May 22, 1956 H. S. HELLER 2,746,043

MAGAZINE FOR STAPLING MACHINES

Original Filed Aug. 10, 1949 4 Sheets-Sheet 1

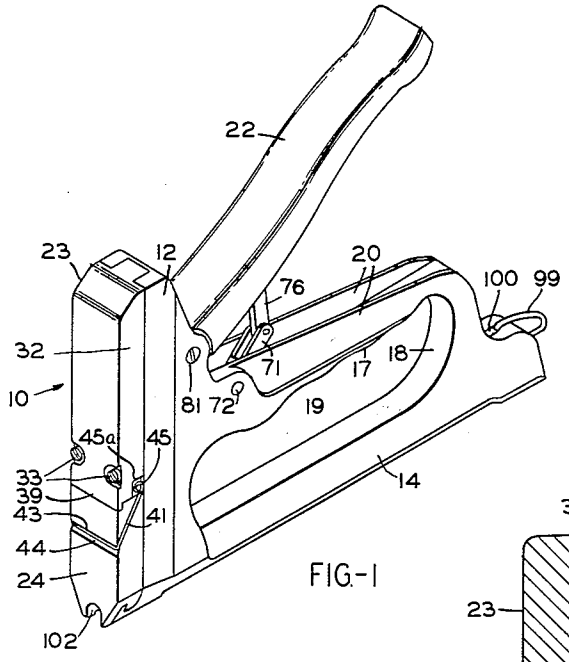

FIG.-1

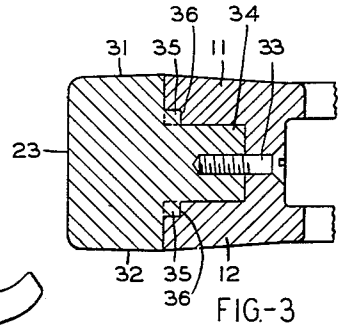

FIG.-3

