F. KOHNLE.

STAPLING MECHANISM FOR PIN TICKETING MACHINES.

APPLICATION FILED APR. 29, 1907.

1,052,153.

Patented Feb. 4, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

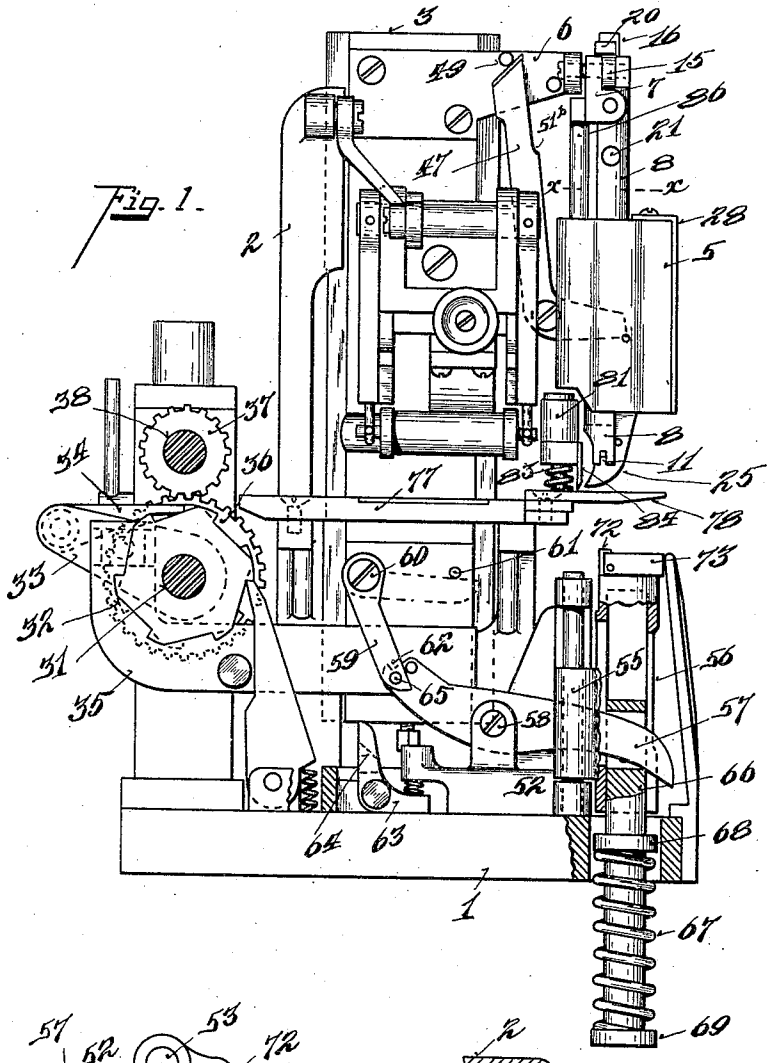


Fig. 2.

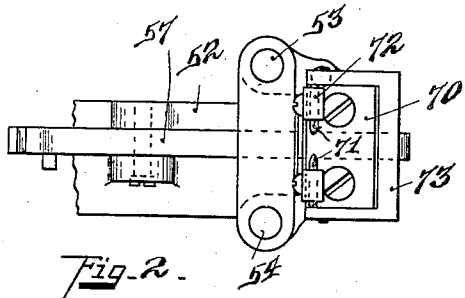
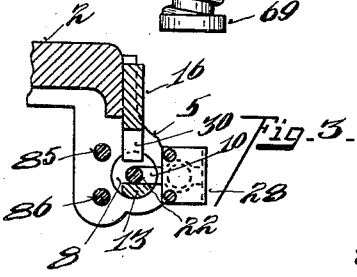


Fig. 3.



