

March 28, 1944.

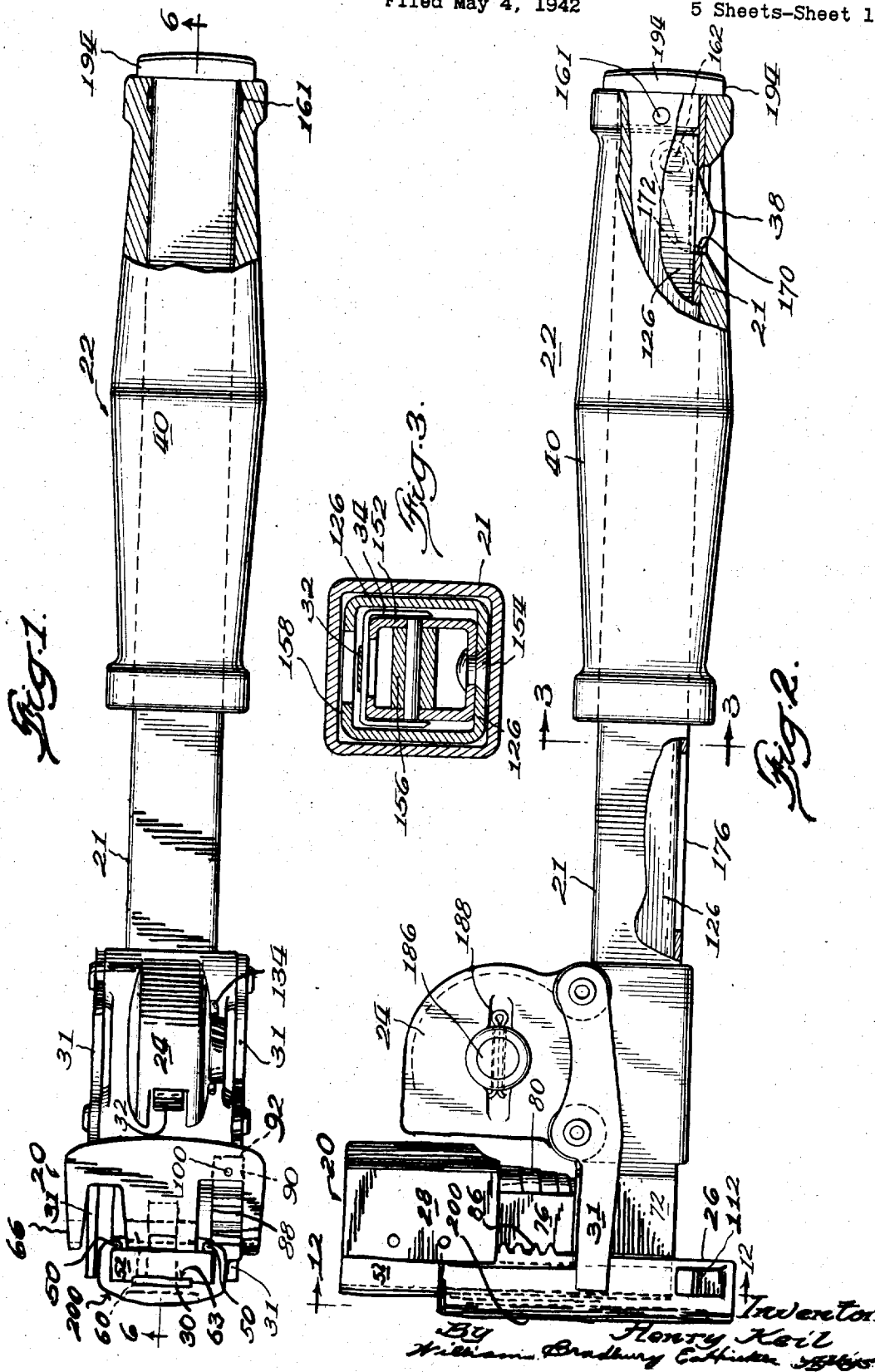
H. KEIL

2,345,267

STAPLER

Filed May 4, 1942

5 Sheets-Sheet 1



March 28, 1944.

