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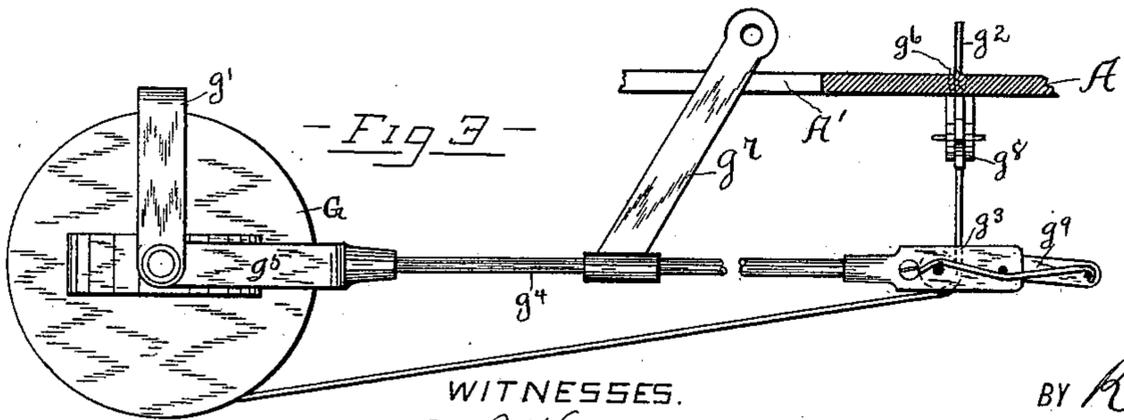
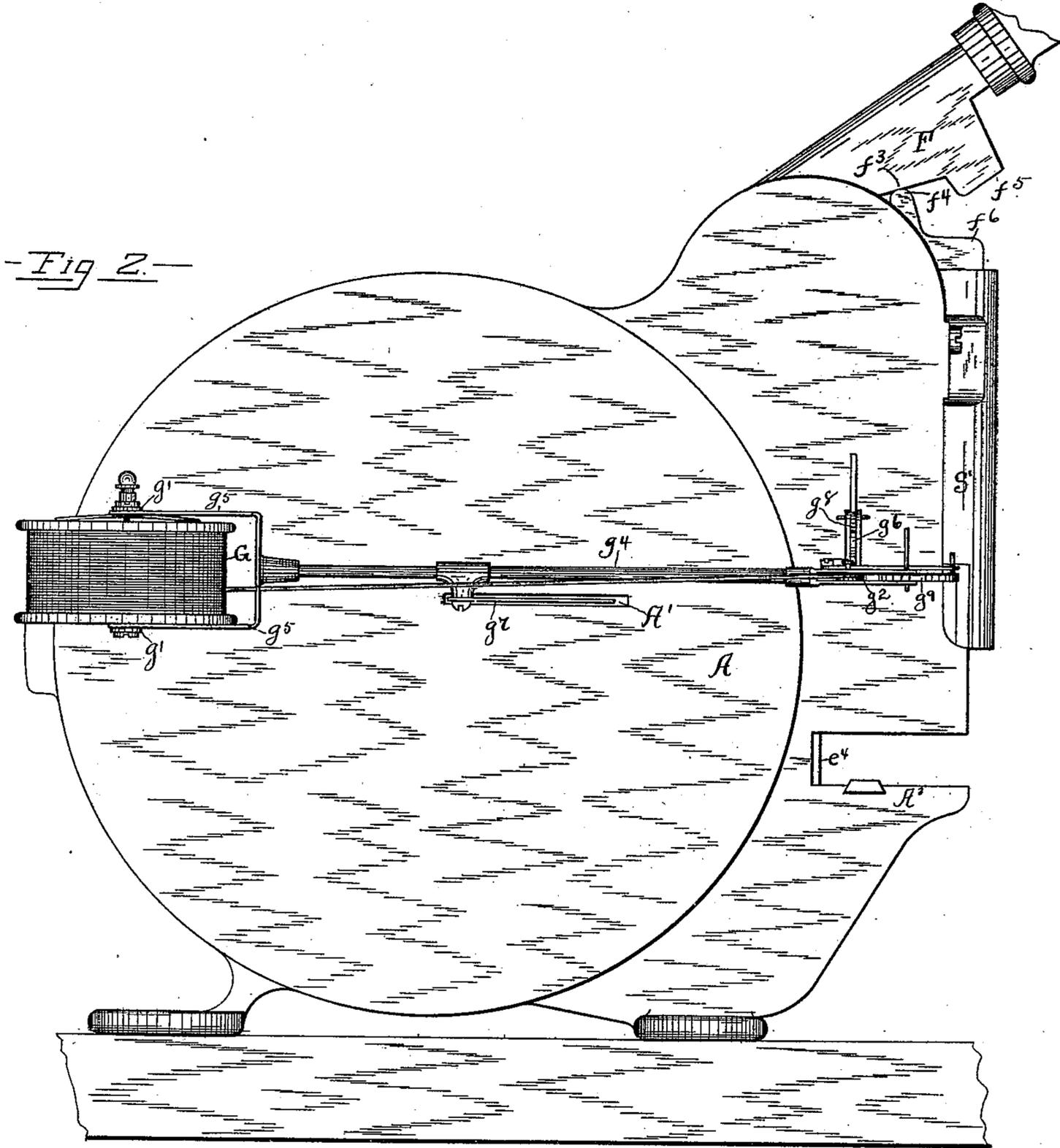
Patented Feb. 21, 1899.

