

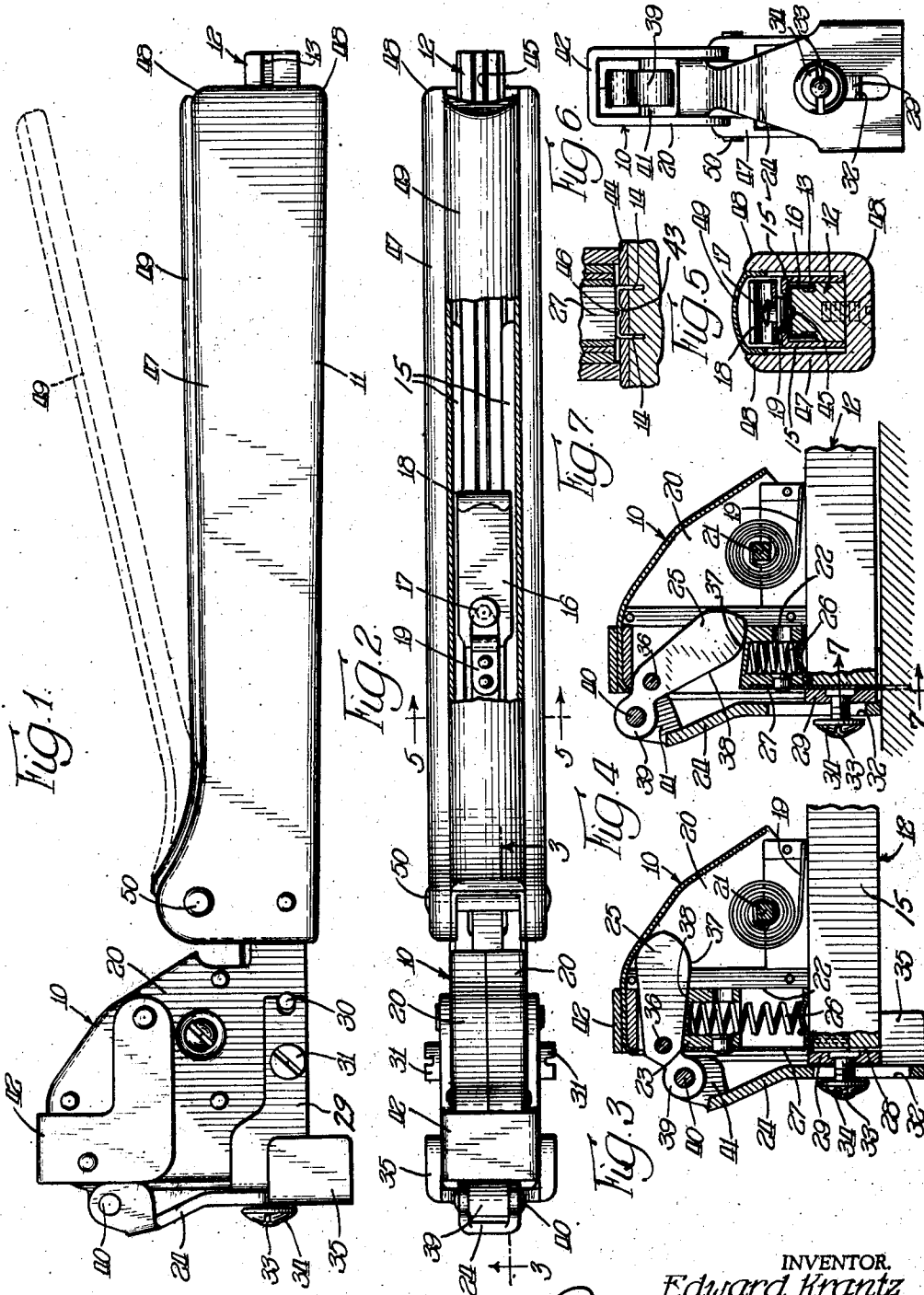
May 8, 1945.

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2,375,419

MAGAZINE HAMMER

Filed March 14, 1941



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UNITED STATES PATENT OFFICE

2,375,419

MAGAZINE HAMMER

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Application March 14, 1941, Serial No. 383,249

13 Claims. (Cl. 1—49)

This invention has to do with magazine hammers of the type used for driving staples, tacks and other kinds of fasteners.

The principal object of the invention is to provide an improved magazine hammer which is automatic in action, operates easily and smoothly, affords ample driving force with a minimum amount of movement, is light in weight, possesses a fine balance, is rugged in construction, and will give dependable service for an indefinitely long period of time.

Another important object of the invention is to provide a magazine hammer which holds an exceptionally large number of staples, loads from the rear, is easily accessible for loading, and has a long hand grip portion which extends rearwardly about the loading means without interfering in any way with the latter.

