June 7, 1960 M. ABRAMS 2,939,146

TABLE TYPE HAND OPERATED STAPLER

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FIG. 1.

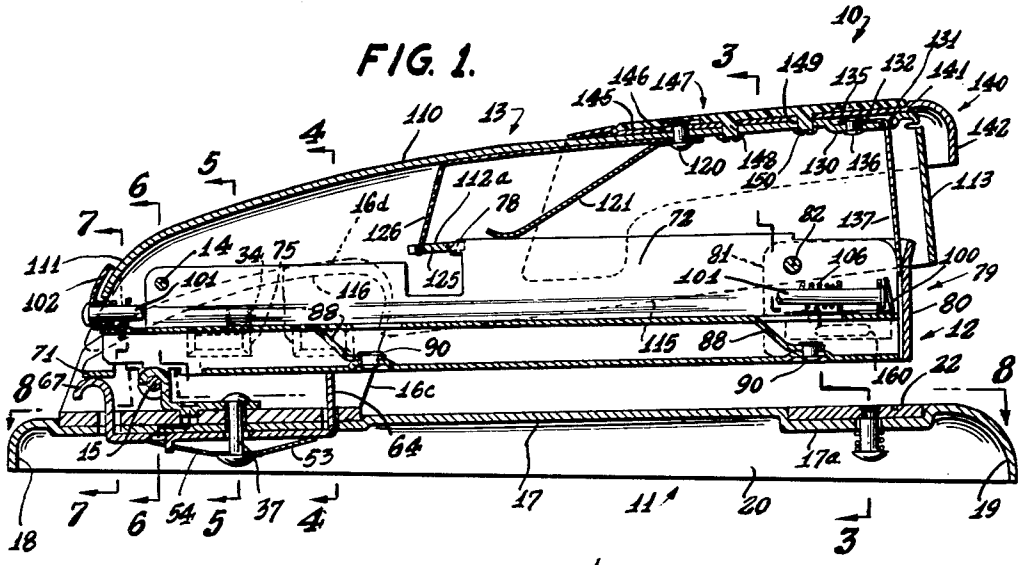


FIG. 2.

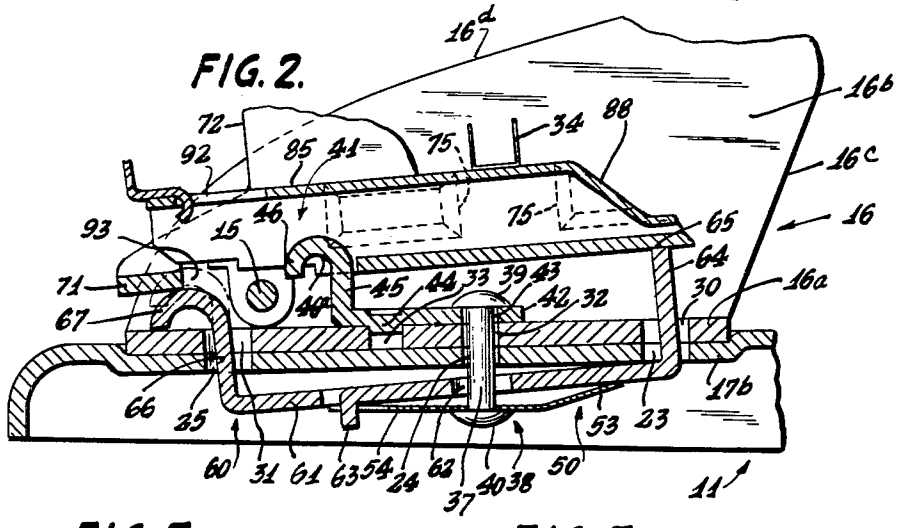


FIG. 7a.

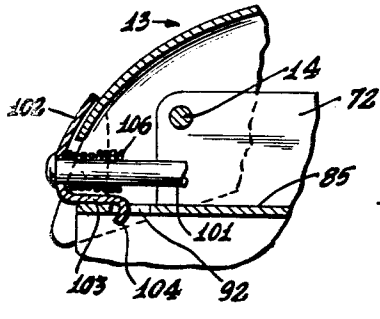
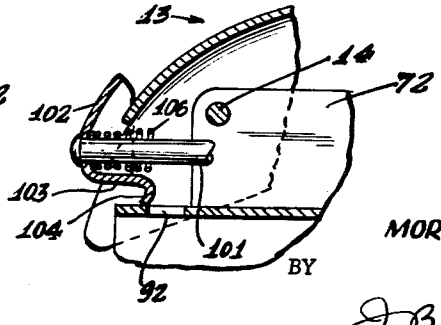


FIG. 7b.



