

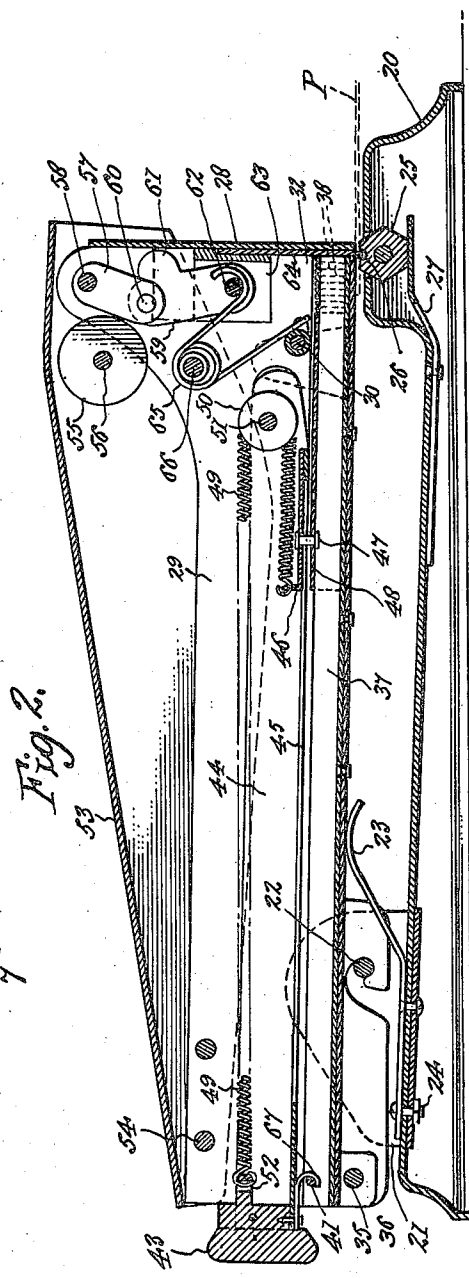
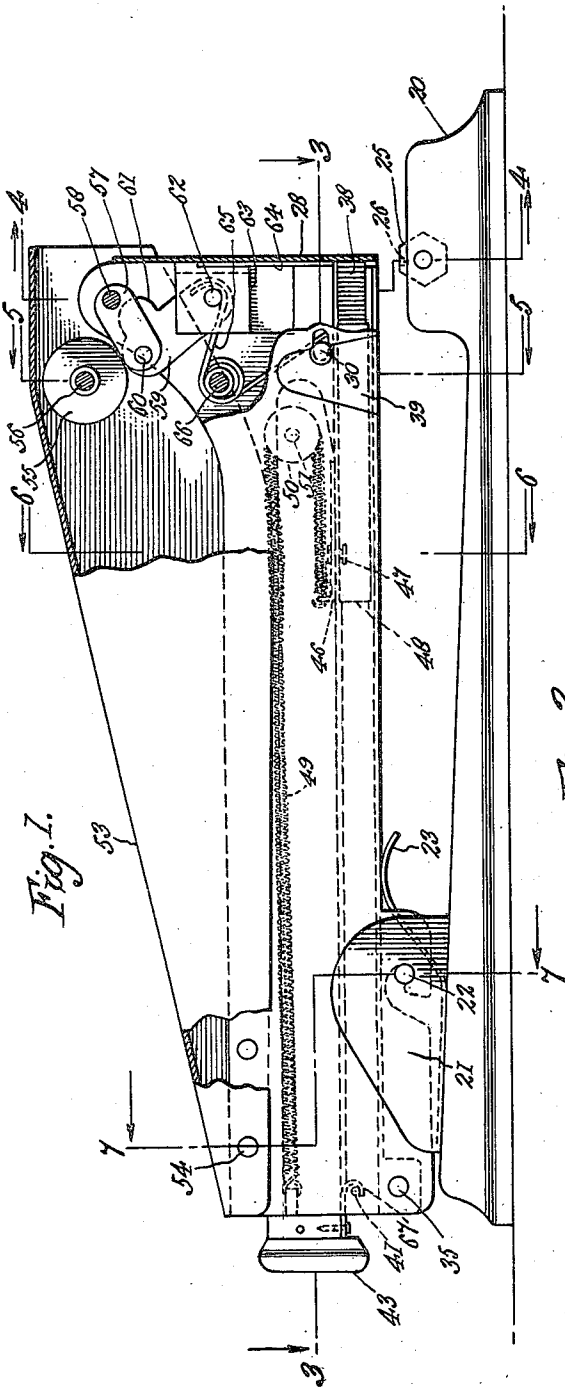
March 13, 1951