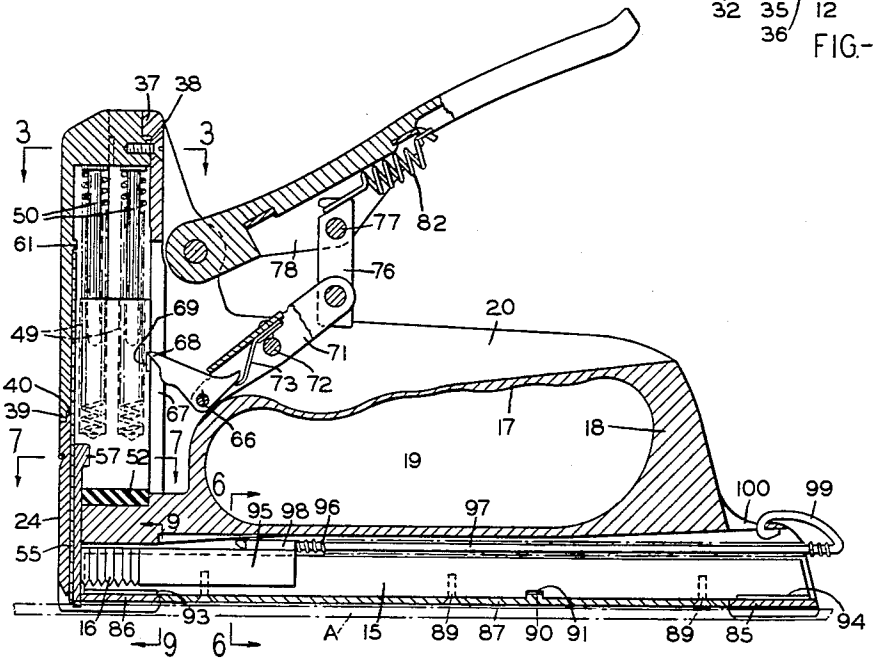

FIG.-2

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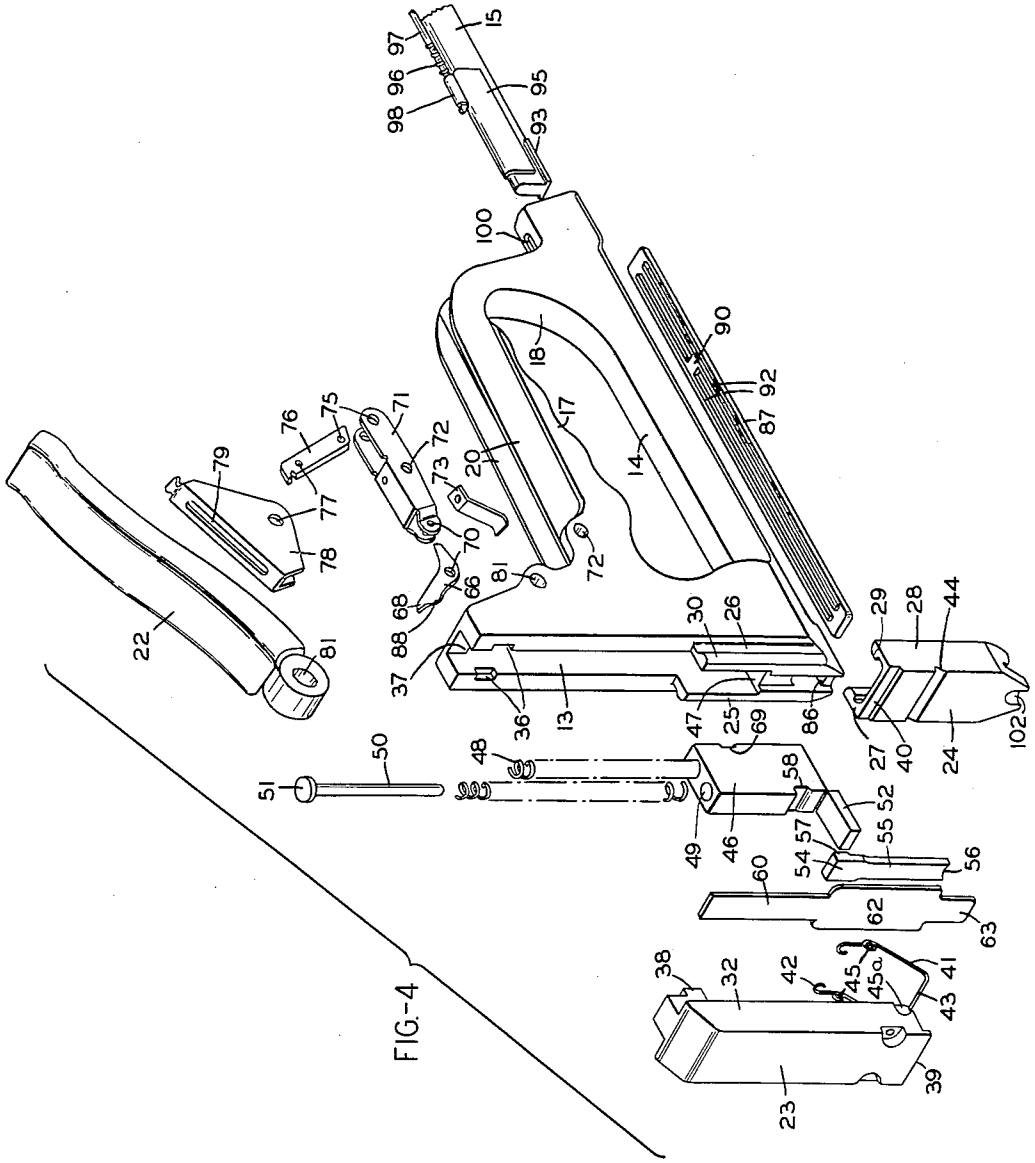

FIG-4

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MAGAZINE FOR STAPLING MACHINES

