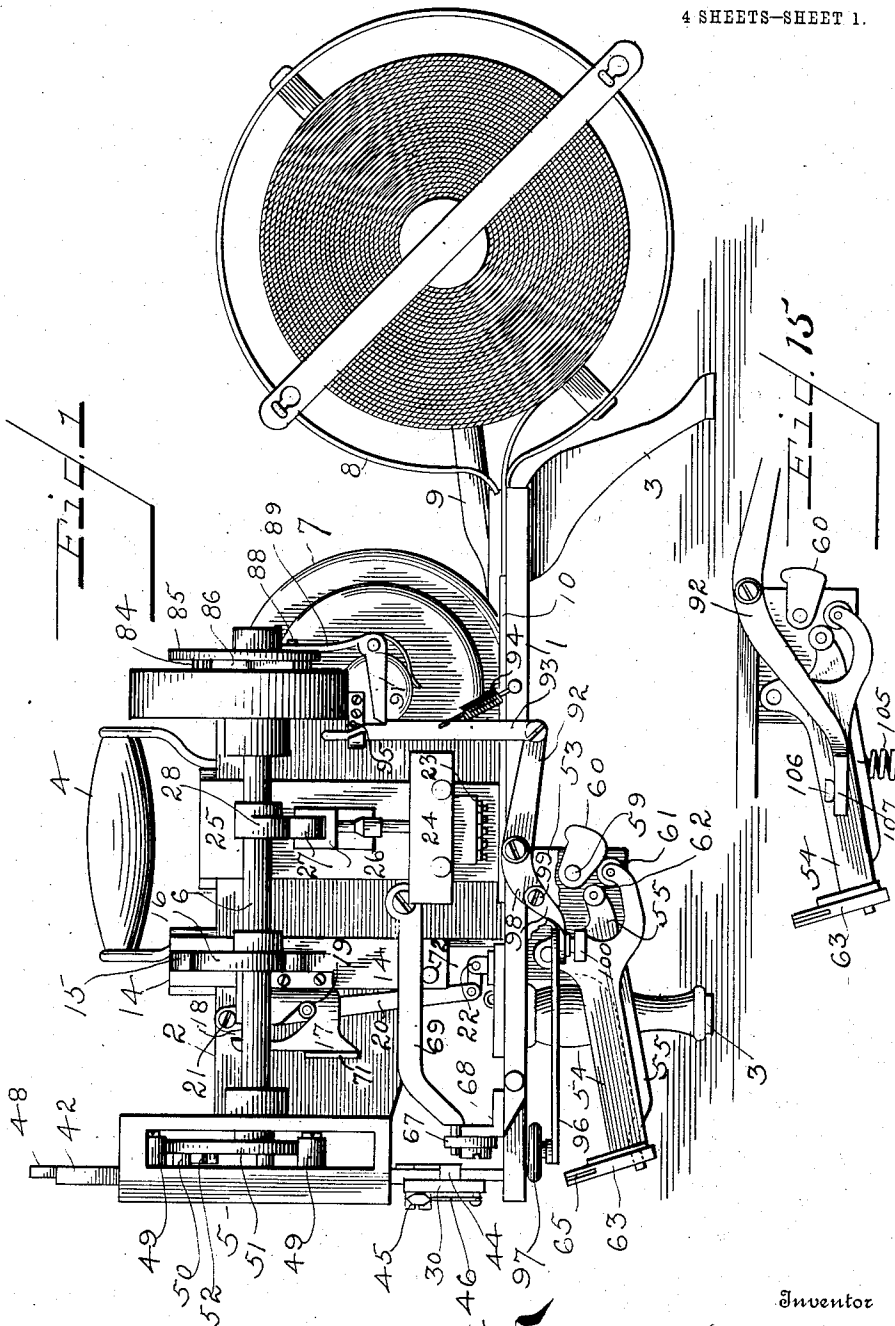


H. G. DAVIS.
TICKET ATTACHING MACHINE.
APPLICATION FILED APR. 8, 1910.

1,048,136.

Patented Dec. 24, 1912.

