

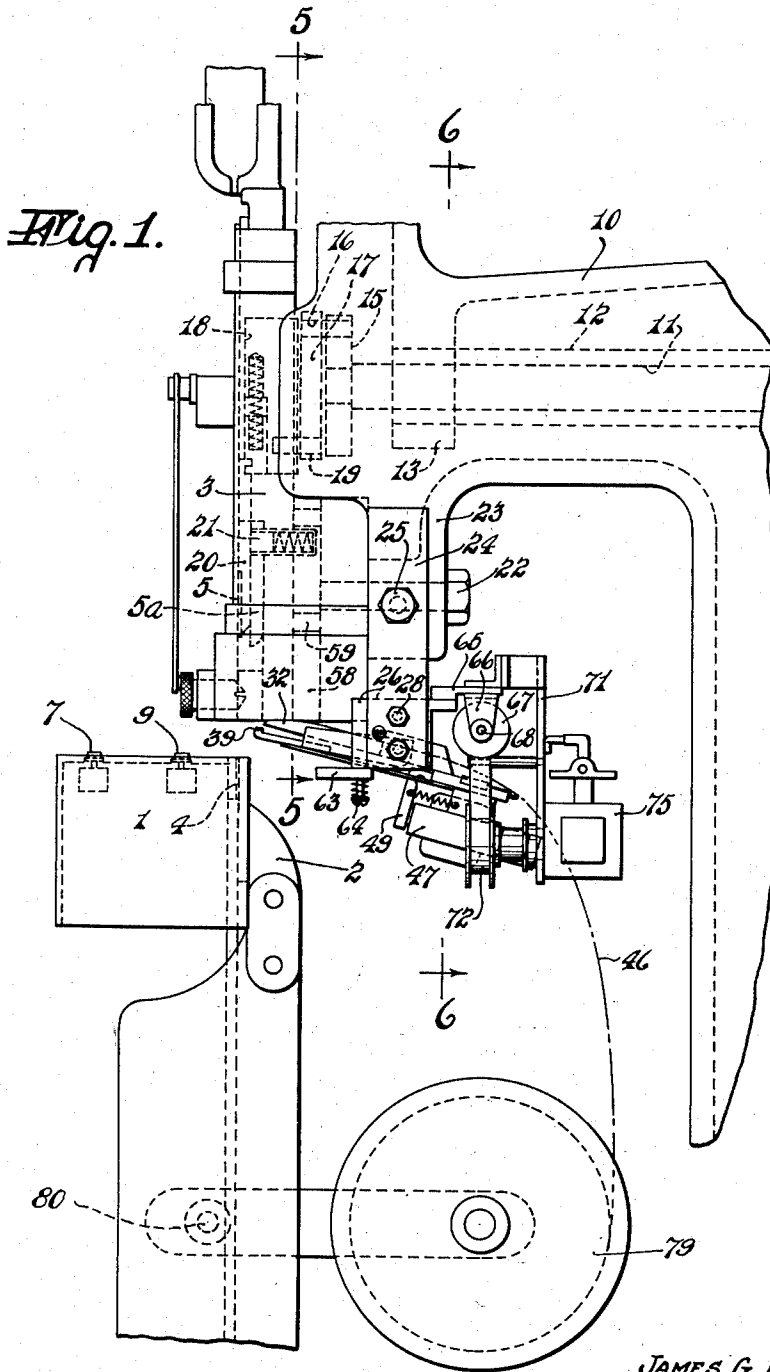
May 19, 1953

J. G. MACKECHNIE, JR
TICKET PRINTING AND FEEDING APPARATUS
FOR WIRE STITCHER MACHINES

2,638,822

Filed April 22, 1950

3 Sheets-Sheet 1



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Fig. 2.