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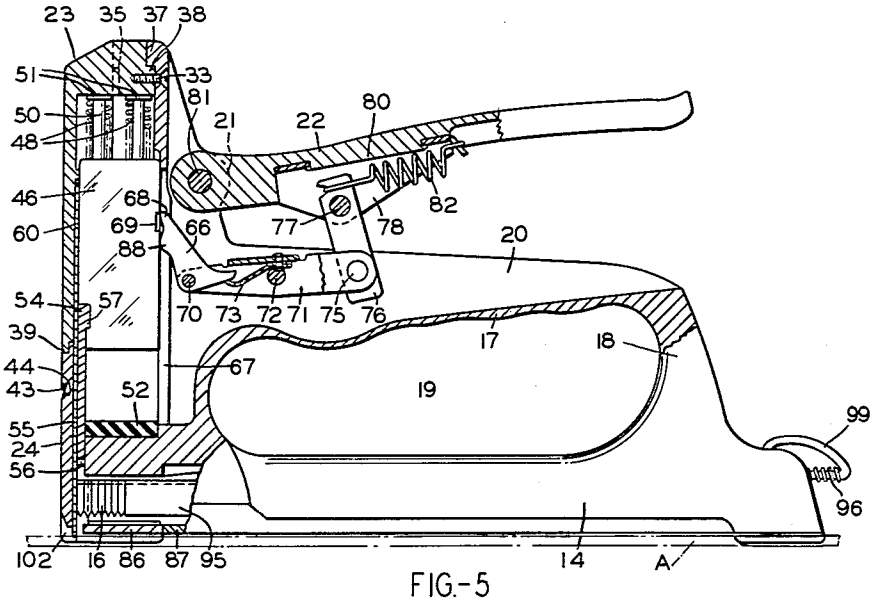

FIG.-5

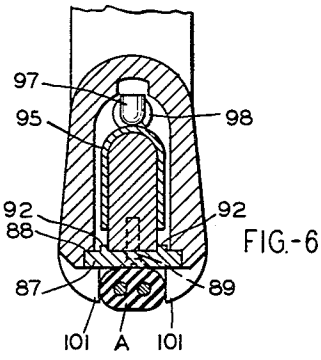

FIG.-6

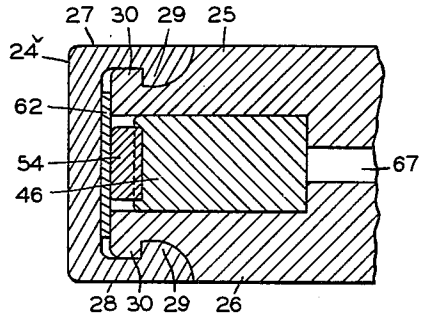

FIG.-7

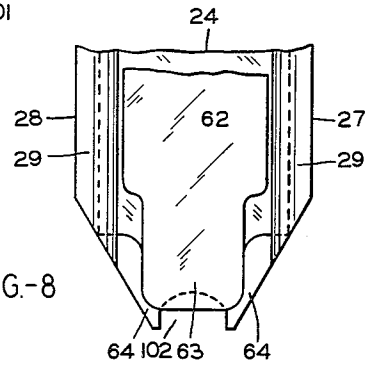

FIG.-8

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MAGAZINE FOR STAPLING MACHINES

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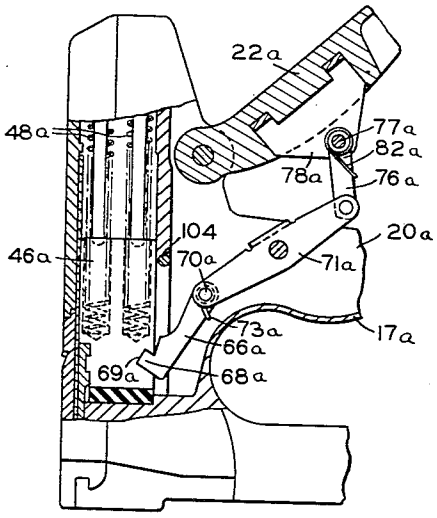

