Aug. 10, 1943. E. KRANTZ 2,326,540

FASTENER DRIVING TOOL

Filed June 12, 1941 2 Sheets-Sheet 1

Fig. 1

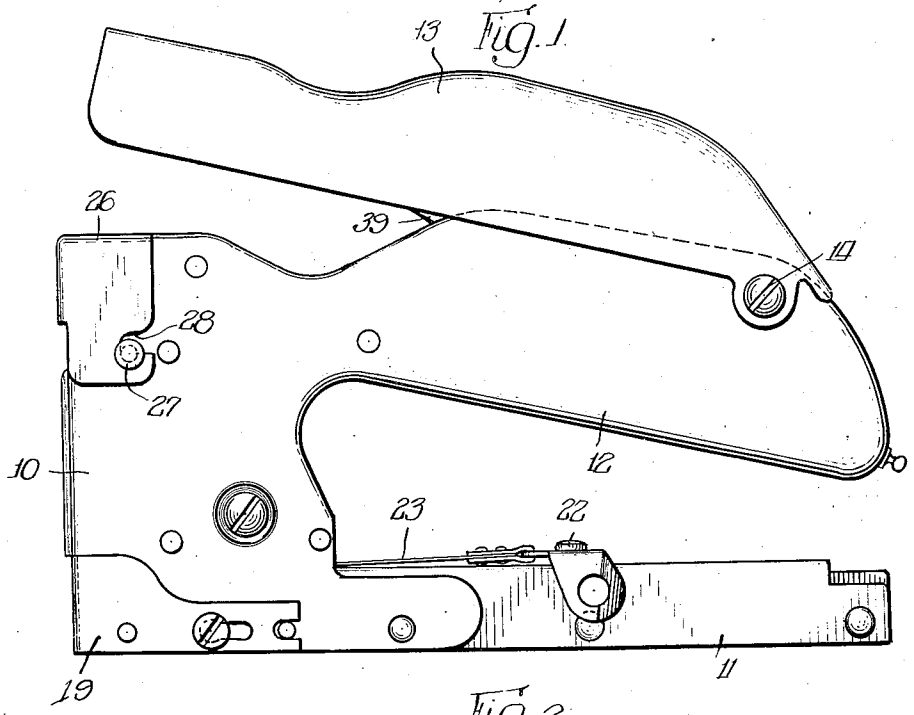
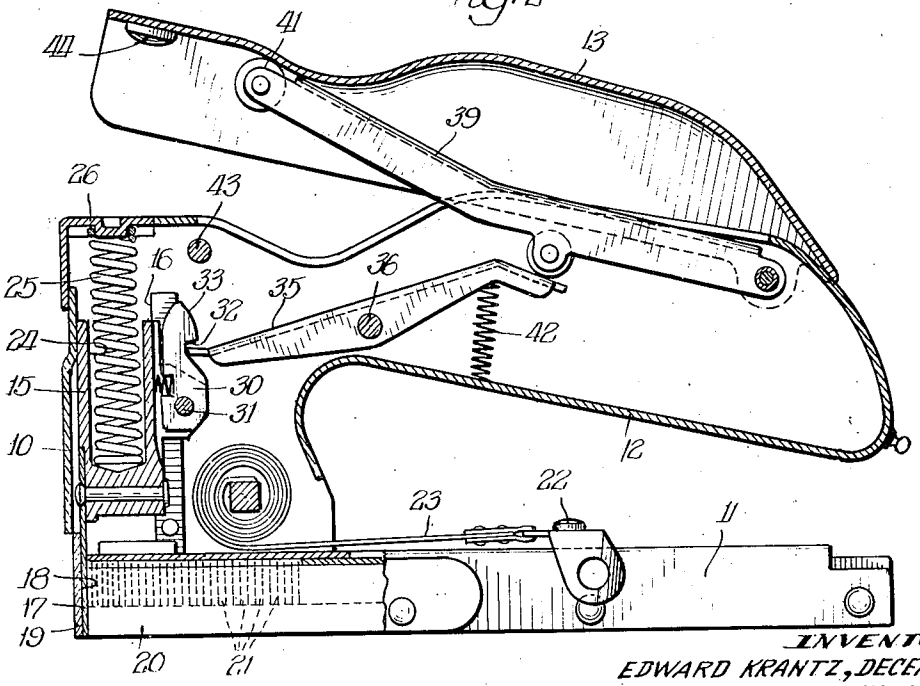