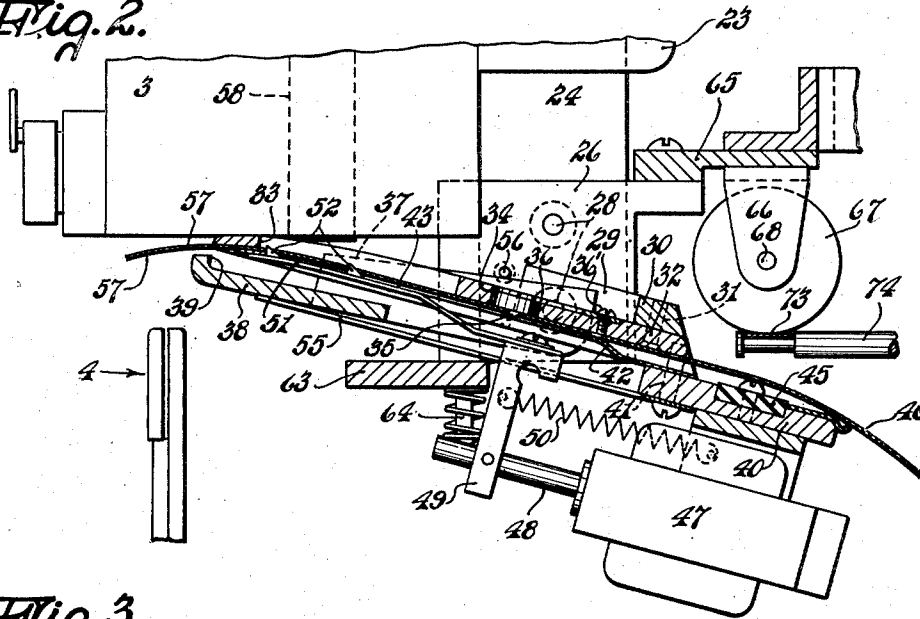
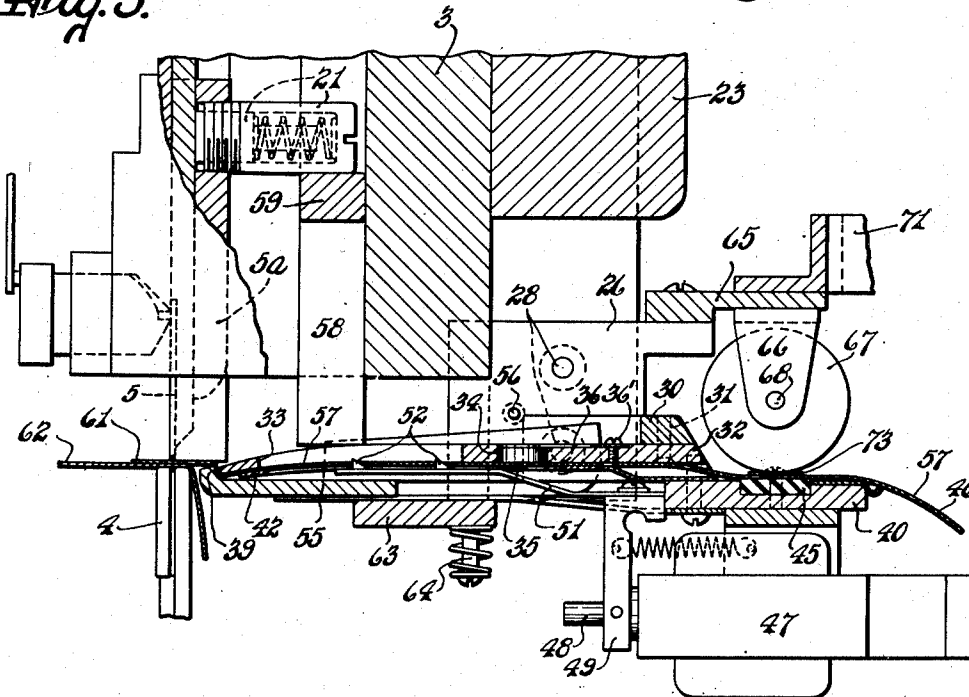


Fig. 3.



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Fig. 4.

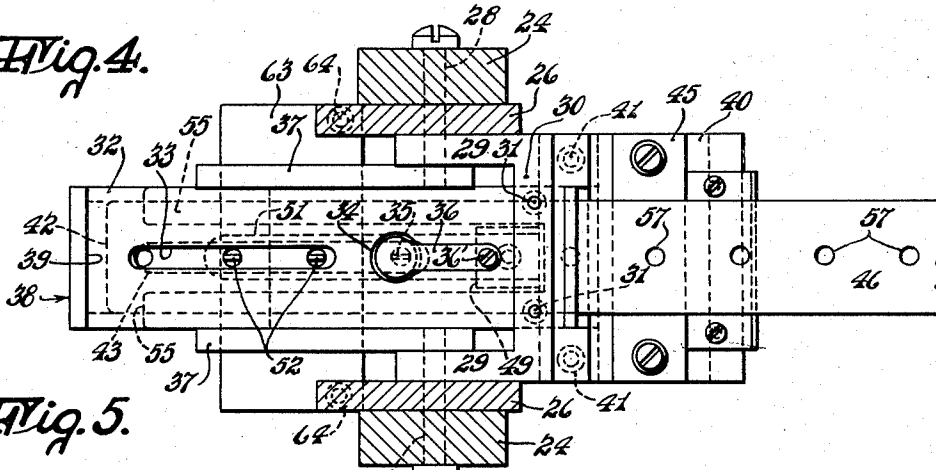


Fig. 5.