4 SHEETS—SHEET 1.



Witnesses

Grace Bechtol
Alfred M. Gray

Inventor

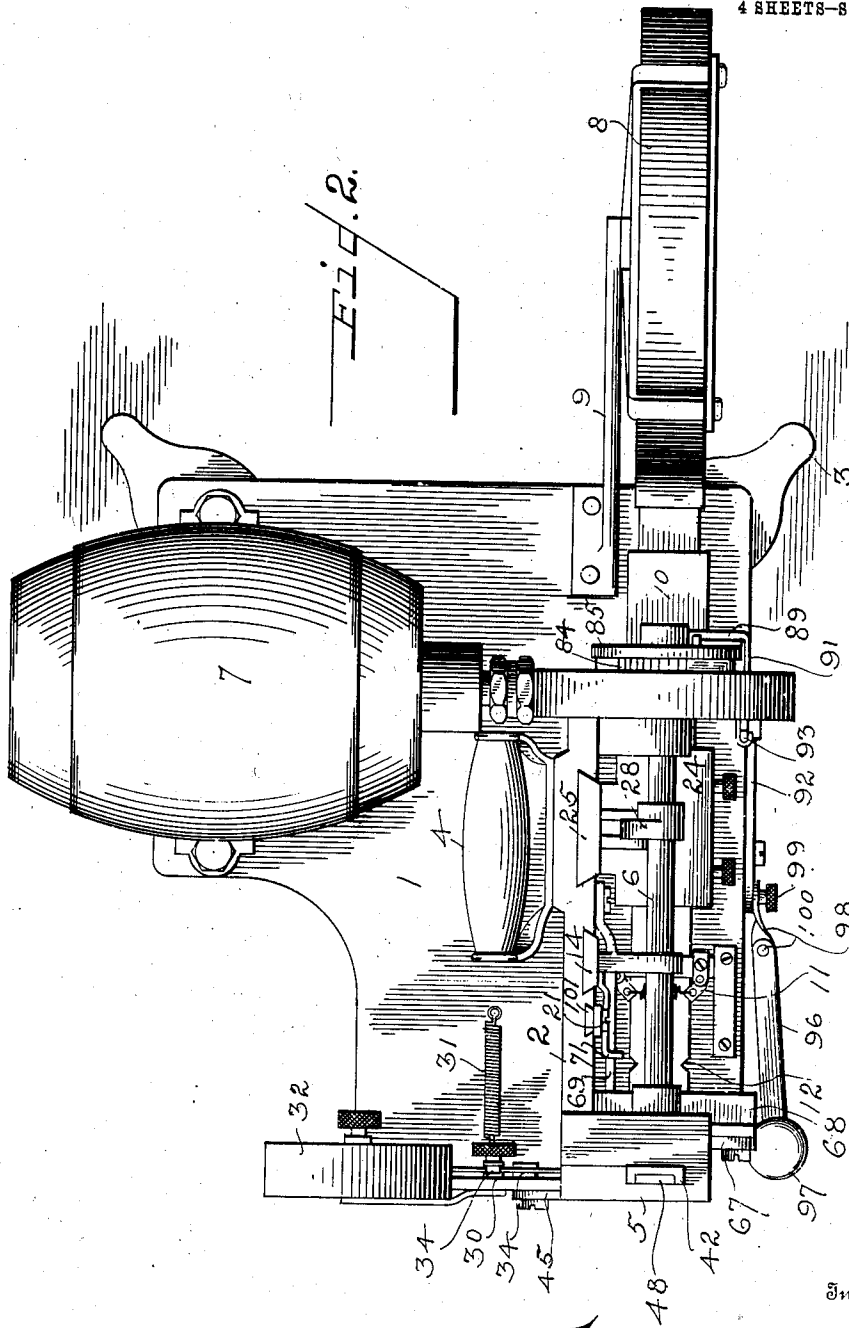
H. G. Davis
J. P. Walker
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4 SHEETS-SHEET 2.