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TABLE TYPE HAND OPERATED STAPLER

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FIG. 3.

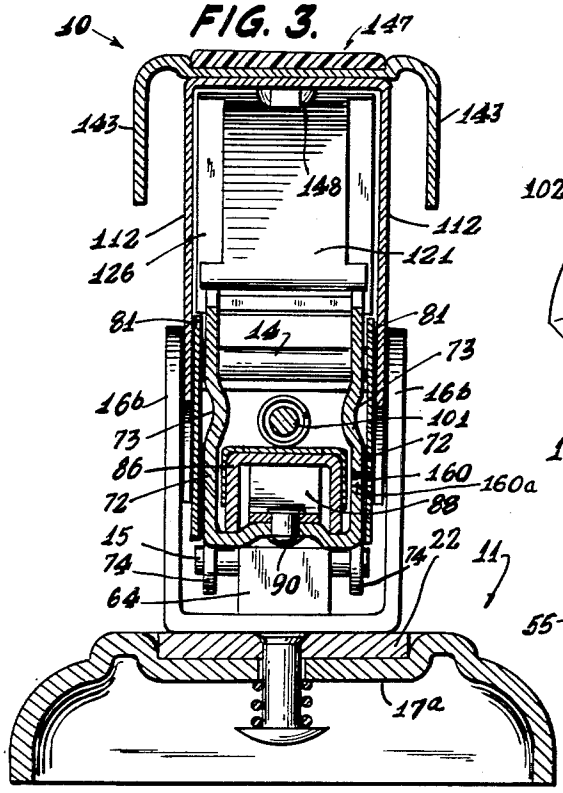


FIG. 7d.

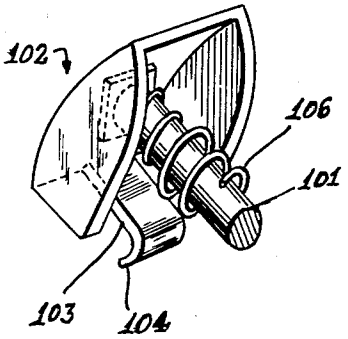


FIG. 14.

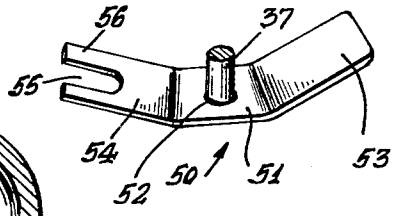


FIG. 4.

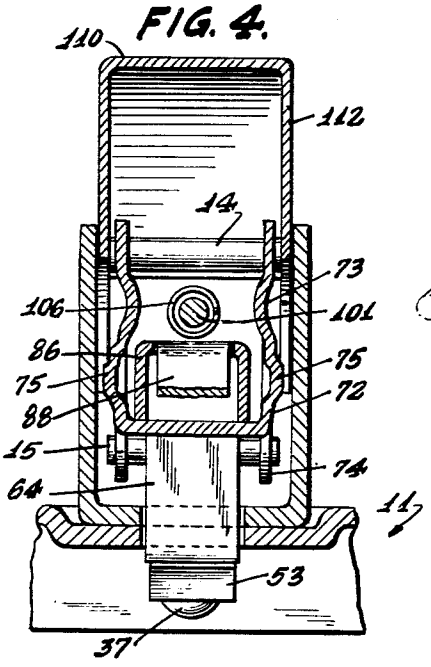
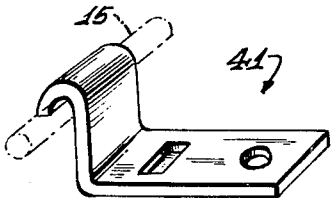


FIG. 13.



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FIG. 5.