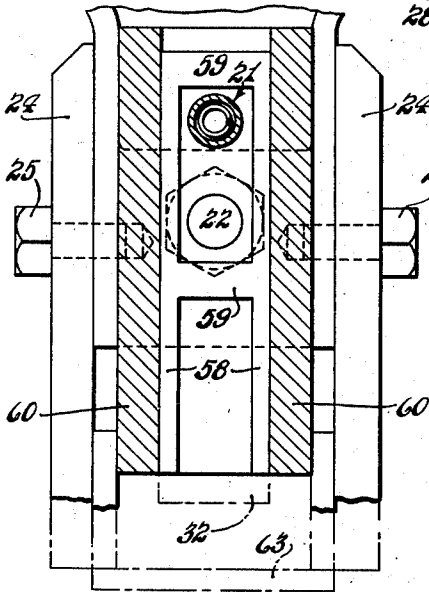


Fig. 6.

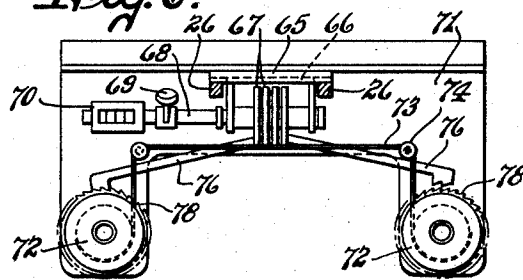


Fig. 8.

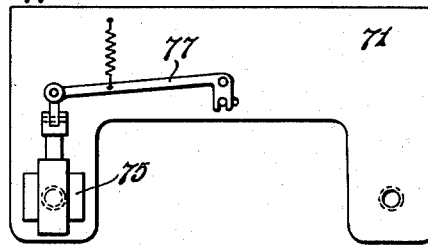
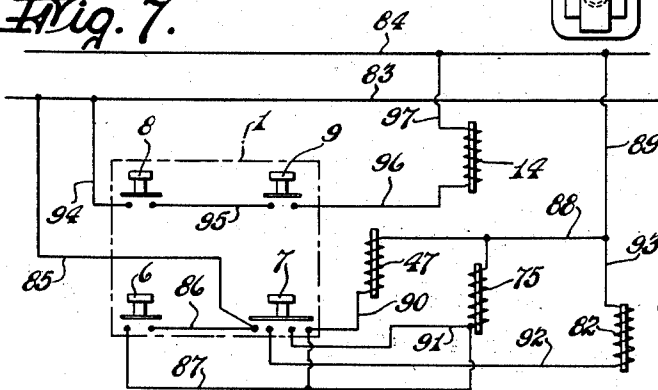


Fig. 7.



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TICKET PRINTING AND FEEDING APPARATUS FOR WIRE STITCHER MACHINES

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Application April 22, 1950, Serial No. 157,432

7 Claims. (Cl. 93—88)

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This invention relates to apparatus for printing, feeding, and attaching tags or tickets on individual articles as by a wire stitching machine and has for an object to provide mechanism automatically presenting an individually identified tag for stapling to the material of an article placed in a stitcher machine.

A more particular object of the invention is to provide apparatus in a common type of wire stitching machine by means of which a paper ticket or tag may be automatically fastened to identify each item in a bundle of laundry. The utility of the invention is specifically pointed out in its application to the work of a laundry plant, although it will be seen that the apparatus may be adapted for other specific circumstances.

Another object of the invention is to provide in a machine of the character described a novel means for delivering the free end of a paper strip between the staple forming members of a wire stitcher machine and for simultaneously severing a tag from the end of the strip and printing a succeeding portion of the strip while the stitcher machine is performing the staple forming operation.