W. G. METCALF.  
PIN TICKET MACHINE.

(Application filed Aug. 8, 1898.)

(No Model.)

4 Sheets—Sheet 2.



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WITNESSES.  
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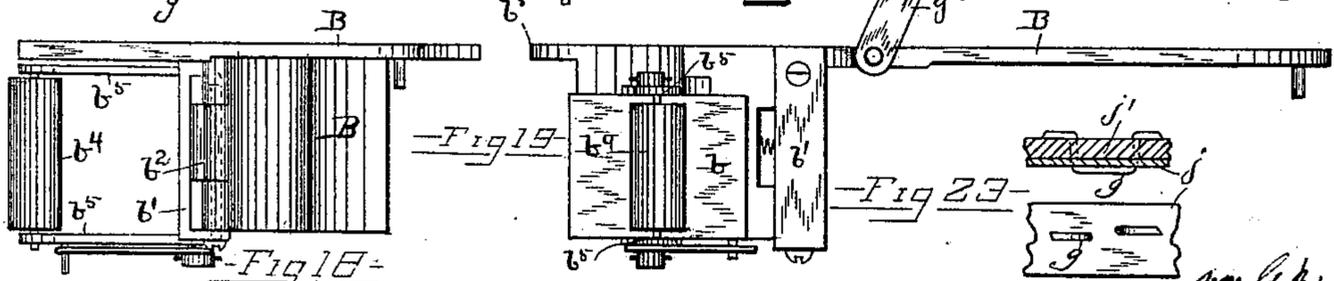
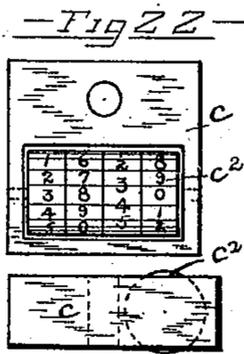