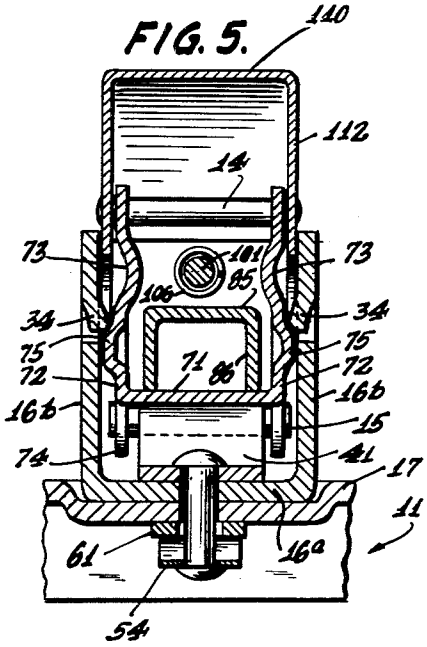


FIG. 6.

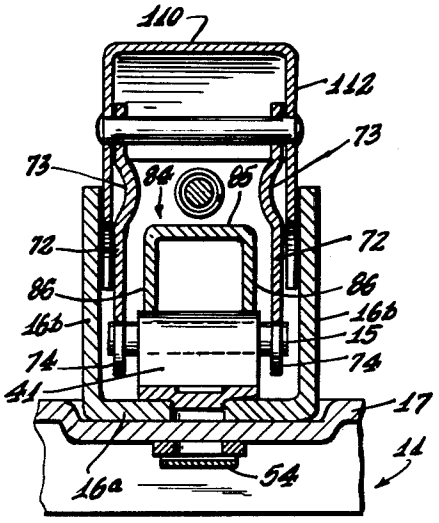


FIG. 7.

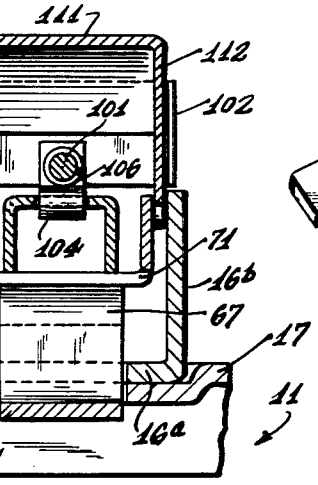


FIG. 7c.

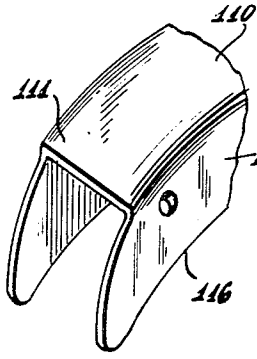
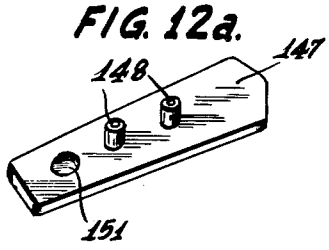


FIG. 12a.



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FIG. 8.

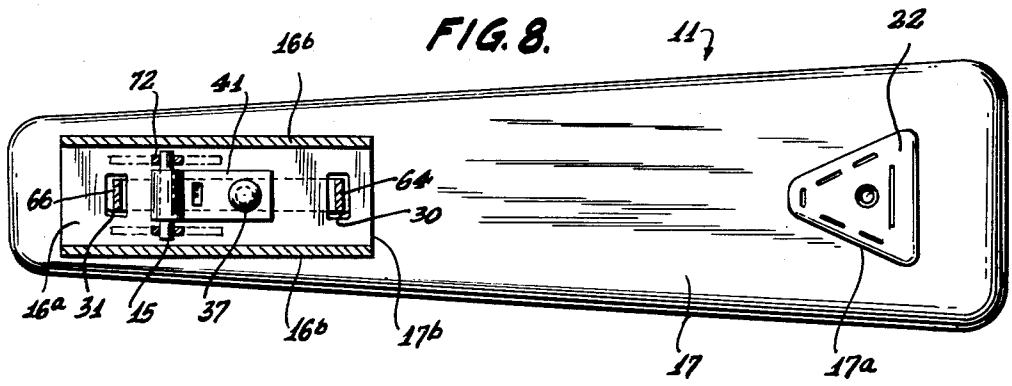


FIG. 9.