These and other specific objects and advantages of the invention will be apparent from the following description of an apparatus embodying the invention as shown by the accompanying drawings, in which:

Fig. 1 is a side elevation of a wire stitching machine having the mechanism of the present invention mounted thereon;

Fig. 2 is an enlarged side elevation of a portion of the mechanism shown by Fig. 1 and illustrating the operation of the ticket strip advancing means;

Fig. 3 is a similar view to show the relationship of parts in the operation of affixing the ticket while severing the same from the end of the strip and printing a succeeding strip section;

Fig. 4 is a plan view showing details of the ticket strip feeding mechanism;

Fig. 5 is a view on line 5—5 of Fig. 1 showing detail of the severing mechanism;

Fig. 6 is a view on line 6—6 of Fig. 1 to show the printing mechanism;

Fig. 7 is a wiring diagram of the machine; and
Fig. 8 is a rear view of the printer frame shown by Fig. 6.

The mechanism of a wire stitching machine is generally known and readily understood by those skilled in the art. The apparatus of the present invention is described in connection with the parts of a wire stitcher machine well known in

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the trade as a "No. 2 Boston Wire Stitcher" and manufactured by the Boston Wire Stitcher Company of Warwick, Rhode Island. Prior Patent No. 1,983,384, granted December 4, 1934, to H. T. McClure contains a detailed disclosure of the wire forming and stitching mechanism which will be herein referred to in a general way and only insofar as deemed necessary for an understanding of the present invention.

As above stated the apparatus disclosed is particularly adapted for attaching by staples small identification tickets on articles in a laundry plant and is for identifying each item of a customer's laundry with an individual number. Thus, the machine as shown by Fig. 1 is provided with a work support or table 1 having a rectangular upper surface mounted on the frame 2 of the anvil portion of a stitcher machine.

The table 1 is vertically spaced from the lower edge of a bonnet or head 3 of the machine containing the wire forming and driving elements for affixing a wire staple in a piece of material placed on the table. Clincher mechanism at 4 in table 1 receives the wire staple driver blade 5 brought downwardly (Fig. 3) to clinch the staple to the material.

In using the machine the operator grasps an article of laundry and holding a portion thereof stretched between his hands advances it across the table and actuates the mechanism. As will be seen from the wiring diagram of Fig. 7 the table has two spaced switch buttons 6 and 7 at the rear edge of the table and two spaced switch buttons 8 and 9 at the front of the table. By first actuating the switch 7 electrical circuits are established to operate the ticket feeding, printing, and counting apparatus as will be described. Switch 6 may also be energized if desired for positioning the operator's hands. It need not be energized, however, in the usual operation as will be later discussed. The operator then advances his hands in spaced relation to depress switches 8 and 9. The circuit established by the latter switches actuates the staple driving and forming apparatus, cuts off the ticket, and prints a succeeding section of the ticket strip for attachment to an article in a succeeding staple attaching operation. The spaced relation of switches 8 and 9 prevents a careless operator from placing his hands in the path of the staple driving bar by requiring the closing of both switches to actuate the machine.

As shown by Fig. 1, the wire stitcher machine has a horizontally disposed arm 10 in which a drive shaft 11 is journaled in a sleeve bushing 12

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held by a bearing 13 at the forward end of arm 10. At the other end of the shaft a suitable motor driven power transmitting element (not shown) may be coupled to the shaft by means of a clutch engagement (not shown). As will be readily appreciated the clutch engagement may be effected through energizing a clutch solenoid 14 (Fig. 7) by the closing of switches 8 and 9. The clutch is adapted to engage the shaft 11 for one revolution thereof.

At the front end of shaft 11 is a crank disc 15 with a pin 16 fixed eccentrically thereon to oscillate a link 17 which in turn reciprocates a vertically disposed slide 18 through a pin 19 of the slide. The slide 18 is guided in the head 3 for actuating a driver bar 20 and driver blade 5 in the manner disclosed by the aforesaid McClure patent. A frictional coupling indicated at 21 provides a driving connection to reciprocate the driver blade 5 and a staple forming bender bar 5a.

The head 3 is mounted in assembled position on the horizontal arm 10 as by a bolt 22 secured on a lower hanger portion 23 thereof.