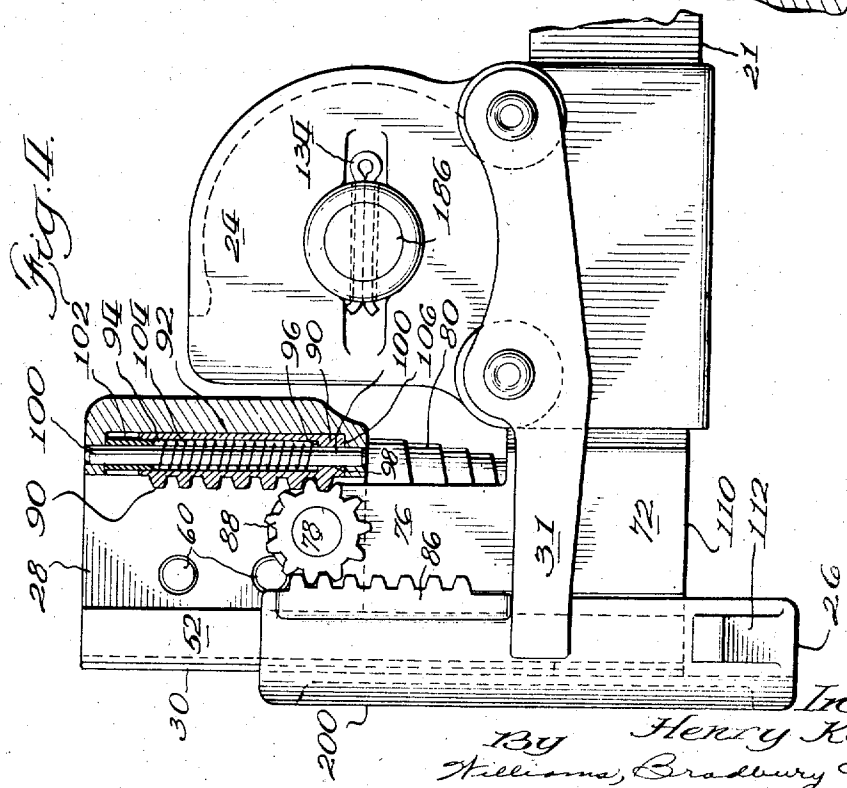
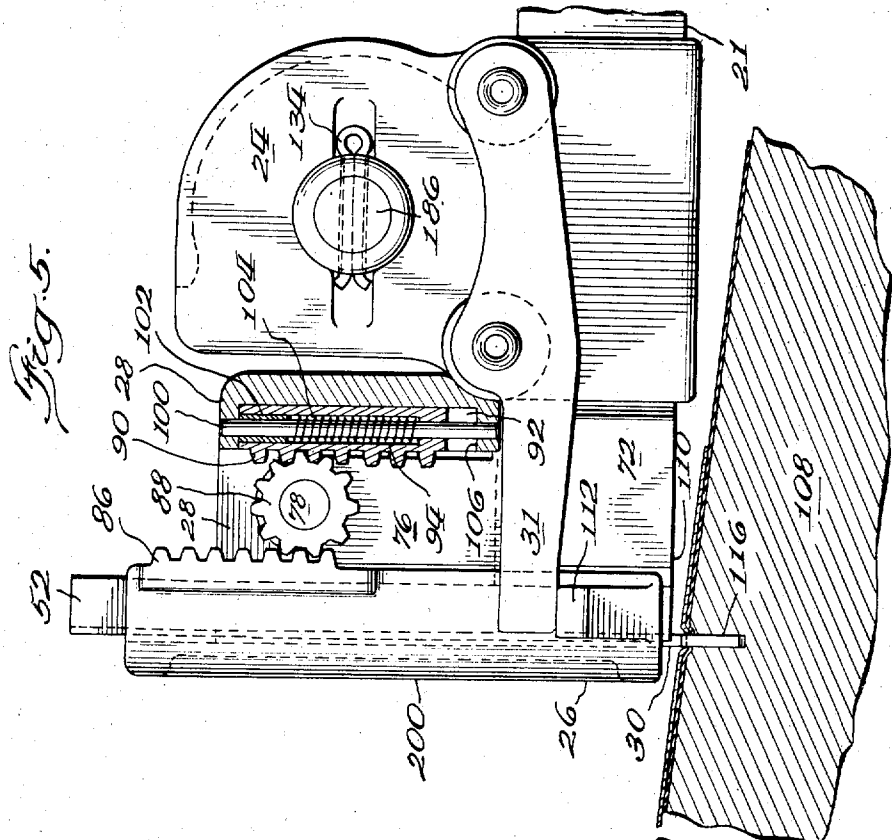
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2,345,267

STAPLER

Filed May 4, 1942

5 Sheets-Sheet 2



Inventor:
By Henry Keil
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ATTORNEYS

March 28, 1944.

