

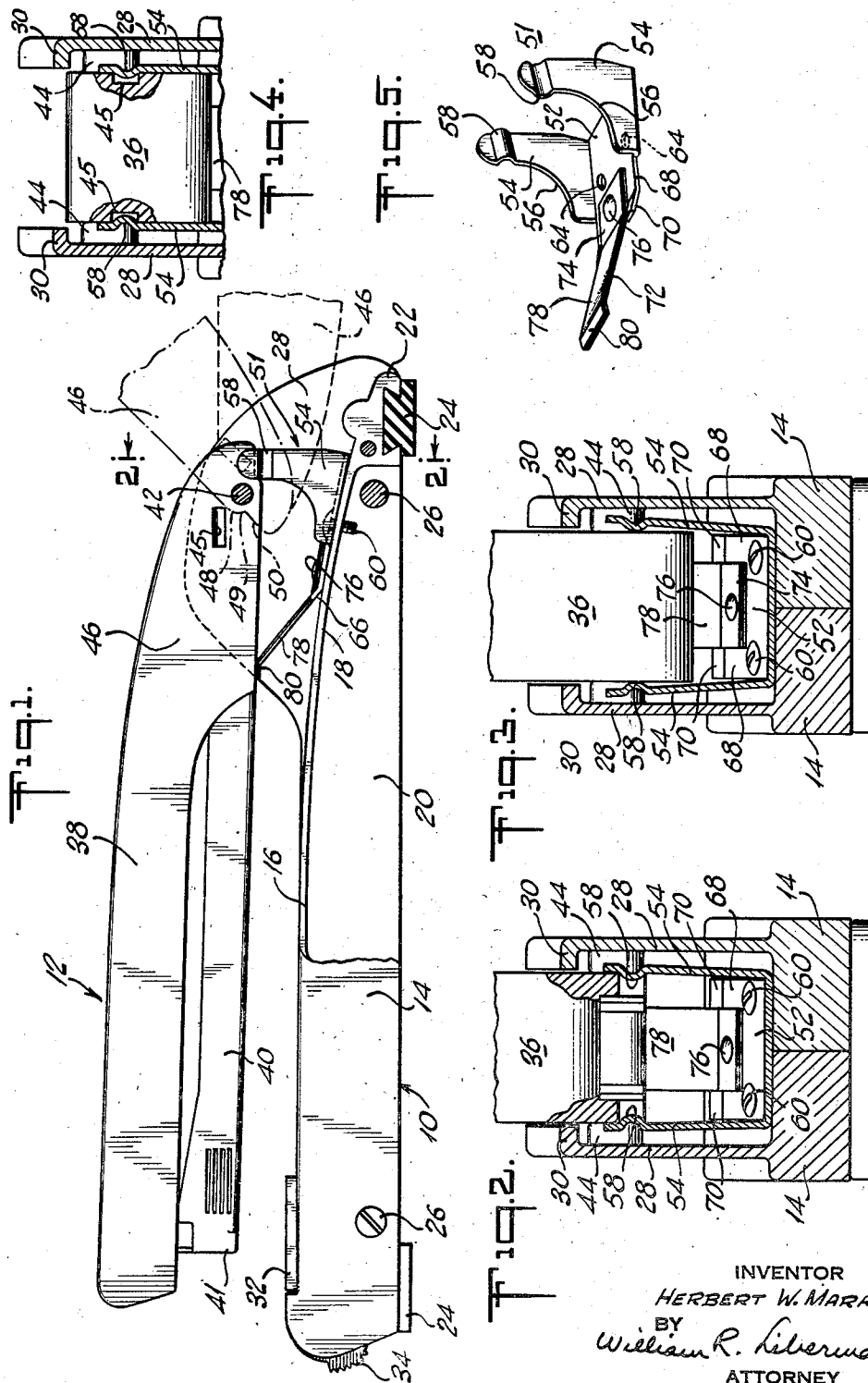
Feb. 25, 1958

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2,824,307

STAPLE DRIVING DEVICE

Filed March 6, 1957



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STAPLE DRIVING DEVICE

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Application March 6, 1957, Serial No. 644,232

6 Claims. (Cl. 1-3)

The present invention relates generally to an improved fastener driving device, and in particular it relates to an improved staple driving device which may be selectively employed as a clinching type stapler or as a tackler or staple driving gun.

The staple driving heads employed in conventional staplers and staple driving guns or tackers are basically the same in that they are provided with a staple magazine, a staple driving blade and a blade actuating mechanism. However, in the case of the conventional clinching stapler there is provided an anvil portion having appropriately shaped recesses in alignment with the staple driving blade to effect the clinching of the driven staple. There have been proposed and there are available many stapling devices which may be alternatively employed as a stapler or tackler but these have possessed numerous drawbacks which have limited their method of fabrication and their versatility in use, and have required costly fabrication operations.