At each side of portion 23 are fastened mounting straps 24 secured thereto by bolts 25 and providing the means for carriage of a ticket feeding and printing mechanism for the new apparatus. As more clearly shown by Figs. 2, 3, and 4 the spaced ends of straps 24 below portion 23 carry adjacent spaced frame plates 26. Rearwardly and at the top thereof (Fig. 2) is rigidly mounted a rearwardly disposed connecting hanger for carrying the printing elements of the mechanism as will be described.

Between the plates 26 is pivotally hung the ticket strip feed device as on the lower pair of bolts 28 fastening the plates 26 to straps 24.

The feed device is pivoted as on a swinging frame and hung on bolts 28 by a hanger block. The block is a C shaped member with spaced side arms 29 (Fig. 4) held on bolts 28 inwardly adjacent plates 26. An integral portion 30 is rearwardly disposed and undercut or relieved to connect only the upper rear portions of arms 29 (see Figs. 2 and 3). Between the arms 29 and against the underside of portion 30 is fastened by retaining screws 31 a forwardly extending upper jaw piece 32.

The undersurface of the upper jaw is grooved or dished longitudinally to receive a ticket strip as will be described. In the forward portion of the jaw 32 is also provided a central longitudinal slot 33 and rearwardly in alignment therewith is an opening 34. In opening 34 a depending tooth 35 (Figs. 2 and 3) is mounted, as by a leaf spring 36, fastened on the upper surface of the jaw at 36'.

Also pivoted on bolts 28 inwardly adjacent arms 29 (Fig. 4) of the hanger block are side pieces 37 of a lower jaw portion. The side pieces 37 receive between them the forwardly extending upper jaw piece 32 and forwardly of the sides (Fig. 2) is a lower jaw piece 38 having an upwardly turned knife edge as at 39. Piece 38 is preferably integral with the forward portions of the sides 37.

Adjacent the rearwardly disposed connection of upper jaw 32 with portion 30 of the hanger block 31 a shelf bracket 40 is mounted as by screws 41. Screws 41 are fastened into the outer rear edge portions of arms 29 (see Fig. 4) of the block and leave a slotted passage between the undersurface at the end of upper jaw 32 and the bracket 40. Attached at the forward end of the bracket (Figs. 2 and 3) and on the upper surface thereof is a leaf spring 42 angled forwardly

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and upwardly to lie against the arcuate undersurface of upper jaw 32. The spring 42 extends forwardly to a point near the tip of the upper jaw and is provided with a long centrally disposed slot 43 extending from a point rearwardly adjacent the tooth prong 35 to the forward portion of slot 33. Spring 42 is adapted to tension the ticket strip against the undersurface of the upper jaw and to receive in its slot 43 ticket pusher prongs as will be described.

On the upper surface of the bracket 40 is inset a rubber platen 45 over which the ticket strip 46 is adapted to pass. The underside of bracket 40 has a U-shaped holder for mounting a solenoid 47. Plunger 48 of the solenoid at its forward end carries a pusher bracket 49, the latter being normally urged rearwardly by a spring 50. At the top of the bracket is a leaf spring ticket pusher 51 upwardly angled to pass between the sides 37 of the lower jaw portion and to lie with longitudinally spaced prongs 52 riding in the slot 43 of the leaf spring 42 and the slot 33 of the upper jaw.

On the underside of bracket 40 and forwardly thereof is a leaf spring with forked arms 55 extending forwardly to resiliently urge the lower jaw piece 38 upwardly against stop pins 56 fixed in the plates 26 (see Fig. 2). The forked arms 55 as may be seen by Fig. 4 are spaced to straddle the bracket 49 of the solenoid and the ticket pusher 51. As shown by Fig. 2 the ticket strip 46 passes over the platen 45 and along the passage provided at the underside of the upper jaw piece 32 to extend outwardly of the upper jaw as shown.

The strip 46 is provided with longitudinally evenly spaced perforations as at 57 two adjacent perforations being engaged by the spaced pusher teeth 52 of the pusher 51. The teeth 52 are forwardly raked to engage the forward edges of the perforations and advance the strip when the solenoid 47 is energized. On being deenergized the bracket retracts and the inclined rear surfaces of teeth 52 ride out of the perforations and rearwardly to engage the next succeeding perforations of the strip. So that the strip will be accurately positioned to transfer the teeth 52 as described the permanently positioned stop tooth 35 on spring 36 engages the next adjacent perforation rearwardly of the starting position of teeth 52 and holds the strip against frictional rearward sliding. Tooth 35 is also received in the slot 43 of spring 42 which holds the strip 46 against the undersurface of the upper jaw. Thus the energizing of solenoid 47 causes a predetermined advance of the ticket to leave a short length of the strip extending beyond the outer end of the jaws.