Witnesses

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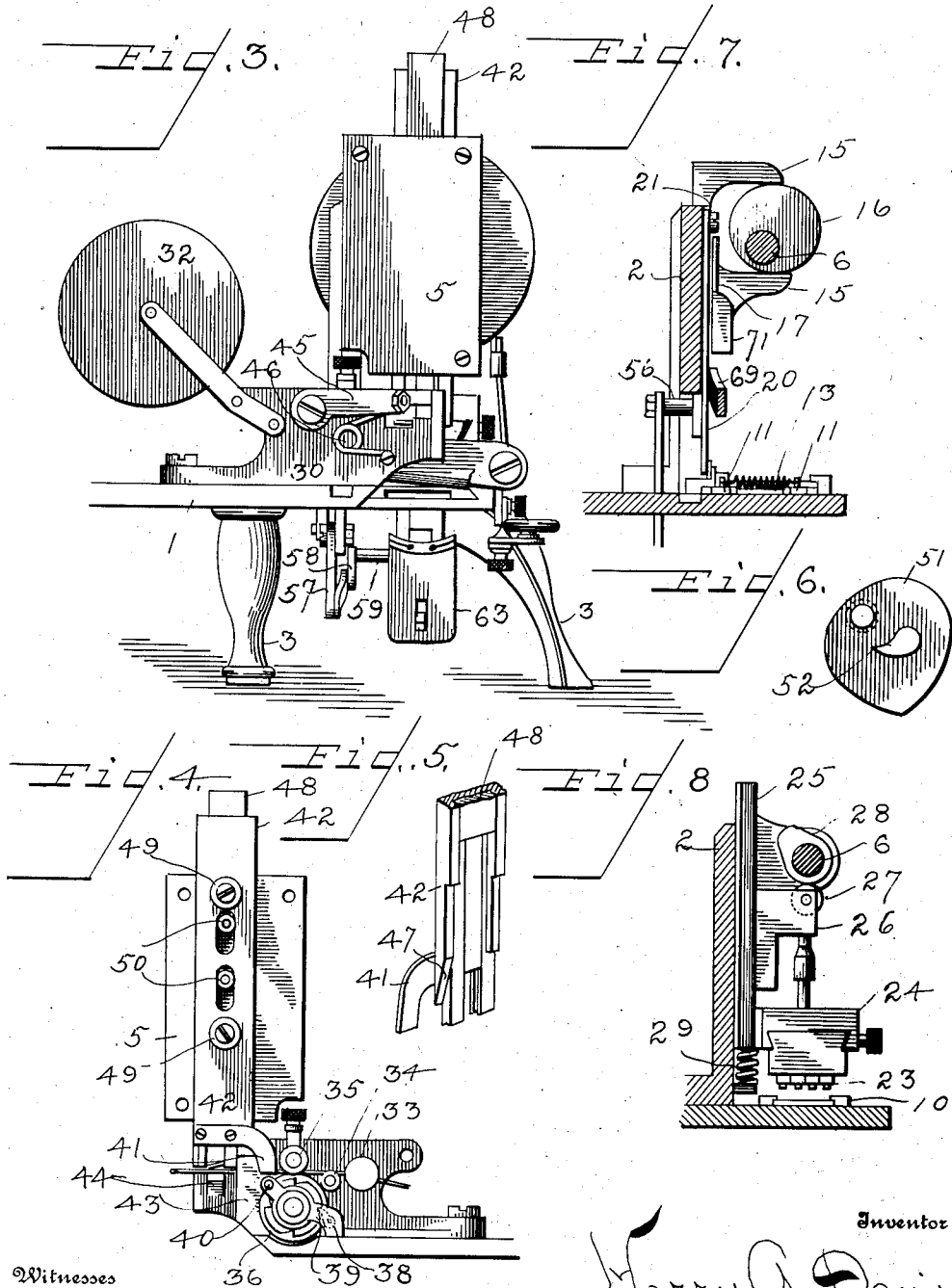
Harry G. Davis
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4 SHEETS-SHEET 3.



Witnesses

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4 SHEETS-SHEET 4.

Fig. 9.

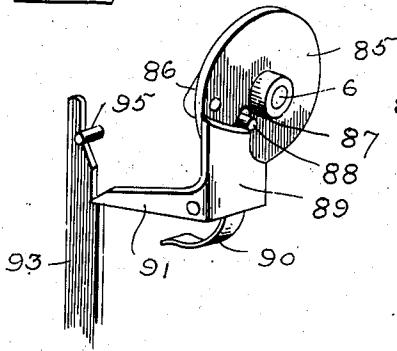


Fig. 10.