M. E. WAMPLER  
STAPLING DEVICE

2,545,397

Filed Dec. 26, 1945

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

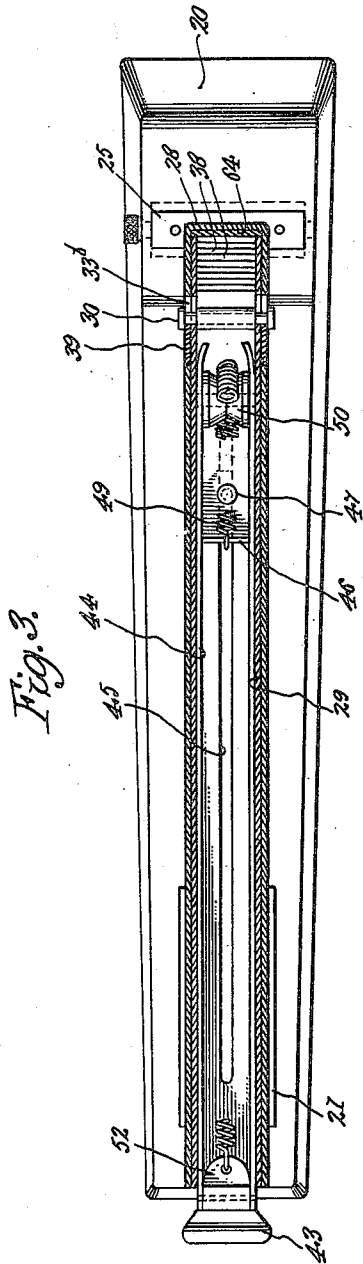


Fig. 1.

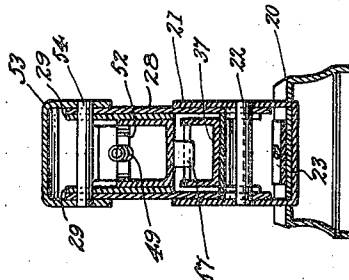


Fig. 6.

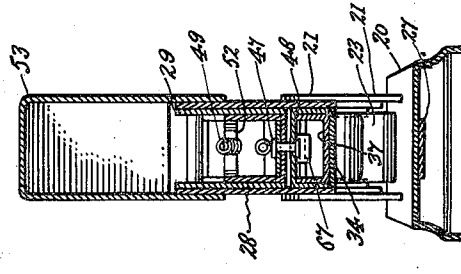


Fig. 5.

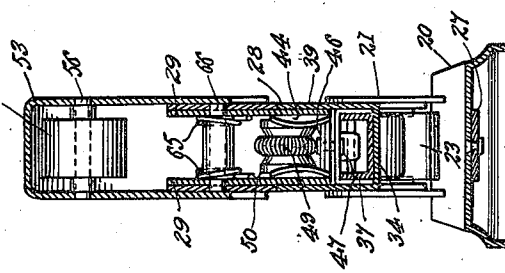
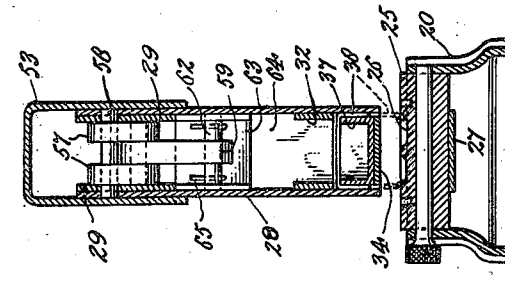


Fig. 4.