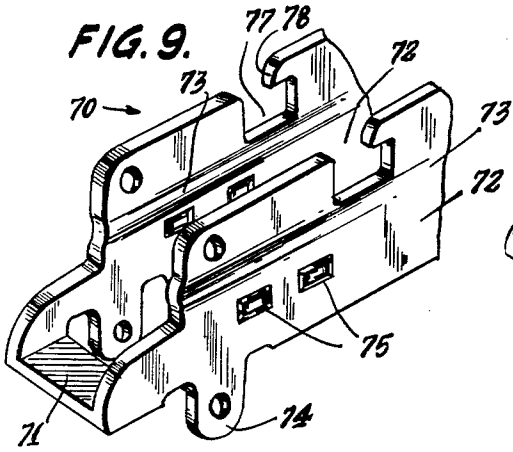


FIG. 10.

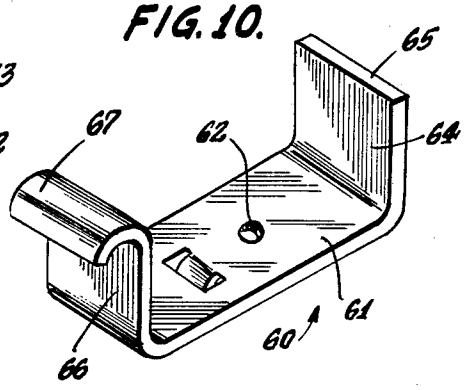


FIG. 11.

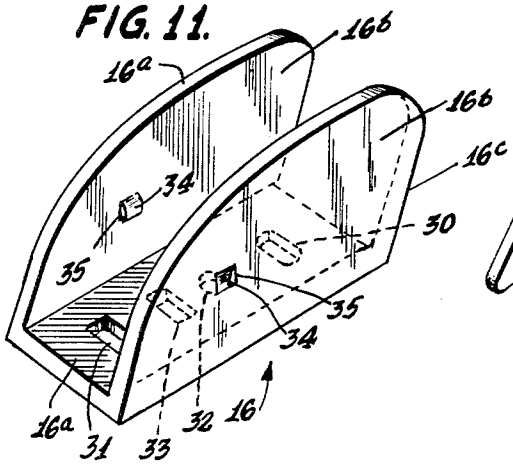
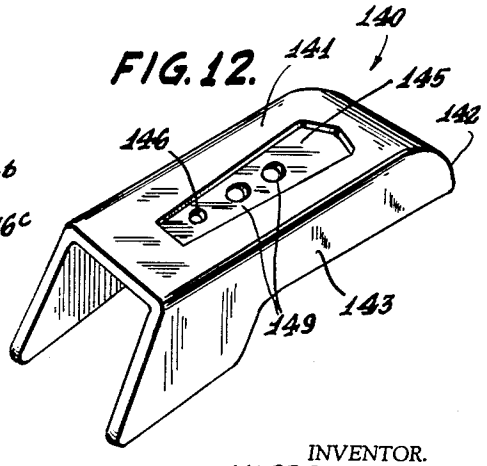


FIG. 12.



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United States Patent Office 2,939,146 Patented June 7, 1960

2,939,146

TABLE TYPE HAND OPERATED STAPLER

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Filed Apr. 2, 1958, Ser. No. 726,014
11 Claims. (Cl. 1—3)

This invention relates to hand operated table staplers.

An object of this invention is to provide a stapler of the character described, comprising a base carrying an anvil, a staple magazine, a cover hinged thereto and having means to drive staples from the magazine onto the anvil, and improved means for removably assembling the hinged-together magazine and cover to the base, such assembly means including resilient means which tends to bring the parts back to normal when either the front end of the magazine is lifted, or after a stapling operation.

Another object of this invention is to provide in a stapling machine of the character described, improved means for hookingly and disengageably engaging the staple strip pusher mechanism to the staple magazine, including improved means to guide the magazine to correct assembling position and to retain the magazine in assembled position.

Still another object of this invention is to provide in a stapler of the character described, a novel and improved cap for the cover thereof.

A further object of this invention is to provide in a stapler of the character described, peep hole means to permit the operator to observe when the stapler is almost out of staples.

Yet another object of this invention is to provide a strong, rugged and durable stapling machine of the character described, which shall be relatively inexpensive to manufacture, which shall be smooth and positive in operation, easy to assemble, clean and easy to load, and which shall yet be practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope of invention will be indicated in the appended claims.

