

**Dec. 9, 1969**

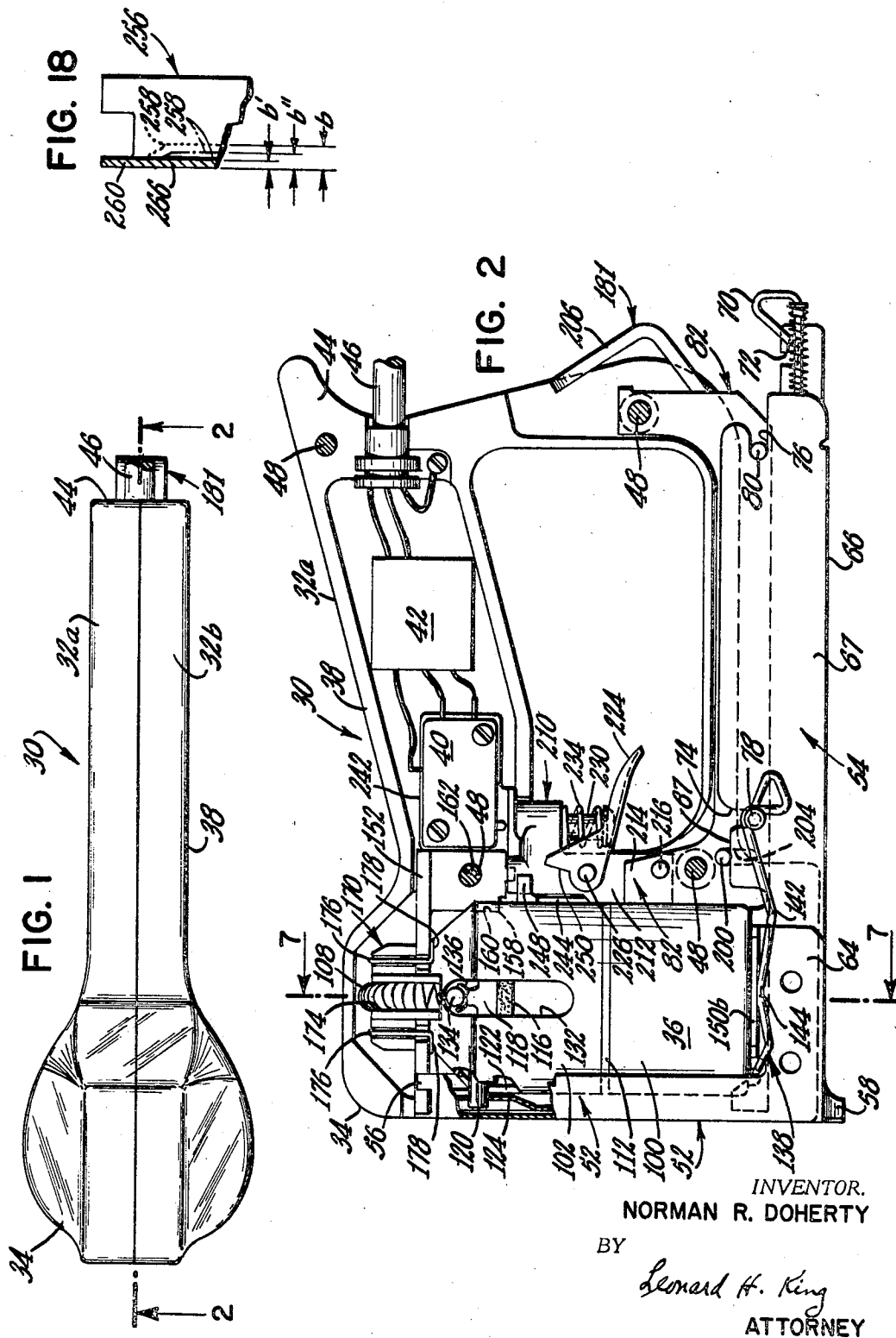
N. R. DOHERTY

**3,482,754**

## FASTENER DRIVING MEANS

Filed July 11, 1966

5 Sheets-Sheet 1





Dec. 9, 1969

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FASTENER DRIVING MEANS

Filed July 11, 1966

5 Sheets-Sheet 3

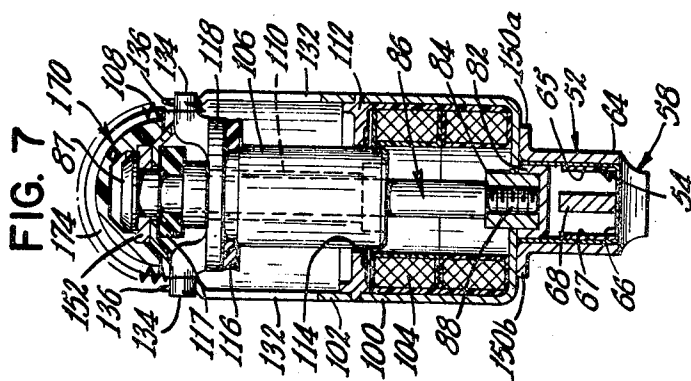
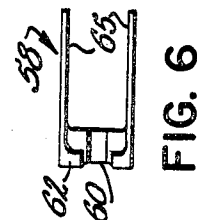