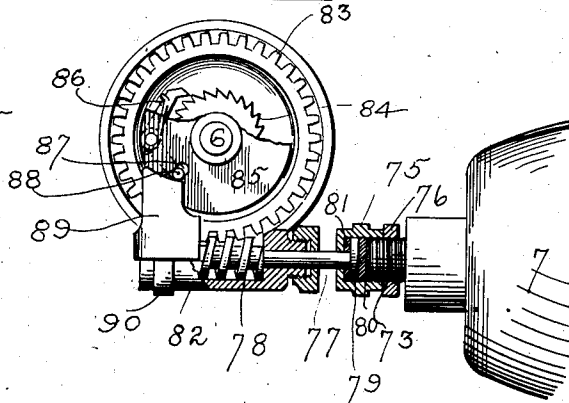


Fig. 11.

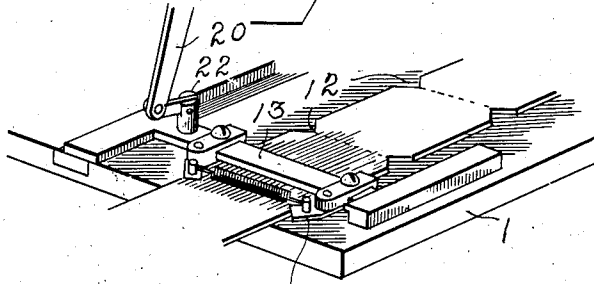


Fig. 12.

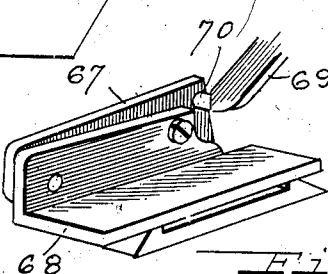


Fig. 13.

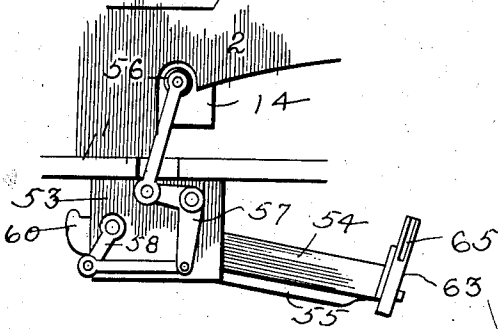
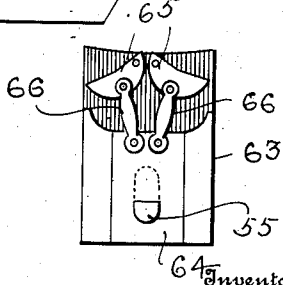


Fig. 14.



Witnesses

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Alfred M. Gray-

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UNITED STATES PATENT OFFICE.

HARRY G. DAVIS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE H. G. DAVIS MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

TICKET-ATTACHING MACHINE.

1,048,136.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed April 8, 1910. Serial No. 554,237.

To all whom it may concern:

Be it known that I, HARRY G. DAVIS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ticket-Attaching Machines, of which the following is a specification.

My invention relates to machines for attaching pin tickets to garments or fabrics, and more particularly to a power driven machine adapted to automatically perform the various functions of preparing the ticket, forming the staple and attaching the ticket by means of the automatically formed staple.

The object of the invention is to simplify the structure as well as the means and mode of operation of such machines, whereby they will not only be cheapened in construction, but will be more efficient in use, substantially automatic in operation, easily operated and controlled, and unlikely to get out of repair.

A further object is to provide improved means of actuating the staple forming and driving devices; to provide means for automatically marking upon the ticket the stock number, price and other data as may be desired; to provide improved means for actuating the clenching mechanism; to provide an improved drive connection between the drive shaft and operating parts adapted to yield under undue strain; and to provide an improved non-repeating connection between the drive shaft and the operating parts whereby said parts will be automatically disconnected after each operation.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described and set forth in the claims.

Referring to the drawings Figure 1 is a side elevation of the assembled machine. Fig. 2 is a plan view of the same. Fig. 3 is an end elevation thereof, viewed from the left of Figs. 1 and 2. Fig. 4 is an interior elevation of the head of the machine, being the opposite of that disclosed in Fig. 3, illustrating the wire feeding and staple forming and driving mechanism. Fig. 5 is

a detail perspective view of the staple forming and driving mechanism. Fig. 6 is a detail view of the actuating cam for the staple forming and driving mechanism. Figs. 7 and 8 are detail transverse sectional views. Fig. 9 is a detail perspective view of the non-repeating driving connection. Fig. 10 is a detail view partly in section of the yielding drive connection also the non-repeating connection between the drive shaft and the operating parts. Fig. 11 is a detail perspective view of the ticket feeding mechanism. Fig. 12 is a detail perspective view of the ticket cut off mechanism. Fig. 13 is a detail view of the clencher actuating connections. Fig. 14 is a detail view of the clenching devices. Fig. 15 is a detail view of a modification.