Fig. 2



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Fig. 3

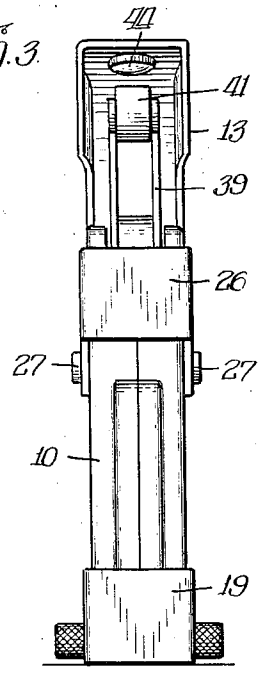


Fig. 5

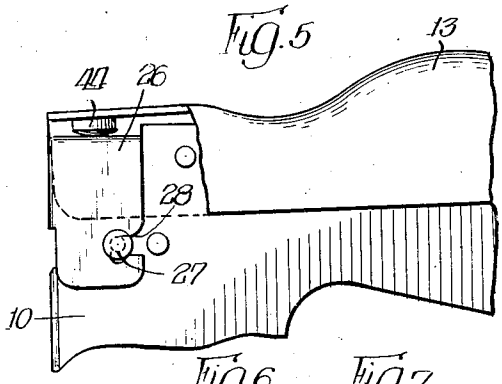


Fig. 6

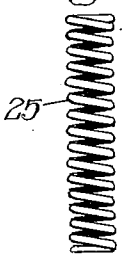


Fig. 7

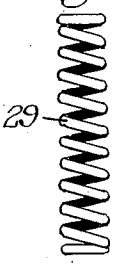
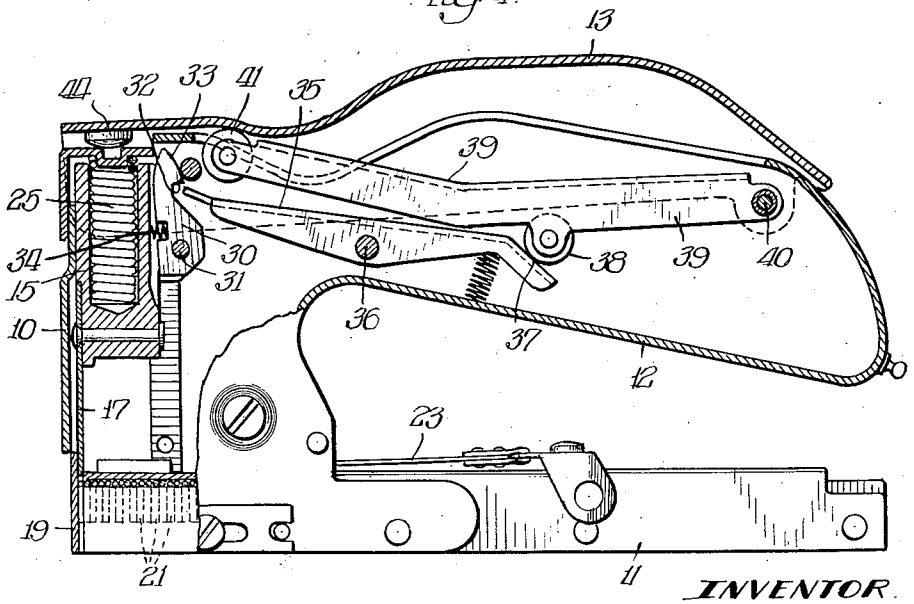


Fig. 4



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UNITED STATES PATENT OFFICE

2,326,540

FASTENER DRIVING TOOL

Edward Krantz, deceased, late of Chicago, Ill., by Helen Krantz, administratrix, Chicago, Ill., assignor of one-half to Henry A. Torstenson, and one-half to Valentine Pearson, both of Chicago, Ill.

Application June 12, 1941, Serial No. 397,783

6 Claims. (Cl. 1—49)

The principal object of this invention is to provide an improved fastener driving tool which is so constructed and arranged as to insure the tool being pressed firmly against the surface receiving the fastener at the instant the fastener is driven.

Another important object is to provide such a tool in which the amount of the driving force can be quickly increased or decreased to adapt the tool to widely different kinds of work by merely changing a readily accessible spring in the head of the tool.

Still another object of the invention is to provide novel means for cocking and releasing a spring actuated driving member.

While the foregoing statements are indicative in a general way of the nature of the invention, other more specific objects and advantages will be apparent to those skilled in the art upon a full understanding of the construction, arrangement and operation of the improved tool.