FIG. 4

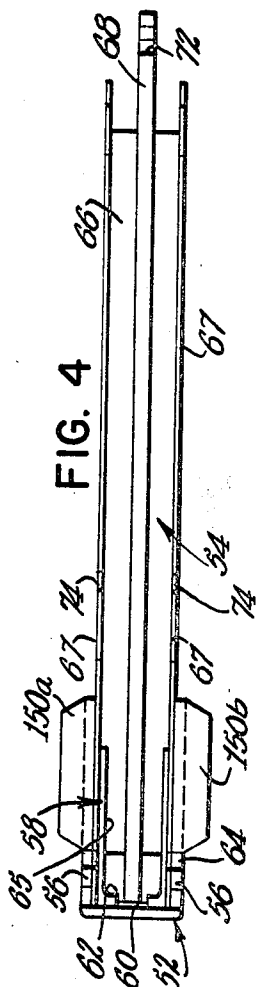


FIG. 8

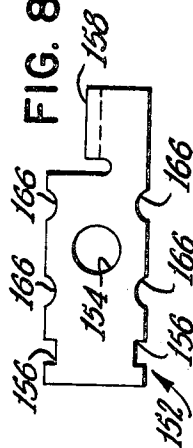


FIG. 9



FIG. 5

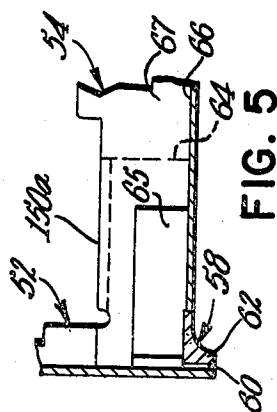


FIG. 11

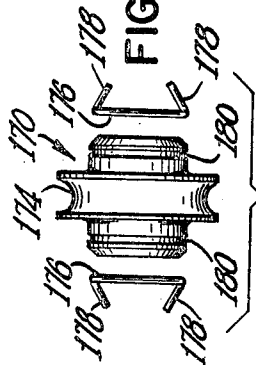


FIG. 10



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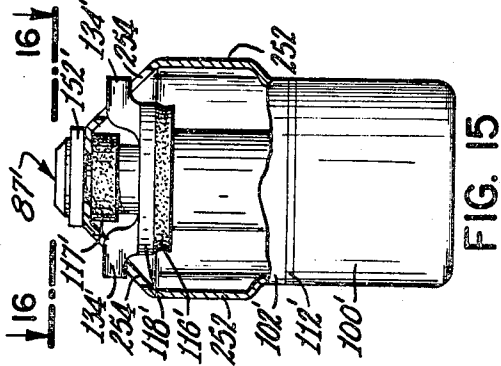
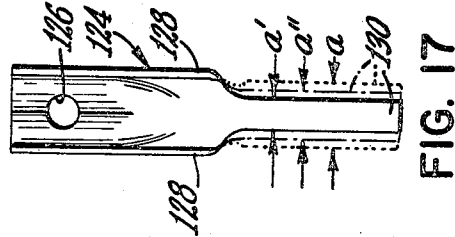
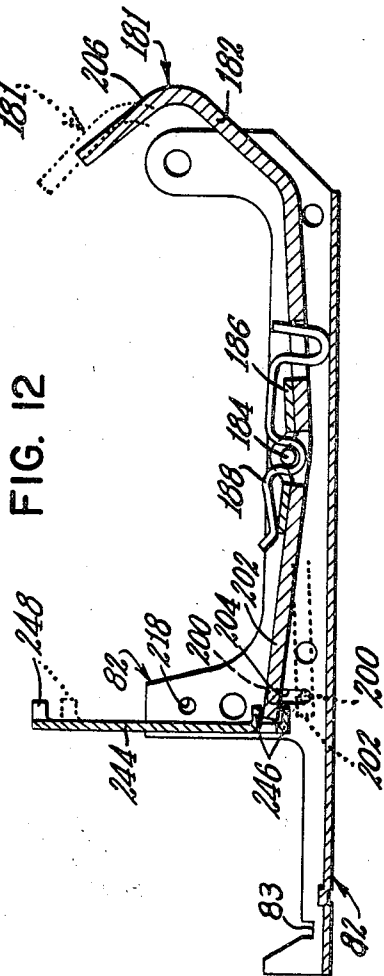
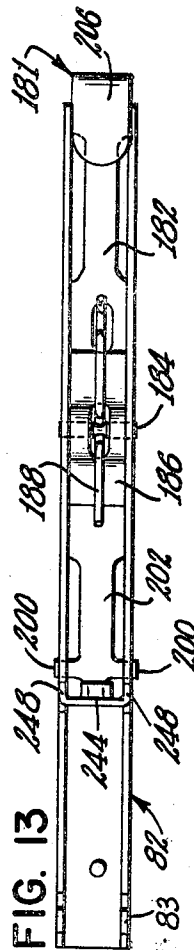
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FASTENER DRIVING MEANS

