from the cylindrical receptacle B into the lower compartment of the casing H. The next succeeding function of the rotating shaft K is to release the ticket-stamping mechanism. A detent p is pivotally hung in the path of the pin k⁷, which is carried by the shaft K, Figs. 2 and 9, and the other end p' of this detent engages the downwardly-curved end of the strip-carrier D, so that the latter is unable to move toward the stamping-types. The strip-carrier D is held normally in this locked position by the spring D². (Shown in Fig. 4.) When the pin k⁷ lifts the detent p and removes the catch p' at its end from engagement with the strip-carrier D, this carrier is then free to turn upon its pivot d'. The rotating shaft K next throws the strip-carrier D into pressure-contact with the types L L' L² (shown in Fig. 7) and performs this operation by means of the coaction of the wiper-roller k⁴, carried by the lug k³ with the cam-block D', which is secured on the inside of the strip-carrier D. This coaction forces the carrier D into contact with the types, and the strip d, lying in the carrier D, is properly impressed. The cover d⁴ of the carrier is cut away to form a suitable opening, as at L³, Fig. 8, through which the types operate; the yielding pad E³, over which the strip passes, providing a proper surface to permit the action of the types. The ticket-strip having been indented by the types L L' L², the roll k⁴ passes by the cam-block d', the spring D² returns the strip-carrier D to its normal position, and the roll k⁴ next makes contact with the arm f¹⁰ of the bell-crank lever, whose other arm f⁹ is connected to the hanging link f⁸, which in turn connects with the lever f⁷, which is pivoted upon the pin d', which serves also for the pivot for the strip-

carrier D. A spring f^{11} , Figs. 4 and 5, resists the movement of the bell-crank f^{10} f^9 , and would return the bell-crank lever to its normal position after the passage of the roll k^4 were it not for the catch f^4 , which, pivoted at f^5 and controlled by the spring f^{17} , (see Fig. 4,) automatically opposes its notched end f^6 over the top of the cutter-plate F, which is depressed by the lever f^7 , which projects into the aperture f^2 of the cutter-plate, this plate being mounted to slide upon the back plate F', (being secured thereto in this sliding relation by the screws f^3 , which play in slots cut in said cutter-plate F, the cutting edge f'' thereof being shown clearly in Fig. 8.) Thus by the catch f^4 the cutter-plate F is held against the stress of the spring f^{11} . After accomplishing the setting of the cutter-plate the shaft K in its further rotation feeds the ticket-strip downward so as to protrude the end thereof through the slot h' . (Shown in Figs. 5 and 7.) The feeding of the strip is effected by the rotation of feed-rolls d^{11} and d^{12} , the roll d^{11} being actuated by its pinion, which meshes with the gear d^9 , which is carried by the yoke d^6 . On the shaft K the projecting segment k^5 strikes the toothed disk d^{10} , and thereby turns gear d^9 against spring d^{14} , Fig. 10, accurately to mesh with segment-gear k^6 , which moves the yoke d^6 upward, rocking it upon its pivot, (shown in Fig. 5,) this rocking movement being against the stress of the spring d^8 , which presses against the tail d^7 of the yoke d^6 . On the back side of the mechanism, as seen in Fig. 4, there is pivoted the bell-crank d^{14} d^{15} , the end d^{15} having a pin-and-slot connection with the yoke d^6 and the end d^{14} having a pin-and-slot connection with the strip-detent d^{13} . When in its normal position, the yoke d^6 , through the connections of the bell-crank d^{14} d^{15} , holds the strip-detent d^{13} pressed down upon the paper-strip, which it reaches through the slot d^5 . This strip-detent is provided so as to prevent retraction of the strip when the strip-holder D is pressed forward against the printing-types. After the strip-detent d^{13} is released the further rotation of the shaft K carries the segmental gear k^6 into mesh with the gear-wheel d^9 and the train of gearing rotates the feed-roll d^{11} and feeds forward the strip, pushing it out from the slot h' , the transverse slot in the knife-plate F being held depressed so as to permit the passage of the said strip. This operation completes the cycle performed by the main shaft K of the machine.

Severing the ticket-strip.—Referring to Fig. 4, the trigger g projects into the ticket-carrier D through the slot g^5 . (Shown in Fig. 8.) The trigger-arm g' is pivoted to the crank-arm of the piece g^2 , which is spring-controlled by the spring g^3 . This piece g^2 appears also in Fig. 5 and carries the lug g^4 in position to operate upon the knife-catch f^4 . The end

of the trigger g is of proper size and depth to enter one of the previously-prepared perforations in the strip E', so that when the railway-car conductor or other operator takes hold of the end of the protruded ticket-strip and draws it out the trigger g , falling into one of the said perforations E', is carried downward by the strip, and by the turning of the piece g^2 the lug g^4 presses the knife-catch out of engagement with the knife-plate F, which under the stress of spring f^{11} snaps upward and severs the ticket at the proper point.