FIG.-10

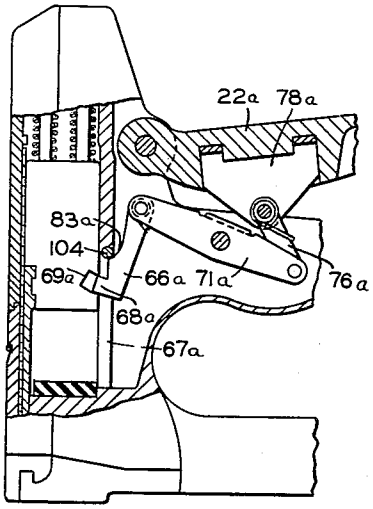

FIG.-11

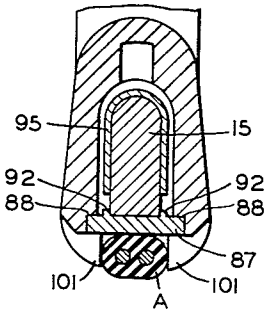

FIG.-9

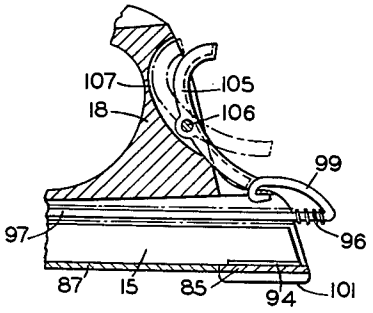

FIG.-12

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2,746,043

MAGAZINE FOR STAPLING MACHINES

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Original application August 10, 1949, Serial No. 109,483. Divided and this application September 13, 1950, Serial No. 184,597

6 Claims. (Cl. 1—49)

This application is a division of my co-pending application Serial No. 109,483, filed August 10, 1949, and issued as U. S. Letters Patent No. 2,668,290 on February 9, 1954.

This invention relates to stapling machines and more particularly to the staple magazine structure of a staple tacker of the type which is held in and operated by one hand of the user thereof, and in which the staples are successively driven by the force of compressed spring means bearing against a plunger to which the staple driving blade is secured for movement therewith, the plunger and the staple driving blade being manually raised for compression of the spring means by operation of a lever conveniently located adjacent the tacker handle and being automatically released for staple driving purposes.

The invention has for its primary object the provision of an improved staple tacker which is characterized by its structural simplicity, the economy of its manufacture, the ease and convenience with which its parts may be assembled and disassembled, the ready access which is afforded to all interior parts, its strong, sturdy and durable nature, the ease of its operation for staple driving purposes, and its general operating efficiency.

Further objects of the present invention, and certain of its practical advantages, will be referred to in or will be evident from the following description of a staple tacker embodying the invention, as illustrated in the accompanying drawings, in which

Fig. 1 is a perspective view of such tacker;

Fig. 2 is a longitudinal sectional view thereof;

Fig. 3 is a detail cross-sectional view of the tacker head portion, the view being on the line 3—3 of Fig. 2;

Fig. 4 is a perspective view of the tacker parts in separated or "exploded" relationship;

Fig. 5 is a view corresponding to Fig. 2, but showing the staple driving blade in an elevated position for staple driving purposes;

Figs. 6 and 7 are detail sectional views, on the lines 6—6 and 7—7 of Fig. 2, respectively;

Fig. 8 is a fragmentary rear view of the lower cover member of the tacker head portion, and the lower end portion of the guiding and bearing strip for the plunger and the staple driving blade;

Fig. 9 is a detail vertical sectional view on the line 9—9 of Fig. 2;

Fig. 10 is a fragmentary side view, partly in elevation and partly in section, showing the staple tacker with a modified form of mechanism between the plunger and the hand lever for operation of the plunger in the staple driving operation, the parts being shown with the plunger in its normal lowered position;

Fig. 11 is a view corresponding to and showing the mechanism of Fig. 10, the plunger being in its raised position as the result of manual depression of the hand operated lever; and

Fig. 12 is a fragmentary sectional view of the rear end of the tacker, with means for preventing accidental disconnection and release of the staple follower.

Before specifically describing the staple tacker here illustrated, it is to be understood that the invention here involved is not limited to the structural details or the particular arrangement of parts here shown, as tackers embodying the present invention may take other forms. It also is to be understood that the terminology or phraseology herein used is for purposes of description and not of limitation, as the scope of the present invention is denoted by the appended claims.