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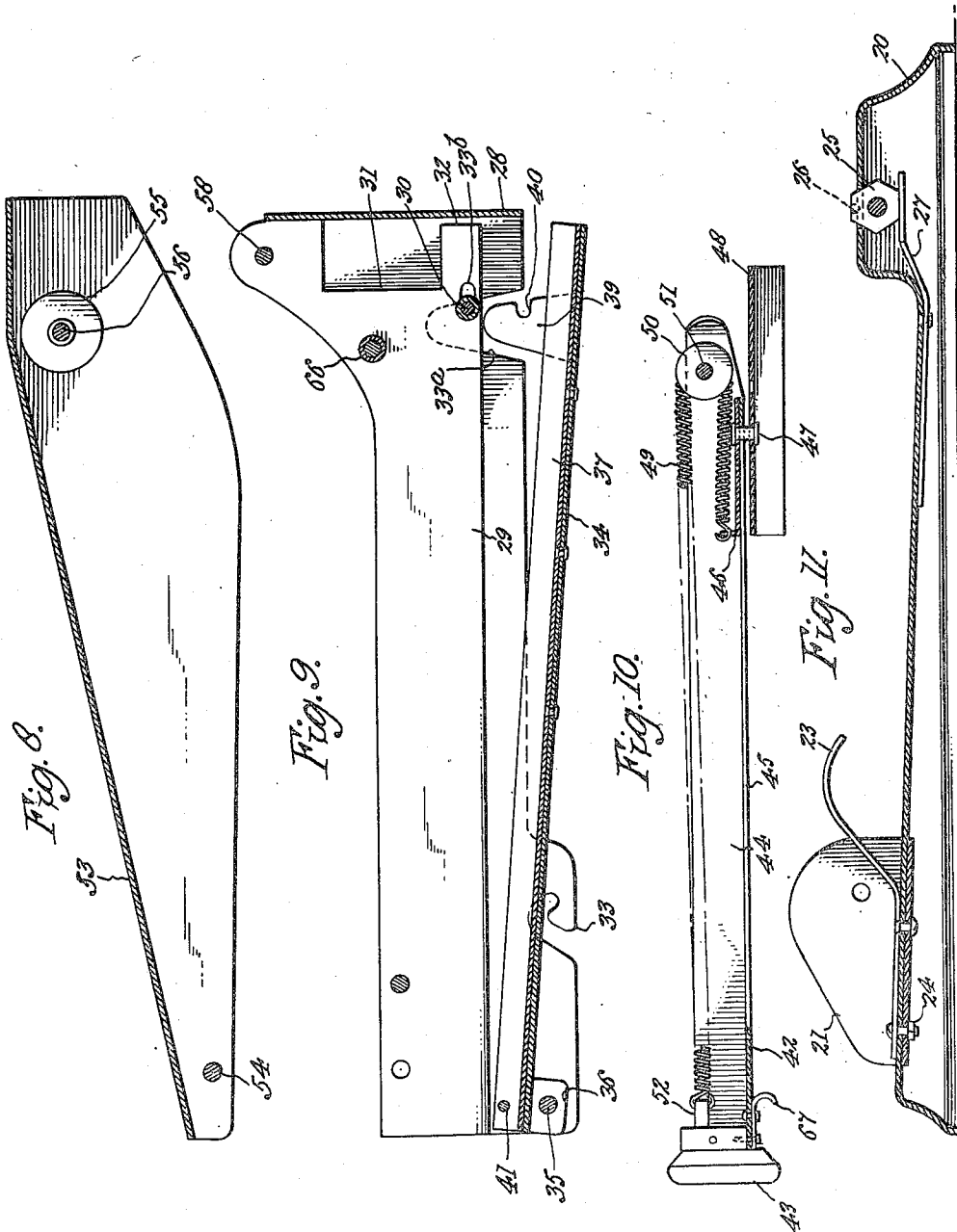
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# UNITED STATES PATENT OFFICE

2,545,397

## STAPLING DEVICE

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Application December 26, 1945, Serial No. 637,204

9 Claims. (Cl. 1—3)

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The present invention relates to a stapling device, or the like, and more particularly to a staple machine adapted for office use.

One object of the invention is to provide a stapling device having a magazine which is pivotally secured so that it may be easily swung away from the staple driving mechanism to clear bad staples.