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5 Sheets-Sheet 4



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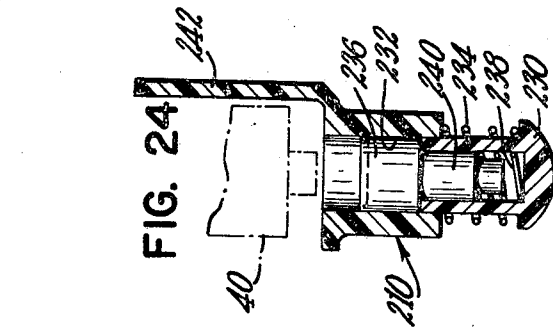
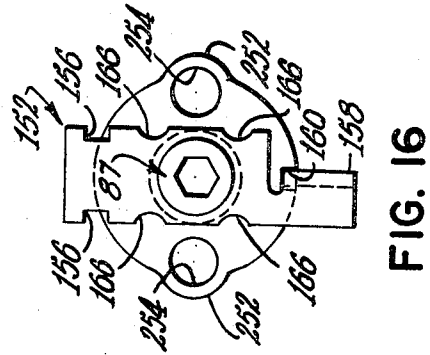
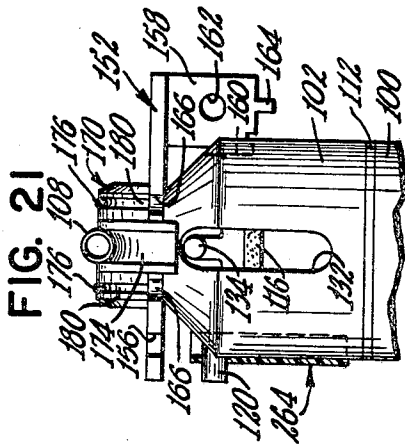
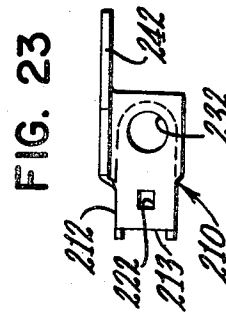
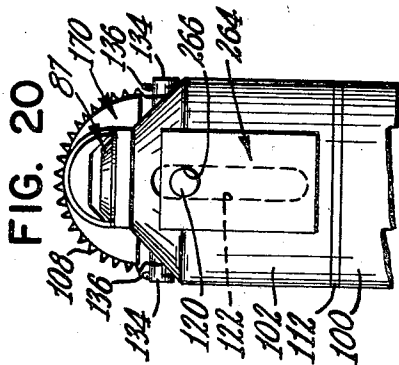
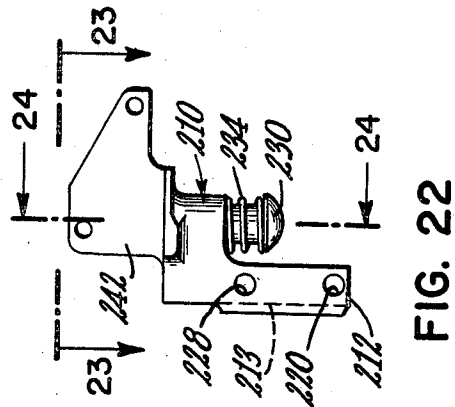
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FASTENER DRIVING MEANS

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5 Sheets-Sheet 5



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3,482,754

## FASTENER DRIVING MEANS

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Filed July 11, 1966, Ser. No. 564,227

Int. Cl. B27f 7/22

U.S. Cl. 227—131

18 Claims

### ABSTRACT OF THE DISCLOSURE

An electrically operated fastener driving tool having readily releasable head housing and supply track which permits interchange of channels for the supplying of different sized fasteners using a single basic power head.

This invention relates to fastener driving tools and particularly, although not limited thereto, to an electrical-ly operated staple driving tool having interchangeable means for accommodating fasteners of various sizes and shapes.

In the electric stapler and tacker art there are many examples of cumbersome and unwieldy machines. Generally, such devices employed a solenoid and linkage to move the driver of a conventional tool designed for hand powered operation.

In my copending application entitled Electric Fastening Tool, filed Nov. 24, 1965, and assigned Ser. No. 509,475, now Patent No. 3,347,441, there is disclosed a compact, lightweight, easily handled device which overcomes many of the drawbacks of the prior art. Typical of such prior art deficiencies was the excessively large solenoid employed for actuation of the fastener driving element. Accordingly, high input power was required and this resulted in an excessive heat output when the tool was used for even a short period of time. A second and even more important characteristic of many of the prior art devices was the coaxial positioning of the driver blade with respect to the armature of the solenoid. Because of this construction the operator could not work too closely to an obstruction, such as the wall. Of necessity, the driver blade would have to be spaced from the obstruction by at least half the width or diameter of the solenoid plus the thickness of the tool housing. Further, the prior art devices did not readily adapt themselves to interchangeability. That is, they could not readily accept staples having different widths, lengths or gauge wire.

The device described in my aforesaid copending application employs a chassis which carries a drive system comprising a unique solenoid, a trigger switch connected to a solid state control for power input to the solenoid. The circuit shown in my copending application, or other suitable SCR pulse circuits, may be employed. When actuated by the trigger switch, the circuit admits from 1/4 to 1/2 cycle of A.C. power from the line to the solenoid.

A staple driving blade is removably mounted on a cantilevered arm that is integral and movable together with the solenoid armature. In addition to the interchangeability of the driver blade, the combination staple supply magazine and head housing is also interchangeable. Cover members are provided which also serve as a handle. As in my aforementioned copending application, all of the interchangeability features to be described more fully hereinafter are achieved without recourse to removable fasteners.

Among the features of the apparatus not disclosed or specifically claimed in my aforesaid copending case are:

(1) The retaining tabs used to capture the locking clips are formed on the head housing as opposed to the prior construction where these tabs were positioned on the staple channel. A more rugged and reliable tool is pro-

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vided by means of the present construction. The locking clips also serve as a shock absorber against the force of the armature to maintain the components in contact. The use of resilient clamping means for securing the staple channel to the tool serves as a shock adsorber providing a more rugged and reliable tool.