Like parts are indicated by similar characters of reference throughout the several views.

The machine forming the subject matter hereof is adapted to automatically feed from a continuous strip of ticket material a length sufficient to form a ticket, to impress thereon the stock number, price and such other data as may be desired, and to sever the prepared ticket of proper length from the strip. While these operations are being performed, there is also being fed from a supply of staple wire a length thereof sufficient to form a staple which is severed by an oblique cut whereby the ends are sharpened, the severed length of wire is formed into a staple which is forced through the ticket and the fabric placed in position to receive it and the protruding ends of the staple are clenched by being bent outward. It is to be understood that several of these operations may be in progress at the same time, and that they are automatically performed in proper relation to each other. The several operations are all performed by power applied to the machine, either through a motor attached thereto as shown in the drawing or by any other suitable power driving connection. While the parts are power actuated, the driving connections are manually tripped, causing the machine to perform one complete cycle of operations, after which it is automatically disconnected, and comes to rest.

In constructing the machine there is employed a main frame comprising a base por-

tion 1, from which projects a vertical portion 2 perpendicular to said base. The frame is supported on legs 3, and is provided with a handle 4 by which it may be readily moved from place to place.

The particular wire feeding and staple forming mechanism and the ticket feeding mechanism shown in the drawings are similar to those parts disclosed in my former Patent #864,157, of August 1907. However the method of actuating such parts as herein disclosed is new and novel.

The vertical portion 2 of the main frame terminates at the left in Figs. 1 and 2, in a head 5. Journaled in suitable bearing in the head 5 and on the frame portion 2 is an actuating shaft 6 adapted to be intermittently rotated, whenever the interengaging connections are manually tripped, by a motor 7 mounted on the base 1. Carried in a suitable supporting frame 8 supported on an arm 9 projecting from the main frame is the supply roll of ticket material, from which the strip of material is led through suitable ways 10 over the base 1 and beneath the marking devices to the stapling and cut off point. The ticket strip is advanced through a step by step movement by a pair of pawls 11 which engage notches 12 formed in the margin of the ticket strip (see Fig. 11).

The feeding pawls 12 are carried by a reciprocating frame 13 mounted in suitable ways in the base 1, as shown in Fig. 11. To reciprocate the feeding pawls, there is provided a vertically reciprocating plate 14 mounted in gibbed ways in the vertical portion 2 of the main frame. The plate 14 has a forward projecting bifurcated portion forming arms 15—15, between which engages and rotates a cam or eccentric 16 mounted on the actuating shaft 6.

The rotation of the shaft 6 and the eccentric 16 causes a vertical reciprocatory movement of the plate 14. Carried by the reciprocatory plate 14 is a cam plate 17 having therein an irregular cam slot 18, within which engages a roller 19 on an arm 20 pivoted at 21 to the frame portion 2. At its lower extremity the arm 20 is connected by a link with a lug 22 on the reciprocating frame 13. It is obvious that the vertical movement of the plate 14 will by means of the cam slot 18 in the cam plate 17 cause a swinging movement of the pivoted arm 20 which is transmitted to the pawl carrying frame 13, causing the advance of the ticket strip one step at each operation of the shaft 6. Before being engaged by the feeding pawls each ticket portion passes over a suitable platen and beneath the marking devices by which it is impressed.

The marking devices comprise a plurality of type 23, carried in a suitable chase and supported face downward in a holder 24

rigidly carried on a vertically reciprocating plate 25, mounted in gibbed ways in the vertical portion 2 of the frame.

