May 17, 1960 H. RUSKIN 2,936,456

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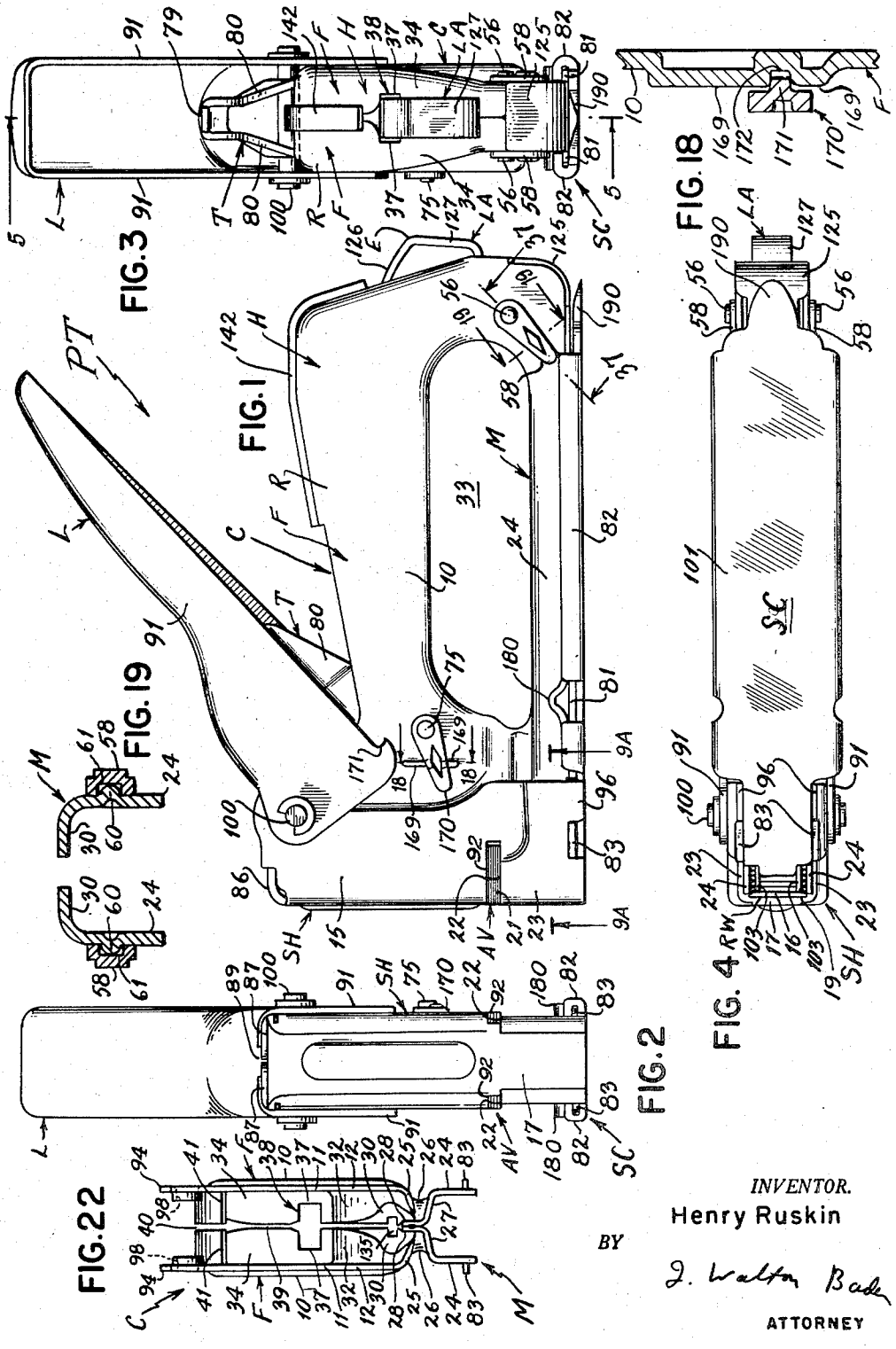

FIG. 3

FIG. 1

FIG. 19

FIG. 18

FIG. 4

FIG. 2

FIG. 22

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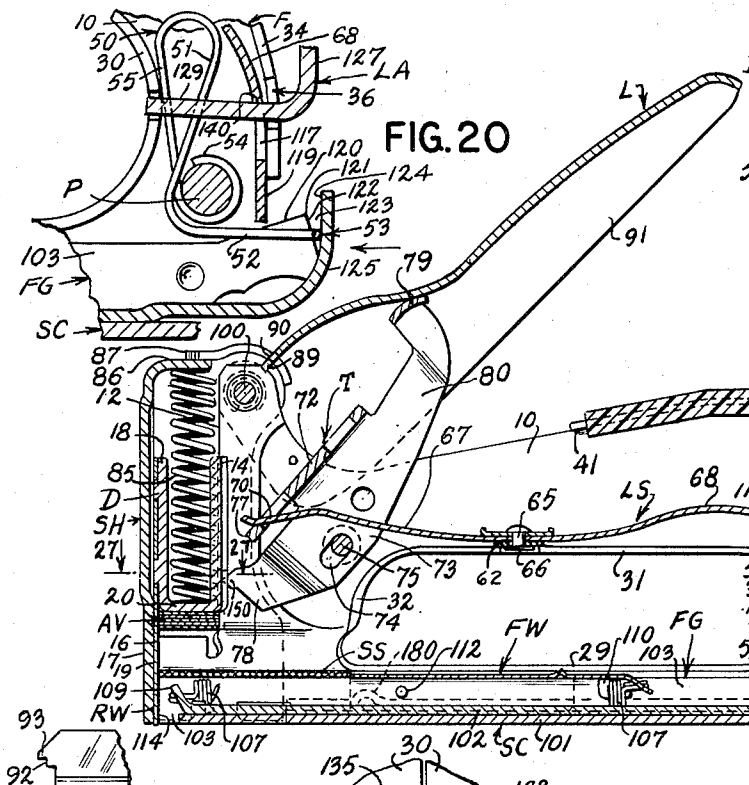