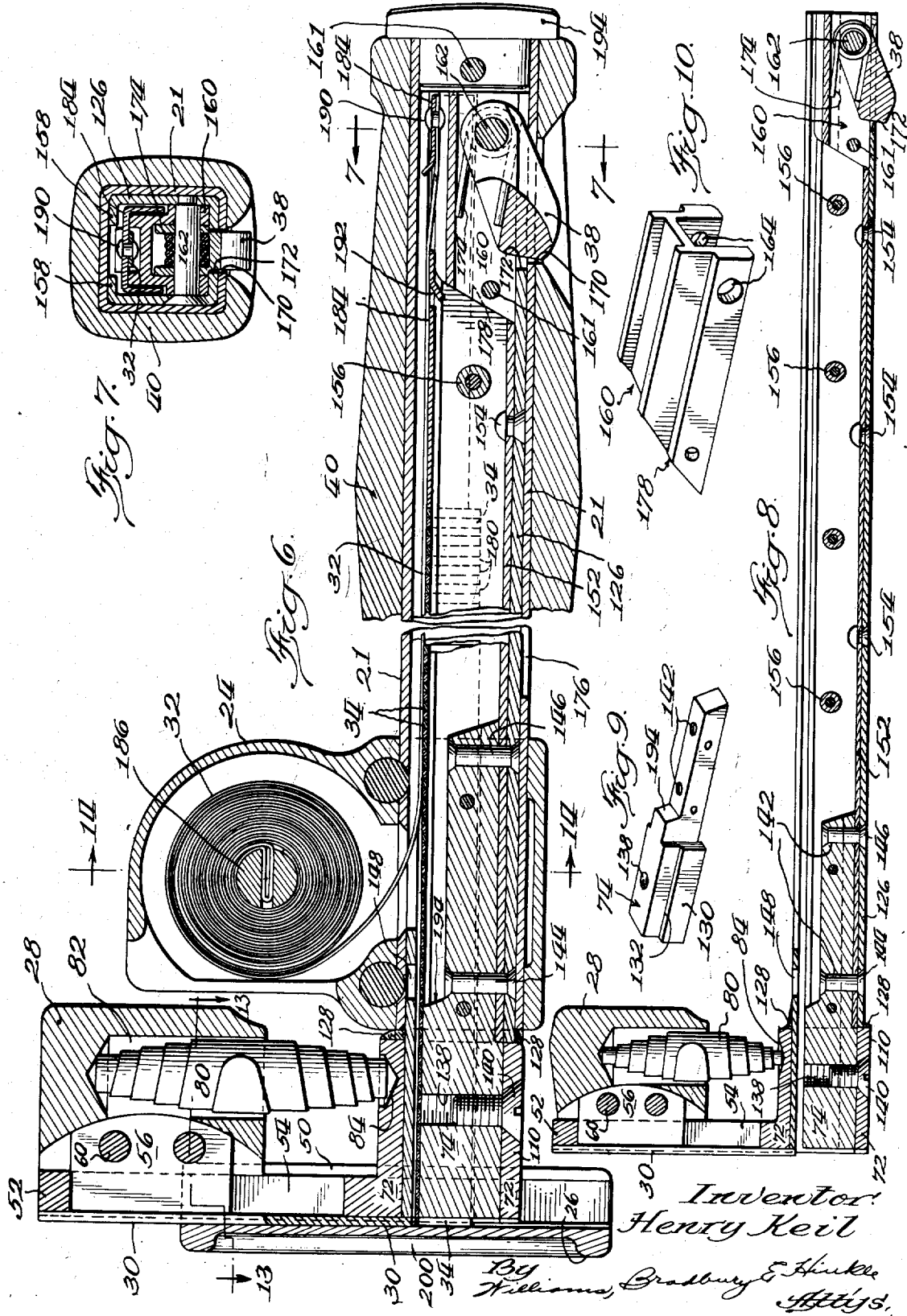
H. KEIL

2,345,267

STAPLER

Filed May 4, 1942

5 Sheets-Sheet 3



March 28, 1944.

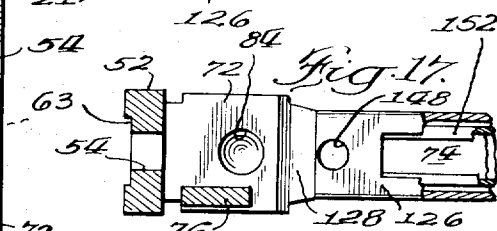
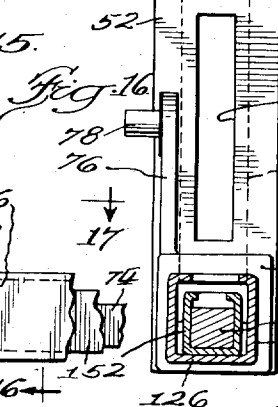
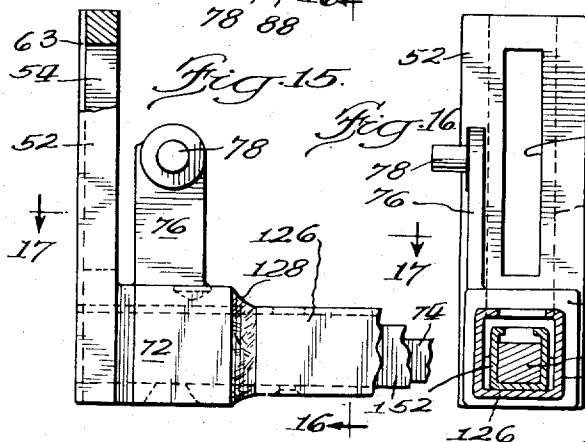
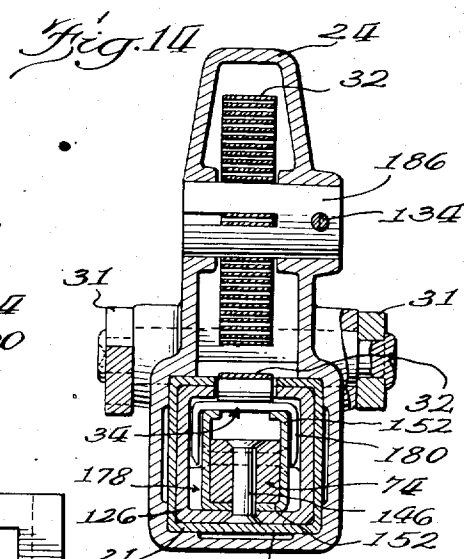
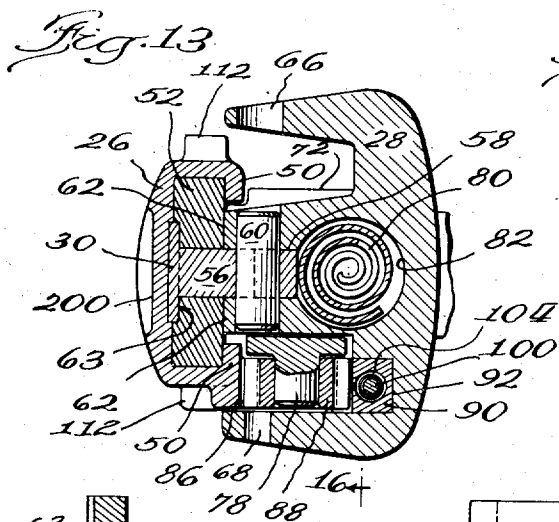
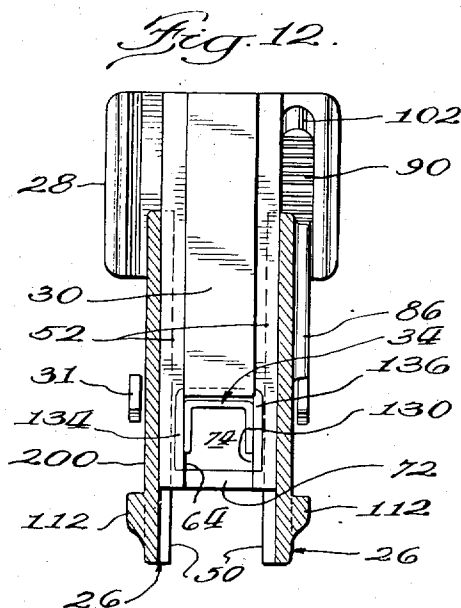
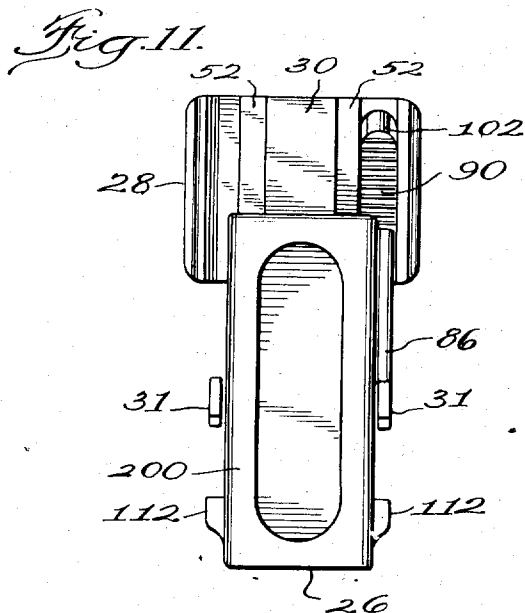
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2,345,267

STAPLER

Filed May 4, 1942

5 Sheets-Sheet 4



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March 28, 1944.