It is thus a principal object of the present invention to provide an improved fastener driving device.

Another object of the present invention is to provide an improved staple driving device.

Still another object of the present invention is to provide an improved staple driving device which may be selectively employed as a staple driving and clinching device and as a staple driving gun or tackler.

A further object of the present invention is to provide an improved device of the character described which is characterized by simplicity of construction and operation, and by its ruggedness.

The above and other objects of the present invention will become apparent from a reading of the following description, taken in conjunction with the accompanying drawings, wherein

Figure 1 is a front elevational view of an improved stapling device embodying the present invention, illustrated in stapling position, partially broken away and partially in section, the stapling head being shown by broken line in tacking position;

Figure 2 is a sectional view taken along line 2-2 in Figure 1;

Figure 3 is a sectional view similar to Figure 2 with the stapling head shown in position between the stapling and tacking position;

Figure 4 is another view similar to Figure 2 showing the relationship of the stapling head and the latching member when the head is in a tacking position; and

Figure 5 is a front detailed perspective view of the stapling head latching mechanism.

In a sense, the present invention contemplates the provision of an improved staple driving device comprising a base member including, an anvil disposed adjacent the forward end thereof, and upwardly directed transversely spaced bracket members located adjacent to the rear end thereof, a head member, the rear portion of which is disposed between and hinged to said bracket

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members, and the forward portion of which is normally located above said anvil, said head being selectively swingable to a tacking position and to a position affording contact between the forward portion of said head and said anvil, spring means normally urging the forward portion of said head upwardly to a stapling position above said anvil, a latching member mounted on said base adjacent to the rear portion thereof and having an upstanding resilient leg engaging and adapted to selectively releasably maintain said head in said tacking position and in said stapling position. As used herein, the tacking position of the head is one wherein the head is angled with respect to the base and separated therefrom on the line of the blade and anvil a distance substantially greater than the length of the staple legs, so that actuation of the staple driving blade will not result in contact between the staple and the anvil but will merely tack or drive the staple legs into the work piece.

Referring now to the drawings which illustrate a preferred embodiment of the present invention, reference numeral 10 generally designates the base portion and reference numeral 12 the head of the improved stapling device of the present invention. The base 10 is formed of a pair of conjugately shaped longitudinally extending members 14 preferably formed of die cast aluminum, and including an upper platform 16 extending from the forward portion thereof substantially horizontally and thence being inclined rearwardly and downwardly at the rear thereof, as at 18. Depending from the sides of the platform 16 are skirt portions 20, the forward and rear ends of the platform 16 terminating in leg engaging portions 22. The underface of the leg engaging portions 22 are provided with rectangular recesses having undercut shoulders which engage the correspondingly shaped shoulders of foot pieces 24, formed of rubber or similar resilient material. The base forming members 14 are interconnected by suitable transversely extending fasteners 26 which engage corresponding reinforced openings formed in skirts 20.

Disposed adjacent the rear end of base 10 and formed integrally with the base forming members 14 are a pair of laterally spaced upstanding bracket plates 28 provided with inwardly directed edge flanges 30. An anvil plate 32 is disposed on platform 16, located adjacent its forward end. Anvil 32 has formed in its top face longitudinally spaced pairs of conventionally shaped staple leg clinching recesses. The plate 32 is selectively movable into advanced or retracted positions by means of a finger piece 34 located at the forward end of base 10 so as to alternatively bring one or another of the pairs of clinching recesses in alignment with the driven staple.

Head 12 may be of any conventional structure, such as that described in U. S. Patent No. 2,624,878, issued January 13, 1953, to Herbert W. Marano, and includes a hollow shell 36 having a depending peripheral skirt 38. Partially housed within the head is a staple magazine 40 of conventional construction having a staple drive throat at its forward end 41 with which registers a staple driving blade actuated by shell 36. The staple driving head 12 is hinged to base 10 by means of a pivot or pin 42 which passes through openings formed in skirts 38 forward of the trailing end thereof and through corresponding aligned openings formed in the bracket plates 28, and reinforced by bosses 44. Skirt 38 at the rear of shell 36 extends downwardly as at 46, the lower edge thereof extending longitudinally rearwardly to a point 48, thence upwardly as at 49, and rearwardly as at 50 to the end thereof. One or more rectangular apertures or recesses 45 are formed in the skirt 38 in a radially offset position relative to the pin 42 to permit the releasable locking

of the head 12 in selected angular position relative to the base 10 as will be hereinafter set forth.

