Aug. 22, 1961 J. G. MACKECHNIE 2,996,720

TICKET FEEDING APPARATUS FOR HAND STAPLING MACHINES

Filed Nov. 30, 1959 2 Sheets-Sheet 1

Fig 1

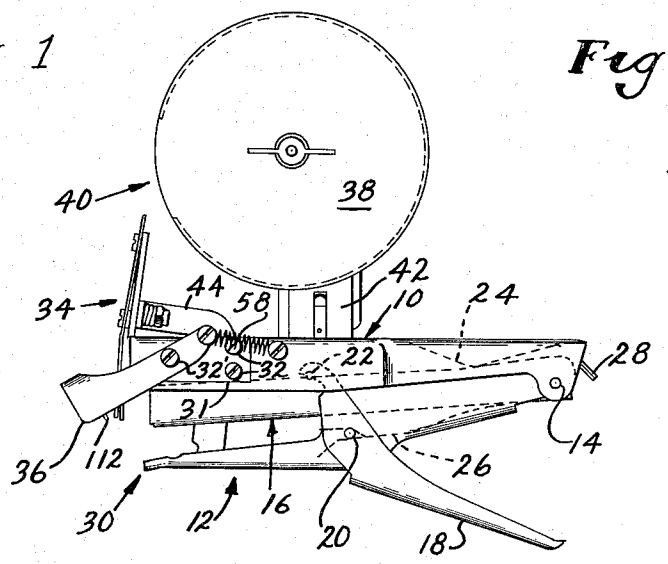


Fig 4

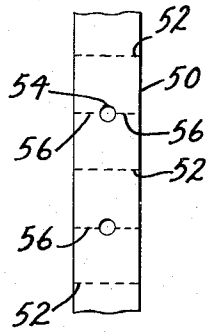


Fig 2

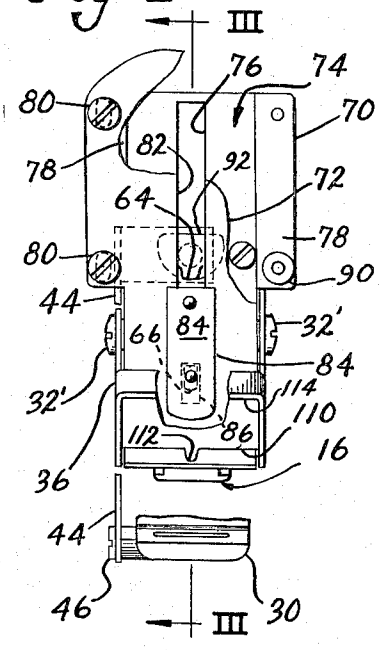
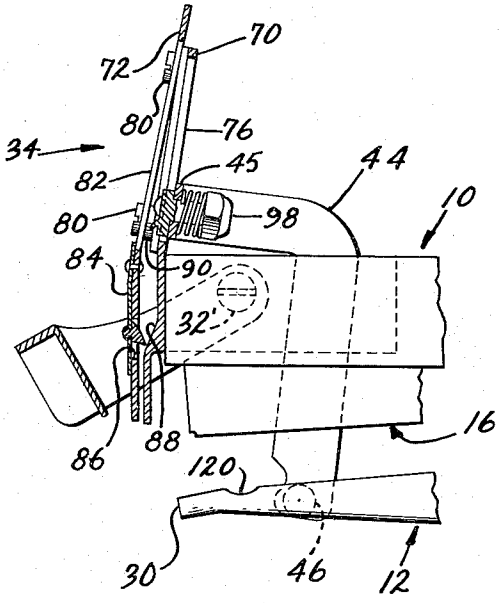