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 parts entering into the improved hammer.

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

In the accompanying drawing:

Fig. 1 is a side view of a magazine hammer construction in accordance with the invention;

Fig. 2 is a plan view of the hammer, with a portion of the magazine cover broken away to expose the staple bar and follower;

Fig. 3 is a vertical longitudinal section through the head of the hammer, taken on the line 3—3 of Fig. 2;

Fig. 4 is a similar section through the head, showing the position of the various parts at the moment of impact;

Fig. 5 is a vertical transverse section through the handle of the hammer, taken on the line 5—5 of Fig. 2;

Fig. 6 is a front view of the head of the hammer; and

Fig. 7 is a vertical transverse section through the head, taken on the line 7—7 of Fig. 4.

The magazine hammer shown in the drawing includes a head 10 and a handle 11. A staple-carrying bar 12 extends practically the full length of the hammer, on the inside of the same, from

the front end of the head 10 to the rear end of the handle 11.

The bar 12 is provided in its upper portion with a longitudinally extending staple guideway 13 of downwardly opening U-shaped cross section—of the same shape as the staples 14 used in the hammer. The staples are connected together in a long strip by adhesive material which permits the foremost staple to be readily separated from the others when the hammer strikes. The staples 14 straddle the bar 12, between inwardly flanged side plates 15 which form portions of the bar, and are advanced forwardly along the bar by a correspondingly shaped sheet metal follower 16.

The follower 16 slides freely in the guideway 13, and is provided on its upper surface with a coupling button 17. A finger piece 18, which is connected to the free end of a draw spring 19, is detachably coupled with the button 17 on the follower. The bar 12 can be loaded with staples for practically its entire length, leaving room only for the follower 16 at the rear end of the guideway 13.

The head 10 of the hammer includes two complementary sheet metal casing members 20 of generally triangular shape which are flanged toward each other along their front and rear edges to form a hollow structure and are secured along their lower edges to the sides of the bar 12 adjacent the front end of the latter. The head 10 contains—in addition to the usual torsion mounting 21 for the coiled portion of the spring 19—a vertically extending guideway 22, a driving block 23 in the guideway, a striker 24, and a cam 25. The driver 23 is urged upwardly in the guideway 22 by a spring 26 beneath the same and is provided at its front edge with a downwardly extending blade 27 in line with a vertically extending slot 28. The slot 28—which is of such size as to accommodate only the foremost staple projected into the same from the guideway 13—is formed between the front end of the bar 12 and the center portion of a U-shaped cap plate 29 which is rigidly but detachably secured to the sides of the head by locating pins 30 and screws 31.

The striker 24, which is vertically movable, fits slidably against the front portion of the cap plate 29 and is provided with a vertically extending slot 32 which engages with a forwardly projecting guide pin 33 on the cap plate. The pin 33 is threaded and is provided with a head-like nut 34 which keeps the striker from moving appreciably away from the cap plate. The lower portion of the striker 24 normally projects a short distance below the bottom of the front end

of the hammer, as shown in Fig. 3, and is provided with rearwardly extending side flanges 35 which loosely embrace the side portions of the cap plate.

The cam 25 is rotatably mounted near its front end on a stationary pivot pin 36 which extends across the guideway 22 above the upper end of the driver 23. The cam 25 is provided on its under side with a curved surface 37 which cams downwardly against the inclined upper surface 38 of the driver when the cam is rotated by the striker 24. The cam 25 is provided with a forwardly extending portion 39 which is apertured to rotatably receive a pin 40 carried by rearwardly extending side flanges 41 on the upper end of the striker 24.

When the hammer is swung downwardly into engagement with the object into which a staple is to be driven, the striker 24 upon coming into contact with the surface of the object will come to rest, the front end of the hammer will continue its downward movement into engagement with such surface, and the striker will rotate the cam 25 through an arc of about 60°, camming the driver 23 downwardly and causing the blade 27 to drive the foremost staple into the object, all as shown in Fig. 4. As soon as the front end of the hammer is lifted from the surface of the object, the parts will return to their normal positions, as shown in Fig. 3, and the next staple will be projected by the action of the spring 19 into a position directly beneath the lower edge of the blade 27, in readiness for the next staple driving operation.

The head 10 of the hammer is preferably provided at its top with a U-shaped reinforcing strap 42 which can be used as the impact surface of an ordinary hammer by merely inverting the hammer.

The staples 14 are preferably, though not necessarily, provided with downwardly looped center portions 43 which will afford an additional intermediate anchorage for the member 44 which is being fastened down. To accommodate the downwardly looped portion 43 the staple carrying bar 12 may be provided along its upper surface with a correspondingly shaped groove 45, as shown in Fig. 5, and the lower edge of the driving blade 27 may be provided with a correspondingly shaped projection 46, as shown in Fig. 7, which projection will conform to the downwardly looped portion 43 of the staple and will act to prevent any inadvertent sidewise movement of the staple while the latter is being driven.