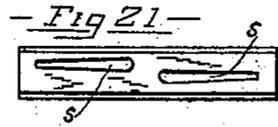
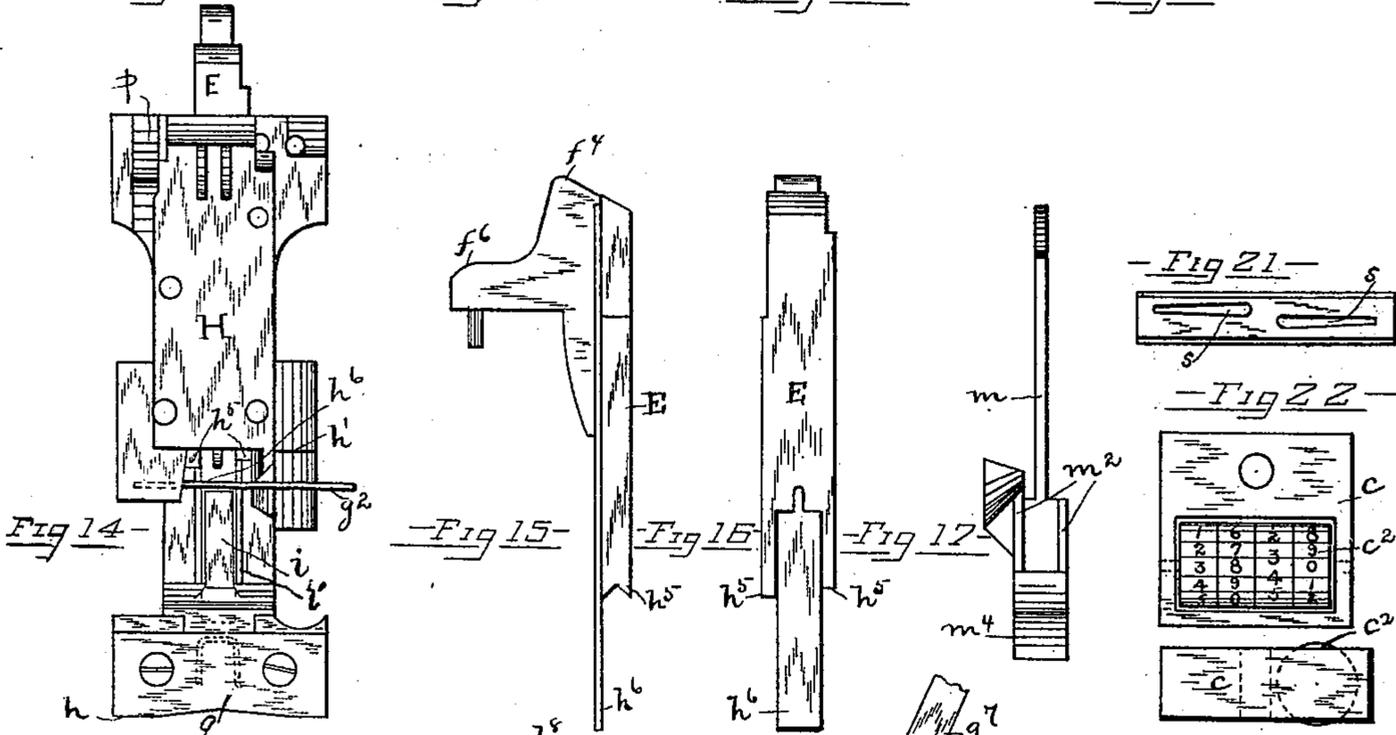
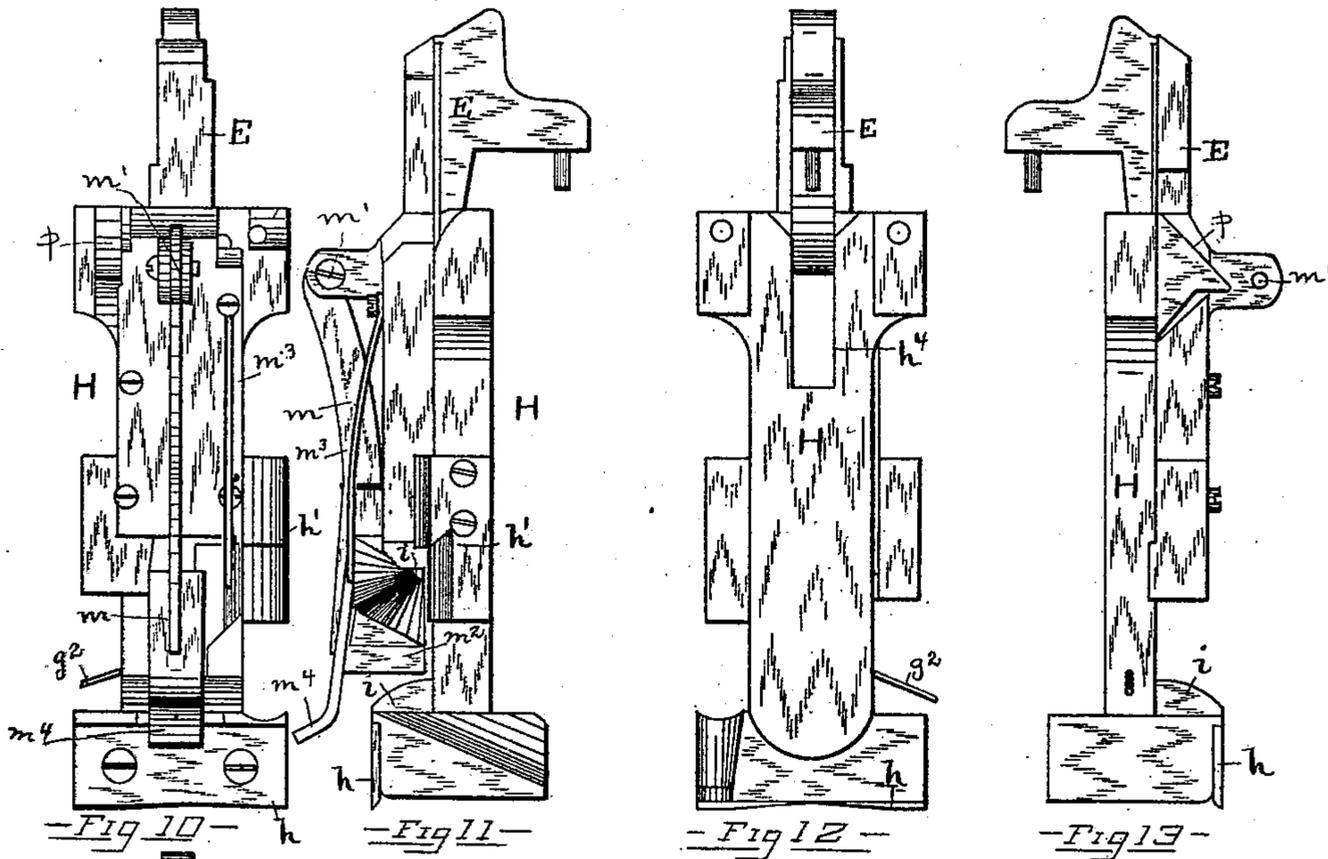
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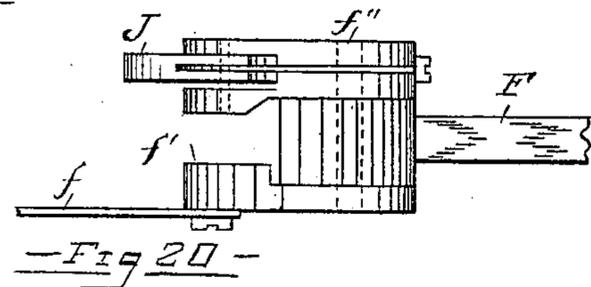
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# UNITED STATES PATENT OFFICE.