FIG. 20

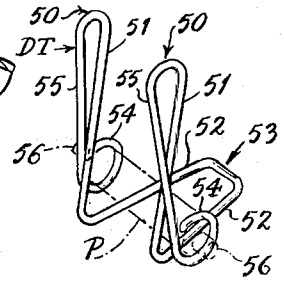

FIG. 17

FIG. 5

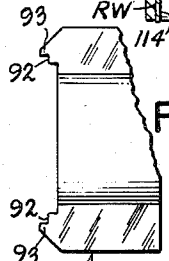

FIG. 31

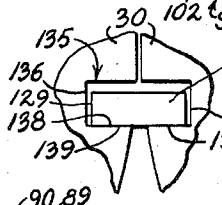

FIG. 34

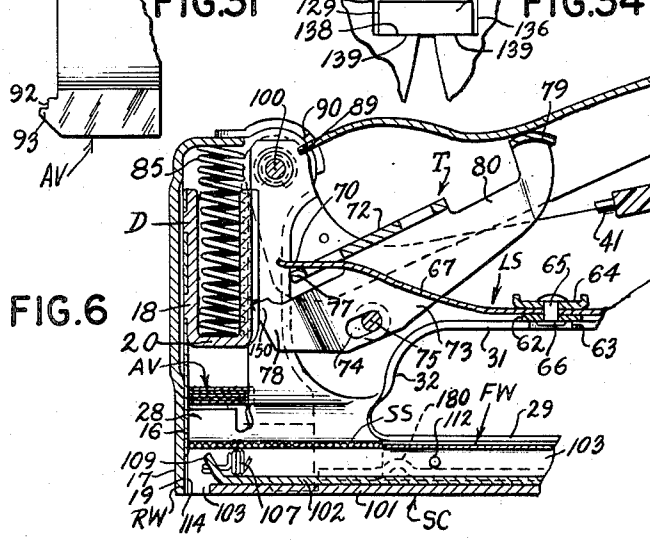

FIG. 6

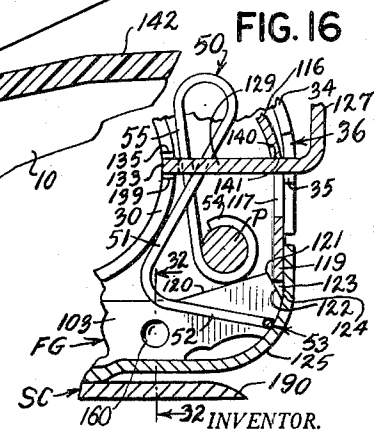

FIG. 16

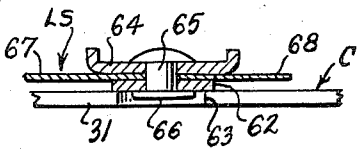

FIG. 21

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FIG. 7

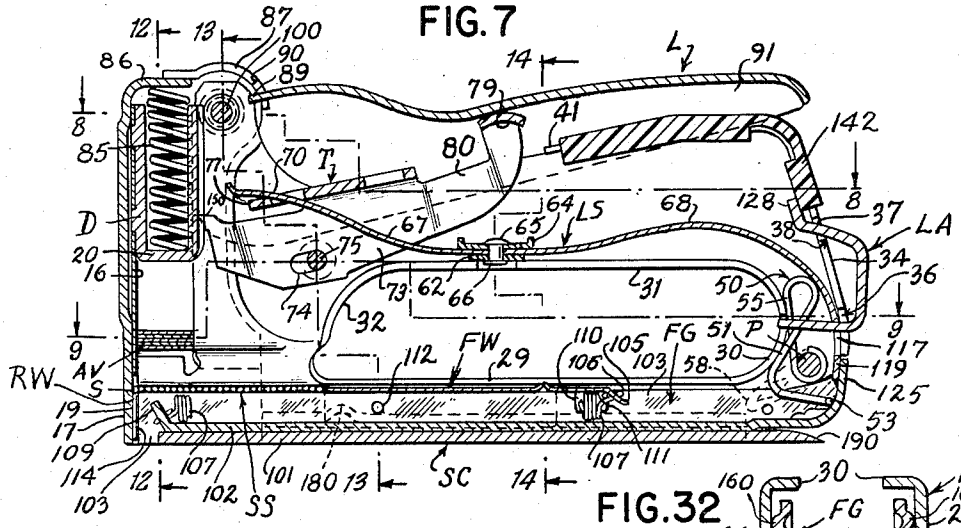


FIG. 32

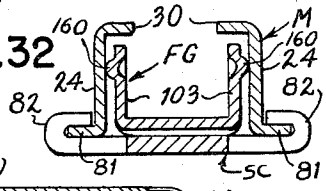


FIG. 8

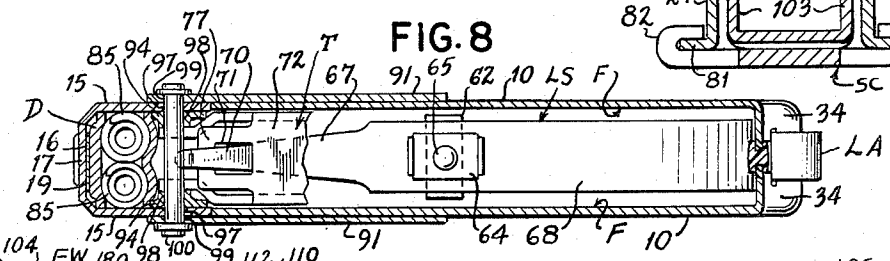


FIG. 29

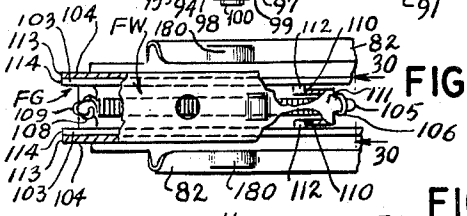


FIG. 30

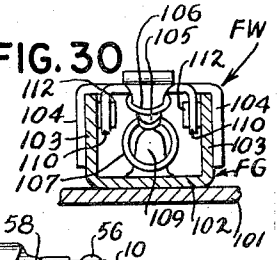


FIG. 9

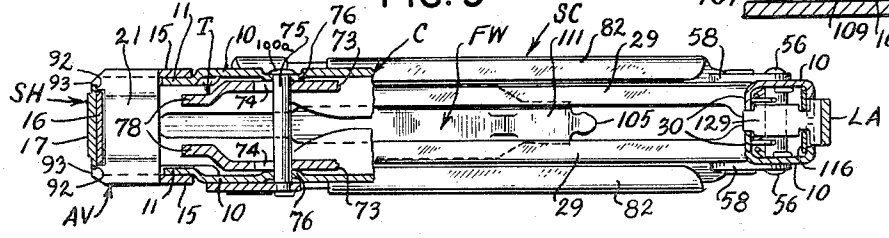


FIG. 9A

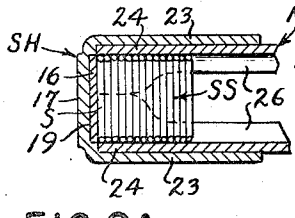
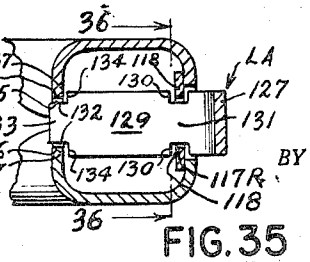


FIG. 35



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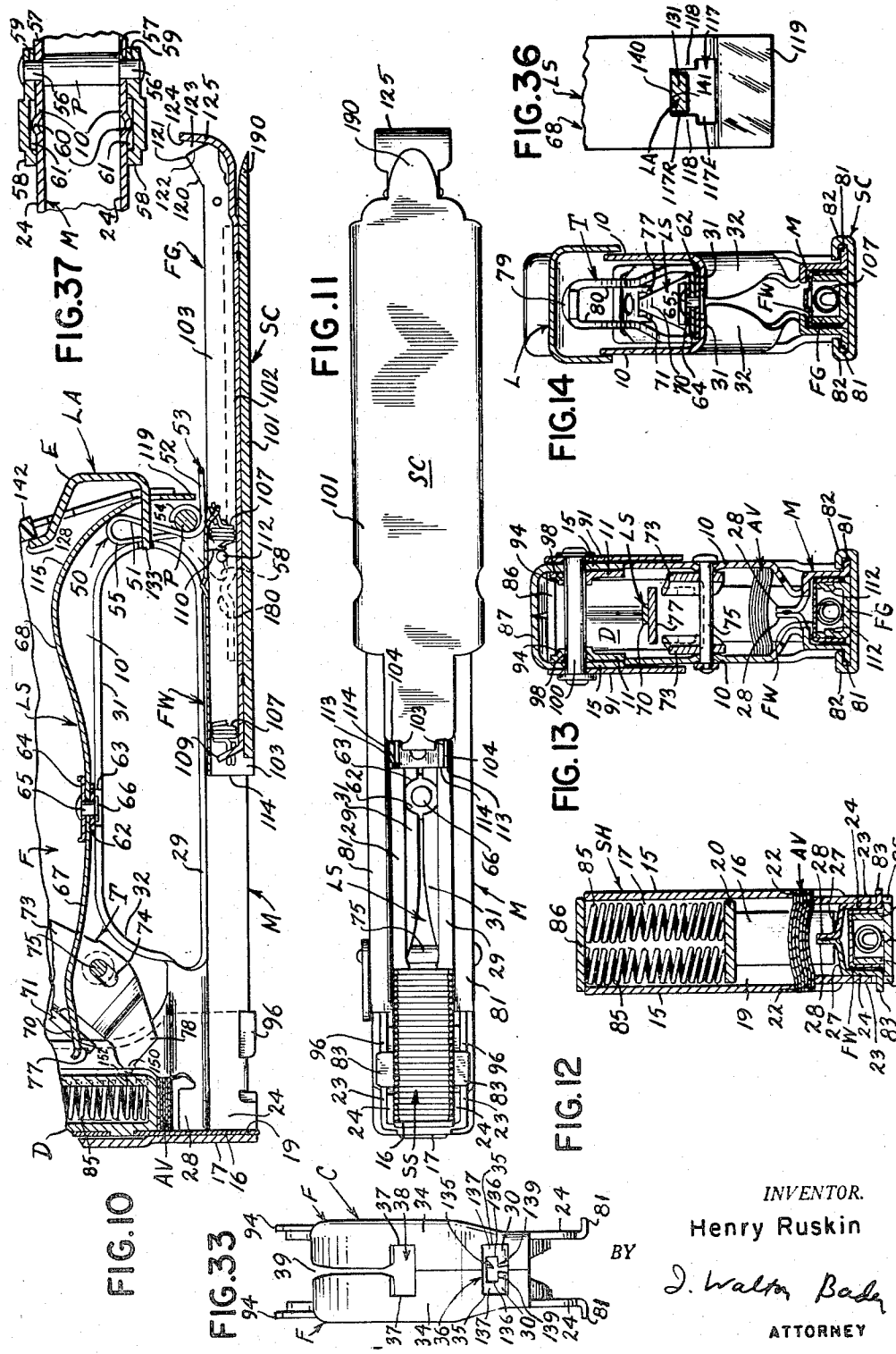