Fig 3



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Fig 5

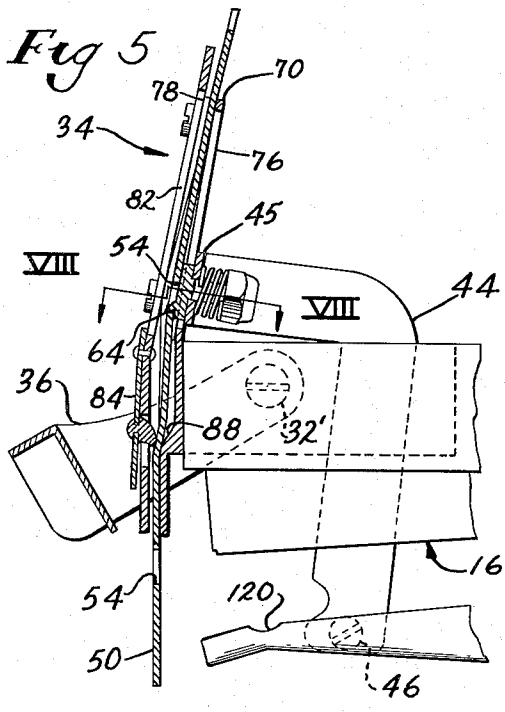


Fig 6

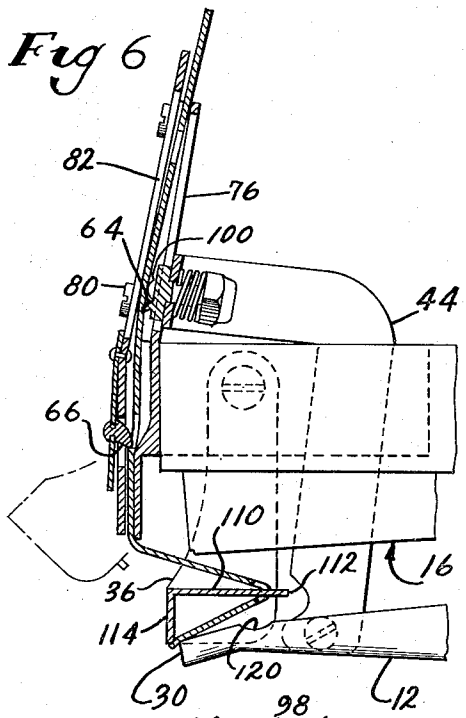


Fig 7

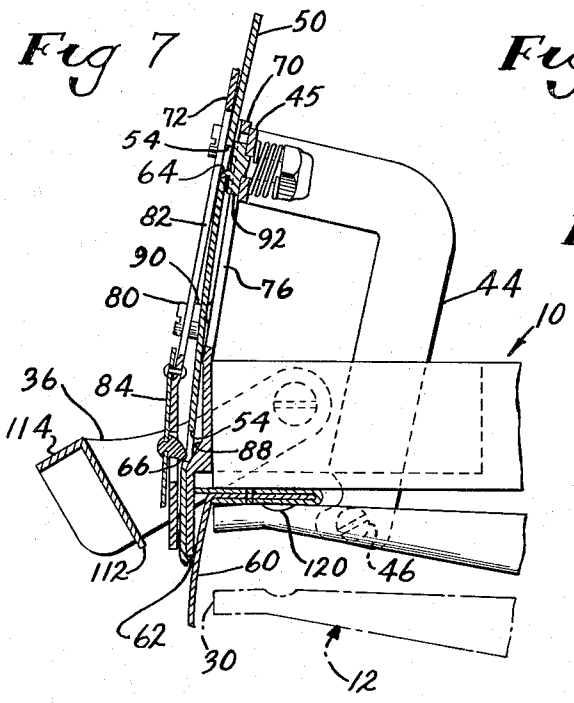


Fig 8

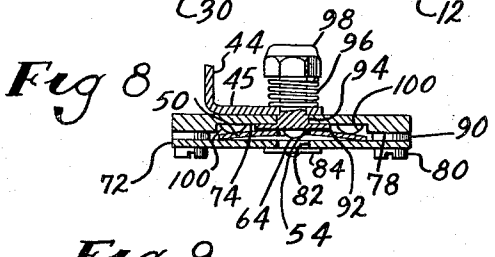
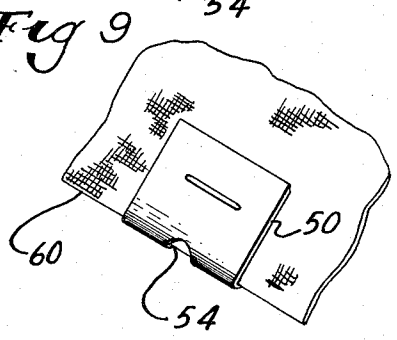


Fig 9



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TICKET FEEDING APPARATUS FOR HAND STAPLING MACHINES

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Filed Nov. 30, 1959, Ser. No. 856,294
15 Claims. (Cl. 1—108)

This invention relates to stapling machines and particularly to hand staplers of the so-called plier type in which driver and clincher arm assemblies are relatively movable to drive and clinch a staple to an article or articles presented thereto.

More specifically the invention is directed to a tag or ticket feeding and folding mechanism or attachment which is especially adapted for incorporation in a plier type hand stapler and which is operable to feed between the driver and the clincher a tag or ticket at the free end of a strip supply carried by the stapler and to insert the same in folded condition for affixing a ticket to an article presented thereto in the normal manner, and, thereafter as the otherwise ordinary stapling operation takes place to automatically sever the folded ticket from the end of the strip and to advance the next ticket of the strip into position for a succeeding stapling operation.

A primary object of the invention is to provide a known type of commercial hand stapler with simplified mechanism operable as above set forth so as to enable tags or tickets to be affixed to a variety of articles, as for identification purposes. The invention is particularly useful in placing tickets on garments for identification purposes, one example being the temporary ticketing of garment pieces in a dry cleaning or laundry establishment for proper identification and return to the customer.