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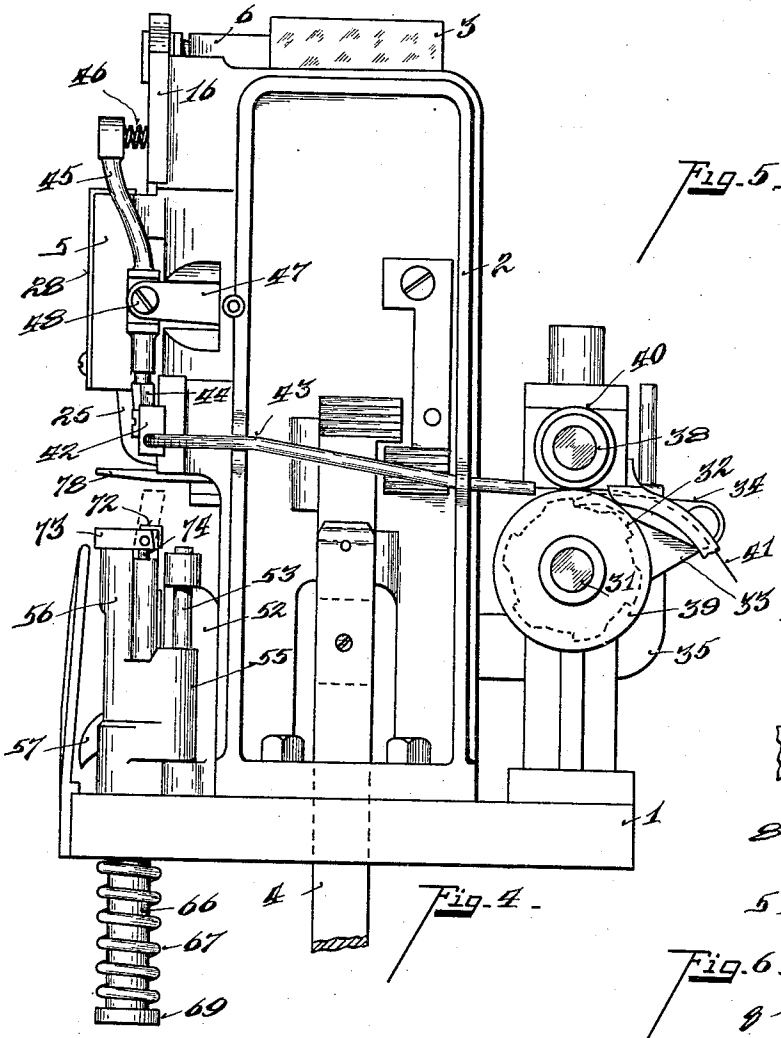

Fig. 4.

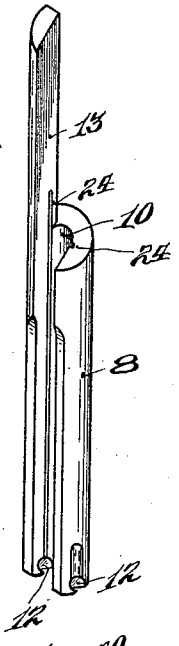

Fig. 5.

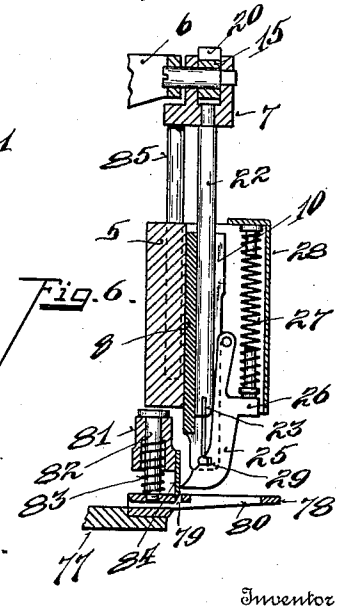

Fig. 6.

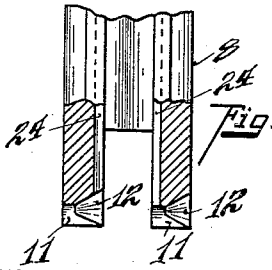

Fig. 7.

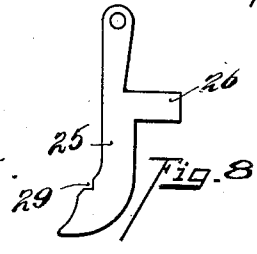

Fig. 8.

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3 SHEETS—SHEET 3.