FIG. 10

FIG. 37

FIG. 11

FIG. 36

FIG. 14

FIG. 13

FIG. 12

FIG. 33

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FIG. 15

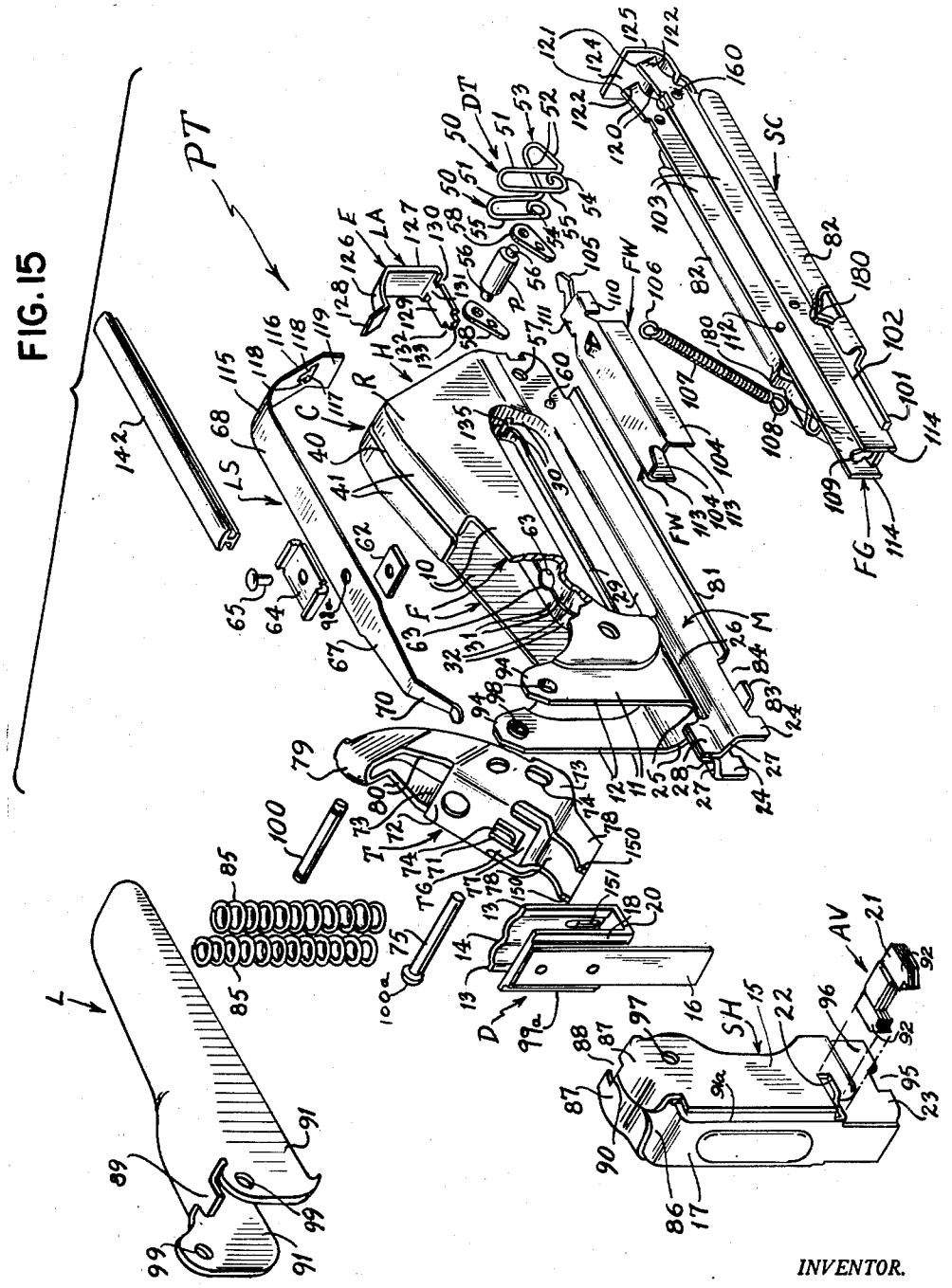

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FIG. 24

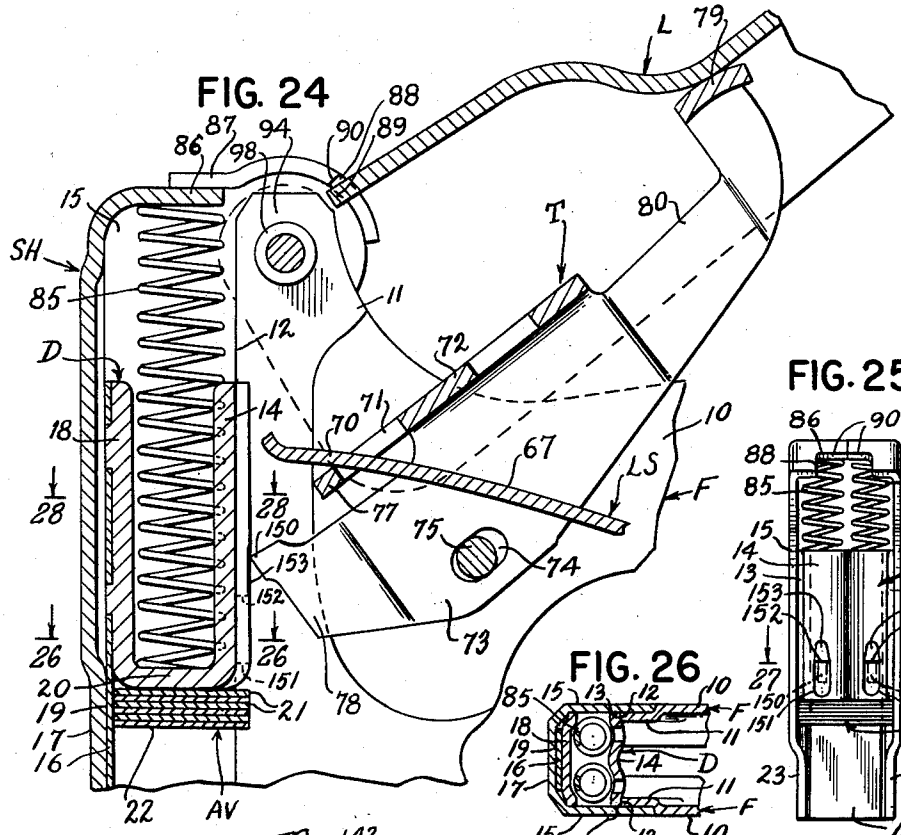


FIG. 25

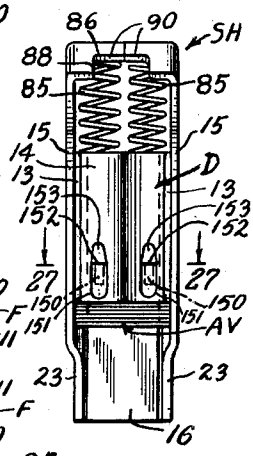


FIG. 26

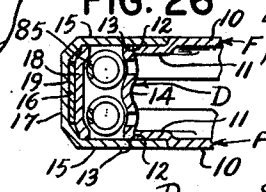


FIG. 23

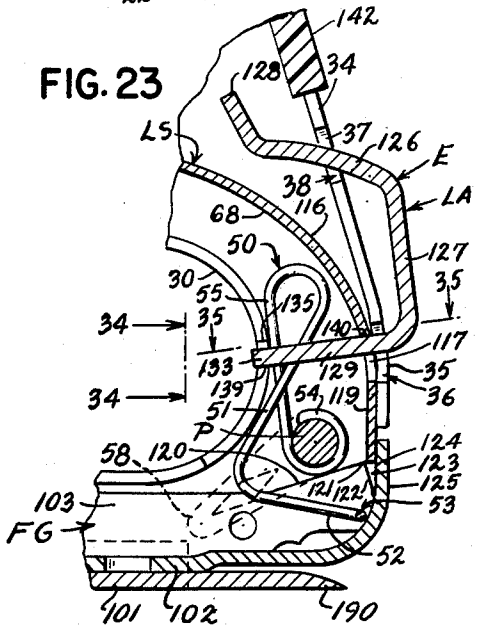


FIG. 27

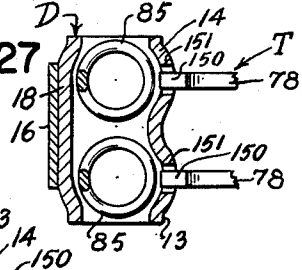
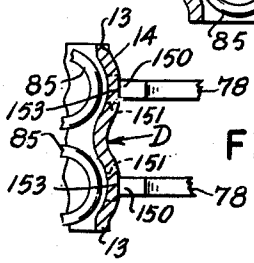


FIG. 28



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United States Patent Office 2,936,456 Patented May 17, 1960

2,936,456

TACKER

Henry Ruskin, Bayside, N.Y., assignor to Swingline, Inc., Long Island City, N.Y., a corporation of New York

Application April 10, 1958, Serial No. 727,717

12 Claims. (Cl. 1—49)

This invention deals with the type of stapling machine known as a tacker. In machines of this type the staple is ejected from the magazine directly into the material in which it is to be held and an anvil for clinching the legs of the staple is not provided.

The tacker of this invention combines a number of novel features which all co-operate to produce a relatively small, light weight and inexpensive tacker adapted to be conveniently carried about in work clothes of the operator but nevertheless powerful enough for effective operation.

Experimental work has shown that the tacker of this invention is as powerful and as durable as larger and more closely machines and can be effectively employed for securing fabrics to furniture frames in upholstering, rock wool to joists in insulating houses, displays to supporting frames in store windows, tags and labels to shipping crates, and lining material to shelves. In addition the tacker of this invention is capable of being employed in any other manner wherein a conventional tacker may be employed.

The novel features of this invention are briefly summarized below in the numbered paragraphs. The preferred construction of the tacker of this invention uses all of the features set forth. All of the features combine to produce a most successful and useful construction. However it is to be understood that the features can be separately and/or partially employed in conventional machines of the instant type and, if such is done, will partially improve the operation thereof to the extent that such features are useful.

(1) A unitary multi-purpose leaf spring is provided having one cantilever component normally holding a swingable and slidable trigger effectively tilted and removably interlocked with the staple ejecting ram. The leaf spring is also employed in holding the operating lever for actuating the trigger normally elevated so as to permit prompt manipulation thereof. The other cantilever component of the same leaf spring is employed as part of latching means for automatically and removably locking and unlocking a slidable base so as to open and close the magazine of the tacker.

(2) In order to provide proper actuation of the cantilever component of the leaf spring for latching and unlatching the magazine tiltable latch actuating means are provided. These actuating means bear against the aforesaid leaf spring and move the same.

(3) In order to provide automatic latching of the magazine guide means are provided upon the cover of the magazine which engage the end portion of one of the cantilever components of the leaf spring. These serve as means for locking the cover in closed position.

(4) Additional spring means are also operatively engageable by the cover of the magazine and are adapted to propel the cover outwardly when the aforesaid latching means are released so as to permit automatic opening of the magazine when empty.