Heretofore, apparatus satisfactorily adapted for stapling tags to garments and other articles in dry cleaning establishments and laundries have been available as a relatively specialized type of equipment and normally for handling a huge volume of pieces. Consequently they have been found practical only for locations where the expense is justified and the problems of maintenance of relatively complicated machinery is of secondary concern. Accordingly, another object of the invention is to provide an inexpensive piece of equipment for the purpose assigned which will be readily available to those handling a moderate or small volume of work and which will be well within the means of the operator of smaller establishments. At the same time devices of the present invention may also be advantageously used where large volume ticketing operations are required and inexpensive and simplified hand portable devices can offer superior results from the standpoint of convenience and otherwise.

The device of the present invention is particularly designed for use in folding an identification ticket, or ticket used for other purposes, and stapling it at the edge of a garment or other flat piece but it may be used as well in tagging other articles of a cylindrical or other form having a relatively small cross-sectional dimension such as wire, plant stems and the like. In the latter instance the ticket or tag will normally be stapled with the portions adjacent the fold line thereof in surrounding relation to the article and the staple wire piercing the material of the ticket only.

The particular novelty of the invention and the above and other objects and advantages of the same will be apparent from the following description.

In the drawings,

FIG. 1 is a side elevation of a hand stapler having the mechanism of the present invention mounted thereon, the strip of tickets not being shown;

FIG. 2 on an enlarged scale is a front elevational view of the device, with parts cut away, as viewed from the left of FIG. 1;

FIG. 3 is a fragmentary side elevational view of the device of FIG. 1 on an enlarged scale with parts shown in section;

FIG. 4 is a plan view showing a pair of tickets from a roll strip such as may be used in the device of FIG. 1;

FIGS. 5, 6 and 7 are views similar to that of FIG. 3 showing various stages of operation of the device in stapling a ticket to a flat article;

FIG. 8 is a sectional view of line VIII—VIII of FIG. 5; and

FIG. 9 is a perspective view showing a ticket stapled to an article.