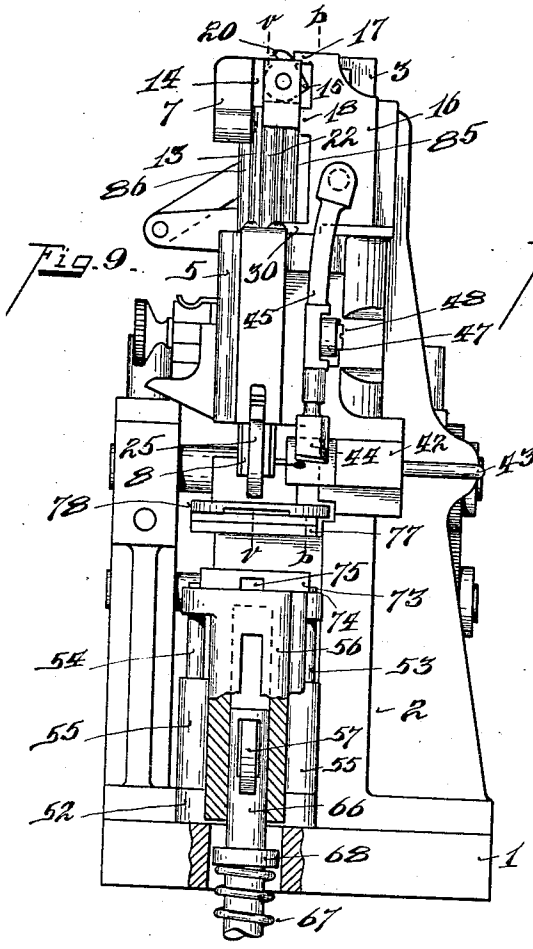

Fig. 9.

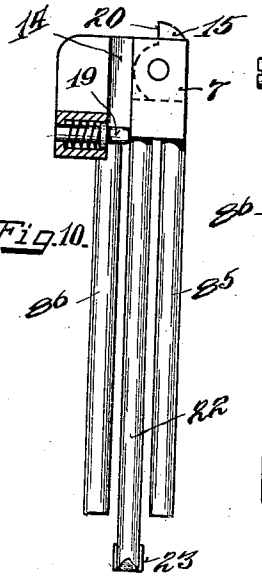

Fig. 10.

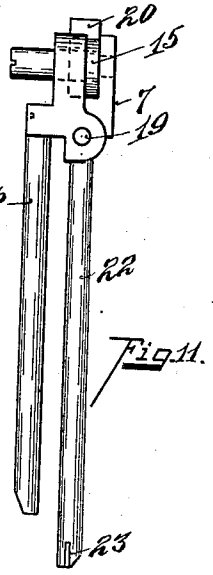

Fig. 11.

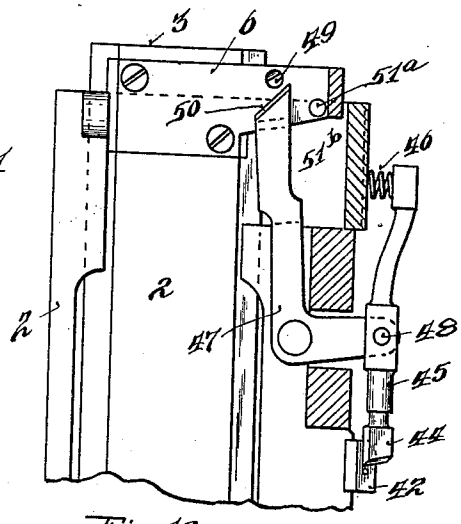

Fig. 12.

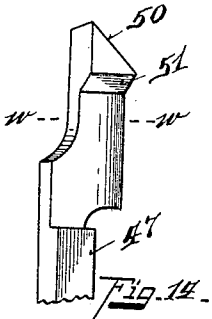

Fig. 14.

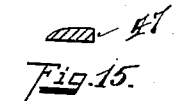

Fig. 15.

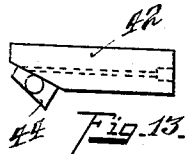

Fig. 13.

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FREDERICK KOHNLE, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HARRY H. PRUGH AND THEODORE MEUCHE, TRUSTEES.

STAPLING MECHANISM FOR PIN-TICKETING MACHINES.

1,052,153. Specification of Letters Patent. Patented Feb. 4, 1913.

Original application filed April 30, 1906, Serial No. 314,456. Divided and this application filed April 29, 1907. Serial No. 370,990.