WILLIAM G. METCALF, OF DAYTON, OHIO.

## PIN-TICKET MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,773, dated February 21, 1899.

Application filed August 8, 1898. Serial No. 688,037. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM G. METCALF, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Pin-Ticket Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in pin-ticket machines, or machines for attaching tickets to fabrics or other articles.

The object of the invention is to provide a machine with a capacity for printing tickets, forming staples, and attaching said tickets by means of said staples, all in one operation.

In carrying out the object of the invention the machine is equipped with mechanism for feeding from a continuous roll the paper or cardboard from which the tickets are made, mechanism for stamping or printing on said tickets the name of the merchant or firm, the price-mark, and any other matter, mechanism for forming the staples from a continuous roll of wire, and mechanisms for driving said staples and cutting the tickets, all through one operation, as will hereinafter more fully appear in a detailed description of the invention in connection with the accompanying drawings, of which—

Figure 1 is a side elevation with one side of the casing removed to show the arrangement of the mechanisms; Fig. 2, an elevation of the side of the machine upon which the wire-reel is located; Fig. 3, a top plan view of the wire-reel and adjuncts; Fig. 4, a front elevation of the machine; Fig. 5, a side elevation of the front portion of the machine, showing part of the interior mechanism; Fig. 6, a top plan view of the printing-forms; Fig. 7, a detached view of the stationary member of the wire-cutter; Fig. 8, detached front and side elevations of the staple-former; Fig. 9, an elevation of the inner side of the vertical wall through which the end of the paper passes to a position to be cut and stapled; Figs. 10, 11, 12, and 13, elevations of the four sides of the

plunger; Fig. 14, an elevation of the plunger with the staple-depositor removed to show the wire in a position to be formed into a staple; Figs. 15 and 16, elevations of the staple former and driver; Fig. 17, an elevation of the staple-depositor removed from the plunger; Fig. 18, a rear elevation of the mechanism for supporting the paper while being printed and advanced. The inking-roller also appears in this view. Fig. 19 is a top plan view of the mechanism shown in Fig. 18; Fig. 20, an elevation of the lower side of the inner end of the hand-lever; Fig. 21, a plan view of the plate containing the grooves which deflect the ends of the staples when driven; Fig. 22, a bottom plan view and a side elevation, respectively, of the type-wheels; Fig. 23, a sectional view and a bottom plan view, respectively, showing the attachment of a ticket to a fabric; Fig. 24, Sheet No. 1, a side elevation of the printing mechanism, showing the position of the inking-roller during the period of impact; Fig. 25, an elevation of the inner side of the front end of the horizontally-reciprocable slide or carriage; Fig. 26, Sheet No. 1, a top plan view of the plunger with parts removed; Fig. 27, a view of the lower end of the plunger; Fig. 28, Sheet No. 3, a sectional side elevation of the lower end of the plunger with parts removed.

Throughout the specification similar reference characters designate corresponding parts.