Explanation of the reference numerals in the drawings not mentioned hereinafter in the specification and the structure relating thereto will be found in my U. S. Letters Patent No. 2,668,290, issued February 9, 1954.

The staple tacker here illustrated, for the disclosure of the present invention, comprises a metal frame, preferably formed as a die casting, and having as integral parts thereof (*a*) an upright head portion **10** at its front end, said head portion being of channel shape, with the side walls **11** and **12** thereof extending forwardly and providing therebetween an elongated, correspondingly upright chamber **13** for the staple driving mechanism; (*b*) a rearwardly extending elongated base portion **14**, of downwardly opening channel shape and having removably mounted therein, in the manner hereinafter described, a supporting bar **15** for a strip of adhesively united staples **16**, the staple strip being normally urged forwardly along said bar by the follower hereinafter described; and (*c*) a handle portion having a top section **17** extending rearwardly from the head portion **10**, from a point intermediate the upper and lower ends thereof, and a rear section **18** extending downwardly from the rear end of the handle top section to the base portion **14** adjacent its rear end, the rearwardly extending top section **17** of the handle portion being generally parallel with the base portion **14** and being spaced therefrom to provide an elongated opening **19** between the handle top section and the frame base portion for the fingers of the operator's hand in the support and manipulation of the tacker.

The staples **16**, for use in the present tacker, are of the ordinary type, with pointed legs and an arched-shaped crown. The staples are adhesively united in strip form, as is usual, and are successively severed from the front end of the strip and driven into the work by the downward power movement of staple driving blade **55**.

As heretofore mentioned, the bar **15** for the support of the staple strip is arranged within the downwardly opening channel-shaped base portion **14** of the tacker frame. As best shown in Fig. 2, the front end portion of the staple supporting bar extends into the lower end portion of the frame head **10**, with the front end of said bar terminating just rearwardly of the path of travel of the staple driving blade **55** and with the rear end of said bar terminating at the open rear end of the frame base portion **14**.

For the support of the rear end portion of said bar, the frame base portion **14** is integrally provided with a cross web **85** (see Fig. 2), and for the support of the front end portion of said bar, the frame head portion **10** is integrally provided with a similar cross web **86**, the bar resting upon said webs, as shown in Fig. 2. Between these cross webs **85** and **86**, the tacker frame is open, but for such opening, a closure strip **87** is provided, the closure strip snugly fitting and closing said opening, as indicated in Figs. 6 and 9. As best shown in Fig. 6, the tacker frame is provided along the sides of this opening with shoulders **88** against which the side edge portions of the closure strip **87** are seated, with the closure strip being retained in position against the shoulders **88** and with the staple supporting bar **15** being held against its supporting cross webs **85** and **86** by screws **89** which

extend upwardly through the closure strip and into the staple supporting bar.

To enable the staple supporting bar **15** to be readily located in proper position in the tacker frame and particularly with respect to the path of movement of the staple driving blade **55**, the closure strip **87** is formed with a transverse rib **90** on its upper surface for seating engagement in a transverse slot **91** provided in the lower surface of said bar. Therefore, by first placing the closure strip **87** in place, in which position the upper surface of the strip is preferably flush or in alignment with the upper surfaces of the bar supporting webs **85** and **86**, it is a simple matter to determine the proper location for the staple supporting bar by merely moving said bar along the upper surface of said closure strip until the rib **90** of the strip enters the bar slot **91**. When this occurs, the bar will be in proper position within the tacker frame and the apertures of said bar which receive the attaching screws **89** will be in registry with the screw-receiving apertures of the closure strip. All that is then necessary is to insert and tighten the screws **89**, as will be readily understood. If desired and as shown in Figs. 6 and 9, the closure strip **87** may be provided along its upper surface with a pair of longitudinally disposed, laterally spaced ribs **92**, between which the staple supporting bar is slid in the positioning thereof and between which it is thereafter retained.