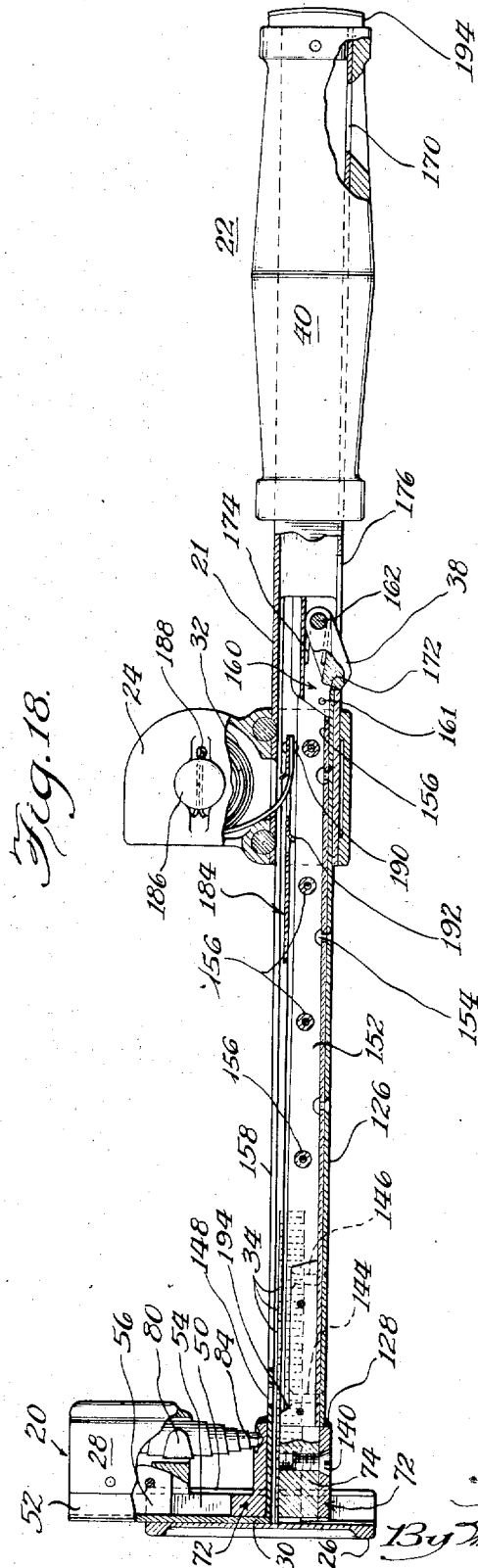
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2,345,267

STAPLER

Filed May 4, 1942

5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

2,345,267

STAPLER

Henry Kell, Chicago, Ill., assignor to Signode Steel Strapping Company, Chicago, Ill., a corporation of Delaware

Application May 4, 1942, Serial No. 441,656

4 Claims. (Cl. 1—49)

My invention relates generally to staplers, and it will be described as embodied in an automatic hand operated staple hammer.

An object of my invention is the provision of a stapler which is of solid and substantial construction and which is economical to manufacture.

Another object of my invention is to provide an improved stapler, wherein an inertia member is mounted to carry through the stapling stroke independently of the rest of the stapler.

A further object is to provide a stapler having relatively great staple driving power in proportion to its size, and which is sufficiently compact to be used in restricted spaces.

A further object of my invention is to provide a stapler with an improved staple magazine closure.

Another object of my invention is to provide a stapler which may be refilled easily and which will not eject staples during the refilling operation.

A further object is to provide a stapler in which a single part serves both as a staple magazine closure and as an impact member which comes into contact with the object to be stapled.

Another object is to provide a stapler which is capable of driving a staple into an object when held at an angle thereto.

Another object of my invention is to provide a stapler in which the magazine is completely accessible and which is readily and completely demountable for ordinary repairs without the need of tools.

A further object is to provide a stapler with a minimum number of movable wearing parts.

Other objects and advantages will hereinafter appear.

In the drawings:

Fig. 1 is a top plan view of a stapling hammer embodying my invention;

Fig. 2 is a side elevational view thereof;

Fig. 3 is an irregular transverse sectional view taken on the line 3—3 of Fig. 2, the outer hand grip being omitted for the sake of clarity;

Fig. 4 is a side view of the head or striking portion of the stapler, partially broken away, and shown in normal or inoperative position;

Fig. 5 is a side view similar to Fig. 4, showing the stapler in an operative position near the completion of a staple inserting stroke.

Fig. 6 is a vertical sectional view of the entire stapler taken on the lines 6—6 of Fig. 1;

Fig. 7 is a transverse sectional view taken on the line 7—7 of Fig. 6;

Fig. 8 is a vertical sectional view of the staple magazine and its associated parts;

Fig. 9 is a perspective view of the front magazine guide and handle bracing member;

Fig. 10 is a perspective view of the latch carrier;

Fig. 11 is a front view of the head of the stapler;

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 2;

Fig. 13 is an irregular sectional view taken on the line 13—13 of Fig. 6;

Fig. 14 is a sectional view taken on the line 14—14 of Fig. 6;

Fig. 15 is a detailed elevational view of the front magazine guide and handle bracing member;

Fig. 16 is a sectional view taken on the line 16—16 of Fig. 15;

Fig. 17 is a sectional view taken on the line 17—17 of Fig. 15; and

Fig. 18 is a view, partially in section, of the stapler with the handle member and its associated parts withdrawn to prepare the stapler for loading, but with the staple gate and driving member in normal position.