(5) Stop means are also provided to limit the extent

of the opening of the magazine and thereby to prevent normal removal of the cover. These stop means are provided wtih a recess on the underside thereof engaging a projection extending from the case. Normally, therefore, the stop means are not swingable and can only be swung about the projection by the exertion of considerable force upon them. Such force is only applied when the machine is to be dissembled for repair.

(6) Additional stop means are also provided to hold the operating lever in its most downward position when the machine is not in use. These stop means are identical in construction with the stop means referred to in paragraph 5 above except that the recess is on the upper side of the member and the projection is on the lower side. The projection is slidable about the case so that it can be swung about easily.

(7) The magazine cover of the machine is of novel construction and is formed with a base portion having laterally disposed guide means thereupon. The upper portion is movable with respect to the base portion and is tensioned by means of tension spring means disposed between the base portion and the upper portion.

(8) The ram of the machine is formed with a pair of laterally aligned springs which are disposed in a holder of relatively narrow width. The narrow width of the holder prevents involuntary tilting of the same when movably actuated by the trigger.

(9) The sheath of the machine, wherein the ram is slidably movable, is made of a single piece of metal with the upper portion thereof closed by means of the interlocking of tongue portions. This construction avoids the use of a pin to hold a separable cover in place and provides a more durable construction.

(10) Extractor means are provided in juxtaposition with the base of the machine and are operable by utilizing the entire machine as lever means for the extractor.

In addition to the features set forth above, other important functional and structural features and significant objects will appear from the following detailed specification taken with the accompanying drawings wherein:

Fig. 1 is a side elevational view of the pocket tacker according to my invention illustrating the pivoted operating lever held fully raised by the trigger.

Fig. 2 is a front view of Fig. 1.

Fig. 3 is a rear view of Fig. 1.

Fig. 4 is a bottom plan view of Fig. 1.

Fig. 5 is a longitudinal sectional view on the line 5—5 of Fig. 3 illustrating the spring controlled plunger or ram in its normally fully depressed position at which time the pivoted trigger is interlocked with the plunger and the operating lever is fully elevated by the spring controlled trigger.

Fig. 6 is a fragmentary view of Fig. 5 showing the operating lever partly depressed and the pivoted and slidable trigger elevating the depressed plunger.

Fig. 7 is a view along the lines of Fig. 6 however depicting the plunger reaching its full upstroke and about to be unlocked from the slidable and swingable trigger preparatory to commencing its downward stroke to permit its driving blade to eject the foremost staple now within the raceway.

Fig. 8 is a horizontal sectional view on the bent line 8—8 of Fig. 7.

Fig. 9 is a horizontal sectional view on the bent line 9—9 of Fig. 7.

Fig. 9A is a sectional view on the line 9A—9A of Fig. 1 however with the follower guide and follower removed from the magazine.

Fig. 10 is a fragmentary view of Fig. 5 illustrating the magazine open and so opened automatically by the lower loop of the double torsion spring following unlocking of

the posterior cantilever arm of the main spring from the slidable base.