Referring now to Figs. 1 and 5, the mechanism for cutting the tag or ticket from the strip will be described. In the head 3 the vertically reciprocable slide 16 driven by a crank connection from shaft 11 of the stitcher machine has been described as acting on the friction coupling connection at 21 to actuate the bender bar 5a. The coupling 21 as will be appreciated is vertically reciprocated in the head during this operation. In cooperation with the coupling there is provided a hammer bar assembly slidably mounted in the head to actuate the cutting jaws of the ticket feed mechanism.

Fig. 5 shows two legs 53 of the hammer member straddling at the top thereof the coupling 21. Above and below the coupling are cross members 59 joining the legs 53. The forked construction at the lower portion of the legs is

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for clearance of operative parts (not shown) of the wire guiding means and the guideways for the legs themselves are provided in sides 60 of the head frame portion.

It will be seen from Fig. 5 and Fig. 3 that in the downward travel of coupling 21 the lower cross member 59 is thus carried downwardly to cause the lower ends of legs 58 to strike against the top of the upper jaw piece 32. The hammer will cause the upper jaw 32 to move the swinging frame of the ticket feeder on its pivot 28 and tend to close the jaw 32 relative to the knife edge 39 of the lower jaw piece 38. The tip end of the upper jaw is provided with a shearing edge so that the short tab at the end of the ticket strip will be severed.

It will be noted from Fig. 2 that the upper jaw 32 is held upwardly against the bottom of the frame of head 3 by the greater distribution of weight of the ticket feed mechanism being disposed rearwardly of the pivot 28. The stop pin 56 prevents the lower jaw 38 being urged upwardly to block passage of the ticket strip from between the jaws. The lower jaw, however, is spaced vertically from the work support surface at the top of the clincher device 4 so that clearance is afforded to place a garment under the free end of the ticket strip. When the wire forming and driving mechanism is actuated to bring the partially formed staple into position for the attaching operation, the hammer rocks the feed frame to carry the free end of the ticket strip into position where the prongs of the wire will pierce the two thicknesses of the ticket and garment.

As seen by Fig. 3 the ticket at 61 is then severed from the strip 46 and is attached to the material 62 of a garment. The lower jaw 38 is, as previously described, independently pivoted on the bolts at 28 and upwardly urged by the leaf spring support of arms 55 seated on bracket 40. It will be apparent that the pivoting of the feeder frame will not by itself insure the cutting action of the jaws. To positively close the jaws and wipe the tip of jaw 32 past the knife edge 39 of jaw 38 a bumper piece 63 stops further rocking of the frame by supporting the same with the jaws immediately adjacent the work table surface. Bumper 63 is resiliently mounted between the lower forward end portions of plates 26 as by bolt and spring assemblies at 64.

The return of the ticket feeder frame from the position of Fig. 3 to its upper position of Fig. 2 is accomplished by the heavier weight at the rear thereof. The rearwardly balanced weight is sufficient to raise the hammer in the head 3 when the coupling is raised on the return stroke of the driver mechanism.

It will be obvious that Fig. 2 shows the solenoid in extended ticket feeding position and that when the hammer drops for movement to the position of Fig. 3, the solenoid is normally de-energized and in retracted condition.

In Fig. 6 a plan view of the printing elements of the mechanism is shown. In Figs 2 and 3 a partial side view may be seen. Immediately above the deck of the bracket 40 on which the platen 45 is provided a hanger 65 for supporting the printer is mounted on the upper rear ends of frame plates 26 to permit the printer frame to overhang the rear end of the ticket feeder. Under the hanger 65 is positioned a depending numeral wheel device adapted to register its number for printing on the ticket

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strip overlying the platen 45. The assembly of the printing mechanism as shown is a common type of apparatus with rotatable wheels for changing numerals as desired and providing an inked ribbon for successive printing operations.

From the position of Fig. 3 it will be seen the wheel bracket 66 positions the numeral wheels 67 so as to print a number on the ticket strip whenever the feeder bracket 40 is rocked upwardly in the ticket cutting operation. The wheels 67 are interlocked in the usual manner of such devices so that the number may be changed by partial rotation of a shaft 68 (Fig. 6) when a finger piece 69 is depressed. A counter 70 is affixed to the end of the shaft 68 to give a visual check on the number registered on the wheels or for other totalizing purposes as may be desired.