The metallic case A is of a design substantially as shown, one side thereof supporting the various mechanisms and the other side being in the form of a detachable cover. A horizontally-reciprocable slide or carriage B, mounted against the rear of the casing by means of longitudinal slots B' and guides B<sup>2</sup>, cooperates with other mechanisms to perform the functions of advancing the end *a* of the paper from roll C, the wire from the reel G, and of supporting said paper in a position to receive the type impression. The end of the paper passes onto a platen *b* below a guide-bar *b'* and is prevented from retracting by means of a spring-pressed detent *e*.

*b*<sup>4</sup> is an ink-roller carried on spring-controlled arms *b*<sup>5</sup>, that are pivoted to the sides of the platen *b*.

*b*<sup>6</sup> is an upright arm carried on the slide B.

All of the parts described in the foregoing are attached to the slide B.

$c$  designates printing-forms mounted on a vertically-reciprocable slide D. These printing-forms are shown clearly in Figs. 6, 22, and 24 and consist of a permanent form  $c'$ , bearing the name of the merchant or firm, and a series of movable type-wheels  $c^2$ , bearing numerals or other marks usually placed on pin-tickets.

$c^3$  is a shaft to which the printing-forms are connected. This shaft is loosely mounted in brackets  $c^4$   $c^4$ , that are connected with the slide D.  $c^5$  is an elastic cushion on said shaft between the upper bracket  $c^4$  and a lower loose washer  $c^6$ . When the printing-form is pressed down upon the paper, this elastic cushion permits a yielding thereof when impact is made.

The inking-roller  $b^4$  is enabled to normally occupy a position at the forward end of the printing-form, as shown in Fig. 1, by means of a pin  $d$ , projecting from the slide D, and from which position it is passed back and forth over the type. Upon each actuation of the slide B the type or printing-form is at the same time moving downward. When the said inking-roller has passed rearwardly over the type, it enters a pocket or shield  $c^7$ , carried on the printing-form and serving to prevent said roller from coming in contact with the roll C. The slide B is drawn to its forward position by a coil-spring  $B^3$ . Movement is imparted to the slide B to drive it rearwardly by means of the vertical slide D. This latter slide is maintained in a sliding position against the side of the case by slots  $d'$  and guides  $d^2$ . The lower end thereof has a tapered or cam surface  $d^3$ , that rides on a cam-surface  $b^8$  on the inner side of the front end of slide B. (See Figs. 1, 19, and 25.) The rearward movement of the said slide is continued until the shoulder  $d^4$  on slide D arrives behind the shoulder  $b^9$  of the slide B. When the limit of this rearward movement of slide B is reached, the detent  $b^2$ , Fig. 18, obtains a grip on the paper and unwinds it during the forward or return movement of said slide under the action of the spring  $B^3$ . During this rearward movement of the slide B to enable the grip to be taken on the paper, as above specified, the extreme outer end of said paper is held, as before stated, by a spring-controlled detent  $e$ , pivoted between ears  $e'$  in the opening  $e^2$  in the wall  $e^3$ , through which the end of the paper passes to the cutters and stapling devices, Fig. 9.