Fig. 11 is a bottom plan view of Fig. 10, illustrating the magazine turned bottom face up for convenient loading therein a staple strip.

Figs. 12, 13 and 14 are transverse sectional views on the lines **12—12**, **13—13** and **14—14** of Fig. 7.

Fig. 15 is an exploded perspective view of the important parts of the pocket tacker and illustrating the handle, constituted by companion and opposing frames of the case, partly broken.

Fig. 16 is a fragmentary and enlarged view of Fig. 5 illustrating the slidable base held removably locked by the posterior arm of the main leaf spring and constantly acted upon by the lower loop of the double torsion spring.

Fig. 17 is a perspective view of the double torsion spring mounted on the swingable stop sustaining fulcrum pin shown in phantom.

Figs. 18 and 19 are enlarged sectional views on the lines **18—18** and **19—19** of Fig. 1.

Fig. 20 is a fragmentary view of Fig. 10 however exhibiting the slidable base now moving against the lower loop of the double torsion spring to appreciably stress the latter spring on closing of the magazine.

Fig. 21 is an enlarged fragmentary view of Fig. 5 showing the manner of anchoring the multipurpose main leaf spring within the handle of the case.

Fig. 22 is a front view of the case showing opposing companion frames thereof empty but held initially together by welded front lips extending upwardly from the front part of the magazine.

Fig. 23 is a view similar to Fig. 16 but exhibiting the manipulatable and rockable latch tilted and elevating the posterior cantilever arm of the main leaf spring which is just about ready to unlock the base to permit automatic retraction of the lower loop of the double torsion spring for automatically shifting the slidable base to open the magazine.

Fig. 24 is an enlarged fragmentary longitudinal sectional view depicting the slidable and pivoted trigger idly and bodily shifting rearwardly as hand pressure on the part of the operator is gradually decreased on the operating lever following the complete driving or operating down stroke of the plunger.

Fig. 25 is a rear elevational view of the sheath in which the spring controlled normally depressed staple driving plunger or ram is slidably guided, the spaced nibs of the slidable and pivoted trigger being shown in phantom and interlocking relation with and abutting the lifting faces of spaced notches interrupting the posterior undulatory wall of the spring holder of the plunger.

Fig. 26 is a reduced transverse sectional view of the plunger taken on the line **26—26** of Fig. 24.

Fig. 27 is an enlarged transverse sectional view on the line **27—27** of Fig. 5, however with the sheath not shown.

Fig. 28 is a transverse fragmentary sectional view on the line **28—28** of Fig. 24.

Fig. 29 is a fragmentary and partly broken away plan view of the assembly including the slidable cover for the magazine and the spring controlled slidably guided staple follower guided therein.

Fig. 30 is a transverse sectional view on the line **30—30** of Fig. 29.

Fig. 31 is a fragmentary plan view of the laminated bumper.

Fig. 32 is a transverse sectional view on the line **32—32** of Fig. 16.

Fig. 33 is a rear view of the juxtapositioned companion frames of the case shown empty.

Fig. 34 is a fragmentary view on the line **34—34** of Fig. 23.

Fig. 35 is a horizontal view on the line **35—35** of Fig. 23.

Fig. 36 is a sectional view on the line **36—36** of Fig. 35, illustrating the lifting neck of the tiltable limb of the pivoted latch manipulator.

Fig. 37 is a sectional view on the line **37—37** of Fig. 1.

In the drawings, pocket tacker PT according to the invention, comprises, inter alia, case C, sheath SH, spring controlled slidably guided plunger or ram D, swingable and slidable trigger T, multipurpose leaf spring LS, pivoted operating lever L, slidable closures SC, and tiltable latch actuator LA.

Case C is constituted by companion but opposing sheet metal frames F (Figs. 15, 22, 26 and 33) having spaced sides **10** including inwardly offset but parallel front marginal guide portions **11** embodying rectilinear bearing faces **12**. Concerning plunger D, spaced margins **13** of posterior undulatory wall **14** thereof are retained by bearing faces **12** to vertically and slidably guide plunger D between spaced sides **15** (Fig. 26) of U-shaped sheath SH and the stapled driving blade **16** of plunger D slidably against the inside bearing surface **19** of front wall **17** of sheath SH. Driving blade **16** is suitably fixedly carried by anterior wall **18** of the U-shaped open top portion **99***a* of plunger D (Fig. 15) and includes a bottom wall or block **20** held against laminated bumper or shock absorber AV of the type disclosed in U.S. Patent 2,746,044, granted May 22, 1956, jointly to Gioacchino Cusumano and Irvin L. Delin, for Tackers, and comprising a stack of closely superimposed, relatively thin sheet metal, flexible and resilient plates **21** appropriately held across sheath SH and within alined notches **22** (Figs. 1 and 2) interrupting spaced sides **15** which are adapted to closely straddle and embrace parallel guide portions **11** while the spaced lower depending and inwardly offset portions **23** of sheath SH (Figs. 4, 9A and 15) closely straddle and embrace spaced parallel walls **24** of magazine broadly designated M.

Referring back to the opposing frames F, lower front portions **25** (Fig. 15) depending from spaced sides **10** and marginal portions **11** (Figs. 15 and 22) converge downwardly and then merge with the grooved neck portions **26** integral with diverging and slightly downwardly sloping walls **27** from which parallel walls **24** of staple magazine M depend.

Integral with and extending upwardly from the upwardly converging walls **27** are the juxtapositioned lips **28** which are initially welded together to properly secure corresponding front parts of magazine M. Upper parts of spaced walls **24** are provided with spaced flanges **29** which are integral with rear arcuate flanges **30** integral with spaced sides **10** of handle H. Flanges **30** merge with lower flanges **31** of handle H and flanges **31** merge with the arcuate front flange **32**.

Handle H although constituted by companion frames F may be said to have its upper reach R (Figs. 1 and 15) spaced from magazine M to define the relatively large and elongated handle opening **33** bounded by the internal rim defined by flanges **29**, **30**, **31** and **32**.

Also integral with spaced sides **10** of frames F are rear outside inclined flanges **34** (Figs. 3, 8, 22 and 33). These flanges **34** (Fig. 33) constitute the rear wall of case C defining lower alined gaps **35** to constitute slot broadly indicated **36**; alined upper gaps **37** to constitute notch generally designated **38**, and gap **39** communicating with gap **40** formed by spaced inwardly overhanging top flanges **41** (Fig. 22) of spaced sides **10**.

With lips **28** welded together, the rear parts of frames F may be spread apart for convenient insertion within case C and between the lower portions of spaced sides **10** thereof, the assembly illustrated in Fig. 17, namely, fulcrum pin P which carries the preloaded double torsion wire spring broadly designated DT (Fig. 15), the latter comprising transversely spaced inverted U-shaped loops **50** including corresponding rear legs **51** merged with spaced sides **52** of the lower U-shaped laterally extending loop **53** normally disposed in advance of coils **54** of corresponding front legs **55** of spaced loops **50**. As shown in Fig. 15, double torsion spring DT is not preloaded

or under stress. However in Fig. 17 and in the remaining views, spring DT is always preloaded. To this end, loop 53 (Fig. 15) is first manually urged forwardly to swing corresponding rear legs 51 between and to the rear of corresponding front legs 55 of loops 50 and rearwardly of alined coils 54 and in this relationship pin P is threaded into alined coils or eyes 54. Subsequently manual or finger pressure is removed from loop 53, thus automatically causing rear legs 51 of loops 50 to resiliently swing and retract to abut fulcrum pin P which serves as a stop limiting rearward displacement of corresponding rear legs 51, that is, pin P holds torsion spring DT always under a preload.