General description of the stapler

Referring to Fig. 1, the stapler is composed generally of a head portion 20, which constitutes generally the staple driver, and a handle portion 22 which serves also as a staple magazine. A staple-feed spring housing 24 is made integral with the outer tubular member 21 of the handle portion 22.

The head portion is made up of a number of major parts, namely, a striking member 26 adapted to come into forceful contact with the object to be stapled, and an inertia member 28 which receives its impetus from the striking member 26 and which during one stage of operation travels in a direction opposite thereto. The inertia member 28 is secured to an attenuated staple driver 30 which drives the staples, one by one, into the object to be stapled, i. e., the work (see Fig. 5). Transfer of momentum between the striking member 26 and inertia member 28 is attained by means of a rack and pinion arrangement to be explained. Riveted to the spring housing 24, and extending forward therefrom, are a pair of stops 31 which limit the movement of both the striking member 26 and the inertia member 28.

The handle portion 22 carries the spring housing 24 in which is a coil spring 32 for urging forward the staples 34 within the magazine. A

latch 38 may be depressed by the operator to permit the handle to be drawn away from the head portion during a refilling operation or in case repairs are necessary. A hand grip 40 of rubber or similar material is provided to facilitate handling of the stapler.

The staple driving mechanism

The staple driving mechanism may be considered to be in the head portion of the stapler while the staple feeding mechanism, consisting of the magazine and its associated parts, may be considered to be in the handle. The striking member 26, when in an inoperative position, extends below the body of the stapler. As seen in Figs. 1 and 2, the rear portion of the striking member 26 has inwardly directed flanges 50 which extend throughout its length and which hold the striking member 26 slidably on a drive guide 52. While the outer edges of the drive guide serve as a slide for the striking member, the drive guide has in addition an elongated rectangular slot 54 (see Fig. 16), extending throughout the greater part of the length thereof to serve as a slideway for the inertia member 28. Inertia member 28 and staple driver 30 are secured together and both are slidably mounted relative to guide member 52. Thus staple driver 30 has a key 56 formed integrally therewith, this key extends through the elongated slot 54 in guide member 52, and inertia member 28 is fastened to key 56 by pins 60. The forward portion of the inertia member 28 provides two additional bearing surfaces 62 which bear against the rear of the drive guide and which, in conjunction with the staple driver 30 and the key 56, serves to hold both the inertia member 28 and the staple driver 30 in tight but slidable relation with the drive guide 52 (see Fig. 13).

The forward face of the drive guide 52 is provided with a groove 63 to form part of a slide-way for the staple driver 30. The rearward face of the striking member 26 is similarly grooved to complete the slide-way for the staple driver. This slide-way 64, formed by the complementary grooves of the two members 26 and 52 serves as a passageway for the staple as it is impelled by the staple driver 30.

To facilitate the removal of the pins 60 and the disconnecting of the staple driver 30 from the inertia member 28 in case repairs are necessary, the inertia member 28 is provided with holes 66 located in the side thereof and in axial alignment with the pins 60. These holes 66 have a bore sufficient to allow passage of the pins 60 therethrough. On the opposite side of the inertia member 28 are additional holes 68 of slightly smaller diameter than the holes 66, but in axial alignment therewith. The purpose of the smaller holes 68 is to permit the insertion of a punch or similar tool to engage the pins 60 and force them out of the inertia member 28 through the holes 66 (see Fig. 13).

In order to assure rigidity of the assembled parts of the head, and in order to provide for secure attachment of the head of the stapler to the handle, the drive guide 52 and the base 72 of the stapler are made integral. (See Figs. 15 and 16.) This base is of relatively heavy metal, and is in the form of a hollow square in cross section, providing a space through which extends the front staple guide 74. (See Fig. 9.) The front staple guide has dual functions. First, it serves as the forward end of the staple magazine to support and guide the staples to position

below the driver 30; secondly, it provides a rigid handle bracing member. As a handle bracing member, the front staple guide 74 bears a great part of the shock of each blow of the stapler. The method of attaching the head to the handle by means of the staple guide will be described in greater detail subsequently.

Extending upward from the base 72, and made integral therewith, is a pinion support 76 carrying a stub shaft 78 near its upper end. This pinion support is located slightly to the rear of the drive guide 52 and approximately in the same plane as the edge of the drive guide. The stub shaft 78 extends outward beyond the plane of both the pinion support and the drive guide (see Figs. 15 and 16).

The inertia member is urged to its inoperative or upper position by means of a spring 80, one end of which extends into a bore 82 in the inertia member, and the other end of which extends into a shallow cavity 84 in the upper surface of the base 72 of the stapler (see Fig. 6). The upper limit of the movement of the inertia member 28 is determined by contact of the key 56 with the upper end of the slot 54 in the drive guide 52.

The rack and pinion assembly in the head of the stapler is shown most clearly in Figs. 1, 4, and 5. The striking member 26 carries a rack 86 adjacent its upper end. This rack engages a pinion 88 carried by the stub shaft 78. A second rack 90, slidably mounted in an elongated channel 92 in the inertia member 28, completes the rack and pinion assembly. This slidable rack provides a novel and effective means of delivering the full force of the blow to the staple.