(2) An improved bracket is used to mount the solenoid and the bearing of an external spring return to the solenoid chassis.

(3) An improved bearing for the spring return and improved connection means between the spring return and the solenoid armature have been provided.

(4) A positive release latch is now included to permit easy separation of the components when the spring clip retaining the interchangeable components is released.

(5) A unitized mounting block for the trigger and switch assembly is employed.

(6) An interlock is provided for the trigger so that the tool cannot be used when the interchangeable components are removed.

(7) As an optional feature several slots have been eliminated from the solenoid housing in order to make the interior of the solenoid less susceptible to contamination. The optional construction also makes the solenoid casing stronger.

(8) The interchangeable head housing is provided with a critical inside wall location that is variable from unit to unit in accordance with the gauge of staples and particular driver blade that is being used.

(9) Means are provided for releasably holding the channel retaining spring clip in a retracted position when the release latch is depressed and the interchangeable components are removed.

(10) A shield substantially covering the armature arm slot in the solenoid housing is also included. The shield serves the additional function of providing a low friction bearing surface for the driver blade.

The present invention will be described in connection with means for tacking wire staples. However, it is to be clearly understood that the basic concept of this invention may be applied to staple clinching tools as well, and, in addition, to tools for driving other fasteners, such as nails, brads, tacks, pins and the like.

Accordingly, it is an object of the present invention to provide an improved, lightweight, hand-held, electrically driven staple fastening tool.

It is another object to provide an improved bearing member for the solenoid return spring.

It is a further object to provide a release mechanism for the interchangeable components.

Yet another object is to provide improved unitized mounting means for the trigger and switch.

It is a further object to provide an improved solenoid housing.

A further object is to provide an interlock between the trigger and the release mechanism of the fastening tool.

Yet another object is to provide an improved mounting bracket for the solenoid.

A particular object of the invention is to provide a combined shield and bearing surface for the solenoid housing and driver blade, respectively.

Yet another object is to provide simplified spring clip retaining means for the solenoid return spring bearing block.

It is of course an object of this invention to include all of the aforementioned objectives in an improved electrically operated fastening tool that has interchangeable components, such as a staple-driving blade, a head housing and a staple supply channel.

A feature of this invention is that the interchange-

ability is achieved without recourse to conventional fasteners such as screws, nuts, rivets, etc.

An additional feature of this invention is the provision of interchangeable staple supply chambers and driving blades dimensioned in accordance with the size of the staple being used.

Another feature of this invention is the fact that the power package, which represents the most expensive portion of the tool, is common to a wide range of supply magazines and driver blades.

Another object of this invention is to provide a low cost yet rugged staple driving tool that has interchangeable components in a self-contained power package.

A particular feature of this invention is to provide a single power package and housing together with a set or range of driver blades and staple supply magazines, the total cost for which is far less than for prior art devices having a comparable range.

An important feature of this invention is the use of a driver blade removably disposed on a cantilevered arm of a solenoid armature having an elongated co-axial bearing and an external return spring.

These and other features, objects and advantages of the invention will, in part, be pointed out with particularity and will, in part, become obvious from the following more detailed description of the invention, taken in conjunction with the accompanying drawing, which forms an integral part thereof.

In the various figures of the drawing like reference characters designate like parts.

In the drawing:

FIG. 1 is a plan view of the present invention;

FIG. 2 is a side elevational view, partly in section, taken along line 2—2 of FIG. 1;

FIG. 3 is an exploded sectional side elevational view showing the interchangeable components separated from the main housing;

FIG. 4 is a plan view of the combination head housing and supply track;

FIG. 5 is a fragmentary sectional side elevation view of the forward portion of the combination head housing and supply track;

FIG. 6 is a detail plan view of a typical nose piece used with this invention;

FIG. 7 is a vertical sectional view taken through the solenoid along line 7—7 of FIG. 2;

FIG. 8 is a plan view of the solenoid mounting bracket;

FIG. 9 is a side elevational view of the solenoid mounting bracket;

FIG. 10 is a front view of the bearing member for the solenoid spring return;

FIG. 11 is an exploded plan view of the bearing member and retaining clips for the solenoid spring return;

FIG. 12 is a sectional side elevational view of the release latch assembly and trigger interlock mounted in the solenoid chassis;

FIG. 13 is a plan view of the release latch assembly and trigger interlock;

FIG. 14 is a fragmentary plan view of the forward end of the release latch;

FIG. 15 is an elevational view, partly in section, of an alternative form of solenoid housing;

FIG. 16 is a plan view taken along line 16—16 of FIG. 15;

FIG. 17 is a schematic front view of a driver blade together with outlines in phantom of a range of driver blades of other widths which are examples of the interchangeability feature of the present invention;

FIG. 18 is a fragmentary schematic side elevational view in section of a head housing showing in phantom outline other head housing configurations which are suitable for use with this invention;

FIG. 19 is a fragmentary sectional view, taken along line 19—19 of FIG. 3 illustrating clip retaining means;

FIG. 20 is a fragmentary front elevational view of the solenoid housing together with the combined dust shield and bearing surface;

FIG. 21 is a fragmentary side elevational view of the components illustrated in FIG. 20;

FIG. 22 is a detail elevational view of the switch and trigger mounting block;

FIG. 23 is a plan view taken along line 23—23 of FIG. 22; and

FIG. 24 is a vertical sectional view taken along line 24—24 of FIG. 22.