Subsequently, reduced portions 56 of fulcrum pin P are threaded into alined openings 57 of frames F (Fig. 37). Thereafter swingable stops 58 are mounted on reduced portions 56, that is, the latter are projected into and through openings 59 in stops 58. The reduced portions 56 are then upset to rotatably retain stops 58 against walls 24 of magazine M, each wall 24 including detent or projection 60 adapted to be received and snap into a relatively shallow recess interrupting the inside face of each stop 58 to removably interlock therewith.

Pursuant to sustaining pin P and its preloaded spring DT within case C, lower loop 53 normally extends beyond sides 10 of frames F, that is, beyond the rear wall of case C constituted by flanges 34 (Figs. 10 and 20).

To maintain companion frames F against spreading relative to the front part of the magazine M now welded at lips 28 as previously pointed out, metal spacer or seat 62 is suitably welded to bridge the spaced lower flanges 31 of handle H interrupted by alined notches 63 (Figs. 11 and 15). Positioned on seat 62 is the intermediate part of the multi purpose main leaf spring LS and superimposed on and against the latter is the channel shaped bearing plate 64. Leaf spring LS has two opposite end portions or arms 67 and 68. Appropriately holding bearing plate 64 against the metal leaf spring LS and the latter against welded seat 62 is bolt 65 having its lower upset head 66 disposed in notches 63. Bolt 65 holds spring 65 to case C at intermediate portion 98*a*. By the arrangement disclosed, leaf LS may be said to constitute two cantilever components or arms 67 and 68 effectively anchored within reach R of handle H by the common rivet 65.

Trigger T is now inserted within case C between spaced guides 11 and between spaced sides 10 of frames F so that terminal 70 of spring arm 67 is threaded through opening 71 interrupting tongue TG extending from bridge 72 of trigger T having depending spaced sides 73 provided with transversely alined relatively elongated slots 74.

Fixed fulcrum pin 75 (Figs. 9 and 15) is in the form of a rivet and traverses sides 10 of companion frames F and is disposed in alined elongated slots 74 in depending sides 73 which are movably interposed between spaced sides 10 of frame F. Rivet 75 is suitably held against sides 10 by head 100*a* on one side and latch 170 on the other. Rivet 75 is peened to latch 170. It follows that spaced sides 73 of trigger T are not only pivotally held on fulcrum pin 75 but these sides 73 are also slidably retained thereon between bosses or bearings 76 (Fig. 9) struck inwardly of spaced sides 10.

Terminal 70 of spring arm 67 continually bears against abutment 77 of tongue TG to normally hold transversely spaced and forwardly projecting jaws 78 of trigger T fully down and at the same time hold crown or bearing 79 at the rear part of the trigger fully raised as shown in Fig. 5. Jaws 78 extend from and are inwardly offset relative to depending sides 73 while bearing 79 merges with the rearwardly converging limbs 80 likewise integral with depending sides 73.

Extending laterally of spaced walls 24 of magazine M and integral therewith are the spaced rectilinear rails 81 receivable in and cooperating with the interrupted channel shaped ears 82 of the relatively wide base SC to slidably and linearly guide the latter in the matter of opening or closing magazine M. Lugs 83 also projecting laterally of spaced walls 24 are spaced from rails 81 to define therewith spaced relief recesses 84.

Plunger D containing normally expanded springs 85 is inserted within sheath SH and between spaced sides 15 thereof so that the upper ends of ram springs 85 yieldingly abut stop or roof 86 extending from front wall 17. Stop 86 is reinforced by inwardly turned lips 87 (Fig. 15) defining notch 88 adapted to closely and removably receive lug 89 of operating lever L. Notch 88 includes interrupted stop face 90 cooperating with lug 89 to limit upward pivotal displacement of lever L which includes depending sides 91 adapted to movably straddle spaced sides 15 of sheath SH. It is to be noted that sheath SH is a one piece construction and that stop 86 and lips 87 form the top of the sheath against which springs 85 abut. Thus there is no need of a roof portion separate from the remainder of sheath SH as in conventional machines. Thus there is no need of the conventional pin to secure these portions to one another and no point of strain and eventual failure in the machine.

With plunger D positioned within sheath SH and springs 85 expanded, plunger D is slidably moved towards stop 86 by a suitable tool (not shown) to raise plunger D against resistance of spring 85 above alined notches 22. By such action springs 85 are compressed. Laminated bumper AV is then inserted into slot 22 in one side 15 of sheath SH and shifted to receive in its recess 91*a* slidable driving blade 16 and to be also received in the other alined slot 22 of opposing side 15. Relief recess 91*a* is closed by front wall 17 of sheath SH. Front wall 17 also aids in slidably guiding driving blade 16 in recess 91*a* (Fig. 15). Wall 17 is positioned against shoulders 92 of bumper AV and is received between and retained against lateral displacement. So arranged, laminated stack AV is adequately interlocked with sheath SH. The tool, holding plunger D elevated in sheath SH, is now removed. Immediately springs 85 expand, automatically shifting plunger D towards and against bumper AV, holding plunger D in this normally depressed position.

Case C is now assembled with sheath SH. In this connection spaced ears 94 of guides 11 (Fig. 8) are interposed between spaced sides 15 of sheath SH and guides 11 are swung into and between sides 15 whereby sides 23 (Fig. 9A) of the lower part of sheath SH straddle and closely embrace spaced walls 24 of the forward part of staple magazine M to permit spaced lugs 83 (Fig. 11) to be received within alined recesses 95 interrupting sides 23 and to be interlocked with the walls thereof. As this occurs, lugs 96 defined by spaced sides 23 enter and interlock with walls of alined recesses 84 interrupting rails 81. In such relationship alined openings 97 (Fig. 8) at the upper part of sides 15 register with transversely alined openings 98 of ears 94.

Operating lever L is now positioned so that its sides 91 embrace sides 15 of sheath SH for locating alined openings 99 thereof in alinement with the alined openings 97 of sheath SH in registration with alined openings 98 of ears 94. Now fulcrum pin 100 is inserted into alined openings 99, 97 and 98 and thereafter suitably upset to preclude separation of operating lever L from sheath SH. Sides 91 of lever L of course are rotatably retained on fulcrum pin 100 thereby permitting operating lever L to be tilted to actuate and depress normally raised crown or bearing 79 for pivotally displacing trigger T relative to fixed fulcrum 75.

Appropriately welded to bottom wall 101 of the sheet metal base is bottom wall 102 of the U-shaped follower guide FG having integral therewith spaced upstanding parallel rails or flanges 103 slidably guiding parallel depending sides 104 of the inverted U-shaped staple follower or pusher FW which is provided with rear offset lug 105

for retaining terminal loop 106 of the normally contracted but expandible helical spring 107 having loop 108 retained by biased lug 109 extending from bottom wall 102 of the U-shaped follower guide FG. Base SC broadly constitutes cover means for magazine M.

Slidably guided by and between spaced rails 103 of hollow guide FG are spaced flanges 110 of reduced portion 111 integral with top wall of follower FW. Spring 107 is held between rails 103 of follower guide FG and if magazine M be empty of the staple strip SS or wherever magazine M be opened by sliding base or closure SC away from front wall 17 of sheath SH, spring 107 contracts, shifting follower FW forwardly until flanges 110 of reduced portion 111 strikes alined dimples 112 projecting from rails 103 (Figs. 13, 15 and 29), thereby stopping follower FW at which time forward face 113 (Fig. 29) of depending flanges 110 are flush with forward faces 114 of spaced rails 103 of follower guide FG.