The channel 92 is appreciably longer than the rack 90 in order to permit a longitudinal sliding movement of the rack within the channel. The rack is provided throughout the greater part of its length with an enlarged bore 94 terminating at an annular shoulder 96 in a smaller bore 98. A pin 100, the ends of which are carried by the end walls of the channel 92, extends through the bores to maintain the rack in position within the channel. The smaller bore 98 serves as a bearing for one end of the rack, while a bushing 102, slidably mounted in the open end of the enlarged bore 94, serves as a bearing for the other end. A coil spring 104 positioned in the bore 94 surrounds the pin 100. One end of the spring 104 abuts the bushing 102, urging the bushing against the upper end of the channel 92. The other end of the spring abuts the annular shoulder 96, thus urging the rack 90 against the lower end 106 of the channel 92 when the inertia member is in its inoperative position (Fig. 4).

Observing the head portion of the stapler in Figs. 4 and 5, it may be seen that when the striking member 26 is struck sharply against the object 108 to be stapled, the striking member remains stationary against the object, while the force of the blow carries the remainder of the head portion, as well as the handle, in the direction of the object to be stapled, the entire assembly sliding on the drive guide 52 which is integral with the base 72 of the stapler.

In addition to the relative movement between the striking member 26 and the rest of the stapler, the inertia member 28 and the staple driver 30, to which the inertia member is attached, move independently in the direction of the object to be stapled. This movement is imparted to the inertia member through the rack and pinion arrangement in the following manner: Upon striking the object 108, the striking member remains

in contact with the object, while the rest of the stapler, impelled by the force of the blow, follows through the stroke in the direction of the object 108, as described. The relative movement between the striking member, which of course becomes stationary when it strikes the work, and the moving head of the stapler, to which the pinion 88 is attached, causes the pinion to rotate in a clockwise direction, impelled by contact with the rack 86. As the pinion 88 rotates, the rack 90 which is meshed therewith travels forcibly downward in the direction of the object 108, carrying with it the inertia member 28 and the staple driver 30 attached thereto. The spring 80 within the bore 82 of the inertia member is made sufficiently compressible to give readily under the impact, and yet is of sufficient resilience to return the parts to an inoperative position at the conclusion of the stapling stroke.

When the bottom 110 of the base 72 strikes against the object 108 to be stapled, the inertia member continues to drive by reason of its own momentum in the direction of the object 108. The striking member 26 linked to the inertia member through the racks and pinion also continues the relative movement in an upward direction until brought to a sudden stop by the contact of the two lugs 112 with the pair of stops 31. Contact of the lugs 112 with the stops 31 terminates not only the travel of the striking member 26, but also abruptly terminates the movement of the racks 86, 90 and the pinion 88 as well. Although the effective movement of the racks and pinion has been terminated the inertia member, being slidably associated with the rack 90, continues to travel forcefully in the direction of the object 108. The power which has been applied to the inertia member through the racks and pinion, coupled with the original downward movement of the inertia member in the direction of the object, imparts an extraordinary driving force to the inertia member near the completion of its stroke, thereby assuring a well driven staple 116.

The inertia member 28 is brought to a stop by contact with the upper edges of the stops 31. This position marks the completion of the stapling stroke (see Fig. 5). It is to be noted that the staple driver 30 is made sufficiently long to protrude slightly below the base 72 at the conclusion of the stapling stroke. This not only makes it possible to drive the staple slightly below the surface of the object 108, if desired, but also permits the stapler to be held at a considerable angle to the object and still effectively drive a staple therein.

The staple feeding mechanism

The handle portion 22 of the stapler, which carries the staple feeding mechanism, is composed primarily of two telescoping tubular members, approximately square in cross section. The inner tubular member is termed a staple retainer 126, and is securely attached to the head of the stapler by means of the front staple guide 74, as will be described, and by welding, 128. (See Figs. 6, 8, and 9.) The front staple guide, which serves also as a handle bracing member, has an enlarged frontal portion the sides 130 of which are flanged to provide a forward runway 132 for the staples 34. The sides 130 of the front staple guide fit snugly within the staple retainer 126, and the base of the frontal portion of the front staple guide rests within the base 72 of the stapler.

The forward end of the lower side of the staple retainer 126 is cut short so that it abuts the bottom edge 110 of the base of the stapler (see Fig. 8). A weld 128 is made at this point. The remaining three sides of the staple retainer extend through the hollow base 72 of the staples, two of the sides 134, 136 forming part of the slideway 64 in the forward face of the drive guide 52 (Fig. 12). A hole 138 in the frontal portion of the front staple guide 74 is threaded to receive a screw 140 which firmly connects the front staple guide with the base 72 of the stapler. The rearward portion of the front staple guide is provided with a number of vertical holes 142 by means of which it is securely riveted to the staple retainer 126 with rivets 144, 146. A hole 148 in the upper side of the staple retainer provides for access to the forward rivet 144 during the assembly of the stapler.

A staple support core 152 abuts the front staple guide 74 and is attached to the staple retainer 126 by means of a number of countersunk rivets 154. The core 152 is provided with spacers 156 at intervals in order to make certain that it will be of uniform width throughout its length so that the staples will not bind. The top of the staple retainer 126 comprises two inwardly disposed flanges 158 extending the length thereof. These flanges are spaced apart from each other, and so provide an open space running the length of the handle of the stapler through which the staples on the magazine may be manipulated in case a jam should occur. The flanges are spaced from the top of the staple support core 152 a distance sufficient only to permit the free passage of staples 34 along the magazine, thereby preventing the staples from becoming displaced, even when subjected to severe jarring, and even though the stapler may be held in an inverted position (see Fig. 3).

At the rear of the staple support core 152 is a latch carrier 160 fastened to the staple retainer 126 by means of a rivet 161 (see Fig. 10). The latch 38 is mounted on a shaft 162 journaled in holes 164 in the latch carrier. The lower walls of both the outer tubular member 21 and staple retainer 126 are provided respectively with juxtaposed elongated slots 170, 172 through which the latch 38 extends. The latch is urged outwardly through the slots by a latch spring 174, and the forward end of the latch engages the forward edge of the slot 170 in the outer tubular member 21 thereby locking together the outer tubular member and the staple retainer 126 in the closed position shown in Figs. 2 and 6. In this telescoped relation the tubular members constitute a strong, rigid handle, well able to withstand the severe shocks to which stapler is subjected.