Referring now to the drawings, and in particular to FIGS. 1, 2 and 3, there is shown the present invention comprised of an improved, electrically powered fastener driving tool 30 having interchangeable components. The tool housing is made in two matching halves 32a and 32b which may be metal castings or which may be made of any of the presently available high strength plastics. It should be noted that the tool housing is not a structural member and serves only the functional purpose of retaining the internal components and providing handle means.

The front portion 34 of the tool housing is substantially cylindrical in cross section in order to accommodate solenoid 36 and several of the components associated therewith. Midportion 38 of the tool housing defines a hollow hand-gripping area that includes an internal, snap action type switch 40 and an electronic power package 42. An SCR control circuit designed to deliver a fraction of a cycle of electricity from an AC power source is used as the power package. Rear portion 44 is provided with an opening that admits a line cord 46 adapted to be connected to a suitable source of power (not shown).

Four screws 48 that traverse and are threadably secured in the two housing halves are all that is employed to hold the housing parts together. These are the only fasteners that are removed when either repairs or maintenance requiring replacement of the internal components are to be made. However, it is not necessary to disturb screws 48 when certain components are to be interchanged in order to permit the tool to drive fasteners having different basic sizes. In this connection it should be noted that the present invention will be described as a staple tacker and, by definition, the width of the staples is the transverse dimension between the staple legs. The length of the staple is the length dimension of the legs and the gauge of the staples is determined by the wire or material size used.

Tool 30 additionally includes a combination head housing and staple supply track comprising a head housing section 52 integral with a supply track section 54. The combined sections are substantially L-shaped with the head housing section and the supply track section individually being U-shaped. Interlocking tabs 56 are provided on the opposed walls of the upper end of head housing section 52.

A hollow nose piece 58 is also provided at the lower end of the head housing. It should be noted that the nose piece is selected in accordance with the width and gauge of the staples which, as they are urged to a forward position, are ejected through slot 60 formed in the transverse wall 62 of the nose piece. Spaced parallel legs 64 extend rearwardly of the head housing and are welded to the spaced legs of the U-shaped supply track section 54. Depressions are inwardly formed on legs 64 to aid in the welding assembly. The nose piece is in turn welded at its rearwardly extending legs 65 to the inside surface of the upwardly extending legs of the supply track section, thus making for a very rigid and substantially damage proof subassembly.

Supply track section 54 is comprised of a transverse web 66 and a pair of spaced, parallel legs 67. An elongated staple guide bar 68 is rigidly secured to the transverse web of the supply track 54. The staples slide on bar 68 and are urged towards the forward, dispensing end of the tool by a spring biased pusher member 70 removably

captured in a notch 72 at the rearward end of the guide bar. As with the nose piece, the staple guide bar is selected as part of the head housing and supply track assembly in accordance with the width of the staples being driven.

Locating slots 74 and 76 in the side walls 67 of the staple supply track cooperate with pins 78 and 80, respectively, extending laterally from an upwardly facing U-shaped support chassis 82 that is a permanent or non-changeable element of the standard tool. By being nestingly positioned within the staple supply track the bottom transverse surface of chassis 82 acts as a cover therefor and assures that the staples are slidably seated on the guide bar.

Chassis 82 also serves several other very important functions as follows:

- (a) Chassis 82 has the solenoid secured thereto;
- (b) Chassis 82 loosely supports, in a pivotal manner, the retaining clip for the interchangeable components;
- (c) The channel formed by chassis 82 supports the new release latch;
- (d) The channel formed by chassis 82 supports the new trigger interlock.

A nut 84 is welded to the forward end of chassis 82 on which solenoid 36 is mounted. A central non-magnetizable support shaft 86 extends through the solenoid case. The upper end 87 of the shaft is external of the solenoid case while the lower end 88 is threadably secured to the nut. The solenoid case, comprised of ferromagnetic lower and upper sections 100 and 102, respectively, includes a wire wound coil 104 and an armature 106 biased by an external spring 108. An elongated, self-lubricating magnetizable bearing 110 is press fit into the central bore of the armature and supports and guides shaft 86. The solenoid coil is electrically connected to the power package 42 by means of two leads (not shown) extending outwardly from lower case section 100. A magnetizable coil cover 112, having a central aperture 114 to slidably receive the body of the armature 106, is interposed between the lower and upper case sections.

Armature 106 is provided with resilient, shock-absorbing means 116 and 117 in the form of annular rings. In the lowermost position of the armature, ring 116 resiliently abuts the top surface of cover 112. In the uppermost position of the armature, ring 117 resiliently abuts the inside top surface of the solenoid case. The upper, yoke-like portion 118 of the armature includes an arm 120 integral therewith. The armature arm extends outwardly from the body of the armature through a vertical slot 122 in the forward end of the upper solenoid case section. Arm 120 releasably supports the driver blade 124 in sliding relationship with the U-shaped portion of the head housing section 52. As is shown in FIG. 3 and FIG. 17, driver blade 124 includes an aperture 126 in which the armature arm is removably disposed and a pair of rearwardly extending ears 128 at the upper end thereof. Ears 128 are arranged to slide on the solenoid case during movement of the armature. The lower end 130 of the driver blade engages and ejects the staples. The width of the lower end is dimensioned in accordance with the width of the fastener being driven. Dimension  $a$  indicates the width of the driver blade used with the widest staple, dimension  $a'$  indicates the width of the driver blade used with the narrowest fastener and dimension  $a''$  is used to schematically represent the width of all driver blades between the widest and narrowest. It is also contemplated to fabricate the driver blade from a non-magnetic material, for example stainless steel, to minimize the "pull-in" created by the solenoid when it is energized. In addition, the upper solenoid case section includes two opposed slots 132 that permit passage of laterally disposed armature extensions 134 and the externally positioned armature return spring 108 secured to the extensions by means of cotter pins 136.