Illustrated in FIG. 1 is a commercial form of hand stapler with the device of this present invention mounted on it. The stapler by itself is a well known piece of equipment and will be recognized in the trade as a "Bostitch" plier-type stapler identified under model designation "P6 Plier." Essentially the stapler unit comprises a driver arm assembly indicated at **10**; a clincher arm assembly at **12** (pivoted relative to the driver arm at **14**); a magazine assembly at **16** (also pivoted at **14** relative to the driver arm and clincher arm), and an operating lever at **18**. Lever **18** is pivoted intermediate its ends at **20** to the clincher arm and at its inner end is hooked over a pin at **22** fixed in the driver arm. A magazine cover spring is at **24** and an elevating spring is at **26**. Spring **26** is caught at one end on the lever pivot pin at **20** with a mid-section thereof resting on the clincher arm and bearing at its other end against the underside of the magazine. The end of the magazine sliding cover is seen at **28** and as will be recognized is manipulated in known fashion to insert a supply of staples in the magazine.

As the stapler is grasped in the hand after the manner of a pair of pliers the lever can be raised to bring the clincher arm and an anvil (not shown) at the end **30** of the arm toward the magazine assembly. The clincher arm then forces the magazine upwardly against a driver (not shown) at the end of arm **10** to drive a staple from the magazine through the material of an article placed over the end **30** and in the conventional fashion clinches the staple on the anvil. The springs serve to return the parts to the position of FIG. 1 whereupon an article can be removed with the staple fixed to it.

The invention as shown in the drawings has been incorporated in the assembly of a plier type stapler as generally described above. Briefly, there is added to the stapler a saddle type bracket **31**, fixed by screws **32** to the driver arm and on which is carried a ticket guiding and feeding channel generally designated by numeral **34**, and a feeding and folding arm **36** pivoted on a pivot screw **32'** also fixing bracket **31** to the arm **32**; a ticket roll housing **38** having an exit at **40** for a strip of tickets thereon to feed through to channel **34**, the casing **38** being removably mounted on a bracket **42** fixed in any suitable manner (not shown) to the driver arm at the far side of FIG. 1; a ticket advancing arm **44** fixed at **46** (see FIG. 3) to the clincher arm, the arm **44** extending upwardly to cooperate with the channel **34** to advance the strip of tickets therein as will be later described.

Preferably the tickets adapted for use in the device are as shown by FIG. 4. In roll form the strip of tickets is mounted on the spindle of the casing with the free end of the roll passing through the exit **40** above the guide channel **34**. The line of separation between each ticket **50** of the roll is a scored or weakened transverse line **52** so that the endmost free end ticket may be readily severed from the strip. Each ticket is also provided with a central aperture or hole **54** for ticket advancing purposes and laterally at each edge of a hole **54** are aligned weakened lines **56** defining a mid fold line for embracing

the edge of a flat article or encircling an article of a linear character such as wire, etc.

The device as generally described operates as follows: The strip of tickets at the beginning of a stapling operation extends from the housing **38** through the channel **34** (FIG. 5) to position the hole **54** of an endmost ticket in a predetermined position opposite the spacing between the driver and clincher arm assemblies. The rocker or folding arm **36** is manually swung downwardly, picking up the endmost ticket by engaging the exposed hole **54**. Continued movement of the arm **36** pulls a portion of the ticket strip from the channel and inserts the lowermost ticket between the spaced arms **12** and **16**. Movement of the arm **36** past the arm **16** causes the ticket to become creased or folded along the weakened lines **56**, disposed on opposite sides of the hole **54**. The lines **56** are such that once creased, a ticket will remain in a folded condition. The folding arm **36** may then be released, its spring **58** will return it to its FIG. 1 position. When the folding arm is returned by its spring **58** (FIG. 1) the friction between the ticket and arm serves to maintain the folded ticket in place between the arms **12** and **16**, as shown in FIG. 6. On return of the arm **36** the operator then merely places the edge of a garment or other article to be tagged between the ticket halves and operates the stapler in conventional manner.