When the operator desires to load the stapler or to disassemble it, the latch 38 is depressed, thereby permitting the outer tubular member 21 to be moved rearwardly relative to the staple retainer 126 as shown in Fig. 18. An additional slot 176 adjacent the forward end of the outer tubular member 21 serves to catch the latch 38, and prevent the outer tubular member from becoming entirely separated from the staple retainer. In case it is desired to separate these members, the latch, when extending through the slot 176, may be depressed again and the outer tubular member removed entirely.

The latch carrier 160 performs the additional function of preventing the staples from sliding beyond the rear of the staple support core 152. This is accomplished by means of a flange 178

on the latch carrier (see Figs. 6 and 10). This flange is somewhat higher than the lower ends 180 of the staples in the magazine and so engages the lower ends of the rearmost staple thereby preventing further rearward movement of the staples.

The staples are urged forward by a staple pusher 184 traveling slidably between the flanges 158 and the staple support core 152 in the same relative position as the staples. The coil spring 32 which activates the staple pusher is carried by a spring tensioner 186 journaled in the spring housing 24 and locked in position by means of a cotter pin 188. The free end of the coil spring is bent over upon itself and is attached to the staple pusher 184 by means of a rivet 190. Figure 6 shows the stapler with the magazine entirely loaded with staples, the staple pusher 184 being at the extreme rear of the staple magazine. As the staples are used, the spring 32 and the staple pusher 184 urges the staples forward, so that they may be used one by one. As the last staple in the magazine is used, a detent 192 on the staple pusher encounters a shoulder 194 on the front staple guide 74, thereby preventing the staple pusher from protruding into the path of the staple driver 30 and becoming damaged.

The rearward end of the outer tubular member 21 is closed by means of a cap 194 held in place by a rivet which extends through the tubular member.

The staple gate

An important feature of my invention resides in the staple gate or closure 200 which is made integral with the striking member 26 (see Figs. 11 and 12). It will be observed that the outer face of the staple gate 200 is recessed in order to diminish its weight, so that the full inertia of the striking member may be transmitted to the inertia member 28 without undue loss of power. As has been described, the groove in the rearward face of the striking member, combined with the groove 63 of the forward face of the drive guide 52 forms the slide-way 64 in which travels the staple and the staple driver 30. The slide-way 64 is of a width sufficient to accommodate only one staple at a time. Therefore, when the staples 34 within the magazine are urged forward by the staple pusher 184, there is room in the slide-way 64 for only the foremost staple when it is brought to bear against the rearward face of the staple gate 200. Upon the staple being driven, and after the return of the parts to an inoperative position, the next staple will be urged forward into the slide-way ready for the next staple driving operation.

Not only does my novel staple gate make certain that only one staple at a time is in a position to be driven, but in conjunction with the staple feeding mechanism, the staple gate performs the further function of preventing staples from becoming ejected from the stapler during a refilling operation. It will be noted that when the inner and outer tubular handle members are completely telescoped, the stops 31 are in their forward position as shown in Fig. 2. It is therefore not possible to remove the staple gate 200 until the stops 31 are withdrawn from the path of the lugs 112. This may be done by depressing the latch 38 and moving the outer tubular member 21 rearwardly, carrying the stops 31 with it. The outer tubular member is moved rearwardly until the latch 38 engages the forward slot 176; this relative position of the

outer tubular member and the staple retainer is illustrated in Fig. 18.

The inertia member may then be manually moved toward the base 72 of the stapler. This will cause the staple gate to move upwardly on the drive guide 52 until the rack 86 on the staple gate is no longer meshed with the pinion 88. The staple gate may then be slid manually from the drive guide 52, and the inertia member allowed to spring back to its upper or inoperative position. The forward opening of the magazine is thereby exposed to view, and a new supply of staples may be inserted into the magazine. Fig. 8 shows the stapler head 20 with the staple gate 200 removed and the forward end of the magazine opened to receive a new stick of staples.

Although a supply of staples may have been left in the magazine at the time the staple gate 200 is removed, my stapler will not cause the staples to be ejected, as is the case with many conventional stapling machines. It will be noted that in order to remove the staple gate 200, it is first necessary to withdraw the outer tubular member 21 to the rear. Inasmuch as the spring housing 24, the spring 32, and the staple pusher 184, are all carried by the outer tubular member, these members likewise move rearwardly. The staple pusher 184 is thereby withdrawn from contact with the staples remaining in the magazine, and when the staple gate is removed and the forward or open end of the magazine made accessible, the staples within the magazine will remain in place.

Operation of the stapler

Assuming that the stapler is empty, it is first necessary to fill the magazine with staples before the stapler can be used. Ordinarily, the staples are provided in magazine form, a considerable number of staples being held together by some form of binder in the nature of a light glue. The staples are inserted in the magazine, as previously described, after which the inertia member is manually depressed, the staple gate is placed upon the drive guide 52 and the racks and pinion are allowed to mesh. Upon releasing the inertia member, the spring 80 carries the parts to the inoperative position shown in Fig. 18. The tubular handle members are then completely telescoped, so that the staple pusher 184 urges the foremost staple against the staple gate 200 and into position in the slide-way 64 (Fig. 2 and Fig. 6). The foremost staple is then ready to be driven. The stapler is firmly grasped in the hand of the operator and the striking member is struck against the object to be stapled, the force of the blow being transmitted to the inertia member, as described. The staple driver 30 is thereby brought to bear suddenly and forcefully against the staple within the slide-way 64. The impact breaks the bond between the staples and carries the driven staple completely into the object to be stapled.