In the accompanying drawings in which is shown various illustrative embodiments of this invention:

Fig. 1 is a vertical, longitudinal, cross-sectional view of a stapling machine embodying the invention, but with the cover unhooked from and slightly raised relative to the staple magazine;

Fig. 2 is an enlarged, partial, vertical, longitudinal cross-sectional view illustrating an intermediate step in the assembly of the staple magazine and cover, with the base of the stapler;

Fig. 3 is an enlarged cross-sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is an enlarged cross-sectional view taken on line 4—4 of Fig. 1;

Fig. 5 is an enlarged cross-sectional view taken on line 5—5 of Fig. 1;

Fig. 6 is an enlarged cross-sectional view taken on line 6—6 of Fig. 1;

Fig. 7 is an enlarged cross-sectional view taken on line 7—7 of Fig. 1;

Fig. 7*a* is a partial cross-sectional view illustrating the assembly of the staple strip pusher to the magazine;

Fig. 7*b* is a view similar to Fig. 7*a* but showing the pusher mechanism unhooked;

Fig. 7*c* is a rear, partial perspective view of the cover;

Fig. 7*d* is a perspective view of the rear end of the pusher mechanism;

Fig. 8 is a cross-sectional view taken on line 8—8 of Fig. 1;

Fig. 9 is a partial top perspective view of the rear end of the staple magazine with the staple guide removed;

Fig. 10 is a top perspective view of the rocker which retains the staple magazine assembled to the base;

Fig. 11 is a top perspective view of the U-shaped bracket which is fixed to the base and locks the magazine in assembled relation thereto;

Fig. 12 is a top perspective view of one of the cover cap parts;

Fig. 12*a* is a bottom perspective view of a plastic cover cap part;

Fig. 13 is a perspective view of one of the magazine assembly locking parts; and

Fig. 14 is a perspective view of the spring for controlling assembly of magazine cover and base.

Referring now in detail to the drawing, **10** designates a staple machine embodying the invention, here shown in the form of a hand operated table type stapler. The same comprises generally of a base **11**, a staple magazine **12**, and a cover **13** hinged to the magazine on a pin **14** carried by said magazine, and said magazine and cover being removably and pivotally assembled with a channel shaped bracket **16** on said base by a pin **15** carried by said magazine.

The base **11** has a slightly forwardly and upwardly inclined wall **17** from the rear end of which extends downwardly, a rear flange **18**, from the front end of which extends downwardly a forwardly extending flange **19**, and from the sides of which extend downwardly curved forwardly diverging flanges **20**. Flanges **18**, **19**, **20** have horizontal, connected lower edges on which the base rests on a table. Wall **17** has a front triangular depression **17***a* to receive a usual anvil **22**, and a rear, rectangular depressed wall **17***b* to receive the bottom rectangular web **16***a* of the support bracket **16** (Figs. 1, 2, 11) which may be spot welded or otherwise fixed thereto. Said depressed wall **17***b* has a front transverse slot **23**, an intermediate round opening **24**, and a rear transverse slot **25**, said slots and openings being centrally and longitudinally located relative to said depressed wall.

The bracket **16** further comprises parallel flanges **16***b* extending up from said web **16***a*, and formed with upwardly and forwardly inclined forward edges **16***c* and top, downwardly and rearwardly sloped curved edges **16***d*. Bottom web **16***a* has a front transverse slot **30** registering with slot **23**, a rear transverse slot **31** registering with slot **25**, an intermediate hole **32** registering with hole **24**, and with a transverse slot **33** located between hole **32** and slot **31**. Side walls **16***b* are formed with aligned, inwardly projecting lugs **34** cut from the metal of said side walls, and formed by making U-shaped cuts **35** in the side walls and pressing the lugs inwardly.

Extending through the registering openings **32**, **24** is the shank **37** of a rivet **38** having an upper head **39** and a lower head **40**. Fixed to the top of bottom web **16***a* is a latch member **41** (Figs. 2, 13) located between the side walls **16***b*. Latch **41** has a flat wall **42** lying in and spot welded to the top of web **16***a* and formed with a hole **43** registering with hole **32**. Rivet shank **37** passes through hole **43** and head **39** contacts the top surface of wall **42**. Said wall is formed with a depressed rib **44** projecting down into slot **33**. Extending upwardly from the rear end of wall **42** is a flange **45** formed at its upper end with a rearwardly curved semi-cylindrical hook **46** providing a semi-cylindrical slot **46***a* at its underside.