The reciprocable movement of the slide D, which actuates slide B in one direction, as described, and which actuates the printing-form in both directions, is imparted to said slide D through a bar  $f$ , one end of which has a pivotal connection with said slide and the other end a similar connection with the inner arm  $f'$  of the hand-lever F. (See Figs. 5 and 20.)

Referring to Figs. 2 and 3, the reel G of wire from which the staples  $g$  are formed is

mounted on a bracket  $g'$  on the case A. The end  $g^2$  of the wire is threaded through an opening  $g^3$  in the end of a vibrating rod  $g^4$ , which has an adjustable connection with a pivotal bracket  $g^5$ . Outward movement is imparted to said rod to unwind the wire from the reel and inward movement is imparted thereto to thread the wire through the opening  $g^6$  to the staple-forming mechanism by an arm  $g^7$ , one end of which has a pivotal connection with the rod  $g^4$ , and the other end, passing through a horizontal slot A' in the side of the case, has a pivotal connection with the upright arm  $b^6$ , connected with the slide B. During the backward movement of the latter slide the rod  $g^4$  is thrown outwardly to unwind wire from the reel, during which time the end of said wire is being held by a detent  $g^8$ . During the return or inward movement of said rod  $g^4$  by the slide B returning under the action of the spring  $B^3$  the wire is held by a detent  $g^9$  in the end of the rod  $g^4$  and is fed into opening  $g^6$ .

Referring to the cutting and staple-forming mechanisms, these are fully illustrated on Sheet No. 4 of the drawings. The reciprocable plunger H is mounted in the front of the case between the wall A'' and lower wall  $e^3$ . The knife  $h$  for cutting the tickets from the paper is attached to the lower end of the plunger and moves against the wall  $e^3$  and blade  $e^4$ . The cutters for the wire consist of two coacting knife-edges  $h'$  and  $h^2$ , the former of which is attached to the inner side of the plunger and is movable therewith, and the latter has a stationary attachment with the inside of the case. The cutting edge  $h^2$  thereof being in line with the wire-opening  $g^6$  has its cutting side tapered to form a bevel or sharp end to the wire when cut. The downward movement of the plungers simultaneously cuts a ticket and the wire, the latter of sufficient length to form a staple. When the wire is threaded into the machine preparatory to being cut and formed into a staple, it lies across a former  $i$  in the plunger. In this position it is acted upon by the downward movement of a combined staple former and driver E, which fits in a guide-slot  $h^4$  in the plunger H. (See Fig. 26.) The two projecting ends  $h^5$  move down on both sides of the former  $i$  and engaging the ends of the wire carry them down against the sides of the former, and thus form a staple. The staple formed is removed from the former  $i$  to a staple-passage  $i'$ , that lies at the rear of said former and extends down through the lower end of the plunger. (See Figs. 14, 27, and 28.)

The staple-depositor  $m$  is pivoted at  $m'$  to the upper part of the plunger, and the two sides  $m^2$  thereof inclose the sides of the former  $i$  when they are allowed to move inward under the action of spring  $m^3$ . The staple-depositor is moved out from the former to permit the formation of each staple. Upon each downward movement of the plunger, during which the curved end  $m^4$  of said depositor