As shown by FIG. 7, the edge of an article **60** which has been inserted between the arms is thus tagged as the driver and clincher arms are brought together. Relative movement between the clincher and driver arms from the position of FIG. 6 to the position of FIG. 7 causes the following interaction of the various elements of the device.

As for severing the end ticket, the clincher arm first moves toward the driver until the halves of the partially folded end ticket are pressed flatly on opposite surfaces at the edge of the article **60**. At this stage the clincher **12** has moved towards the driver sufficiently to bear against the magazine **16** and would be substantially in the relative position shown by full lines in FIG. 7. Insofar as the ticket being applied is concerned it will be noted that travel of the end edge **30** of the clincher further from this position toward the driver, while the ticket and article are squeezed together and the staple wire is being driven, will cause the end of the ticket attached to the strip to "double back" over the edge **62** of the guide channel. Upward movement of the clincher arm **12** moves the arm **44** upwardly and a projection **64** carried by the arm **44** engages the ticket strip as shown in FIGS. 6 and 7. The ticket size is related to the parts of the device so that this doubling back over the edge **62** occurs approximately at the weakened transverse separation line **52** of a ticket. The upward movement of the clincher arm **12** and magazine assembly causes the ticket strip to be severed, or pulled apart, along the separation line **52** which, as described above, is located approximately at the edge **62** of the guide channel.

As the stapled ticket is torn from the strip the succeeding endmost ticket is (FIG. 7), of course, positioned with its leading edge at the exit end of the guide channel. However, the advancing arm **44** with a ticket hole engaging projection **64** has been carried from the position shown in FIG. 6 upwardly to its position shown by FIG. 7 where the projection **64** engages the hole of the now next endmost ticket of the strip. It will thus be seen that as the article with a ticket stapled to it is withdrawn from between the stapler arms and the parts of the stapler returned to their inactive position as shown in FIG. 5, the projection **64** has advanced the ticket strip to bring the hole of the endmost ticket into position for engagement by the folding arm for a succeeding cycle of operation.

It will also be noted after the folding arm has inserted the endmost ticket in partially folded condition between the arms a ticket holding projection **66** engages the ticket hole **54** against return movement in the guide channel. The projection **66** retains the strip against rearward movement as the advancing projection **64** bears against the ticket in its upward travel from the position of FIG. 6 to that of FIG. 7. The frictional rubbing movement of projection **64** against the back of the ticket could otherwise cause a reverse travel of the strip.

In broad outline the tickets **50** of the strip supply may thus be successively stapled at the edges of a series of articles. The tickets may bear any desired indicia as consecutive numbering and varying colors to accommodate any system of identification which might be used. The various elements of the structure wil now be described in detail.

The ticket strip guide means designated generally by the numeral **34** is formed by a rear plate **70** and an overlying front plate **72** attached to it. Rear plate **70** is, in the construction shown, an integral part of the bracket **31** attachment arm plates lying at each side of the driver arm assembly **10**, these arms being directed rearwardly at each side of the plate **70** and fixed by the mounting screws **32**. In the upper portion of plate **70** which stands upwardly of the driver arm a recessed ticket groove **74** is formed (FIG. 8) to receive the ticket strip (see also FIG. 2) and guide the same. Centrally of the groove is an elongated slot **76** extending substantially from the top to the bottom of the upper extension of the plate for receiving the advancing hook or projection **64**.

Against the raised edges **78** at the sides of the recessed plate portion the front plate **72** is fastened as by the screws **80** to overlie both the upper and lower portions of the rear plate. The front plate **72** is also provided with a central longitudinal slot **82** matching the slot **76**. Below slot **82** is a leaf spring **84** riveted centrally to the plate **72** at its upper end and at its lower end has the "check" projection **66** fixed to it and extending through an opening **86** of plate **72** for contact with tickets passing through the guide. As seen in FIG. 3 the lower section of the rear plate is formed with an apron **88** to insure engagement of the projection **66** with the ticket hole.