In order to maintain stapling head 12 selectively in the stapling position as shown in full lines in Figure 1 of the drawing, or in a selected tacking position as shown in broken line in Figure 1 of the drawing, there is provided a latching member 51 formed preferably of resilient steel and including a cross piece or base plate 52 provided with integrally formed upstanding legs 54 located along the side edges of the base plate 52 and having concave leading edges 56. The upper portions of legs 54 are inwardly arcuately formed to provide horizontal cylindrically faced confronting detents 58 located slightly below the upper ends of the arms 54 and adapted to register with recesses 45. The latching mechanism 51 is secured to base 16 by means of a pair of screws 69 passing through laterally spaced openings 64 formed in cross piece 52, and engaging corresponding tapped openings formed in base 16. Latching mechanism 51 is so located on base 10 that detents 58 are located directly behind and slightly below pivot pin 42, so that when staple head 12 is in stapling position, as illustrated in Figure 1, the upper surface of the detents 58 engage the underface of the apron edge along the portion 50 (see Figure 2). When stapling head 12 is swung upwardly from the stapling position towards tacking position (as in dotted lines in Figure 1), legs 54 are spread outwardly by the apron edge portion 50 and resiliently engage the outer surfaces of the skirt 38, as seen in Figure 3 of the drawing. Upon the stapling head being swung to a position bringing a pair of apertures 45 into registry with the detents 58, the legs 54 urge the detents into engagement with the recesses as seen in Figure 4 of the drawing. The recesses 45 may be so disposed that the latched positions are horizontally rearwardly or at an angle to base 10.

The forward portion of cross piece 52 has formed therein a pair of laterally spaced longitudinally extending slits to divide the forward portion of the cross piece 52 into a tongue 66 coplanar with the trailing portion of cross piece 52, and a pair of laterally spaced tabs 68, the leading ends of which are inclined upwardly as indicated at 70. A multiple leaf spring 72 has a trailing tab portion 74 secured to the tongue 66 by means of a rivet 76 and an upwardly forwardly inclined portion 78 terminating in a horizontal flange 80 which bears against the undersurface of magazine 40 when stapling head 12 is in stapling position normally to maintain the forward end of the stapling head 12 above anvil 32.

In operation, when it is desired to employ the device as a staple driver and clincher, head 12 is swung into position whereby detents 58 engage the underface of skirt 38 along line 50, as illustrated in Figures 1 and 2 of the drawings. In the alternative, when it is desired to employ the device only as a staple driving gun or tacker, head 12 is swung rearwardly to any desired position as illustrated in broken line in Figure 1 and in Figures 3 and 4 of the drawings, the head being maintained in the selected position by means of the resilient arms 54 which may frictionally engage the skirt 38 or register with a selected pair of recesses 45.

While there has been described and illustrated hereinabove a preferred embodiment of the present invention, it is apparent that numerous alterations and omissions may be made without departing from the spirit thereof.

I claim:

1. A device for driving staples including spaced legs and a connecting bridge member, said device comprising a base member including an anvil disposed adjacent the forward end thereof and upwardly directed transversely spaced bracket members located adjacent the rear end thereof, a stapling head having a rear portion disposed between and hinged to said bracket members, and a forward portion normally located above said anvil, said stapling head being swingable to a tacking position wherein the forward portion thereof is spaced from the anvil a distance substantially greater than the length of the staple legs, and to a position affording contact between said stapling head forward portion and said anvil, spring means normally urging said stapling head forward portion upwardly to a stapling position above said anvil, a latching member mounted on said base adjacent the rear portion thereof and having an upstanding resilient leg engaging and adapted selectively to releasably maintain said stapling head in said tacking position and in said stapling position.

2. A stapling device in accordance with claim 1, including a pivot rotatably connecting said stapling head to said base, said stapling head having a portion extending rearwardly of said pivot and above said base, an inwardly directed detent located on said latching member resilient leg adjacent to the upper portion thereof, said stapling head rear portion having a shoulder disposed above said detent when said stapling head is in stapling position.

3. A stapling device in accordance with claim 1, wherein said latching member includes a pair of upstanding legs engaging opposite sides of said stapling head.

4. A stapling device in accordance with claim 3, wherein said latching member is provided with a bottom cross piece extending between and integral with said upstanding legs and secured to said base member and said spring means are defined by a forwardly upwardly extending leaf spring having a trailing portion affixed to said cross piece.

5. A stapling device in accordance with claim 3, wherein said latching member is provided with a bottom cross piece extending between and integral with said upstanding legs and secured to said base member, said cross piece being provided with a forwardly directed tongue and a pair of forwardly upwardly directed tabs extending along the sides of said tongue, and said spring means is defined by a forwardly upwardly extending leaf spring having a trailing portion affixed to said tongue.

6. A stapling device in accordance with claim 1, wherein said stapling head rear portion has a recess formed therein adapted to be brought into registry with said resilient leg when said stapling head is swung into a tacking position whereby to releasably maintain said stapling head in said tacking position.

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