Spring cantilever or arm 68 of main spring LS is in actuating relationship with the locking means provided upon magazine M so as to hold cover SC in closed position with respect to case C and includes intermediate bowed portion 115 having depending leg 116 provided with the inverted T-shaped slot 117 (Fig. 36) constituting reduced opening 117R communicating with lower expanded opening 117E. Portions of leg 116 in part constitute reduced opening 117R characterizing shoulders 118. Leg 116 is provided with lower terminal part 119 adapted when closing magazine M on shifting of slidable base SC towards front wall 17 of sheath SH, to ride on spaced and inclined cams 120 at the rear of and integral with spaced rails 103 of follower guide FG. Consequently terminal part 119 is raised thereby lifting and stressing spring latch component or arm 68 until terminal part 119 clears rear corners 121 defined in part by alined downwardly and rearwardly sloping faces 122 of spaced rails 103. On clearing alined corners 121, latch arm 68 instantly and resiliently retracts, causing terminal part 119 to drop and snap into alined and downwardly converging slots 123 formed by corresponding biased faces 122 of spaced rails 103 with inside face 124 of end wall or lug 125 extending upwardly from bottom wall 102 of follower guide FG, that is, spring latch arm 68 locks the follower guide FG in a predetermined position to preclude longitudinal displacement of slidable base SC at which time corresponding front faces 114 of spaced rails 103 are spaced from rear face 19 of front wall 17 of sheath SH to constitute raceway RW adapted to receive and guide foremost staple S of staple strip SS. The construction set forth above constitutes a form of locking means designated to lock the magazine.

As terminal part 119 rides on spaced cams 120 on slidable base or cover SC, inside face 124 of turned up end wall 125 also eventually meets lower loop 53 of double torsion spring DT causing corresponding spaced legs 51 of loops 50 to be shifted away and forwardly from their positions abutting stop and fulcrum pin P (Fig. 10) to their positions shown in Figs. 5 and 16. In this way loops 50 are appreciably further tensioned or loaded, aiding in holding biased faces 122 of rails 103 against terminal portion 119 of spring latch 68. By the arrangement described base SC is prevented from accidentally unlocking and when locked, spaced rails 103 of follower guide FG are held a predetermined distance apart from the locked sheath SH to characterize as previously stated staple raceway RW.

To lift terminal part 119 of latch spring 68 to unlock slidable base SC, manipulator LA is provided and is tiltably associated with the rear part of hollow case C. Manipulator LA includes elbow E having diverging branches 126 and 127. Integral with branch 126 is the forwardly and upwardly inclined lip 128. Branch 126 extends through opening 38 in flanges 34 of companion frames F to arrange lip 128 within case C.

Projecting forwardly and integral with lower end of branch 127 is limb 129 (Figs. 9A and 15) interrupted by alined notches 130 to form neck 131. Also, limb 129 is interrupted by corner notches 132 defining reduced tongue 133 and shoulders 134. Tongue 133 loosely fits into square shaped opening 135 (Figs. 9A, 33 and 34) formed by alined notches 136 in adjacent flanges 30 to permit shoulders 134 (Fig. 35) of limb 129 to bear against portions 137 of flanges 30 adjacent opening 135, and also to permit bottom face 138 (Fig. 34) of tongue 133 to tilt against the alined but separated bottom fulcrum walls 139 of opening 135.

Shoulders 118 (Figs. 35 and 36) of leg 116 of spring LS are loosely received within marginal notches 130 interrupting limb 129, thus movably interlocking limb 129 with depending leg 116. In the lifted and locked position of spring arm 68 (Figs. 5, 16 and 36) bottom face 140 (Fig. 36) of reduced opening 117R bears against or abuts upper lifting face 141 (Figs. 16 and 36) of neck 131 of the tiltable limb 129 of manipulators LA, thereby exerting a downward thrust on limb 129, causing latch LA to be bodily tilted outwardly and downwardly until lip 128 thereof meets the plastic or rubber H-shaped strip 142 (Fig. 5) which acts as a stop. This strip threaded into gap 40 of top flanges 41 and in gap 39 (Fig. 22) defined by rear flanges 34 of frame F.

As shown in the drawings, springs 85 hold block 20 of plunger D against the shock absorbing laminated bumper AV whereby its staple driving blade 16 occupies raceway RW. At this time lifting nibs 150 of spaced jaws 78 of trigger T are disposed within spaced notches 151 interrupting undulatory posterior wall 14 of plunger D. When lever L is depressed, spaced nibs 150 abut upper faces 152 of notches 151, lifting plunger D away from bumper AV and driving blade 16 rises above staple strip SS whereby follower FW advances the foremost staple S into raceway RW. Towards the completion of the full upstroke of plunger D (Fig. 7) nibs 150 disengage from lifting faces 152 since the space between nibs 150 and faces 152 increases and thus faces 152 move out of notches 151. Springs 85 which had been compressed on the upstroke of plunger D now expand, forcing the latter to carry its downstroke whereby blade 16 ejects foremost staple S out of raceway RW, as is well understood. Toward completion of the downstroke block 20 of driver D impacts bumper AV which takes up the shock.

Terminal 70 of leaf spring LS acts on abutment 77 to retract slidable and pivoted trigger T. Thus, nibs 150 (Fig. 24) ride idly against the back wall 14 of plunger D after the latter has completed its downward stroke causing trigger T to be bodily cammed or slidably shifted rearwardly, until nibs 150 again interlock with walls of notches 151. Leading to lifting faces 152 are the flat bearing surfaces 153 (Fig. 25) providing a lower linear edge widely distributing pressure by nibs 150 as the latter are about to leave notches 151 for the purpose of reducing brinelling.

Referring to Fig. 32, detents 160 struck out of rails 103 of follower guide FG of slidable base SC cooperate with spaced sides 24 of magazine M to assure centering of follower guide FG within the latter on complete closing of base SC.

Appropriately swingably retained on fixed fulcrum pin 75 is the swingable latch 170 (Figs. 1 and 18) having projection 171 adapted to removably interlock with recess 172 to hold latch 170 free and clear of notch 171 of lever L, hence permitting the latter to be held fully elevated by trigger T (Fig. 1). If latch 170 be interlocked with wall of notch 171, lever L is held in a locked and depressed position whereby the tacker occupies less space.

Spaced lobes or projections 180 extending upwardly from ears 82 of base SC coact with the removably locked latches 58 (Fig. 10) to limit the extent of base SC may

be shifted rearwardly away from the front wall 17 of sheath SH in the matter of opening magazine M.

However before tilting manipulator LA to unlock spring component or latch arm 68 from the follower guide FG of base SC, tacker PT (Fig. 1) is turned bottom face up as shown in Fig. 4. Finger pressure is now applied to branch 127, causing limb 129 to pivot that is, tilt, lifting leg 116, consequently raising terminal free of cams 120 and instantly thereafter base SC is unlocked permitting insertion or loading of staple strip SS within magazine M. Subsequently, base SC is slidably shifted to the left closing magazine M and by such action and at completion of the closing action, base SC becomes automatically locked as previously pointed out.

If desired, bottom wall 101 of base SC is provided with a rounded and tapered terminal 190 conveniently adapted to be positioned under the bridge of a secured staple to extract the latter. The stapling machine also serves as lever means to aid in such extraction.

Various changes may be made in details of construction and arrangement of parts without departing from the spirit of the invention or sacrificing any of the advantages thereof inherent therein.

I claim:

1. A tacker comprising a frame bearing movable ram means, movable trigger means and a staple magazine, said staple magazine operatively carrying staple follower means, a slidable openable cover about said staple magazine, locking means and locking means releasing means in operative relationship with said cover and said staple magazine adapted to hold said cover in closed position, spring means having an intermediate portion and a pair of opposite end portions, said spring means being anchored to said frame at said intermediate portion, with one end portion of said spring means in operative relationship with said trigger means and the other end portion in operative relationship with said locking means.

2. A tacker comprising a frame defining a handle opening therewithin, vertically movable ram means formed with a depending blade portion and an upper portion within said frame, a pair of adjacent compressible coil spring members in within said upper portion, pivotally movable trigger means in operative relationship with said ram means, a pivotally movable operating handle pivotally secured to said frame and in operative relationship with said trigger means, a staple magazine within said frame operatively carrying a staple follower and having a slidably movable cover thereupon, locking means and locking means releasing means in operative relationship with said cover and adapted to hold said cover in closed position, leaf spring means having an intermediate portion and a pair of opposite end portions, said leaf spring means being anchored to said frame at said intermediate portion, one end portion of said spring means being in operative relationship with said trigger means and the other end portion in operative relationship with said locking means.