Another object is to provide mechanism for removably locking the magazine in operative position relative to the staple driving mechanism.

A further object is to provide mechanism for removably securing the base to the stapling head.

Still another object is to provide novel spring means for urging the staples forwardly in the magazine into position for operation of the staple driving blade.

Yet another object is to provide a novel staple driving mechanism for reciprocally operating a staple driving blade in combination with spring means for returning the driving blade to initial position.

A still further object is to provide an anvil arrangement on the base of the staple which has a plurality of grooves adapted for different types of staples.

Other and further objects and advantages of the present invention will be apparent from the following description thereof, and from the claims appended thereto.

In the drawing, wherein like numerals refer to like or corresponding parts throughout the several views,

Figure 1 depicts a side elevation, partly in section, and with parts broken away, of the stapling device embodying the features of this invention.

Figure 2 is a longitudinal vertical section of the stapling device, shown in Figure 1, depicting the staple driving mechanism operating upon a piece of paper.

Figure 3 is a sectional view taken along the line 3—3 of Figure 1, in the direction of the arrows,

Figure 4 is a sectional view taken along the line 4—4 of Figure 1, in the direction of the arrows,

Figure 5 is a sectional view taken along the line 5—5 of Figure 1, in the direction of the arrows,

Figure 6 is a sectional view taken along the line 6—6 of Figure 1, in the direction of the arrows,

Figure 7 is a sectional view taken along the line 7—7 of Figure 1, in the direction of the arrows,

Figure 8 is a longitudinal vertical section of the top piece of the stapling arm,

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Figure 9 is a longitudinal vertical section of the central casing of the stapling device, showing the staple magazine in partially disengaged position.

Figure 10 is a sectional view of the staple-pusher means, and

Figure 11 is a longitudinal vertical section of the base of the stapling device.

Referring to the drawing, and more particularly to Figures 1 and 2, the numeral 20 generally represents the base plate of the stapling machine, which is rectangular in cross-section, and preferably made of sheet steel, or the like. On the base 20 are mounted two ears 21, in spaced apart relation, having a pin 22 anchored therein. A spring band 23 is disposed between the metal ears 21 and is secured to the base in any suitable manner such as by nut and bolt 24.

A hexagonal anvil element 25 is disposed on the forward portion of the base 20 and is suitably grooved at 26 to receive staples, or the like. A spring member 27 is mounted on the underside of the base 20 and engages the hexagonal anvil member 25 to prevent its turning out of position. If desired, each of the hexagonal faces of the anvil member 25 can be grooved in a different way, so as to adapt the said anvil for different types of staples. Depending upon the particular type of staple employed, the hexagonal anvil element can be rotated to bring the proper grooved surface into operative position.

As better shown in Figure 9, the stapling head comprises a central hollow casing 28, of rectangular cross-section, provided with an internally disposed bracing member 29 which extends substantially the length of the casing 28 and is provided with apertures in the side wall thereof. A headed pin 30 is disposed in said apertures or slots, and is longitudinally slideable therein. The brace 29, in the forward portion thereof, is also cut away to provide a C-shaped section 31 adapted to receive a part of the staple driving mechanism as hereinafter more fully explained. The front wall 32 of the brace 29 is spaced away from the front wall of the casing 28 to permit a staple driving blade to reciprocate therebetween.

The lower rear portion of the casing 28 is angularly slotted at 33 for engagement with the pin 22 of the base plate 20. The spring 23 is depressed, and the pin 22 is slid into the angular slot 33 so that the central casing is adapted for pivotal movement at the pin 22 against the spring band 23 which normally urges the casing 28 away from the base plate 20. The side walls of the casing 28 are cut away at 33a, and also provided with a longitudinal slot 33b communicating with the cutaway portion 33a.

A magazine generally represented by the numeral 34, is pivoted to the casing 28 by the pin 35 extending through a bracket 36 carried on the underside of the magazine 34. The magazine 34 comprises an elongated staple trackway 37 of U-shaped configuration, upon which is adapted to ride U-shaped staples 38.