In order to insure the proper operation of the trigger g , there is arranged the guide-plate M, pivoted at m , as seen in Fig. 4. This guide-plate has a cam-slot in its arm m' , said slot being shown at m^2 , embracing the pin m^3 , which is fixed to the link f^8 . The other arm of the guide-plate M appears at m^4 , where it is bent to form a vertical open-ended trough whereof the sides are m^5 and m^6 . When the link f^8 is lifted by the action of shaft K upon bell-crank lever f^9 f^{10} , the arm m^4 of plate M is swung inward toward the strip-carrier D, so that the trigger g , which is provided for the purpose with the laterally-projecting pin g^5 , (see Fig. 7,) said pin g^5 traveling between the trough edges m^5 m^6 , is constrained to descend in the proper path and is instantly lifted out of engagement with the strip, when the link f^8 descends in response to the action of spring f^{11} as the strip is cut by the knife F, the descent of the disk throwing the plate M outward.

The time-stamp.—The time-stamp (shown at L in Fig. 7) may be operated by a time-piece N, inserted in the proper compartment or receptacle in the casing H. Other types, such as shown at L' L', may be provided at will.

I claim as my invention—

1. In a ticket-delivering mechanism, the combination of a strip-holder, feed-rolls, a strip-cutter, a spring controlling the cutter, a shaft, a crank-handle thereon, a cutter-setting arm and means on said shaft to set the cutter, a catch to hold the cutter in set position against the stress of the cutter-spring, gear connections between the shaft and feed-rolls, a trigger, adapted to engage a perforation in a ticket-strip and movable therewith, a tripper and connections therewith to the trigger, to release the cutter-catch by movement of said trigger.

2. In a ticket-delivering mechanism, the combination of a strip-holder, feed-rolls, a strip-cutter, a spring controlling the cutter, a strip-detent, a shaft, a crank-handle thereon, a cutter-setting arm and means carried by said shaft to set the cutter, a catch to hold the cutter in set position against the stress of the cutter-spring, means actuated by the shaft to release the strip-detent, gear connection between the shaft and feed-rolls; a trigger, adapted to engage a perforation in

a ticket-strip, and movable therewith, a tripper, and connections therewith to the trigger, to release the cutter-catch by movement of said trigger.

5 3. In a ticket-delivering mechanism, a strip-holder, a spring-controlled strip-cutter, a cutter-catch, a trigger to release the catch, said trigger adapted to engage a perforation
10 in a ticket-strip and be actuated by movement of the strip, and a trigger-guide to hold the trigger in engagement with the strip.

4. In a ticket-delivering mechanism, a strip-holder, a spring-controlled strip-cutter, a cutter-catch, a trigger to release the catch,
15 adapted to engage a perforation in a ticket-strip, and a trigger-guide, movable toward and from the strip-holder, and means to move said trigger-guide.

5. In a ticket-delivering mechanism, a strip-holder, a spring-controlled strip-cutter, cutter-setting mechanism, a cutter-catch, a trigger to release the catch, adapted to engage a perforation in a ticket-strip, and a trigger-guide movable toward and from the
25 strip-holder, and connections with the cutter-setting mechanism to move the guide.

6. In a ticket-delivering mechanism, the combination of a strip-holder, a feed-roll, a frame carrying said feed-roll, said frame
30 movable, a spring normally holding said frame retracted from feeding position, a shaft, means carried thereby to advance the frame to feeding position and thereafter to actuate the feed-roll to feed a strip in the
35 strip-holder.

7. In a ticket-delivering mechanism, the combination of a strip-holder, a strip-detent, a frame, a feed-roll carried thereby, a spring normally holding said frame retracted from
40 feeding position, a shaft, means carried thereby to advance the frame to feeding position, and to release said strip-detent, and

means thereafter to actuate the feed-roll to feed a strip in the strip-holder.

8. In a ticket-delivering mechanism, a casing, stamping-types carried thereby, a strip-holder, movable toward and from said types, an actuating-shaft, a spring normally holding the strip-holder away from the types, a catch for the strip-holder, means, carried by
50 the shaft to release said catch and thereafter to move the strip-holder into contact with the types.

9. In a ticket-delivering mechanism, a casing, stamping-types carried thereby, a strip-holder, movable toward and from said types, an actuating-shaft, a spring normally holding the strip-holder away from the types, a catch for the strip-holder, means, carried by the shaft to release said catch and thereafter
60 to move the strip-holder to the types, and a strip-detent, carried by the strip-holder, to prevent movement of a strip therein.

10. In a ticket-delivering mechanism, an actuating-shaft, a crank-handle therefor, a strip-holder, a catch normally engaging the same, means, carried by said shaft to release the catch and move the strip-holder in succession; a strip-cutter, spring-controlled, and means, carried by said shaft, to set the cutter
70 against the stress of the spring, by further rotation of said shaft; a strip feed-roll, a frame therefor, normally held out of feed position, means, carried by said shaft to move said feed-roll frame and roll into feed position, and actuate said roll, successively, said shaft being movable in but one rotative direction.

Signed by me at Boston, Massachusetts, this 25th day of April, 1906.

HENRY H. CUMMINGS.

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