A preferred embodiment of the invention is presented herein by way of exemplification, but it will of course be appreciated that the invention is capable of incorporation in other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawings:

Fig. 1 is a side view of a fastener driving tool constructed in accordance with the invention;

Fig. 2 is a vertical longitudinal section through the tool;

Fig. 3 is a front end view of the tool;

Fig. 4 is a vertical longitudinal section through the tool, corresponding to Fig. 2 but showing the various parts just as the spring-pressed fastener driving member is about to be released to drive one of the fasteners;

Fig. 5 is a fragmentary side view of the upper front portion of the tool, with the operating handle in the cap-depressing position shown in Fig. 4;

Fig. 6 is a side view of the compression spring in the tool; and

Fig. 7 is a similar view of a relatively heavy substitute spring.

The tool shown in the drawings is what is known as a compression tacker. It is adapted to be used in driving U-shaped staples into wood, cardboard or other surfaces. The tool includes a head 10, a staple bar 11 which extends rearwardly from the lower portion of the head, a hand grip 12 which extends rearwardly from the upper portion of the head in vertically spaced relation to the staple bar, and an operating handle 13 which is pivoted at 14 to the rear portion of the hand grip and extends forwardly therefrom into a position directly above the upper front portion of the head.

The head 10 contains a driving block 15 which is movable vertically in a guideway 16. The block 15 is provided with a driving blade 17 which extends downwardly from the lower front edge of the block into a guideway 18. The guideway 18—which is just large enough to receive one staple at a time—is located between a removable portion 19 of the front wall of the head and the front end of the core 20 of the staple bar 11. The staples 21 straddle the core 20 within the bar 11 and are advanced forwardly one at a time into the guideway 18 by a follower slide 22 in the bar which is connected with a tensioned band spring 23.

The block 15 is provided with a socket 24 in which a compression spring 25 is seated. This spring, upon being compressed, provides the force with which the foremost staple is driven by the blade 17 down through the guideway 18. The upper end of the spring 25 bears against the underside of a depressible cap 26. The cap 26 is movable vertically a short distance with respect to the upper portion of the head 10, and is guided in its movement by headed studs 27 on the sides of the head which engage within vertically elongated bayonet slots 28 in the overlapping side walls of the cap. These pin-and-slot connections keep the cap 26 in place while permitting it to be moved vertically a short distance. They also permit the cap to be readily detached from the head by first depressing the cap against the resistance of the spring 25 and then pulling the cap off forwardly after the horizontal openings of the slots 28 have moved into positions in horizontal alignment with the shanks of the studs 27. The spring 25 can be quickly substituted for another spring (for instance the relatively heavy spring 29 shown in Fig. 7) as soon as the cap 26 has been removed in this manner.

The block 15 is provided, on the side thereof opposite the blade 17, with an elevating and tripping dog 30. The dog 30 is pivoted at 31 to the block and is provided at its upper end with a hook 32 and a beveled nose 33. The upper end of the dog 30 is urged rearwardly away from the upper end of the block 15 by a small spring 34 located between the dog and the block. The hook 32 on the dog normally engages with the front end of a lever 35. The lever 35 is located within the hand grip 12 and is rockably mounted intermediate its ends on a pin 36. This rock

lever is provided at its rear end with a downwardly inclined portion 37 with which an anti-friction roller 38 on a second lever 39 engages. The lever 39, which is relatively long, is located in the hand grip 12 immediately above the rock lever 35 and is pivoted at its rear end on a pin 40. The front end of the lever 39 is provided with an anti-friction roller 41 which bears against the under surface of the handle 13. The normal or inactive positions of the levers 35 and 39 are shown in Fig. 2. The front end of the lever 35—which engages with the hook 32 on the dog 30—is urged downwardly by a spring 42 which engages with the rear end of the lever 35. This spring serves to return the front end of the lever 35 into hooked engagement with the dog 30 after the block 15 has moved downwardly to drive a staple and also serves to return the handle 13 to its elevated position.