A frame 71 is affixed to the hanger 65 for carrying the inked ribbon rolls 72. A ribbon 73 is guided between the rolls by pins 74 so as to lie adjacent the numeral wheel for printing a number on the ticket strip.

The ribbon is advanced by means of a solenoid tripping one of two lever arms 76 for winding one or the other of the ribbon rolls 72 in the usual manner. The solenoid 75 on the rear of frame 71 (Fig. 8) when energized pivots a lever 77 on the back side of the frame which through suitable connections (not shown) actuates one of the arms 76 to engage either roll at the saw tooth peripheral edge of a roll wheel 78 (Fig. 6). Apparatus for advancing an inked ribbon in this manner is common and the particular details thereof may be as desired.

The relative positioning of the parts in the complete assembly may be seen by Fig. 1 wherein the ticket strip spool supply 79 is shown mounted on a bracket fixed at 80 on the anvil frame 2 below the feeder and printing apparatus.

Referring to the wiring diagram of Fig. 7 it will be noted that the switch 7 energizes the ticket feed pusher solenoid 47 and the ribbon advancing solenoid 75 and in addition a solenoid 82. Solenoid 82 is adapted to trip a counter mechanism mounted at any convenient location of the stitcher frame.

In adapting the machine for work in affixing tags to individual items of laundry a totalizer for each customer's laundry is desirable. It will be realized that the number on the printer wheel device is manually changed by means of button 69 (Fig. 6) each time a different customer's laundry is presented to the machine for tagging. Accordingly a suitable counter which may be reset to zero is provided.

When a new number is assigned the counter is actuated through switch 7 every time a ticket is fed for attachment to a garment. In the event an operator makes a mistake or a faulty staple it may be detached from the article, and the article again placed on the work table for stapling. The operator may thus depress switch 6 only and actuate the solenoids 47 and 75 without energizing the counter solenoid 82. In this way the counter can be utilized without giving a false count as to the number of items in a customer's individual bundle.

In the diagram of Fig. 7 the power lines are indicated at 83 and 84. For switch 6 the circuit is from line 83 through lead 85 to one side of switch 7, to connector 86, through switch 6 and connector 87 to solenoids 47 and 75, and through connector 88 to lead 89 of line 84.

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For switch 7 the circuit is from lead 85 of line 83, through the switch 7 to three connectors 90, 91 and 92 of solenoids 47, 75 and 82 respectively, and from the solenoids through connectors 88 and 93 to lead 89 of line 84.

The circuit for switches 8 and 9 is established by lead 94 from line 83, switch 8, connector 95, switch 9, connector 96, solenoid 14 and lead 97 to line 84.

What is claimed is:

1. A wire stitching machine having a work support, staple driver mechanism and switch operated means to reciprocate said driver against said support, and in combination ticket feeding mechanism for presenting a ticket on the support for attachment to a work piece, said mechanism comprising a rocker frame pivotally attached on said stitcher machine, ticket strip advancing means on said frame, ticket strip guiding and cutting means on the frame, forwardly of the pivot and lying adjacent said work support, a ticket strip supporting shelf carried by said frame and having a platen surface rearwardly of said pivot, said frame being weighted rearwardly to normally urge said guiding and cutting means upwardly of said work support, upper and lower stops to limit the pivoting of the frame, means actuated by said driver mechanism and engageable with said cutting means to pivot said frame, printing elements positioned in spaced overlying position relative to said platen surface to receive a ticket strip in said pivoted position of the frame, an inking ribbon extending across said elements with feeding means for advancing the ribbon to renew the same, and switch operated electrical means for actuating said ticket strip advancing means and said ribbon feed independently of said driver means.