The plate 25 carries a lug 26, in which is journaled a roller 27 (see Fig. 8) engaged by a cam 28 on the actuating shaft 6, whereby at each rotation of the shaft 6 the plate 25 and type holder are forced downward against the tension of a spring 29, by which the parts are elevated after each impression. Pivotaly mounted on the base 1 is a vertically disposed plate 30 capable of a swinging movement outward against the tension of a spring 31. Carried on said plate 30 is a casing 32 for the supply of staple wire. The wire is led from an exit opening in the case 32 under and over the straightening rolls 33, 34, and between the feed rolls 35 and 36. The feed roll 35 is adjustable to compensate for wear and for the use of wire of different diameter. To the main feed roll 36 is secured a ratchet wheel 37, engaged by a pawl 38 on a lever 39 pivoted concentric with the ratchet wheel and feed roll. The lever 39 is provided with a stud 40, adapted to be engaged by a finger 41 on a reciprocating forming bar 42 mounted to vertically reciprocate in the machine head 5.

At each downward movement of the forming bar 42 the finger 41 engages the stud 40 and by means of the pawl and ratchet wheel advances to wire a predetermined distance, sufficient to form one staple. Beyond the feeding rolls the wire passes through a perforation in a stationary shear plate 43 and beyond its beveled edge, thence over an anvil block 44. On the outer side of the vertically disposed plate 30 is pivoted an arm 45 carrying a shear blade cooperating with the stationary shear plate 43, to sever the wire in an oblique direction, thereby pointing the ends of the staple section. A spring 46 elevates the shear arm 45 after each operation. The lower end of the forming bar 42 is bifurcated, the adjacent surfaces and ends of the tines formed by such bifurcation being grooved as shown in Fig. 5. These tines of the forming bar 42 are adapted to pass on opposite sides of the anvil block 44, and to engage the severed length of wire and bend it over the anvil block 44 into a staple, upon the downward movement of the forming bar. After the staple has been formed, an additional downward movement of the forming bar 42 causes the cam face 47 to engage a corresponding surface on the vertical plate 30 moving said plate outward against the tension of the spring 31. This movement of the plate 30 withdraws the anvil block 44 from within the formed staple and from between the tines of the forming bar, leaving the formed staple retained within the inner grooves of the tines.

Slidingly mounted to reciprocate within

a suitable guide way in the forming bar 42, is a driving bar 48, by which the formed staple is pushed from engagement with the tines of the forming bar and forced through the ticket and fabric. The forming bar 42 and the driving bar 48 are each provided with a pair of rollers 49 and 50 respectively. The rollers 50 of the driving bar 48 project through slots in the forming bar as shown in Fig. 4. Carried on the actuating shaft 6 and within the head 5 is an eccentric disk or cam 51, operating between the rollers 49 of the forming bar, and by engagement therewith reciprocating said bar to form the staple. Projecting from the face of the eccentric disk or cam 51 is a cam member 52, adapted to engage the rollers 50 of the driving bar and reciprocate said bar to drive the staple. It will be noted that both the forming device and the driving device move in a straight line, thereby forming and driving the staple more accurately.

Pivottally supported in a housing 53 projecting from the under side of the base 1 is the goods supporting arm 54, which is recessed for the reception of the pivoted clenching lever 55. The goods supporting arm 54 is so located as to register with the forming bar and driver. The supporting arm 54 is elevated into contact with the ticket and the forming bar and driver by an actuating connection with the vertically reciprocating plate 14 by which the ticket feeding mechanism is also operated.

Projecting from the rear of the plate 14, as shown in Figs. 7 and 13, is a stud 56, connected by a link with a bell lever 57 pivoted on the housing 53. The bell lever 57 is connected by a link with a rock arm 58 secured on a rock shaft 59 (see Fig. 13). The rock shaft 59 carries a cam 60, adapted upon a rotation of the shaft to engage a roller 61 carried in the rear extremity of the goods supporting arm 54. By the engagement of the cam 60 with the roller 61 the rear end of the goods supporting arm is depressed while the forward end is elevated. An additional movement of the cam 60 causes it to engage the roller 62 carried by the clenching lever 55, elevating this lever in turn after the supporting arm has reached the limit of its movement.

The clenching mechanism is carried in the head 63 of the supporting arm 54, and comprises a reciprocating plate 64, engaged by the extremity of the clenching lever 55, by which it is reciprocated within the head. Pivottally supported at central points adjacent to the upper or working surface of the head 63 is a pair of substantially semi circular clenching plates 65, their outer or working surface being slightly concave. Toggle links 66 connect these clenching plates 65 with the reciprocating plate 64. The tines of the staple forced through the

ticket and fabric by the driver enter the recessed head 63 of the goods supporting arm and engage the concave surfaces of the clenching plates 65 which are then forced upward by the action of the clenching lever 55, acting upon the reciprocating plate 64, thereby bending the tines of the staple outward and slightly upward, due to the concave surface of the clenching plates, whereby the tines will tend to reënter the fabric to which they are attached rather than the next article of a series or pile.