comes in contact with the surface  $m^5$  on the wall  $e^3$ , (see Fig. 9,) these outward movements of the depositor take place. As the plunger is returned to its upper or normal position by the spring  $n$ , Fig. 1, the depositor moves back to deposit the formed staple in the passage  $i'$ . The staple is driven from said passage into the ticket  $j$  and fabric  $j'$  (see Fig. 23) by the staple-driver  $h^6$ , which moves down into and through the passage  $i'$ . A staple and the end of the driver  $h^6$  are shown in broken lines in Fig. 14. When the ends of the staple pass through the ticket and fabric, they are clenched by the ends being deflected inwardly or outwardly by means of the grooves  $s$   $s$  in the upper face of the ledge or platen  $A^3$ . The downward movement is imparted to the plunger  $H$  by the pawl  $J$ , pivoted in the outer arm  $f^2$  of the hand-lever  $F$ . This pawl, coming in contact with the cam-surface  $P$  on the plunger, moves the latter down to cut the wire for a staple and to cut a ticket. During this movement of the plunger the staple former and driver  $E$  also moves therewith and continues its movement after said plunger has performed its operation. This continued movement of said staple former and driver is to perform its function of bending the wire into a staple and uniting said staple to the ticket and is effected by the point  $f^3$  on the hand-lever, which is in contact with the point  $f^4$  on the staple former and driver, and in point  $f^5$  on said hand-lever next coming in contact with point  $f^6$  on said staple former and driver. The contacts of the points  $f^3$  and  $f^4$  take place to bend the staple, and during the contact of points  $f^5$  and  $f^6$  the staple is driven. The hand-lever is returned to its upper position by a compression-spring  $S$ , which is inclosed in a front cylindrical part  $S'$  of the case. The staple former and driver  $E$  is also returned to an upper position by said spring.

Briefly describing the operation, upon each downward movement of the operating-lever  $F$  the end of the paper that is projected out, as shown in Fig. 1, and which was previously printed by a former operation is cut into a ticket by the knife  $h$ , the wire is cut by the knife-edges  $h'$  and  $h''$ , and the staple-depositor  $m$  moved back to permit the ends  $h^5$  of the staple former and driver  $E$  to bend the wire over the former  $i$ . A ticket is printed, a grip is obtained upon the paper, and the wire is unwound from the reel  $G$ . Upon the upward movement of the lever  $F$  the wire is fed into the machine, the staple-depositor moves in to dislodge a staple from the former  $i$ , and the paper is advanced to a position to be cut into a ticket.

In the foregoing specification I have set forth minutely and in detail the various mechanisms; but I desire to be understood as not limiting myself to all the details of construction shown and described. Changes and modifications may of course be made without departing from the broad and underlying principles of my invention, which comprises

means for printing tickets, forming staples, and uniting said tickets to fabrics by means of said staples, all in one operation and embodied in a single machine. 70

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a pin-ticket machine, the combination with a primarily-movable slide, of a paper-feeding slide arranged to feed predetermined lengths of paper, mechanism to print thereon, the said paper-feeding slide and the printing mechanism actuated by the said primarily-movable slide, and mechanisms for forming a staple, cutting a ticket from said paper, and uniting said ticket to a fabric with said staple, substantially as specified. 75 80

2. In a pin-ticket machine, a paper-feeding slide adapted to feed a predetermined length of paper, wire-feeding mechanism adapted to feed a predetermined length of wire, in combination with a knife-carrying plunger adapted to cut the paper, and wire and to leave a point on the cut ends of said wire, a staple former and driver mounted in said plunger, and a depositor to remove the staples to a position to be acted upon by the driver, substantially as specified. 85 90 95

3. In a pin-ticket machine, the combination with a reciprocable slide arranged to feed a predetermined length of paper, mechanism to print upon said paper as the slide moves to a position to engage the paper to feed it, mechanisms for cutting the wire and forming a staple, means for cutting a ticket from the end of said paper, and mechanism for uniting said ticket to a fabric by means of said staple, substantially as specified. 100 105

4. In a pin-ticket machine, the combination with paper and wire feeding mechanisms arranged to feed predetermined lengths of paper and wire, printing mechanism for printing on said paper, cutters for cutting said paper into tickets, and the wire into suitable sizes for staples, a combined staple former and driver, and a staple-depositor to deposit the staples in positions to be acted upon by the staple-driver, substantially as specified. 110 115