Two spaced apart upstanding ears 39 are mounted on opposite sides of the forward portion of the staple trackway 37. Each ear 39 is provided with a slotted portion 40. The ears 39 are adapted to engage in the cutaway portions 33a, by sliding the pin 30 forwardly in the slot 33b. The magazine 34 is locked in position by the pin 30 which engages in slot 40 urged by a spring as more fully described hereinafter. It is one of the primary features of this invention to have the magazine 34 pivoted to the casing 28, in such a manner that the said magazine can be selectively removed from engagement in the casing 28 to alleviate any staple jam, or the like.

At the rear end of the trackway 37 is disposed a pin 41 which is adapted to cooperate with the staple-pusher means.

Figure 10 more fully shows the staple-pusher means generally indicated by the numeral 42, and comprising a nob 43 secured to an elongated member 44, of rectangular cross-section. The member 44 is provided with an elongated slot portion 45 in the bottom wall thereof. A rider 46 is adapted to slide along the slot 45, and is secured thereto by a headed pin 47 which extends through the slot 45 and engages a sleeve 48 of inverted U configuration. The sleeve 48 is adapted to ride along the staple trackway 37 and push the staples 38 forwardly into position for the operation of the staple driving mechanism. The rider 46 and the sleeve 48 move as a unit along the slot 45. A spring 49 is secured to the rider member 46 and passes over a roller member 50 which is secured to the front portion of the member 44 by pin 51.

The other end of the spring 49 is secured to the nob 43 at the projection 52. If the sleeve 48 is slid toward the nob 43 tension is built up in the spring 49 to urge said sleeve 48 forwardly against the staples 38 to successively deliver the staples to the operation of the stapling driving mechanism.

Mounted on the upper portion of the casing 28 is an actuator for the staple driving mechanism herein shown as a channel shaped element or hand lever 53 pivotally secured to the casing by a pin 54 for limited relative movement with reference to said casing 28. In the forward portion of the element 53 is mounted a roller 55 which is secured to the side walls of the element 53 by the pin 56. The element 53, like the casing 28 is rectangular in cross-sectional area and is adapted to engage over the casing 28 to carry the roller 55 into operative position relative to the staple driving mechanism which will now be more fully explained in detail.

Referring to Figure 1, in the forward portion of the casing 28 is disposed a double link 57 which constitutes one element of a toggle joint and which is pivoted to the side walls of the casing 28 by a pivot pin 58. The double link 57 comprises two spaced links, each of which abuts a side inner wall of the casing 28. A third link 59 constituting the other element of the toggle joint is pivotally secured between the double links 57 by the pin 60. The link 59 has a cam portion 61 which moves toward the inner side of the front wall of the casing 28 when the staple driving

mechanism is operated, as shown more completely in Figure 2. The cam 61 limits the movement of the staple driving mechanism, to guard against its locking in a position which would make it difficult for it to return to initial position. The link 59 is connected at its other or lower end by a pin 62 to a reciprocable staple driver comprising a head 63 carrying a depending staple engaging plunger or blade 64. The head 63 is reciprocable in the guides formed by the notches 31 in the bracing members 29 as noted heretofore, while the blade 64 is guided between the ends 32 of the member 29 and the front wall of the casing 28.

A spring wire 65 engages the pin 62 and is wound around a pin 66 carried by the casing 28 and then extending downwardly across the notch 33b. There are two spring wires 65 each of which urges the blade 64 and associated elements of the staple driver upwardly from the anvil 25 and normally maintains them in a retracted position. In this position the toggle links 57 and 59 are swung into the position shown in Fig. 1 of the drawings.

The spring wires 65 additionally cooperate in locking the magazine 34 in position within the casing 28. The pin 30 is moved against the tension of the spring wires 65 and the magazine 34 is positioned so that the notched portion of the ears 39 coincides with the slot 33b. In this position, the pin 30 is urged by the spring wires 65 into the notch 40, to removably lock the magazine 34 within the casing 28.