To all whom it may concern:

Be it known that I, FREDERICK KOHNLE, 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 Stapling Mechanism for Pin-Ticketing Machines, of which the following is a specification.

My invention relates to an improvement in stapling mechanism particularly applied to a pin ticketing machine.

One of the objects of my invention is to provide a stapling device in which a strand of wire is severed into a staple length, formed into a staple, pressed through a ticket and cloth and clenched thereon during one movement, and the strand of wire fed forward for a second operation, and the parts restored to normal position during a reverse movement.

Another object of my invention is to so construct the parts that the tickets will be stapled without clenching by throwing out of commission the clenching mechanism.

Another object of my invention is to provide a staple forming and applying mechanism of such construction in which one member is in positive connection with the actuating means, while the remaining members receive motion in step form through each other enabling the parts to be put together in compact form and produce positive results.

Other features of my invention are more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a side elevation of the head of my improved pin ticketing machine with some of the parts shown in section. Fig. 2 is a top plan view of the clutching mechanism. Fig. 3 is a section on line x, x, Fig. 1. Fig. 4 is a side elevation of the machine opposite from that shown in Fig. 1. Fig. 5 is a perspective view of the staple bender. Fig. 6 is a section on line v, v, Fig. 9. Fig. 7 is an enlarged sectional view of the lower portion of the staple bender. Fig. 8 is a side elevation of the staple forming anvil. Fig. 9 is a front elevation of the machine. Fig. 10 is a large detailed front elevation of the staple driving and cutter actuating mechanism. Fig. 11 is a side elevation thereof. Fig. 12 is a section on line b, b, Fig. 9. Fig. 13 is a top plan view of the wire cutting knife and feed block. Fig. 14 is an enlarged perspective view of the inside face of the knife or cutter actuating lever. Fig. 15 is a section on line w, w, Fig. 14.

In the accompanying drawings, the wire feeding and paper feeding and printing mechanism are not illustrated in detail, the same being the subject-matter of a separate application, Serial No. 314,456, filed April 30, 1906, and reference thereto being only had in this description to enable a clear understanding of the operation, in so far as it is necessary, to the stapling mechanism.

1 represents the base plate of the head of the pin ticketing machine, which is preferably secured upon a pedestal, not shown.

2 represents a frame for supporting the main actuating mechanism of the machine.

3 represents a slide plate slidably mounted in a gib-way formed in the frame 2. Said slide is reciprocated by means of a connecting rod 4 pivotally connected at one end to the slide 3, and at its opposite end to a treadle, not shown. The treadle and connecting rod effecting a downward travel of the slide, its upward movement being brought about automatically by means of a coiled spring maintained under tension and in connection with the treadle, not shown in the drawing, but any of the well-known means may be employed for obtaining a reciprocating movement to the slide, as for instance, the slide may be in connection with an eccentric shaft rotated by a motor.

5 represents a guide bracket supported on and projecting from the frame 2 forward and to a position over the strip of paper from which a pin ticket is formed, within which bracket the staple bending, forming and driving mechanism and paper cutting actuating mechanism is slidably supported.

6 represents a bracket plate fixed to the upper end of the slide 3, provided with a forwardly projecting limb at right angles to the body portion of the bracket.

7 represents a head plate fixed to the projected limb of the bracket 6. It forms a

support for the staple bender and for one or more guide rods secured to the head 7 or staple driver support.

8 represents a staple bender, the body portion of which is semi-cylindrical and provided with a vertical groove 10, through which the staple driver passes. The lower portion of the staple bender is provided with longitudinal slots 11 terminating on one side to form a conical threading eye 12 serving as a guide for feeding the wire into the slots and holding it in proper position for severing and bending the same.

13 represents a limb projecting upwardly from the body portion of the staple bender adapted to pass into a guide-way 14 formed in the head plate 7, (see Fig. 9).

15 represents a cam pivotally supported within a recess formed in the head plate 7, (see Figs. 9, 10, and 11).

16 represents a plate secured to the frame 2, having the forward projecting lugs 17, 18, for controlling the position of the cam 15 for imparting a predetermined downward movement to the staple bender. This staple bender has a loose connection within the guide-way 14 of the head plate 7 in order to permit the head plate to travel independent of the staple bender at predetermined positions of its movement.