3. A tacker comprising a frame defining a handle opening therewithin, a vertically movable ram within said frame having a depending blade portion and a substantially U-shaped upper portion, a pair of adjacent compressible coil spring members within said upper portion and in abutting relationship with said frame, a pivotally movable trigger operatively connected to said upper portion of said ram, a pivotally movable operating handle in operative relationship with said trigger, and pivotally secured to said frame, a staple magazine at the lower portion of said frame operatively carrying a staple follower and formed with a slidable underlying spring loaded cover at its base portion, locking means and locking means releasing means in operative relationship with said cover adapted to hold said cover in closed position, stressable torsion spring means secured to said frame stressed by closing movement of said cover and releasable from stressed position when said locking means releasing means are activated, leaf spring having an intermediate portion and a pair of opposite end portions, said leaf spring means being anchored to said frame at said intermediate portion, one end portion of said spring means being in operative relationship with said trigger and the other end portion in operative relationship with said locking means.

4. A tacker comprising a frame defining a handle opening therewithin, a vertically movable ram within said frame having a depending blade portion and a substantially U-shaped upper portion, a pair of adjacent compressible coil spring members within said upper portion and in abutting relationship with said frame, a pivotally movable trigger operatively connected to said upper portion of said ram, a pivotally movable operating handle in operative relationship with said trigger and pivotally secured to said frame, a staple magazine at the lower portion of said frame operatively carrying a slidably movable follower therewithin and formed with a slidable underlying spring loaded cover at its base portion, locking means and locking means releasing means in operative relationship with said cover adapted to hold said cover in closed position, spring means secured to said frame and bearing against said cover thereby operatively propelling said cover into an open position when said locking means are released, leaf spring means having an intermediate portion and a pair of opposite end portions, said leaf spring means being anchored to said frame at said intermediate portion, one end portion of said spring means being in operative relationship with said trigger and the other end portion in operative relationship with said locking means.

5. A tacker comprising a frame defining a handle opening therewithin, a vertically movable ram within said frame having a depending blade portion and a substantially open U-shaped upper portion, a pair of laterally disposed adjacent compressible coil spring members within said upper portion in abutting relationship with said frame, a pivotally movable trigger having a forward actuating portion operatively connected to said upper portion of said ram, a pivotally movable operating handle in operative slidably movable relationship with said trigger and pivotally secured to said frame, a staple magaznie at the lower portion of said frame operatively carrying a staple follower therewithin, a slidable cover at the base of said magazine having a pair of spaced upstanding guide rails each formed with an upwardly turned terminal portion, forming a recess with said cover, a leaf spring having an intermediate portion and a pair of opposite end portions and being anchored to said frame at said intermediate portion, one end portion of said spring means being in operative relationship with said trigger and the other end portion being disposable within said recess, a pivotally movable lever secured to said second-named end portion of said leaf spring means and operatively moving said end portion into an upward position to clear said recess, torsion spring means secured to said frame and bearing against said cover, said torsion spring means operatively propelling said cover into an open position when said second-named end portion of said spring clears said recess.

6. A tacker comprising a frame defining a handle opening therewithin, a vertically movable ram within said frame having a depending blade portion and a substantially U-shaped open upper portion provided with a pair of spaced recesses at its lower portion, a pair of laterally disposed adjacent compressible coil spring members within said upper portion and in abutting relationship with said frame, a pivotally movable trigger provided with a centrally disposed recess therewithin and formed with a pair of spaced forward actuating portions engageable within said recesses within said U-shaped upper portion, a pivotally movable operating handle secured to said frame overlying said trigger and in slidable operative relationship therewith, a staple magazine at the bottom por-

tion of said frame, a slidably movable staple follower within said magazine, a slidable cover overlying said magazine and formed with a pair of spaced upstanding rails having upwardly turned portions at the rear thereof, said upstanding rails being provided with a recess at the rear portions thereof, a leaf spring member having an intermediate portion and a pair of opposite cantilever end portions, one of said end portions being disposed within said central recess within said trigger, the other end portion of said spring member being downwardly turned and disposed within said recess, a pivotally movable unlocking lever secured to said second-named cantilever end portion of said spring member and adapted to move said spring member clear of said recess, torsion spring means secured to said frame and bearing against said cover to propel said cover into an open position when said second-named end portion of said leaf spring member clears said recess, and tension spring means secured to said staple follower and to said cover.

7. A tacker comprising a frame defining a handle opening therewithin, said frame being formed with a main portion and a forwardly disposed sheath portion having a plurality of interlocked tongue portions forming a roof thereover, a vertically movable ram within said sheath having a depending blade portion and a substantially U-shaped upper portion, said upper portion being provided with a pair of spaced laterally disposed recesses therewithin beneath the horizontal center line thereof, a pair of laterally disposed adjacent compressible coil spring members within said upper portion in abutting relationship with the roof portion of said sheath, a pivotally movable trigger provided with a substantially centrally disposed recess therewithin and formed with a pair of forwardly disposed actuating portions, said actuating portions being engageable with the recesses within said ram, said trigger being pivotally connected to said frame, an operating handle pivotally connected to said sheath and overlying said trigger in slidable engagement, an open staple magazine at the bottom of said frame, a slidable staple follower within said magazine, a cover underlying said magazine formed with a pair of spaced upstanding rail portions each spaced from the sides of said magazine and each having an upwardly turned portion at the rear thereof, a rear shield secured to said cover behind said rail portions and in spaced relationship with the rear terminal portions thereof so that a recess is provided between said rails and said rear shield, a leaf spring having an intermediate portion and a pair of opposite cantilever end portions, said leaf spring being anchored to said frame at said intermediate portion, one end portion of said spring means being disposed within said central recess within said trigger, the other end portion of said spring means being downwardly turned and disposable within said recess within said cover, a pivotally movable lifting handle secured to said second-named end portion of said spring and adapted to raise said portion clear of said recess so as to release said magazine cover, a torsion spring member pivotally secured to said frame and bearing against said rear shield so that said cover may be propelled into an open position when said second-named rear portion of said spring is lifted clear of said recess, and tension spring means between said staple follower and said magazine cover.

8. A ram for a tacker including a depending blade portion and a substantially U-shaped upper portion having an inwardly disposed central portion, a pair of laterally disposed coil springs within said U-shaped portion, each of said coil springs being on either side of said central portion.

9. A ram for a tacker comprising a blade portion and an open U-shaped upper portion of greater cross-sectional size than said blade, said U-shaped upper portion being provided with a pair of laterally disposed recesses to accommodate a pair of spring members, said upper portion also having an inwardly disposed central portion between said recesses, and a pair of spaced notches at the lower portion of said U-shaped upper portion adapted to receive actuating portions of a trigger.

10. A sheath portion for a tacker formed with a first overlying integral portion and a pair of integral side portions overlying said first overlying portion, thereby forming an integral roof upon said sheath.

11. In a stapling machine the improvement which comprises a slidable cover for a staple magazine having a pair of first projections on either side of said cover, a pair of pivotally movable stop members on the machine normally adapted to abut said projections, each of said pivotally movable members having a recess on the underside thereof normally engageable with an abutting projection on said stapling machine so that said pivotal moveable members are normally engageable with said stop members but may be removed from said engagement by the application of sufficient force thereto.

12. A tacker comprising a frame having movable ram means, movable trigger means and a staple magazine, said staple magazine operatively carrying a staple follower, loading means in operative relationship with said staple magazine and locking means adapted to retain said loading means in closed position, spring means having an intermediate portion and a pair of opposite end portions, said spring means being anchored to said frame at said intermediate portion with one end portion of said spring means in operative relationship with said trigger and the other end portion in operative relationship with said locking means.

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