5. In a pin-ticket machine, the combination with paper and wire feeding mechanisms, of a knife-carrying plunger arranged to cut said paper and wire into pieces of predetermined sizes, a combined staple former and driver movable in said plunger, and means for actuating said plunger and staple former and driver, substantially as and for the purposes specified. 120

6. In a pin-ticket machine, the combination with paper and wire feeding mechanisms, and printing mechanism for printing upon said paper prior to each feeding operation, of a knife-carrying plunger to cut the paper into tickets, and to cut the wire into a suitable size for staples, a staple-former in said plunger, a wire-bender coacting with said former to form a staple, a staple-depositor to remove the staples from said former, and a staple- 125 130

driver movable in the plunger, substantially as and for the purposes specified.

7. In a pin-ticket machine, the combination with a reciprocable carriage or slide arranged to feed paper from a roll, printing mechanism for printing upon said paper during the period in which the carriage or slide is moving to a position to engage said paper to feed it forward, a device for holding the end of said paper during said movement of the carriage or slide, and a knife-carrying plunger to cut tickets from said paper, substantially as and for the purposes specified.

8. In a pin-ticket machine, the combination with a reciprocable slide, of a wire-reel, a pivotal rod connected with said reel and through which the wire is threaded, a bar pivotally connected with said rod and with the reciprocable slide whereby the said rod is moved outwardly and inwardly to unwind the wire and feed it to the machine, and means for holding the end of the wire during unwinding movement, substantially as specified.

9. In a pin-ticket machine, the combination with paper and wire feeding mechanisms, of a knife-carrying plunger to cut said paper into tickets, and to cut said wire into pieces of suitable size for staples, a staple-former in said plunger with a staple-passage in the rear thereof, a combined wire-bender and staple-driver movable in a guideway in the plunger and coacting with the staple-former to form a staple, and a staple-depositor to remove said staple from the former to the passage in a position to be acted upon by the staple-driver to attach the tickets, substantially as specified.

10. In a pin-ticket machine, feeding mechanisms arranged to feed predetermined lengths of ticket-paper, and wire, a plunger having a guide-slot and a staple-passage, a staple-former in said plunger, a combined wire-bender and staple-driver movable in the guide-slot and staple-passage in the plunger, cutters for cutting the tickets, and the wire prior to the descent of the wire-bender and staple-driver, and a lever adapted to impart variable movements to the plunger, and wire-bender, and staple-driver, substantially as specified.

11. In a pin-ticket machine, the combina-

tion of a horizontally-reciprocable slide having a gripper thereon to engage and feed the paper, a vertically-reciprocable slide to actuate said horizontal slide in the direction to engage said paper, a detent for holding the extreme end of the paper while the gripper is moving to a position to engage it, staple-forming and uniting mechanism to form staples and attach tickets, and a knife-carrying plunger to cut the tickets, said plunger providing a guideway and a support for the staple-forming and uniting mechanism, substantially as specified.

12. In a pin-ticket machine, the combination with a casing having a horizontal slot and a wire-opening, a reciprocable slide, a wire-reel mounted on said casing, a vibrating rod connected to said reel and through which the wire therefrom is guided through the opening, a bar pivoted to said rod and passing through the slot and having a pivotal connection with the reciprocable slide, a knife-carrying plunger to cut said wire, and a guideway and staple-passage in said plunger, a staple-former, and a combined wire-bender and staple-driver, the former coacting with the staple-former to form a staple, and the latter adapted to drive said staple through the staple-passage to attach a ticket, a staple-depositor to move said staple from the former to the passage, and a hand-lever operating upon said plunger, wire-bender and staple-driver to impart variable movements thereto, substantially as specified.

13. In a pin-ticket machine, the combination with a slide or carriage, of a wire-reel, a pivotal rod through which the wire is guided, a bar pivotally connected with said rod and with the slide or carriage whereby the said rod is moved to unwind and feed wire to the machine, and devices for holding the end of the wire during the unwinding movement, and for holding said wire during the feeding movement, substantially as specified.

In testimony that I claim the foregoing as my own I hereto affix my signature in presence of two witnesses.

WILLIAM G. METCALF.

Witnesses:

A. J. FIORINI,  
W. W. PRICE.