19 represents a spring controlled detent pin adapted to seat in notches 21 formed in the upright limb 13 of the staple bender.

The downward movement of the staple bender is accomplished as follows:—As the head plate 7 is moved down by means of the slide 3 and bracket 6, the lower squared face of the cam 15 will strike the lug 18 moving the lip portion 20 to a longitudinal position, bearing against the upward projection 13 of the staple bender 8. The cam is maintained in this position against vertical movement as long as the flattened portion of the cam 15 abuts the lug 18, and until the slide has moved the head plate down to such position as will free the cam from the projecting lug 18, when the staple bender has completed its bending operation and becomes stationary. The head plate continues to move down to release the forming anvil, and drive and clench the staple. Such further downward movement of the head plate will partially throw the lip portion of the cam to its vertical position, (see Figs. 9 and 10). The cam 15 in its upward movement will be thrown to a complete vertical position by the projecting lug 18, and thrown in an angular position at its completed vertical travel by the projecting lug 17, as shown in Fig. 9. This places the cam in position for a second operation. The reverse movement of the staple bender is accomplished by means of the detent pin engaging with one of the notches 21, (see Fig. 1), formed in the upright limb 13.

22 represents the anvil releasing and staple driving rod, which for convenience, I will term the staple driver, fixed to the lower face of the head plate 7 and actuated thereby.

23 represents lugs projecting from the lower portion of the staple driver and adapted to slide within grooves 24, formed in the staple bender. Said staple driver slides within the groove 10 of the staple bender.

25 represents a staple forming anvil pivotally supported within a groove formed in the bracket 5 and provided with a projecting lug 26 forming a bearing for one end of the closed spring 27, the opposite end of the coiled spring 27 bearing against a plate 28, serving as a cover for the groove formed in the bracket 5. Said forming anvil is adapted to pass into the groove of the staple bender in front of the staple driver in order that the staple driver in its downward course, and after a staple bending operation has been completed may move said forming anvil out of position to effect a staple driving operation, the forming end normally resting between the lower forked ends of the staple bender. It is provided with a notched portion 29 over which the wire passes, and which notched portion is opposite the slots 11 of the staple bender, the inner face of said forming anvil is inclined, so as to allow a ready pulling off of the staple, which is bent over the same by the staple bender and forming an inclined way against which the staple driver contacts, removing the forming anvil out of position. The forming anvil is held under tension in its normal position, shown in Fig. 6, thereby bringing the anvil automatically to such position after a stapling operation.

30 represents a projecting lug formed on the plate 16 and adapted to engage with the upper shell portion of the staple bender to limit its upward movement.

The wire is fed and severed by the following instrumentalities:—31 represents a shaft journaled in suitable bearings, (see Fig. 1). 32 represents a ratchet wheel fixed on said shaft. 33 represents an oscillating arm loosely journaled on the shaft 31, to the end of which is pivoted a pawl 34 engaging with the ratchet wheel 32. 35 represents an arm fixed to the lower portion of the slide 3, its free end being upturned and provided with a slot, (see Fig. 1 in dotted line), in which is gibbed a slide block, said slide block in turn being pivoted to the oscillating arm 33. 36 represents a gear fixed to the shaft 31, and in mesh with a gear 37 fixed to a shaft 38 for driving said shaft. 39 represents a wire feed roll, (see Fig. 4), fixed on the outer end of the shaft 31. 40 represents a coacting feed

roll frictionally held in contact with the feed roll 39. The peripheries of said rolls 39 and 40 are preferably knurled to provide a more positive feeding surface. These feed rolls are driven at certain predetermined times and relative speeds to coact with the printing and stapling mechanism, and remain at rest during the operation of printing and stapling. The feeding mechanism is described more in detail in the separate application as aforesaid, and is therefore only referred to as a means for feeding wire. 41 represents a wire which is fed between the rolls 39 and 40, which is cut into staple lengths, and formed into staples by the mechanism to be described. 42 represents a cutter block through which the wire 41 is fed, said block being secured to the frame 2 at one side of the stapling mechanism. The wire is preferably fed from the feed rollers to the cutter block through a tube 43. The front or free end of the cutter block is beveled and in line with a cutter.