During the time the ticket is being attached to the goods, the ticket is severed from the strip of ticket material by a shear blade 67, pivoted to an adjustable support 68, carried on the base 1. By the adjustment of the support 68 on the base 1 the blade 67 may be made to sever the ticket strip at the proper point. The shear blade 67 is actuated by a lever 69 pivoted to the frame portion 2, which lever terminates in a stud 70, projecting through an opening in the shear blade 67 (see Figs. 1 and 12).

Projecting from the cam plate 17, carried upon the reciprocating plate 14 is a lug 71, which engages the lever 69 as the plate 14 approaches the limit of its downward movement, and forces the lever 69 and the shear blade 67 therewith downward in unison with the plate 14. Upon the return movement of the plate 14 the lever 69 is engaged by a stud 72 in the plate 14 (see Fig. 1) and thereby elevated to normal position.

The intermittent and yielding driving connection between the main drive shaft and the actuating shaft 6 is best illustrated in Figs. 9 and 10.

The main drive shaft 73 is shown in the drawings to be the armature shaft of a driving motor 7. However it is to be understood that the shaft 73 might be a counter shaft of ordinary form, carrying a drive pulley over which passes a drive belt from any suitable source of power.

Secured upon the extremity of the main drive shaft 73 is a cap or thimble 75 locked in its adjusted position by a lock nut or collar 76. Projecting within the cap 75 and in axial alinement with the drive shaft 73 is the shaft 77 of a worm gear 78, which shaft carries at its extremity a disk head 79. Between the disk like head 79 and the end of the drive shaft 73 is interposed a friction disk 80, preferably of fiber. A friction collar 81 of similar material is located on the worm shaft 77 between the disk like head 79 and the interior of the cap 75. The cap 75 is adjusted sufficiently tight to provide an ordinary driving connection sufficient to drive the machine under ordinary circumstances. However if the machine is subjected to undue strain, by the attempt to place tickets on material of

too great thickness, or if anything becomes entangled in the mechanism, whereby the continued movement might result in the straining or breakage of any of the parts, the connection between the friction disks and the worm shaft 77 and drive shaft 73 will yield, or slip to compensate for the increased resistance.

The worm gear 78 is mounted in a housing 82 carried on the frame portion 2, and meshes with a worm wheel 83, loosely journaled on the actuating shaft 6. A ratchet wheel 84 is carried by the worm wheel 83. Carried upon the actuating shaft 6 is a disk 85, to the inner face of which is pivoted a double arm spring pressed pawl 86 the spring of which (not shown) tends to force it into engagement with the ratchet wheel 84, thereby forming a driving connection between the continuous rotating worm wheel 83 and the actuating shaft 6. The disk 85 is provided with a slot 87 through which projects a stud 88 carried on the opposite arm of the double arm pawl 86. Pivottally supported on the housing 82 is a cam plate 89, spring pressed by the spring 90 into the path of the stud 88 as said stud revolves with the disk 85. The cam plate 89 is provided with an integral arm 91, by which the cam plate may be oscillated out of the path of the stud 88.

Pivoted to the side of the base portion 1 of the frame is a lever 92 to which is connected a member 93 capable of vertical movement against the tension of a spring 94. The arm 91 of the cam plate 89 normally engages a notch in the member 93. The initial elevation of the member 93 by the oscillation of the lever 92 causes a corresponding oscillation of the cam plate 89, moving said plate out of engagement with the stud 88, and permitting the double arm pawl 86 to engage the ratchet wheel 84, and thereby complete the driving connection between the drive shaft 73 and the actuating shaft 6. Upon an additional elevation of the member 93 a cam face or inclined surface thereon engages a pin 95 in the guide or keeper through which the member 93 reciprocates, which deflects the member 93 against the tension of the spring 94, and disengages the member 93 from the arm 91 of the cam plate, permitting the cam plate 89 to return to the path of the stud 88 under the influence of the spring 90. Upon the completion of the rotation of the actuating shaft and disk 85, the stud 88 will again engage the cam plate 89, and the double arm pawl 86 will be moved to disengage the pawl from the ratchet wheel 84 whereupon the actuating shaft 6 and parts controlled thereby will come to rest until the lever 92 is again oscillated to move the cam plate from engagement with the stud 88. The lever 92 is provided with an extension 96 terminating in an operating button 97,