In operation the bottom of the tacker is placed flatly against the surface into which it is desired to drive the staple and the handle 13 is then pressed downwardly toward such surface. This movement of the handle imparts a generally corresponding movement to the underlying lever 39, causing the lever 35 to rock from the position shown in Fig. 2 to the position shown in Fig. 4. The front end of the lever 35 in moving upwardly carries with it the driving block 15, progressively compressing the spring 25 between the bottom of the socket 24 in the block and the underside of the cap 26. As the block 15 approaches the upper end of its movement the beveled nose 33 on the dog 30 cams against a cross pin 43 in the upper portion of the head 10, forcing the hook 32 on the dog forwardly out from engagement with the front end of the rock lever 35. Just before this release occurs a protuberance 44 on the underside of the front end of the handle 13 moves into engagement with the upper surface of the cap 26, forcing the cap downwardly a short distance. This downward movement of the cap further compresses the spring 25 at the instant of release and by offering additional resistance to the downward movement of the handle as it approaches its tripping position insures the tool being pressed firmly against the surface into which the staple is to be driven at the instant that the driving takes place.

The pin 43 is so located with respect to the nose 33 of the dog 30 in the elevated position of the latter as to defer the tripping action and consequent release of the driving member 15 until after enough pressure has been brought to bear by the handle 13 to cause the cap 26 to start yielding downwardly under the resistance offered by the then already compressed spring 25. This insures the staple being firmly, evenly and fully driven into the surface.

What is claimed is:

1. In a device of the character described, a body member adapted to be placed against the surface into which a fastener is to be driven, an operating handle on the body member adapted to be moved in the direction of said surface, a spring actuated driving member, a connection between the handle and the driving member for first elevating the driving member and then releasing the same when the handle is moved in said direction, and resiliently yieldable means for resisting movement of the handle in said direction just prior to the driving member being released, whereby to insure the body member being pressed firmly against said surface at the instant the fastener is driven, said means remaining inactive during all but the latter part of the movement of the operating handle.

2. In a device of the character described, a body member adapted to be placed against the surface into which a fastener is to be driven, an operating handle on the body member, a spring actuated driving member, a connection between the handle and the driving member for first elevating the driving member and then releasing the same when the handle is moved to operate the device, and resiliently yieldable means for requiring the body member to be pressed firmly against said surface before the driving member is released, said means remaining inactive during all but the latter part of the movement of the operating handle.

3. In a device of the character described, a body member adapted to be placed against the surface into which a fastener is to be driven, an operating handle on the body member adapted to be moved in the direction of said surface, a spring actuated driving member, a connection between the handle and the driving member for first elevating the driving member and then releasing the same when the handle is moved in said direction, and resiliently yieldable means for resisting movement of the handle in said direction just prior to the driving member being released, whereby to insure the body member being pressed firmly against said surface at the instant the fastener is driven, said resiliently yieldable means consisting of a compression spring which also serves to actuate the driving member.

4. In a device of the character described, a body member, a fastener driving member movably mounted in the body member, a coil spring positioned with one of its ends in engagement with the driving member for moving the latter to drive a fastener, a stop for engagement with the other end of the spring, and means for retracting the fastener driving member toward the stop to compress the spring, said stop being normally locked to the body against sidewise movement with respect to the direction in which the fastener driving member moves in driving a staple, and being depressible from said locked position in said direction against the resistance of the spring into an unlocked position in which it may be removed sidewise, whereby to expose and permit ready removal of the spring.

5. In a device of the character described, a body member, a fastener driving member movably mounted in the body member, a coil spring positioned with one of its ends in engagement with the driving member for moving the latter to drive a fastener, a stop for engagement with the other end of the spring, and means for retracting the fastener driving member toward the stop to compress the spring, said stop consisting of a sheet metal cap on the outside of the body member, studs projecting from the sides of the body member, and L-shaped bayonet slots in the sides of the cap for detachably interlocked engagement with the studs, said slots having locking portions which extend in the direction in which the fastener driving member moves in driving a staple and having releasing portions which open laterally with respect to the first mentioned portions, and said cap being depressible against the resistance of the spring far enough to bring the laterally opening portions of the bayonet slots into lateral alignment with the studs, and being removable sidewise upon being depressed, whereby to permit ready removal of the cap.

6. In a device of the character described, a body member adapted to be placed against the surface into which a fastener is to be driven, an operating handle on the body member adapted to be moved in the direction of said surface, a spring actuated driving member, a connection between the handle and the driving member for first elevating the driving member and then releasing the same when the handle is moved in said direction, and resiliently yieldable means engageable by the handle and located in the latter portion of the path of movement of the handle for resisting movement of the handle in said direction just prior to the driving member being released, whereby to insure the body member being pressed firmly against said surface at the instant the fastener is driven.

HELEN KRANTZ,
As Administratrix of the Estate of Edward Krantz, Deceased.