It will be further noted that the lower attaching screws **80** are provided with spacers **90** (FIG. 3) for greater separation of the plates at the bottom end of the upper plate portions for cooperation with the advancing hook **64**.

The advancing hook or projection **64** is formed as a nib on a sliding piece **92** having a reduced shoulder at **94** to slide up and down in the slot **76** and a stem passing through the inturned end **45** of advancing arm **44**. A spring **96** around the stem holds the slide **92** yieldably pressed rearwardly against the recessed inner surface **74**, the spring being seated against the end **45** and cap **98** threaded on the stem. Thus a snug fit of the slide **92** during its travel back and forth in the slot is assured and adjustment of spring tension may be had to compensate for any chance frictional binding of the slide **92** or inturned end **45** against the plate surfaces.

As will be seen from FIG. 5 and FIG. 8 the hook **64** engages the lower edge of a ticket hole **54** while the longitudinal half portions laterally thereof are flexed forwardly by the underlying buttons located as at **100** in the lower section of the recessed groove **74** (see also FIG. 6). The flexing action of the buttons **100** on the ticket imparts a stiffness to the ticket in the area of the hook engagement with the ticket hole. Thus when the hook engages the hole at the top of its stroke, as in FIG. 7, and advances the strip downwardly to the position of FIG. 5 the stiffness imparted to the ticket prevents any chance disengagement of the hook from the hole **54**.

It will be realized that the greater separation of the plates **70** and **72** by spacers **90** at the bottom of the recessed portion **74** is provided to enable the strip to advance (on manipulation of the rocker arm **36**) and be drawn over the hook during the feeding operation of inserting the partially folded end ticket between the driver

and clincher (FIG. 5 to FIG. 6). With the increased spacing between the plates at this point there is no chance for the projecting hook **64** to tear the ticket as the latter is drawn over it. For added insurance the slot **82** is provided in the outer plate. Furthermore while the ticket frictionally rubs to a certain extent against the hook and is in turn frictionally rubbed by the hook on upward travel of the hook from the position of FIG. 6 to that of FIG. 7, the slot **82** permits the ticket to give along its central section and thus assist in avoiding any excessive drag which might otherwise damage the paper material. It will also be seen that the spring mounting **100** keeps the projection **64** rearwardly in the recess during its upward travel.

Insofar as the projection **66** is concerned it will readily be seen from FIG. 5 that the mounting of this projection on leaf spring **84** means that forward movement of the ticket strip may readily push the projection out of the way and that the leaf spring may be of a strength to merely return the projection toward the apron **88** so as to engage a hole **54** for holding purposes only. Thus projection **66** causes no excessive drag or rubbing action on the ticket.

The feeding and folding rocker **36** is provided with arms straddling the driver arm and pivoted on the screws **32'** as best seen in FIG. 2. A folding bar **110** connects the arms adjacent the outer end of the rocker and centrally of the bar is a projection **112** to pick up the hole of the endmost ticket and insert the latter into position as in FIG. 6. Bridged across the top of the arms is a stop bar **114** which as best seen in FIG. 6 serves to contact the end face at **30** of the clincher arm to limit the travel of the rocker and position the partially folded end ticket in the proper relationship between the stapler arms.

The amount of clearance necessary between the end **30** and the edge **62** is sufficient to accommodate the material of an article during a stapling operation without damage to the article. It will be realized that articles with materials of varying thicknesses will be stapled when using the device for tagging garments for identification purposes. Accordingly, the amount of clearance will normally be that sufficient to properly handle the thickest material which might be presented to the device. If by chance the end ticket is not completely severed, it will be realized that on parting movement of the driver and clincher the rocker **36** can be actuated to bring the stop bar **114** down against the end of the clincher arm (as in FIG. 6). The lower edge of the bar **114** provides a cutting edge for tearing of the stapled ticket while at the same time the rocker **36** feeds the next ticket between the stapler arms.