Supported on the lower head **40** of rivet **38** is a leaf spring **50** (Figs. 1, 2, 14) provided with a central, flat portion **51** having a central hole **52** through which the shank of rivet **38** passes, with the lower head **40** contacting the underside of said flat portion. Extending up-

wardly and forwardly from portion 51 is an inclined portion 53, and extending upwardly and rearwardly from said central portion is a portion 54 formed with a longitudinal end slot 55 thereby providing bifurcated fingers 56.

Supported on spring 50 is a rocker member 60 (Figs. 1, 2, 10) having a bottom web portion 61 formed with a hole 62 through which rivet shank 37 loosely passes, with the ends 53, 56 of the spring 50 pressing upwardly against the underside of said web. Cut from the metal of web 61 is a downwardly bent lug 63 projecting into slot 55 and between fingers 56 to retain spring 50 from turning about rivet 38. Extending upwardly from the front end of web 61 is a flange 64 passing through registering slots 23, 30 and presenting an upper edge 65. Extending upwardly from the rear end of web 61 is a flange 66 passing through slots 25, 31 and formed at its upper end with a rearwardly curved finger 67. A plane tangent to top of finger 67 and contacting the upper edge 65 is parallel to web 61. Normally, spring 50 presses web 61 against the underside of depressed wall 17*b* of base wall 17, as shown in Fig. 1 of the drawing.

As will be explained hereinafter, the latch hook 46 disengagingly engages pin 15 on the magazine 12. Said magazine 12 comprises a magazine frame 70 (Figs. 1, 2, 3, 4, 5, 6, 9) comprising a bottom wall 71 from which extend upwardly, side walls 72, having longitudinal, inwardly curved heads 73 to engage crowns of staples loaded therein. Extending down from side walls 72, adjacent the rear end of the magazine frame, are apertured ears 74 receiving the ends of pin 15. Said side walls 72 are formed with aligned pairs of outwardly pressed, longitudinally spaced pads 75, for the purpose hereinafter appearing.

Side walls 72 are formed in their upper edges, with notches 77 and with hooks 78 projecting rearwardly over said notches.

Fixed to the front end of frame 70 is a front end cover 79 having a front wall 80 from which extend rearwardly side flanges 81 straddling and contacting the outer surface of said side walls and fixed thereto by a transverse rivet 82.

Fixed to the bottom wall 71 of the magazine frame 70 and disposed within said frame is a staple guide 84 having a top wall 85 disposed just below heads 73, and side flanges 86 extending downwardly therefrom and contacting the web 71, and spaced inwardly from the side walls 72. Tongues 88 cut from and pressed down from the top wall 85 are riveted as at 90 to the web or bottom wall 71. Top wall 85 is formed adjacent its rear end with a slot 92 for the purpose hereinafter appearing. Bottom wall 71 of the magazine frame 70 has, near its rear end, an opening or cut away portion 93. Side walls 72 are connected at their rear upper corners by the transverse pivot pin 14 on which the cover 13 is pivoted. The front end of magazine frame 70 terminates short of front wall 80 of front end cover 79 by a distance sufficient to permit a single staple to pass down through the bottom of the magazine.

Slidably mounted on and straddling the staple guide is a staple strip pusher 100 formed with upstanding apertured ears through which passes a pusher rod 101 fixed at its rear end to a rear cap 102 having a bottom wall 103 formed with a hook 104 adapted to pass through opening 92 in the staple guide for hookingly engaging the top wall of the staple guide (Figs. 1, 2, 7*a*, 7*b*). On rod 101 and between cap 102 and pusher 104 is a coil compression spring 106.

The cover 13 has a top wall 110 curved downwardly and rearwardly at its rear end 111. Extending downwardly from the sides of top wall 110 are side walls 112 from the front end of which extend inward flanges 113 forming the front end of the cover and being located forwardly of front wall 80 of magazine front end cover 79. Side walls 112 have straight front lower edges 115 and upwardly notched, curved rear lower edges 116. Side walls 112 straddle the magazine 12. Said side walls 112 are formed, adjacent the rear ends thereof with holes through which the ends of pin 14 pass for hinging the cover to the magazine.