Spring clip 138 is substantially U-shaped and has a

transverse, connecting portion 140 extending across chassis 82. The clip is positioned below the solenoid case and is loosely disposed in chassis slots 83 while still being permitted free pivotal motion. Rearwardly extending legs 142 of the spring clip are bent slightly to indirectly bear against the under side of the solenoid case at 144. The rearward ends of spring clip legs 142 are positioned about the laterally extending ends of transverse pin 78. In this manner and in cooperation with pin 80 and slots 76, the combination head housing and supply track is removably carried by the tool housing.

The foregoing components, particularly the solenoid and the method of interchanging the various parts, are structurally and functionally described in greater detail in my copending application. The several improvements thereto will not be separately described.

#### (I) RETAINING TABS (FIGS. 2, 3, 4, AND 7)

A pair of clip retaining tabs 150a and 150b are formed integrally with the head housing by bending outwardly the top edge of legs 64 in the area directly beneath the solenoid case. Whereas, my prior construction provided similarly functioning tabs on the fastener supply track, the illustrated structure has the advantages of being more rugged and durable because a heavier gauge metal is used in the head housing portion. As before, legs 142 of spring clip 138 are disposed below and bear upwardly against the tabs when the tool is completely assembled. An important feature to be noted is that the spring clip 138 acts as a shock absorber since it is resilient and bears against the tabs 150a and 150b of the head housing. The impact of the solenoid at the extremes of its stroke is taken up by the springs. The components are thereby prevented from separating during usage of the tool, thus adding to the life and reliability of the device.

#### (II) SOLENOID MOUNTING BRACKET (FIGS. 2, 3, 7, 8, 9, AND 10)

Instead of the stepped bracket used in the past to retain the solenoid and the head housing, I now propose to use a substantially flat bracket 152 having an aperture 154 through which the central support shaft passes. A pair of notches 156 are formed at the forward side edges of the bracket to accept head housing tabs 56 when the interchangeable components are all locked in place. Bracket 152 also has a downwardly extending key portion 158 at its rearward end, key 158 being positioned in a slot 160 at the rear of the upper solenoid case section to prevent rotation thereof. One of the four screws 48 passes through aperture 162 in lip 158 whereby both the bracket and the solenoid case are rigidly secured. A second key 164 is also formed on the rearward end of the bracket 152, the second key being arranged to cooperate with the trigger and switch mounting block. Finally, two pairs of spaced notches 166 are also provided in the side edges of the bracket for a purpose that will now be explained.

#### (III) ARMATURE RETURN SPRING BEARING BLOCK (FIGS. 2, 7, 10, AND 11)

An improved bearing member 170 is now provided to guide the external armature return spring 108. Bearing 170, which preferably is a low friction plastic such as Teflon, Delrin, etc., has a flat bottom surface 172 arranged to rest on the top of bracket 152. The block is substantially semicircular in transverse cross section and has a central, arcuate groove 174 dimensioned to receive the midportion of spring 108. As described above, the ends of the spring are secured to oppositely directed extensions 134 of the armature. A pair of arcuate spring clips 176 extend over the top of the bearing member and have inwardly turned ends 178 positioned beneath the bracket so that the bearing member is securely held in place. Grooves 180 in the block receive the central portion of the clips while notches 166 receive the inwardly turned ends of the spring clips.

## (IV) RELEASE LATCH (FIGS. 1, 2, 3, 12, 13, AND 14)

Release latch **181** is in the form of an elongated apertured lever **182** that is pivotally mounted in the central portion of chassis **82** by means of a transverse pin **184** extending between the walls thereof. A plate **186** having an aperture therein is welded to lever **182**. Spring member **188**, which is serpentine in shape, is disposed about pin **184** and bears against lever **182** at one end and the chassis **82** at the other end. The spring **188** normally biases the lever to the "unloaded" position. When the tool is fully assembled legs **67** of the supply track **54** bear upwardly against ears **200** formed integrally with the forward end **202** of lever **182**. Ears **200** extend laterally through elongated slots **204** in each spaced leg of chassis **82**. When the tool is fully assembled, the spring **188** is "loaded." After the spring clip **138** is removed from the ends of pin **78**, the rearward end **206** of the release latch is pressed inwardly. This causes the loaded spring **188** to urge ears **200** downwardly against legs **67** of the staple supply track **54**, thus releasing interlocking tabs **56** from notches **156** in bracket **152**. The combination head housing and supply track may then be removed as a unit from the tool, leaving the driver blade completely exposed and accessible.

(V) TRIGGER AND SWITCH MOUNTING  
(FIGS. 2, 3, 22, 23, AND 24)

An insulating mounting block **210** is used to mount both the trigger and the switch in the tool housing. The downwardly extending body **212** of block **210** is positioned between spaced, upwardly extending tabs **214** integral with chassis **82**. At its forward end body **212** includes a vertical channel **213**. Pin **216** is disposed in registered apertures **218** and **20** in the tabs and body portion **212**, respectively. Second key **164** on the rearward end of solenoid mounting bracket **152** fits into a notch **222** on the top of the block **160** and, in combination with pin **216**, prevents movement of the block.