For tagging articles such as wire, plant stems, and other articles of a similarly small diameter the clincher arm may furthermore be modified by providing a slight depression transversely of the arm as shown at **120** in the various views. It will be appreciated that clearance is thus provided for a proper stapling operation and that the ticket will then be wrapped around this type of article. The depression may, of course, be of various dimensions to accommodate different articles for tagging and may be furthermore selectively located to provide a tight or loose wrap of the identifying ticket.

What is claimed is:

1. In a stapler having relatively movable driver and clincher arms and yieldable means normally holding the same in spaced relation; strip ticket feeding mechanism comprising means on said stapler for guiding tickets at the free end of a strip to a position adjacent the ends of said arms, inserting means movable to engage and position said free end ticket between the ends of said arms to receive a staple, and means movable with one of said arms and engaging said ticket strip when the arms are brought together in a stapling operation, and, on parting movement of the arms advancing said strip into position for the next succeeding ticket to be presented in the position adjacent to the ends of said arms.

2. The structure of claim 1 in which the said guide means is provided with an edge across which a free end ticket is drawn by movement of said inserting means and past which the end of one of said arms is movable during completion of the stapling operation to draw said free end ticket and tear the latter from the strip.

3. In a hand stapler having relatively movable driver and clincher arm assemblies operable on bringing the same together to affix a staple to articles inserted between the outer ends thereof and yieldable means normally urging said outer ends into a spaced relation; strip ticket feeding mechanism comprising means on one of said assemblies for guiding a ticket at the free end of a strip of tickets to a position adjacent said driver and clincher arm ends, inserting means movable in a path to engage and carry a free end ticket so presented between said spaced arm ends, and advancing means movable with the other of said arm assemblies and slidably movable along said guide means to engage the strip of tickets when the arm ends are in fully closed condition and on return of the assemblies to said spaced relation to advance said strip and present the next succeeding ticket into said adjacent position relative to said arm ends.

4. In a stapler having relatively movable driver and clincher arm assemblies to successively fix staples to articles presented between the ends of said arms and means yieldably holding said arm ends in spaced relation; ticket feeding and folding mechanism operable to feed and crease a ticket at the free end of a ticket strip between said arm ends with a transverse fold line of said end ticked positioned inwardly of the staple driving position, to separate said free end ticket from the strip during the stapling operation when said arm ends are brought together, and to position said strip for the next succeeding ticket feeding operation when said arm ends are returned to said spaced relation; said mechanism comprising a ticket strip guide mounted on one of said assemblies for holding a ticket strip with the free end ticket thereof adjacent said arm ends, means movable to engage said end ticket and insert the same between said arm ends with opposite end portions of the ticket lying in opposed spaced relation, said strip guide having means cooperating with the other said assemblies during relative movement of said arms and effecting separation of said creased end ticket from said strip, and means mounted on said other assembly engaging the ticket strip when said arms are brought together and advancing said strip as said arms are being returned to the aforesaid predetermined spaced relation to position the succeeding free end ticket in said predetermined relation with respect to said arm ends.

5. The structure of claim 4 in which the said ticket strip guide comprises a pair of flat plates providing a ticket channel therebetween, the exit end of said channel being in opposed position to said arm ends, said ticket advancing means includes a ticket engaging element at its outer end slidable longitudinally of said channel and one of said plates is slotted and receives the outer end of the advancing means for engagement of the ticket by said element.

6. The structure of claim 5 in which said movable inserting means is a rocker arm having a folding bar with means for engaging a ticket, said bar being positioned transversely of the strip, the path of movement of said bar being across the exit end of said guide and between the arm ends of said driver and clincher.

7. The structure of claim 6 in which movement of the rocker arm toward and between the spaced driver and clincher arms draws said ticket strip from said ticket guide and releases the engagement of the advancing means and said ticket strip, said driver and clincher arms on closing movement carrying the advancing means rearwardly of said channel, said guide having holding means in the path of said ticket strip in contact therewith on rearward movement of the advancing means to maintain

the position of said strip in the channel, said holding means being yieldable when said strip is moved forwardly by said advancing means and by said rocker arm.