As shown in Figs. 2, 4 and 5, the staple supporting bar **15** is here provided at its front end with a pair of laterally and oppositely extending base flanges **93** and at its rear end with corresponding flanges **94**, flanges which give the bar, of course, a more stable base. In order to insure proper positioning of the staple supporting bar within the tacker frame, the front end portion of the frame chamber for the reception of such bar is of slightly less width at the bottom thereof than the rear end portion of such chamber, and the front end flanges **93** of the bar are of slightly less lateral extent than the rear bar flanges **94**. As a result, the bar can be completely inserted into the frame chamber therefor only from the rear end of the chamber and then only if the front end of the bar is inserted first.

The follower for normally urging the staple strip forwardly along the staple supporting bar, to thereby progressively feed the staples of the strip to a position in the path of movement of the staple driving blade, comprises a simple sheet metal member of inverted U shape, which straddles the bar **15** just behind the staple strip and which is normally urged forwardly by the pressure of a coiled spring **96**. As best shown in Fig. 2, the spring **96** surrounds and is carried by a rearwardly extending rod **97**, the front end portion of which is slidably mounted in an upright loop portion **98** at the top of the follower member **95**, with the front end of said rod being bent upwardly to prevent disassembly of the rod and the follower member. The rear end portion of the follower rod is detachably connected in any suitable manner and by any suitable means to the rear end of the tacker frame base portion, with the follower spring **96** being confined in the desired degree of compression, for effecting forward movement of the follower member, between such member and a suitable stop or abutment at the rear end of the follower rod.

As here shown, for the detachable connection of the rear end portion of the follower rod **97** to the tacker frame base portion **14**, and to provide the stop or abutment for the rear end of the follower spring **96**, the rear end portion of the rod is bent forwardly and then rearwardly to form a hook **99** for detachable connection to the frame base portion at the rear of an aperture **100** at the top of such base portion, with the hook **99** being yieldingly and releasably held aaginst the frame base portion by the pressure of the follower spring **96**.

To insert a staple strip into the tacker and onto the supporting bar **15** therefor, it is merely necessary to remove the follower, which is readily done by pushing the follower rod forwardly to release the hook thereof, lift the rear end portion of the rod, and then pull the follower out. After insertion of the staple strip, the follower is returned to position and the hook **99** of its rod reconnected to the frame base portion, all as will be readily understood.

Although tackers of the type here involved have wide fields of use, the tacker here illustrated is the stapling of wires, such as telephone wires, to walls, floors or other surfaces. To that end, the present tacker is so formed that it can be placed over and along the wire to be stapled, such as the wire A of Figs. 2, 6 and 9, to not only hold the wire in position but also, to insure that the securing staples will properly straddle the wire. For such purpose, the frame cross webs **85** and **86**, upon which the staple supporting bar **15** rests, are located slightly about the lower edges **101** of the adjacent side wall portions of the tacker frame, with the consequent provision of wire-receiving grooves below said webs, as clearly shown in Figs. 6 and 9. The bottom end of the lower front cover member **24** for the frame head portion **10** also is suitably grooved, as at **102**, for wire-receiving purposes, as shown in Figs. 1, 4 and 8. Thus, the present tacker is of especial use to electricians and the like, although its use is not limited to the stapling of wires and if desired, the wire-receiving grooves may be eliminated.

If desired, the tacker may be provided with means for preventing accidental disconnection of the follower rod **97** from the tacker frame base portion should the tacker be dropped or the connecting hook portion **99** of the rod be otherwise struck in a manner tending to move the rod inwardly or forwardly.

Such a lock for the follower rod may be of the form illustrated in Fig. 12, a lock which comprises a simple channel-shaped lever **105** of spring steel, the lever being pivoted intermediate its ends, at **106**, in a shallow cavity **107** in the rear wall of the depending rear section **18** of the tacker handle. As shown in Fig. 12, the lower end of this locking lever is normally in abutting relation with the connecting hook portion **99** of the follower rod, so that inward release movement of the rod is prevented. However, by pressing inwardly the upper end portion of the lever, a portion which normally lies outside the handle cavity **107**, the lower end of the lever is swung upwardly out of locking engagement with the follower rod, with consequent release of said rod, for its disconnection from the tacker frame, if desired.