Trigger **224** is pivotally mounted at one end on a second pin **226** that is disposed in aperture **228** and extends outwardly from each side of block **210**. The inner end of a plunger **230** is slidably positioned in bore **232** of the block body, while the outer end of the plunger rests on the free end of the trigger. Compression spring **234** normally biases the plunger and the trigger away from the switch contact button. A second coaxial plunger **236** is also slidably mounted in bore **232** and is biased with respect to the first plunger by a second spring **238**. It will be seen in FIG. 24 that the lower end of the second plunger and the second spring **238** are disposed in bore **240** of the first plunger. Wall **242**, integral with block **210**, is used to mount the switch. For ease of manufacture, pins **184**, **216** and **226** are all the same diameter and length.

(VI) TRIGGER INTERLOCK (FIGS. 2, 3, 12,  
AND 13)

In order to prevent inadvertent usage of the tool when the head housing and supply track are removed, interlock means are provided that disable the trigger at that time. An elongated, vertically positioned lever **244** is linked at its bottom end **246** to the forward end **202** of the release latch **182** and is arranged for vertical sliding movement between the confronting surfaces of the solenoid housing and the switch mounting block. Lever **244** is disposed in vertical channel **213** provided in the switch mounting block. A pair of spaced ears **248** extend rearwardly from the top of lever **244**. When the tool is fully assembled, the forward end of the release latch is in an elevated position and so is lever **244**. The ears **248** are therefore clear of the area about which the trigger pivots. However, when the head housing and supply track are disassembled, the forward end **202** of the release latch **180** and the vertical lever **244** are both biased downwardly by spring member

**188**. In this condition ears **248** abut spaced latches **250** formed on the trigger and thereby prevent any movement thereof. The tool will remain locked until legs **67** of the staple supply track **54**, when assembled, urge the forward end of release lever **182** and the upper end of interlock lever **244** into an upward position.

(VII) IMPROVEMENTS IN SOLENOID HOUSING  
(FIGS. 15 AND 16)

As an alternative construction, the opposed slots in the upper solenoid case section may be almost entirely eliminated. This structure minimizes the likelihood of loose staples or other such contaminants that may be in the immediate work area from reaching the interior of the solenoid and thereby interfering with the action of the armature or shorting the coil. The upper case is formed with a pair of opposed ribs defining depressions **252** on the inside thereof. The depressions provide sufficient clearance for the portions of the armature that are secured to the return spring. All that is required is a pair of openings **254** through which the spring ends may move when the armature travels between the extremes of its stroke. It will be evident that the size of the openings in the solenoid case has been substantially reduced. Where the structure is otherwise comparable to the previously described embodiment, primed reference characters are used.

(VIII) HEAD HOUSING IMPROVEMENT  
(FIG. 18)

Instead of using a single head housing for all gauge fasteners and utilizing a spring to maintain the driver blade against the inside of the transverse wall thereof, an alternative structure is contemplated. A head housing **256** is selected whereby the position of the forward wall **258** will assure that the driver blade is directly over the forwardmost fastener in the supply track. Dimension  $b$  is used to indicate the rearwardmost position of the wall **258**, dimension  $b'$  is used to indicate the forwardmost position of wall **258** and dimension  $b''$  schematically represents all wall positions between  $b$  and  $b'$ . In practice the position of wall **258** may be very accurately determined by jogging or offsetting portion **260** during the die forming operation.

## (IX) CLIP RETAINING MEANS (FIG. 3)

When the tool is disassembled and the combination head housing and supply track is removed, spring clip **138** hangs downwardly. In order to prevent "fouling" of the spring clip, a vertically disposed notch **262** is provided on the inside surface of each housing half at the bottom of the forward end thereof. Because of the resilient nature of the spring clip, its legs will tend to snap into the notches when the clip is in the downward position. This will prevent the spring clip from being unintentionally bent or forced forward which would make reassembly more difficult.

(X) DUST SHIELD AND DRIVER BLADE BEARING  
(FIGS. 20 AND 21)

In industrial applications, an electrically powered tool such as has just been described is subject to contamination of the internal components. If, for example, a loose staple, wood or metal chip or other debris should enter the solenoid when the parts are being interchanged, substantial damage can be incurred. This problem can be avoided by the use of shield member **264**. An aperture **266** in the shield permits it to be mounted on the solenoid arm, thus substantially covering the slot in the solenoid case through which the armature arm moves. Since the arm will be in the up position when the housing is opened the slot will be almost completely covered. The slot is uncovered only when the armature is moving and, since the housing must be closed because of the interlock, the interior of the solenoid is well protected.

The shield serves another very useful function. Because the shield is movable with the armature, the shield acts as a bearing surface between the rear of the driver blade and the solenoid case. Teflon, Delrin or other similar low friction plastics are ideal for use as the shield.

Although not specifically illustrated, it is within the scope of this invention to provide an improved electrically operated stapler. To do this an anvil is preferably pivotably mounted at the rearward end of the tool. Suitable means may be provided for locking the anvil in place when it is desired to be used as a stapler, it being understood that the anvil is positioned beneath the forward end of the head housing. It is also possible with the structure described hereinabove to make the anvil removable, thus increasing the utility of the tool.