In the operation of the staple driving mechanism, pressure is applied to the front end of hand lever 53 rocking it downwardly, which causes the roller 55 to engage the double link 57 and swing it forwardly about its pivot point 58. The movement of the double link 57 is transmitted through the link 59 to the head 63, which moves downwardly, sliding in cutaway portion 31 of the member 29. The downward movement of the head 63 carries the blade 64 downwardly to engage the foremost one of the staples 38 on the trackway 37 which has been pushed into operative position by the staple-pusher sleeve 48.

The downward movement of the blade 64 carries with it a staple which pierces a paper P which is positioned on the anvil member 25 to insure an efficient stapling. The staple is bent into paper locking position in groove 26. After the staple engages through the paper P, pressure is released from the hand lever 53 and the spring wires 65 automatically return the staple driving mechanism to its initial position, and the staple-pusher means automatically again urges the staples forwardly in the magazine 34 for another operation by the staple driving mechanism.

The staple-pusher 42 is provided at the rear end thereof, and on the under side thereof substantially in alignment with sleeve 48, with a hook 67 which is adapted to engage over the pin 41 disposed on the trackway 37 of the staple magazine 34, when the staple-pusher 42 is disposed in operative relation with respect to the magazine 34. The engagement of the hook 67 over the pin 41 keeps the staple-pusher in such a position that the spring 49 continuously urges the sleeve 48 forwardly in the magazine 34 to push staples 38 forwardly into operative position relative to the staple driving mechanism.

To remove the staple-pusher 42 from the staple magazine 34 it is only necessary to push the knob 43 slightly forward against the force exerted thereon by the spring 49 acting through the rider 46 and sleeve 48 against the staples 38 on the

trackway. The pusher is thus rocked upwardly until the hook 67 is free of pin 41 whereupon it may be withdrawn from the staple magazine 34.

When it is desired to fill the staple magazine 34 with staples, or the like, the staple magazine 34 is disengaged from the casing 28 by pushing the pin 39 forwardly into the slot 33b against the tension of the spring wires 65. The magazine 34 can then be pulled away from the casing 28, as it is pivoted at 35. The staples 38 may then be disposed on the staple trackway 37 and the magazine 34 put into position within the casing 28 by again moving the pin 39 forwardly in the slot 33b and bringing slot 40 coincident therewith, and allowing the spring wires 65 to push the pin 39 into the slot 40 to lock the magazine 34 in position.

The staple-pusher 42 is then put into operative position by sliding the sleeve 48 along the trackway 37 until it abuts staples 38. More or less staples 38 may be employed, as the sleeve 48 has a considerable range of movement against the tension of spring 49.

The staple-pusher 42 is then locked into position by engaging the hook 67 over the pin 41, with the tension of the spring 49 keeping the sleeve 48 continuously urging staples 38 forwardly in the magazine 34.

While the invention as herein illustrated and described is embodied in a device for feeding and driving substantially U-shaped staples, it is to be understood that it may be modified in construction to feed and drive fasteners of other types. Therefore, the term "staple" as employed in the description of the invention, is intended to include all forms of fasteners, or the like.

Modifications of this invention will be apparent to those skilled in the art, without departing from the spirit or scope of the invention. Therefore, it is intended to be limited only by the scope of the appended claims.

What I claim is:

1. In a stapling device, a hollow casing, means for driving staples disposed within said casing comprising, two spaced apart links pivotally secured at one end thereof to the side walls of said casing, a third link pivotally secured at one end thereof between said two spaced apart links, and having a cam portion which limits the pivotal movement of said links by engaging the inner side of the front wall of said casing, a pin secured to said third link at the other end thereof, said pin being secured to a reciprocable head, and a staple engaging blade movable with said head.

2. In a stapling device, a hollow casing, means for driving staples disposed within said casing comprising, two spaced apart links pivotally secured at one end thereof to the side walls of said casing, a third link pivotally secured at one end thereof between said two spaced apart links and having a cam portion which limits the pivotal movement of said links by engaging the inner side of the front wall of said casing, a pin secured to said third link at the other end thereof, said pin being secured to a reciprocable head, a staple engaging blade movable with said head, and spring means normally urging the said cam portion of said third link away from said front wall of said casing.