2. Ticket feeding mechanism adapted for use on a stitching machine having a head, an anvil work support spaced therefrom, a driver in the head and means to reciprocate the driver against said table to form a wire staple, said mechanism including a pivotally mounted frame having an upper cutter jaw piece fixed in relation to said frame with its forward edge adjacent said support and normally positioned by said frame upwardly of the surface of the support, a lower jaw piece pivotally mounted on the frame and movable relative to the upper jaw, said lower jaw being provided with a knife edge spaced from and underlying the forward edge of the upper jaw, and a reciprocable tongue urged against the underside of said upper jaw piece and provided with longitudinally spaced prongs, said upper jaw piece having a slot to receive said prongs, a longitudinally dished undersurface to guide a ticket strip along the same, and means to prevent rearward sliding of a ticket on said undersurface, a solenoid operated reciprocable plunger carrying said tongue, and a switch button actuated electrical circuit to energize said solenoid, a hammer member movable against said upper jaw piece and adapted for movement with said driver mechanism to pivot said frame, and a resilient stop in the path of said lower jaw piece limiting the pivotal travel thereof, said frame and upper jaw piece being pivoted toward said lower jaw piece by said hammer member to move said jaws together to cut the free end of a ticket strip advanced by said tongue.

3. Apparatus for feeding a printed ticket from a continuous strip of tape comprising a support, a frame pivoted thereon having an upper jaw

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piece with a shearing blade edge at its front end, a lower jaw piece supported by said frame and provided with a knife edge underlying the front end of the upper jaw, reciprocable strip

engaging members carried by the frame to advance said strip along the undersurface of said upper jaw, solenoid operated means to reciprocate said members, a shelf carried by said frame to underlie said tape strip and printing means mounted on said support in fixed relation thereto and in the pivotal path of said shelf, the movement of said upper jaw against said lower jaw causing engagement of said shelf against said printing means.

4. In a wire stitcher the combination of an anvil table, staple driving means operable to drive the legs of a wire staple into a work piece held on the table, a pivotally mounted frame including cutter means mounted at the front end of the frame adjacent said table, said frame being normally biased to elevate said front end and cutter means higher than the table and means on said frame to support and advance a strip of tickets forwardly thereof with the free end of the strip extending beyond said cutter means and into spaced overlying position with respect to said table, actuating means connected with said staple driving means and movable against the front end of said frame to pivot the same downwardly, a stop limiting pivotal movement of the frame and operable to position the free end of the ticket strip on a piece of work held on said table, the pivotal movement of said frame against said stop by engagement of said actuating means against said frame operating said cutter means to sever a ticket from said strip for attachment to said work.

5. In combination on a wire stitching machine having a head, an anvil table spaced therefrom, a slide in said head reciprocable relative to said anvil table and a staple driver operatively attached to said slide, a ticket printing and feeding apparatus comprising a support in fixed relation to said head, a frame pivoted on said support and including means to advance a strip of tickets forwardly of the frame, relatively movable upper and lower cutter elements provided at the front end of said frame and positioned adjacent said anvil table, said pivoted frame being rearwardly weighted and normally holding both said cutter members upwardly of the anvil table, a platen at the rear of the frame adapted to underlie said ticket strip and printing means carried by said support in fixed relation thereto and opposite said platen, a reciprocable hammer member operatively connected with said slide and engaging said upper cutter element when said slide is moved toward said table, to move said upper cutter toward the lower cutter element and to pivot said frame, stop means limiting pivotal travel of said lower cutter element and said frame and positioning said elements at the edge of said table, said platen in pivoted position of the frame being pressed against said printing means.

6. A wire stitching machine having a work table, reciprocable driving mechanism, and means to move said mechanism toward said table in combination with a ticket feeding and printing apparatus having means to advance a strip of tape toward said table and including a support and on the support a pivoted frame provided with an outlet adjacent said work table for positioning the free end of the tape in overlying relation to said table, said pivotal frame having a rear shelf in underlying relation to a portion of said

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tape strip on said frame and severing means at the outlet of the frame, actuating means connected to said reciprocable driving mechanism engageable with said severing means and movable with said driving mechanism against the latter to pivot said frame, said frame in pivoted condition positioning the free end of said strip on said work table, and printing means fixed on said support engageable by said rear shelf for printing a symbol on said tape.

7. Apparatus for feeding a printed ticket from a continuous strip of tape comprising a support, a frame pivoted thereon having an upper jaw piece with a shearing element at the front end of the frame, a lower jaw piece supported by said frame and provided with a complementary shearing element underlying the shearing element of the upper jaw, reciprocable strip engaging members carried by the frame to advance said strip toward

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the front end of said frame, means to reciprocate said strip engaging members, a shelf carried by said frame to underlie said tape strip, and printing means mounted on said support in fixed relation thereto and in the path of movement of said shelf, the movement of said upper jaw against said lower jaw causing engagement of said shelf against said printing means.

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