Having thus disclosed the best embodiment of the invention presently contemplated, it is to be understood that various changes and modifications may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. In an electrically operated fastener driving tool, including a tool housing, having a solenoid case containing a solenoid energizable by a suitable source of power, said solenoid case being secured inside said tool housing, an arm secured to a spring biased solenoid armature, a trigger, trigger controlled switch means electrically connected to the solenoid and the source of power, a fastener driver blade positioned externally of the solenoid case and coupled to the armature arm, a head housing, a fastener supply track removably secured to the tool housing, means to feed fasteners from the supply track to the path of said driver blade, and retaining means to releasably hold the head housing and supply track on said tool housing, the improvement comprising:

a release latch mounted in said tool housing, said release latch having an external, manually operable portion, and an internal portion whereby when said retaining means are released said internal portion of release latch displaces said head housing and supply track from said tool housing.

2. The device in accordance with claim 1 including spring means normally biasing said release latch to an unlatched position, said spring means being in a loaded condition when the tool is fully assembled.

3. The device in accordance with claim 1 wherein said supply track includes a first upwardly facing U-shaped channel, there being further included an upwardly facing U-shaped chassis spacedly nested within said first channel and rigidly secured to said solenoid, said chassis having opposed, elongated slots in the upstanding walls thereof, said release latch being an elongated lever pivotally mounted intermediate the ends thereof in said chassis, to provide an inner end and an outer end, said inner end of said lever having a pair of outwardly extending ears positioned in the slots of said chassis, said ears being arranged to bear against the upstanding walls of said first channel whereby when said external portion of said release latch is manually displaced, and said retaining means is released, said head housing and supply track will be separated from said tool housing.

4. The device in accordance with claim 1 wherein said improvement further comprises an interlock responsive to the movement of said release latch, said interlock having means to engage and prevent movement of said trigger when said release latch is actuated.

5. The device in accordance with claim 4 wherein said interlock is a slidable elongated bar having one end in engagement and movable together with said release latch, the opposite end of said bar having a tab arranged to engage and prevent movement of said trigger when said release latch is actuated.

6. The device in accordance with claim 1 wherein said improvement further comprises an L-shaped head housing a first portion of which is disposed directly beneath said

solenoid, said first portion including a pair of outwardly extending ears arranged to be engaged by said retaining means when said tool is fully assembled.

7. The device in accordance with claim 6 wherein said retaining means are resilient and in the assembled condition exerts a restraining force acting to hold the head housing and supply track in close contact with the housing of said solenoid.

8. The device in accordance with claim 1 wherein said improvement further comprises an insulating trigger block rigidly secured within said housing, said trigger block having means for mounting said switch, a plunger member slidable therethrough, said plunger member having one end thereof in contact with said trigger, the other end of said plunger member being positioned in opposition to the contact button of said switch, and spring means urging said plunger away from the switch contact button, said trigger being pivotally mounted on said trigger block.

9. The device in accordance with claim 8 wherein said trigger block includes a keyway and said tool includes a bracket secured to the solenoid case, said keyway being arranged to receive a portion of said solenoid case bracket.

10. The device in accordance with claim 8 wherein said plunger member is comprised of first and second coaxial sections, said first section having an axial bore receiving a portion of said second section, said first section being biased with respect to said block by said spring means, there being further included a second spring disposed in the bore of said first section, said second spring being arranged to bias said first and second sections with respect to each other.

11. In a solenoid actuated fastener driving tool having a cantilevered armature arm extending through the solenoid case and a fastener driver blade positioned externally of the solenoid case and coupled to the armature arm, a shield member disposed on said solenoid arm and substantially enclosing the slot in the solenoid case through which said armature arm extends.

12. The device in accordance with claim 11 wherein said shield is a low coefficient of friction material and is disposed on said armature arm between said driver blade and said solenoid case.

13. The device in accordance with claim 12 wherein said solenoid case is magnetizable and said driver blade is made of a non-magnetic material.

14. The device in accordance with claim 1 wherein said improvement further comprises notches in the forward end of said tool housing, said retaining means being captured in the notches when said head housing and supply track are removed from said tool housing.

15. The device in accordance with claim 1 wherein said improvement comprises a supply track disposed within and welded to said head housing.

16. A fastener driving tool, including a tool housing, having a fastener supply track and a head housing removably secured to the tool housing and retaining means to releasably secure the supply track and head housing to the tool housing comprising:

a release latch mounted in said tool housing, said release latch having an external, manually operable portion, and an internal portion whereby when said retaining means are released said internal portion of release latch displaces said head housing and supply track from said tool housing.

17. In a solenoid actuated fastener driving tool having external biasing means for the armature thereof, a low coefficient of friction bearing block supporting said biasing means, said bearing block including a pair of transverse notches on the top surface thereof and wherein there is further included fastening means disposed in said notches, said fastening means having inwardly turned end portions arranged to secure said bearing block to said solenoid.

18. In a fastener tool having a solenoid actuated driv-

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er blade, an armature arm biased by an elongated compression spring, the armature arm extending outwardly of the solenoid case through a slot therein, a yoke member integral with said armature and means integral with said yoke to secure the ends of said armature spring, the improvement comprising opposed, outwardly directed rib portions on the solenoid case, said armature extensions being enclosed by said rib portions during displacement thereof.

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U.S. Cl. X.R.

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