The wire is cut by the following instrumentalities:—44 represents a cutter screw threaded into the actuating rod 45, which projects upwardly, and provided at its free end with a spring 46 for holding and maintaining the cutter under tension against the beveled face of the cutter block 42. 47 represents a bell crank lever pivotally supported upon the frame 2 and pivotally connected at 48 to the cutter actuating rod 45, (see Fig. 12). 49 represents a pin fixed on the bracket 6, adapted to engage the beveled edge 50 of the bell crank lever 47. The inner face of the bell crank lever is notched out, as shown in Fig. 14, and provided with the beveled surface 51 over which the pin 49 rides, when the slide returns to its normal position. One edge of the pin 49 is also beveled to permit a free movement between the pin and inner notched surface of the bell crank lever, and the bell crank at its pivotal connection with the frame, is provided with lateral movement by making the bore through which the stud pin projects oblong in shape.

The operation of the cutter in severing the wire is as follows:—The slide 3 in its downward path causes pin 49, to contact with the beveled face 50 of the bell crank lever 47, moving the bell crank lever to the right and the cutter downward, severing the wire. Such movement of bell crank lever being predetermined by the length of the beveled surface 50. The bell crank lever 47 and cutter mechanism are restored to normal position as follows:—51^b represents a cam face formed on the bell crank lever 47, and as the slide 3 with its bracket 6, continues in its downward travel, the cam face 51^b will be engaged by a pin 51^a secured to the bracket 6, and will throw the bell crank lever into its normal position. The pin 49 being underneath, or extended into the notched portion of the bell crank lever, and in the upward movement of the slide and bracket the pin will engage with the beveled surface 51, throwing the bell crank lever laterally to allow the pin 49 to travel to normal position. Such cutting action being produced at every downward movement of the slide 3.

The clenching of a staple, when such is desired, is accomplished by the following instrumentalities, (see Fig. 1): 52 represents a support mounted upon the base plate 1, provided with the rods 53, 54, to which are slidably mounted the ears 55 formed integral with the clenching block frame 56, forming guiding instrumentalities therefor. The frame 56 is slotted through which the lifting lever 57 projects, said lever being pivotally supported at 58 to the support 52. 59 represents a link arm pivotally secured upon a stud 60, secured to the slide 3, (see Fig. 1), and held under spring tension to move in the direction, shown in dotted line, Fig. 1, and limited in movement by the pin 61 secured to the slide 3. Said link arm and lever 57 are notched and adapted to engage with each other, as shown at 62, Fig. 1, whereby when the slide 3 moves down the rear end of lever 57 is depressed, raising the forward end for actuating the clenching block frame. The link arm 59 occupies the position, shown in dotted lines Fig. 1, only when thrown out of engagement with the lever 57 when it is desired to effect only a stapling operation without clenching. 63 represents a pawl pivotally secured to the frame 52 provided upon its inner face with a notch, as shown in dotted line, Fig. 1, said notch being provided with the angular surface 64, against which the pin 65 fixed to the link arm 59 engages, to release the link arm from engagement with the lever 57. This allows the lever 57 to be forced back to normal position during the upward movement of the slide by the weight of the clenching block frame. The link arm 59, during such upward travel, being thrown away from its engagement with the lever 57, through the action of the pin 65, and inclined surface 64, of the tripping pawl 63, carrying the same away from the lever 57 for a sufficient period of time to allow said lever to move to its normal position when it will become disengaged from the tripping pawl 63, and snapped back into engagement with the lever 57. 66 represents a yoke rod straddling the lever 57, and riding vertically in a groove formed in the clenching block frame 56. 67 represents a coil spring encircling said yoke rod, one end of which bears against the collar 68 loose upon said yoke rod, the opposite end against a collar 69, fixed to the free end of said yoke rod. This

construction forms a yielding support for the clenching block. The fabrics to be ticketed vary in thickness, and this yielding function of the clenching block and frame, serve to adjust the same between the stapling mechanism automatically, obviating the necessity of adjusting the clenching block to different positions according to the thickness of material desired to be tagged. 70 represents the clenching block, (see Fig. 2), fixed to the upper surface of the clenching block frame and provided with the grooves 71 for clenching the staples. 72 represents a guard formed over the outer ends of the grooves for preventing the staple limbs or points from being forced into the goods. 73 represents a yoke pivotally supported upon the side of the clenching block 72, and held into its position by means of the spring controlled pin 74, (see Fig. 4), bearing against one limb of the yoke 73.