8. Ticket folding and feeding mechanism for a stapling machine having relatively movable clincher and driver arm members and means for delivering a staple to the driver for driving and clinching a staple between the free ends of said members on bringing the same together; said mechanism comprising a guide channel affixed to one of said members and having an exit end spaced forwardly and outwardly of said member and from which a ticket may be positioned in bridging relation opposite the ends of said members; a rocker pivoted on said one member having an outer end swingable from a position outwardly of the channel, transversely across the exit end of the channel and between the ends of said arm members, and means on the rocker for releasably engaging a ticket extending from said channel exit, drawing said strip through the channel and partially creasing the ticket engaged by the rocker between the ends of said arms as the rocker is moved therebetween, the frictional engagement of said creased ticket between said arms holding the same when said rocker is withdrawn, said arms when brought together for a stapling operation moving sufficiently past said channel exit while driving the staple to sever the creased ticket from the strip, means carried by the other of said arm members and associated with the channel for engaging the strip at the end of the staple setting operation and when said arm members are moved apart for advancing said strip through the channel for the next operation and presenting the succeeding end ticket in the aforesaid predetermined bridging relation to the ends of said members.

9. The structure of claim 8 in which said guide channel and rocker are mounted on said driver arm member, said strip advancing means is mounted on said clincher arm member and the advancing means at its outer end is slidably received by said channel for reciprocation therein.

10. Hand portable ticket stapling apparatus for folding and applying tickets from a strip supply to a series of articles and comprising in combination a stapler driver arm assembly, a clincher arm assembly pivotally related thereto, yieldable means holding the ends of the arms in spaced relation, and manually operable means for bringing said ends together in a stapling operation, a strip supply of tickets mounted on said driver, each ticket being defined by transverse score lines across the strip and having a central perforation cut between such lines, a guide channel at the fore end of the driver receiving said strip and having portions extending upwardly and downwardly of said end, the exit end of said channel being offset upwardly of the clincher arm end, a rocker arm having a folding bar with a central ticket hole engaging projection at its outer end and pivotally mounted on said driver for movement past the exit end of said channel and between said driver and clincher arm ends, a ticket advancing member mounted on said clincher arm having at the outer end thereof a downwardly directed projection slidable longitudinally of the said upper portion of the channel, said channel being slotted and receiving the projection therein for engagement of said ticket strip, said projection of the advancing member at its forward limit of travel in the channel being spaced from the channel exit less than the spacing between perforations in adjacent tickets of the strip whereby the perforation of a ticket at the free end of the strip below said exit will be engaged by the projection of said folding bar of the rocker arm when said projection of the advancing member lies at its said forward position in engagement with the perforation of the next succeeding ticket.

11. The structure of claim 10 in which said rocker arm is provided with a stop bar engaging the end face of said clincher arm when said folding bar thereof is at its limit of travel between said clincher and driver arms.

12. The structure of claim 10 in which the clincher arm when closed against the driver arm in the stapling operation is upwardly of the exit end of said guide channel whereby the free end ticket being stapled will be doubled back at said channel exit for severing the stapled ticket from the strip.

13. The structure of claim 10 in which movement of said rocker arm between said driver and clincher arms draws said free end ticket from the channel and disengages the projection of the advancing member in the channel from the said ticket perforation and a yieldable holding projection forwardly thereof engages said perforation thereby preventing reverse ticket strip movement in said channel.

14. The structure of claim 13 in which said holding projection is spaced from the upper limit of travel of said advancing member projection the distance between perforations of adjacent tickets of said strips.

15. The structure of claim 14 in which said holding projection is yieldably held in the path of said strip and said advancing projection is formed on a sliding piece held in a longitudinal slot of said channel.

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