Cap 102 overlies the rear end 111 of the cover top wall 110, and said cap straddles the cover and is somewhat spaced rearwardly therefrom.

Riveted to the underside of top wall 110 by rivet 120 is a leaf spring 121 inclined downwardly and rearwardly and contacting the upper edges of side walls 72 of the magazine frame, biasing the cover in a counter-clockwise direction, relative to the magazine, looking at Fig. 1.

The side walls 112 of cover 13 have slots 112*a* to slidably mount a latch 125 which may releasably engage beneath hooks 78 to limit swinging movement of the cover relative to the magazine in a direction away from the latter. A leaf spring 126 also riveted to the underside of the cover by said rivet 120 tends to slide the slider latch forwardly into engagement with said hooks 78.

The front end of top wall 110 is depressed as at 130 and formed with a front slot 131 and a central hole 132. A driver 134 has a top arm 135 lying on the depressed wall 130 and riveted thereto by rivet 136 passing through said hole 132. Extending down from said arm 135 is a blade 137 which passes between the front edges of the magazine frame and front wall 80 of front end cover 79.

Attached to the top of the hinged cover is a top cap 140 (Figs. 1, 3 and 12) having a top wall 141 from which extends downwardly a front curved wall 142, and side flanges 143, spaced from the front and sides of the cover. Top wall 141 has a central depressed wall portion 145 contacting the top surface of top wall 110 and riveted thereto by said rivet 120 passing through opening 146. Fitted in depression 145 is a plastic ornamental insert 147 (Fig. 12*a*) having a pair of integral pins 148 passing through registering opening 149 in said depressed wall and top wall 110 and headed as at 150 by heat and pressure at the underside of the cap.

Insert 147 may have a recess 151 at its underside to accommodate the upper head of rivet 120.

One side wall 81 of front end cover 79 and one side wall 72 of the magazine frame are formed with registering longitudinal slots 160, 160*a*, respectively, which are covered by the pusher 100 when the staples are practically used up. The pusher may be colored if desired. When the operator sees the pusher through openings 160, 160*a*, he is warned to load the machine with staples.

To engage the hinged-together magazine and cover to the base, pin 15 is moved down between hooks 46 and 67. The rear end of the magazine frame will depress the rear hook 67, such depression being permitted by the rocking motion of member 60 against fingers 56 of spring 50, as shown in Fig. 2 of the drawing. During this operation, the pads 75 will move down on opposite sides of lugs 34 which passes between said pads when pin 15 is below hook 46 and pads 75 are below lugs 34, the hinged together magazine and cover are moved forwardly until pin 15 snaps into hook slot 46*a* under action of spring 50 and the lugs 34 slide over the rear pads 75, as shown in Fig. 1 of the drawing, to prevent upward swinging movement of the magazine relative to the base.

The slider latch 125 is slid back (its ends project beyond the side walls 112 of the cover for engagement by the operator) and the cover is pressed down to permit the latch to snap under the hooks 78.

During stapling operations, the magazine will swing down against the base, and flange 64 will be pressed down and member 60 will rock on rivet 38 against pressure of spring finger 53 to again raise the magazine and cover when hand pressure is removed from the stapler.

To remove the pusher mechanism, cap 102 is pushed forwardly to disengage hook 104 from wall 85 at slot 92. The cap is then raised slightly and the entire pusher

mechanism can be withdrawn rearwardly. During assembly of the magazine with the base, the hook **46** will pass up through slot **93**, as shown in Fig. 2. The pads **75** moving down on opposite sides of lugs **34**, will properly locate hook **46** relative to slot **93**, and bring rear end of wall **75** to bear down on curved arm **67** of the rocker.

The insert **147** partially projects above the cap and covers the rivet **120**, and prevents scratching the hands when pressing down on the cover for a stapling operation. The insert can be embossed or imprinted with a design or trademark or name and can be fastened in any suitable manner. Being made of plastic, the insert is smooth, and feels good to the touch, is ornamental and covers the steel cap **140** and is easily mounted in the depression in said cap. The pads **75** and the lugs **34** have a double purpose in the present construction. The pads **75** serve as guides for hooking the staple magazine to the base. The indented pads can easily be seen as the magazine is brought down to the base. Furthermore, the rearward pads **75** hold the staple magazine in position relative to the base. The spring **64** of the rocker presses up against the under side of the staple magazine, thereby causing the rear pads **75** to press upwardly against the indented portions **34**.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that the matter set forth above or shown in the accompanying drawings is merely illustrative and is not to be interpreted in a limiting sense, the scope of the invention being delineated in the appended claims.