75 represents a notch formed in the lower face of the yoke 73, through which the limbs of the staple pass when it is desired to staple a tag without clenching the same or applying the tags at such time to the goods. When it is desired to effect such a tag-making operation, the notched end of lever 57 is depressed by hand, disengaging link arm 59, permitting the same to swing upward, as shown in Fig. 1, dotted line, being limited in such upward swing by the pin 61. The disengagement of the link arm 59 from the lever 57 maintains the clenching block frame 56 in a normal position of rest, and free from engagement with the stapling mechanism. The yoke 73 is swung up, as shown in Fig. 4, dotted lines. Thus, as the stapling mechanism is set into operation, the wire will be severed by the cutter, the staple formed by the staple bender, as before described, the anvil thrown out of position and the limbs of the formed staple pass down through the notch 75 formed in the yoke 73. In forming a tag in this manner, it is also desirable after the limbs of the tag have been properly shaped over the anvil, that the yoke 73 be brought into engagement with the tag and lower ends of the staple bender, to prevent the spreading of the limbs of the staple and leave them in perfect shape for hand stapling. As but a slight movement of the clenching block frame is required, the same is accomplished by the link arm 59 in its released position, as shown in dotted lines, Fig. 1, engaging with the lever 57 when the slide comes within a short distance of its limit of downward movement, the link arm lying practically in a longitudinal position and maintained in such position by the pin 61 against further vertical movement. Such two fold operation of the machine is for making, stapling and clenching a finished tag upon the goods, and making and stapling a tag to be applied by hand is highly advantageous for it renders the application of tags upon goods which could not be conveniently inserted in position on the machine, and renders the tag to be applied at distant points from the machine, without carting the goods to the machine, or vice versa, or other usages and circumstances required in tagging goods.

In order that the tagging operation can be accomplished in two movements of the slide, it is absolutely necessary that all mechanisms be actuated in time movements, and it has been found highly advantageous to actuate the mechanism for severing the strip of paper into tags, by means of the head plate 7 controlling the staple bending and driving mechanism, and the same is accomplished by the following instrumentalities:— 77 represents a platen secured to the frame 2, over which the strip of paper to be printed and cut into tags, passes. The forward end is provided with a guide plate 78 suitably slotted by means of the slots 79, 80, to permit the cutter and staple bending and driving mechanism to pass through. 81 represents a sleeve slidably mounted upon the stud pin 82, said stud pin being secured in the guide plate 78. 83 represents a coil spring for exerting upward pressure to the sleeve 81. 84 represents a paper cutter blade fixed to the sleeve and passing through in its downward movement through the slot 79.

85, 86, represent cutter actuating rods fixed to the head plate 7, and passing through bores formed in the bracket projection 5 of the main frame 2. These rods in their downward movement strike against lugs projecting from the sleeve 81 carrying with it the cutter for a cutting operation.

Having described my invention, I claim:—

1. In a machine of the class described, employing wire cutting, staple forming and driving mechanism, a main reciprocating member, a staple driver supported upon said reciprocating member, a hollow semi-cylindrical bender in which said driver slides, means carried by said staple driver for actuating said staple bender during the downward movement of said staple driver, bifurcated slotted limbs on the forward end of said bender for holding the wire, a spring detent in the staple driver support adapted to engage the staple bender on the back stroke of the main actuating member, and a stop for limiting the upward movement of said bender, substantially as described.

2. In a machine of the class described, employing a main reciprocating member, intermittent wire feeding mechanism, staple bending mechanism, the said staple bender being formed with bifurcated ends, an open slot and a conical eye in each limb on the feeding side thereof, an anvil normally rest-

ing between the limbs of said bender, a wire support on said anvil, means for moving the said bender at a predetermined time, so as to bring the said conical eyes of the bender limb in the plane of the path of the feeding wire, a staple driver, means carried by said staple driver to actuate the bender upon the downward movement of the staple driver, and means for moving said anvil in and out of position at a predetermined time by the action of the staple driver and main actuating member, substantially as described.

In testimony whereof, I have hereunto set my hand.

FREDERICK KOHNLE.

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