3. In a stapling device, a hollow casing, a top portion for said casing and pivotally secured at the rear end thereof and adapted for limited independent movement relative thereto, a roller journaled in the side walls of said hollow casing for cooperation with staple driving means, said

means for driving staples disposed within said casing comprising, two spaced apart links pivotally secured at one end thereof to the side walls of said casing, a third link pivotally secured at one end thereof between said two spaced apart links, and having a projection which limits the pivotal movement of said links by engaging the inner side of the front wall of said casing, a pin secured to said third link at the other end thereof, said pin being secured to a reciprocable head, and a staple engaging blade movable with said head.

4. In a stapling device, a hollow casing, a top portion for said casing and pivotally secured at the rear end thereof and adapted for limited independent movement relative thereto, a roller journaled in the side walls of said hollow casing for cooperation with staple driving means, said means for driving staples disposed within said casing comprising, two spaced apart links pivotally secured at one end thereof to the side walls of said casing, a third link pivotally secured at one end thereof between said two spaced apart links, and having a projection which limits the pivotal movement of said links by engaging the inner side of the front wall of said casing, a pin secured to said third link at the other end thereof, said pin being secured to a reciprocable head, and a staple engaging blade movable with said head, and spring means normally urging the said projection of said third link away from said front wall of said casing.

5. In a stapling device, in combination, a hollow casing, a staple driver supported and guided for reciprocation in said casing, a magazine in said casing for supplying staples to said driver, said magazine being pivotally supported for swinging movement out of the casing and away from said driver to provide access thereto for clearing away jammed staples, latch means for releasably holding said magazine immovable with respect to said casing, and spring means common to said driver and said latch means for yieldably urging the driver toward a retracted position and the latch toward latching position.

6. In a staple driving device, in combination, a hollow casing, a staple driver supported and guided for reciprocation in said casing, actuating means for said driver including a hand lever pivotally supported on the upper portion of said casing, a pair of pivotally interconnected links disposed in said casing between said hand lever and said driver, one of said links being pivotally secured to the casing and the other of said links being pivotally secured directly to said driver, spring means yieldably urging said driver to a retracted position, and means operable by said hand lever for actuating said links to impart a staple driving movement to said driver.

7. In a staple driving device, in combination, a casing, a staple driver supported in said casing for reciprocation, means for feeding a succession of staples into operative relation to said driver, spring means normally holding the driver in a retracted position, a toggle joint connected directly between said driver and said casing, an actuating member mounted on said casing to swing about an axis spaced substantially from said toggle joint, and means carried by said member engageable with said toggle joint incident to the downward swinging of the member for imparting staple driving movement to said driver.

8. In a staple driving device, in combination, a casing, a staple driver supported in said head

for reciprocation, means for feeding a succession of staples into operative relation to said driver, spring means normally holding the driver in a retracted position, a toggle joint connected directly to said casing and said driver, a hand lever pivotally supported on said casing, and cam means operable upon depression of said hand lever for actuating said toggle joint to impart a staple driving movement to said driver.

9. In a staple driving device, in combination, 10 a reciprocable staple driver mounted at one end of the device, means for feeding a succession of staples into operative relation to said driver, means normally holding said driver in retracted position, actuating means for advancing said driver comprising a toggle joint interposed directly between the driver and the stationary part of the device, and a hand lever pivotally supported at the other end of the device for actuating said toggle joint to advance said driver in a staple driving movement. 20

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## REFERENCES CITED

The following references are of record in the file of this patent:

## UNITED STATES PATENTS

Number	Name	Date
1,441,474	Anderson	Jan. 9, 1923
1,687,871	Maynard	Oct. 16, 1928
1,983,397	Polzer	Dec. 4, 1934
2,073,819	Vogel	Mar. 16, 1937
2,202,259	MacDonald	May 28, 1940
2,232,016	Walker	Feb. 18, 1941
2,240,911	Polzer	May 6, 1941
2,251,833	Polzer	Aug. 5, 1941
2,281,198	Maynard	Apr. 28, 1942
2,342,818	Polzer	Feb. 29, 1944
2,347,568	Kunert	Apr. 25, 1944
2,427,028	Spencer	Sept. 9, 1947

## FOREIGN PATENTS

Number	Country	Date
616,569	France	Oct. 30, 1926