From the foregoing description thereof, it will be quite evident that the present tacker has many features and advantages. As shown in Fig. 2, the top portion of the frame chamber for the staples **16** is of progressively reduced size adjacent and toward the front end of the tacker, to thereby reduce the clearance space for the crowns or top portions of the staples and thereby prevent the "piling up" of staples at the front end of the tacker. As shown in Fig. 9 and also in Fig. 2, a frame groove is provided, above this reduced section of the staple receiving chamber of the frame, into which the front end portion of the follower rod **97** may project when the follower is adjacent the front end of the tacker, as in Fig. 2. As a result, "piling up" of staples at the front end of the tacker is effectively prevented. The construction of the tacker parts is such as to make their assembly and disassembly easy, quick and convenient, and operation of the tacker simple and relatively easy.

To those skilled in the art to which the present invention relates, other features and advantages of tackers embodying the present invention will be obvious.

What I claim is:

1. In a staple tacker, a frame having an interconnected chambered head portion and chambered base portion, a staple supporting bar mounted in the chamber of said base portion, and means for normally urging staples on said bar toward the chambered head portion, the cham-

ber of said frame base portion being narrower at its front end where it communicates with said chambered head portion than at its rear end, and said staple supporting bar being narrower at its front end than at its rear end, whereby said staple supporting bar can be completely inserted into said base portion chamber only if the front end of said bar is first inserted into the rear end of said chamber.

2. In a staple tacker, a frame having an upright chambered head portion for the reception of staple driving mechanism and having a rearwardly extending chambered base portion for the reception of a staple supporting bar, longitudinally spaced supporting means carried by the frame and upon which said bar rests, said frame base portion being provided with a bottom opening between said spaced bar supporting means, a closure for said frame opening, downwardly facing means upwardly against which said closure seats, and means for removably connecting said closure and said staple supporting bar, to thereby releasably secure said bar against its supporting means and said closure against its seat.

3. In a staple tacker, a frame having an upright chambered head portion for the reception of staple driving mechanism and having a rearwardly extending chambered base portion for the reception of a staple supporting bar, longitudinally spaced supporting means carried by the frame and upon which said bar rests, said frame base portion being provided with a bottom opening between the spaced bar supporting means, a closure for said frame opening, downwardly facing means upwardly against which said closure seats, means for detachably interlocking said closure and said bar against relative longitudinal movement, and means for removably connecting said closure and said staple supporting bar, to thereby releasably secure said bar against its supporting means and said closure against its seat.

4. In a staple tacker, a frame having an upright chambered head portion for the reception of staple driving mechanism and having a rearwardly extending chambered base portion for the reception of a staple supporting bar, longitudinally spaced supporting means carried by the frame and upon which said bar rests, said frame base portion being provided with a bottom opening between the spaced supporting means for said bar, a closure for said frame opening, downwardly facing means upwardly against which said closure seats, the upper surface of said closure lying in the same plane as the upper surfaces of said bar supporting means and said closure being provided on its upper surface with means for detachable interlocking connection with said bar, and fastening elements for removably connecting said closure and said bar to thereby releasably secure said bar against its supporting means and said closure against its seat.

5. In a staple tacker, a frame having a chambered head portion for housing a staple driving mechanism, said frame having a chambered base portion, a staple supporting bar mounted in the chamber of said base portion, means for resiliently moving staples on said staple supporting means toward said head portion for driving by said staple driving mechanism, the chamber of said frame base portion being narrower at its front end than at its rear end, and said staple supporting bar being narrower at its front end than at its rear end, whereby said staple supporting bar can be completely inserted into said base portion chamber only if the front end of said bar is first inserted into the rear end of said chamber.

6. In a staple tacker, a frame having a chambered head portion for housing a staple-driving mechanism, said frame having a chambered base portion, a staple supporting bar mounted in the chamber of said base portion, and means for resiliently moving staples on said staple supporting bar toward said head portion for driving by said staple-driving mechanism, the chamber of said base portion and said staple-supporting bar being of such cross dimensional character that said bar can be completely inserted into said base portion chamber only if the front end of said bar is first inserted into the rear end of said chamber.

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