Upon removing the striking member from contact with the object which has been stapled, the spring 80 returns the parts to their original position. The staple driver 30 returns to its inoperative position, shown in Fig. 12, thereby clearing the slideway 64, and permitting the next staple to be pushed forward against the staple gate ready for the next stapling stroke.

While I have described my invention in connection with a preferred embodiment thereof, it will be apparent to those skilled in the art that numerous variations and modifications may

be made from the structure disclosed without departing from the underlying principles of my invention. I therefore wish to include within the scope of the following claims all constructions by which substantially the results of my invention may be obtained by substantially the same or equivalent means.

Having illustrated and explained typical embodiments of my invention, what I claim and desire to secure by United States Letters Patent is as follows:

1. A magazine stapler of the type having a striking member for initially engaging the work, a hammer member movable relatively to the striking member for driving a staple into the work, a magazine for holding a plurality of staples, and a staple feed for advancing staples from the magazine into the path of travel of the hammer member; characterized by an inertia member rigidly secured to the hammer member, a rack and pinion connection between the striking member and the inertia member causing the inertia member and the hammer member carried thereby to continue movement after movement of the striking member has been stopped by engagement with the work, and means permitting relative movement between the inertia member and the rack and pinion connection after the rack and pinion connection ceases to function.

2. A magazine stapler of the type having a striking member for initially engaging the work, a hammer member movable relatively to the striking member for driving a staple into the work, a magazine for holding a plurality of staples, and a staple feed for advancing staples from the magazine into the path of travel of the hammer member; characterized by an inertia member rigidly secured to the hammer member, a rack and pinion connection between the striking member and the inertia member causing the inertia member and the hammer member carried

thereby to continue movement after movement of the striking member has been stopped by engagement with the work, a stop for arresting the functioning of the rack and pinion connection, and means permitting relative movement between the inertia member and the rack and pinion connection after the rack and pinion connection ceases to function.

3. A stapler having a striking member for impact against the object to be stapled, an inertia member actuated by the relative motion of the stapler to the striking member, a staple driver operated by the inertia member, and means for feeding staples one by one to the staple driver, said stapler being characterized by means terminating the relative effective movement between the stapler and the striking member at the termination of the power travel of the stapler, and means carried by said inertia member to permit it to travel toward the work independently of the travel of the stapler and the striking member.

4. A stapler of the type having a movable striking member for impact against the object to be stapled, a rack integral with the striking member, an inertia member, a second rack slidably mounted in said inertia member, means preventing relative motion between said second rack and said inertia member, a pinion meshed with said racks, a staple driver carried by said inertia member, means for feeding staples one by one to said staple driver, said stapler being characterized by means for stopping the effective relative movement between the stapler and the striking member before the stapling stroke is completed, and said relative motion preventing means, said last mentioned means being rendered inoperative when the travel of the stapler is stopped at the work to permit the inertia member to complete the stapling stroke.

HENRY KEIL.

CERTIFICATE OF CORRECTION.

Patent No. 2,345,267.

March 28, 1944.

HENRY KEIL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 6, for "staples" read --stapler--; line 58, before "stapler" insert --the--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 6th day of June, A. D. 1944.

Leslie Frazer

(Seal)

Acting Commissioner of Patents.

be made from the structure disclosed without departing from the underlying principles of my invention. I therefore wish to include within the scope of the following claims all constructions by which substantially the results of my invention may be obtained by substantially the same or equivalent means.

Having illustrated and explained typical embodiments of my invention, what I claim and desire to secure by United States Letters Patent is as follows:

1. A magazine stapler of the type having a striking member for initially engaging the work, a hammer member movable relatively to the striking member for driving a staple into the work, a magazine for holding a plurality of staples, and a staple feed for advancing staples from the magazine into the path of travel of the hammer member; characterized by an inertia member rigidly secured to the hammer member, a rack and pinion connection between the striking member and the inertia member causing the inertia member and the hammer member carried thereby to continue movement after movement of the striking member has been stopped by engagement with the work, and means permitting relative movement between the inertia member and the rack and pinion connection after the rack and pinion connection ceases to function.

2. A magazine stapler of the type having a striking member for initially engaging the work, a hammer member movable relatively to the striking member for driving a staple into the work, a magazine for holding a plurality of staples, and a staple feed for advancing staples from the magazine into the path of travel of the hammer member; characterized by an inertia member rigidly secured to the hammer member, a rack and pinion connection between the striking member and the inertia member causing the inertia member and the hammer member carried

thereby to continue movement after movement of the striking member has been stopped by engagement with the work, a stop for arresting the functioning of the rack and pinion connection, and means permitting relative movement between the inertia member and the rack and pinion connection after the rack and pinion connection ceases to function.

3. A stapler having a striking member for impact against the object to be stapled, an inertia member actuated by the relative motion of the stapler to the striking member, a staple driver operated by the inertia member, and means for feeding staples one by one to the staple driver, said stapler being characterized by means terminating the relative effective movement between the stapler and the striking member at the termination of the power travel of the stapler, and means carried by said inertia member to permit it to travel toward the work independently of the travel of the stapler and the striking member.

4. A stapler of the type having a movable striking member for impact against the object to be stapled, a rack integral with the striking member, an inertia member, a second rack slidably mounted in said inertia member, means preventing relative motion between said second rack and said inertia member, a pinion meshed with said racks, a staple driver carried by said inertia member, means for feeding staples one by one to said staple driver, said stapler being characterized by means for stopping the effective relative movement between the stapler and the striking member before the stapling stroke is completed, and said relative motion preventing means, said last mentioned means being rendered inoperative when the travel of the stapler is stopped at the work to permit the inertia member to complete the stapling stroke.

HENRY KEIL.

CERTIFICATE OF CORRECTION.

Patent No. 2,345,267.

March 28, 1944.

HENRY KEIL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, line 6, for "staples" read --stapler--; line 58, before "stapler" insert --the--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 6th day of June, A. D. 1944.

Leslie Frazer

(Seal)

Acting Commissioner of Patents.