What is claimed is:

1. In a table type stapler, a base, a rocker mounted thereon and having front and rear upstanding portions, and an interconnecting bottom portion, and means on the base contacting the underside of the interconnecting portion of the rocker to resiliently support the rocker for rocking movement about either the front or rear ends thereof, whereby to permit depression of either the front or rear ends and for depression of the rocker downwardly as a whole, a staple magazine, and pivotal releasable interengaging means on the base and magazine, between said front and rear upstanding portions, and said magazine contacting said upstanding portions when said magazine is interengaged, in combination with means on the base slidably engaging abutment means on the magazine to hold the magazine down on said upstanding portions.

2. In a table type stapler, a base, a rocker mounted thereon and having front and rear upstanding portions, and an interconnecting bottom portion, and means on the base contacting the underside of the interconnecting portion of the rocker to resiliently support the rocker for rocking movement about either the front or rear ends thereof, whereby to permit depression of either the front or rear ends and for depression of the rocker downwardly as a whole, a staple magazine, and pivotal releasable interengaging means on the base and magazine, between said front and rear upstanding portions, and said magazine contacting said upstanding portions when said magazine is interengaged, in combination with a pair of longitudinally spaced pads on said magazine, and a lug on said base adapted to pass upwardly between said pads, and said magazine being slidably movable forwardly to slidably interengage the lug with the upper side of one of said pads to hold the magazine down on said upstanding portions of said rocker.

3. In a stapler, a base, an upwardly extending rearwardly facing hook on the base, a staple magazine having a pin engaging said hook, a rivet on said base, a rocker having a web located at the undersides of the base and formed with a hole receiving said rivet loosely, a spring on the lower end of said rivet and having front and rear ends engaging the underside of the web, and upwardly extending arms at the ends of the web passing upwardly through slots in the base and contacting the underside of said magazine in front of and in rear of said hook.

4. The combination of claim 3, in combination with abutment means on the magazine slidably engaging beneath complementary abutment means on said base when said pin is engaged with said hook.

5. In a stapler, a base, a channel shaped support having a bottom web fixed to the top of the base and having upstanding side flanges, a member fixed to the top of said web and provided with an upstanding, rearwardly extending, downwardly facing, hook, a rocker having a longitudinal bottom wall at the underside of the base, and front and rear arms passing upwardly through registering openings in the base and web and located in front of and at the rear of said hook, means for rockingly mounting the rocker on said base, spring means pressing the bottom wall of the rocker against the underside of the base, a staple magazine having a pin engageable with said hook, and said upstanding arms of said rocker contacting the underside of the magazine and resiliently pressed thereagainst by said spring means.

6. The combination of claim 5, said side walls being formed with aligned, inwardly extending lugs, and said magazine having pairs of outwardly pressed pads adapted to move down on opposite sides of said lugs when moving the rear end of the magazine down to move said pin below said hook so as to interengage the pin with said hook.

7. The combination of claim 5, said pin being disposed below the underside of said magazine, and the said magazine being formed with an opening into which the hook moves when moving said pin down beneath said hook to engage the latter.

8. The combination of claim 7, said magazine having a portion adapted to depress said rear arm of the rocker when said pin is moved below said hook and said hook moves up through said opening in said magazine.

9. The combination of claim 8, said means for rockingly mounting said rocker on said base, comprising a pin passing through registering openings in said base, and rocker and engaging the underside of said spring.

10. In a stapling machine, a base, a downwardly faced, rearwardly extending, hook on said base, a staple magazine having means to engage beneath said hook, and spring means on said base pressing upwardly on said magazine in front of and in rear of said hook, in combination with abutment means on the magazine, and abutment means on the base and forwardly of the hook, slidably engaging the upper side of the abutment means on said magazine in front of said hook, to limit upward swinging movement of said magazine relative to said base.

11. The combination of claim 10, said magazine having an opening adapted to receive the hook when the hook engaging means on said magazine is moved down below said hook prior to interengaging the same.

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