which extension is connected to the lever 92 either by a universal joint or by an intermediate connecting member 98 pivotally connected to both the lever 92 and the extension 96 by connections at right angles to each other as shown in the drawings, at 99 and 100 in Figs. 1 and 2. By this provision the lever extension 96 is adjustable both horizontally and vertically. The operating lever extension 96 is preferably adjusted sufficiently close to the goods supporting arm that an article placed on the goods supporting arm to be tagged will overlie the button 97 of the extension of the operating lever, whereby the operating lever may be operated by a downward movement of the goods or article while grasped in both hands of the operator. If this is not possible on account of the character of the article or otherwise, the operating lever may be operated by an unused finger while the operator has both hands free to grasp the article operated upon, or if no finger is free, the extension may be adjusted sufficiently close and high to be operated by the knuckle of the operator as the goods are held upon the supporting arm.

By reference to Fig. 11 it will be seen that the ticket feeding pawls 12 are adjustable to and from each other on the frame 13 to adapt the device to feeding tickets of different width.

The ticket feed operating lever 20, instead of being pivoted directly to the frame portion 2 may be pivoted to an adjustable block 101, as shown in Fig. 2, slidably mounted in the frame portion 2, whereby the stroke of the said arm or lever 20 under the influence of the cam plate 17 may be varied, to feed tickets of greater or less length.

In Fig. 15 is shown a modification of the tripping mechanism, in which the goods supporting arm 54 when in its open or inoperative position, is supported on a spring 105 or in any other resilient manner whereby the goods supporting arm 54 will be capable of an additional downward movement when subjected to pressure, against the tension of the spring 105. Projecting from the goods arm 54 is a lug or stud 106. The trip lever 92 is extended as at 107 and engages beneath the lug 106. Any downward pressure on the goods arm 54 against the tension of the spring, will serve to depress the trip lever through the engagement of the lug 106 therewith, which will set in motion the mechanism whereby the arm will be elevated to operative position independent of the trip arm. Thus a downward pressure upon the article when in place on the goods arm will serve to operate the tripping mechanism.

From the above description it will be apparent that there is thus produced a machine of the character described, possessing

the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportion, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

Having thus described my invention I claim:

10 1. In a machine of the character described, the combination with intermittently operating staple forming and ticket attaching mechanism and drive mechanism for the staple, of a depressible trip lever adapted to
15 release the actuating devices located adjacent to the ticket attaching mechanism, adjusting means for the lever whereby it may be adjusted vertically to a position on level with or above the plane of the article operated upon.

20 2. In a machine of the character described, the combination with intermittently operating staple forming and ticket attaching mechanism and drive mechanism for the staple, of a depressible trip lever located
25 adjacent to the ticket attaching mechanism and adjusting means for the lever whereby it may be adjusted horizontally to and from the ticket attaching mechanism.

30 3. In a machine of the character described, the combination with intermittently operating staple forming and ticket attaching mechanism and drive mechanism for the

staple, of a pivoted trip lever adapted by its oscillation to set the said devices in operation
31 located adjacent to the ticket attaching mechanism, adjusting means for the lever whereby it may be adjusted both horizontally and vertically to bring it to a position
41 in proximity to the ticket attaching mechanism whereby the operator may manually operate said lever while grasping the article operated upon.

4. In a machine of the character described, a main frame, ticket feeding and staple
41 forming mechanism, a pivoted goods supporting arm, movable to and from the point of attachment of the tickets, a lever pivoted to the goods supporting arm and movable therewith, but capable of a limited movement independent thereof, a head on the
51 goods supporting arm, a reciprocating member mounted in the head and reciprocated by the independent operation of said lever, oppositely disposed pivoted members carried
51 by the head, links connecting the pivoted member with the reciprocating member, whereby the movement of the reciprocating member will cause a synchronous movement
61 of the pivoted members.

In testimony whereof, I have hereunto set my hand this 25th day of March, 1910.

HARRY G. DAVIS.

Witnesses:

WM. C. GREW,
FRED W. CASSIDY.