The handle 11 includes a long upwardly opening channel member 47 which is secured to the bar 12 and extends from a point just behind the head 10 to a point adjacent the rear end of the bar. The corners of the channel member 47 are rounded at 48 to provide a well shaped hand grip. Because of the length of the handle the latter can be gripped at any point which the operator finds most convenient. The handle also includes a cover member 49 which complements the channel member 47 and normally closes off the opening along the top of the latter. The cover member 49 is pivoted at its front end to the front end of the channel member 47 by a pin 50 which extends between the sides of the channel member. The cover member 49 is held frictionally in its closed position, but is separable from the channel member 47 in the sense that it can be swung upwardly without difficulty into an out-of-the-way position, as shown in dotted lines in Fig. 1, when the hammer is being reloaded with staples. The

channel member 47 may advantageously be made of a transparent composition which will permit the operator to observe at any time how many staples are left in the hammer, without having to lift up the cover member 49.

If the hammer should become jammed for any reason, due to a defective or improperly sized staple entering the driving slot 28, the slot can be quickly cleared by merely releasing the screws 31 and swinging the cap plate 29, together with its associated striker 24, forwardly into an out-of-the-way position.

It will be observed that in the preferred embodiment of the invention shown herein the cam 25 in its normal position engages with the top of the driver 23 at a point close in to the pivotal axis of the cam, and that as the driver approaches its lowermost position this lever arm is lengthened. This results in an acceleration in the movement of the driver at the instant that the staple is being driven home, and insures the staple being driven all of the way into the object even with a comparatively light swing of the hammer. It will be observed that in the lowermost position of the driver 23 the cam 25 will come to rest in a downwardly inclined position in abutment with the top of the driver at an angle of roughly 30° to the vertical, thereby substantially opposing and slowing up the initial return movement of the spring 26 and eliminating any tendency of the hammer to bounce abruptly away from the surface of the object into which the staple has been driven.

I claim:

1. In a magazine hammer for driving staples or other fasteners, a head, a vertically movable striker slidably connected with the head, a vertically movable driver also slidably connected with the head, and a cam connected with the striker in camming engagement with the driver for moving the latter downwardly to drive a staple upon the cam being turned by the striker through but a portion of one revolution.

2. In a magazine hammer for driving staples or other fasteners, a head, a vertically movable striker slidably connected with the head, a vertically movable driver also slidably connected with the head, and a cam pivotally mounted in the head, said cam being pivotally connected with the striker in camming engagement with the driver for moving the latter downwardly to drive a staple upon the cam being rocked about its pivot by the striker through but a portion of one revolution.

3. In a magazine hammer for driving staples or other fasteners, a head, a vertically movable striker, a vertically movable driver, and a pivotally mounted cam connected with the striker in camming engagement with the driver for moving the latter downwardly to drive a staple, said cam in its normal position engaging the driver through a short lever arm, which lever arm increases substantially in length as the driver moves downwardly, whereby to accelerate the rate of movement of the driver as the latter approaches its lowermost position.

4. In a magazine hammer for driving staples or other fasteners, a head, a vertically movable striker, a vertically movable driver, and a pivotally mounted cam connected with the striker in camming engagement with the driver for moving the latter downwardly to drive a staple, said cam being moved by the striker through an angle of approximately 60°.

5. In a magazine hammer for driving staples

or other fasteners, a head, a vertically movable striker, a vertically movable driver, and a pivotally mounted cam connected with the striker in camming engagement with the driver for moving the latter downwardly to drive a staple, said cam being moved by the striker through an angle of approximately 60° and stopping with the cam in a downwardly inclined position in abutment with the top of the driver at an angle of approximately 30° to the vertical.

6. In a magazine hammer, a head provided with a readily releasable cap plate, a vertically movable striker slidably associated with the cap plate, a vertically movable driver within the head, and a power transmitting connection between the striker and the driver within the head for transmitting the movement of the striker to the driver, said striker being movable into an out-of-the-way position as a unit with the cap plate upon release of the latter.

7. In a magazine hammer, staple carrying bar extending substantially the entire length of the hammer, a head on the front end of the bar, and a handle extending from the head to a point adjacent the rear end of the bar in encompassing relation to the latter, said handle being provided with a part which is separable with respect to the remainder of the handle to afford ready access to the bar.

8. In a magazine hammer, a staple carrying bar extending substantially the entire length of the hammer, a head on the front end of the bar, and a handle extending from the head to a point adjacent the rear end of the bar in encompassing relation to the latter, said handle comprising an upwardly opening channel member and a complementary cover member which is movable into an out-of-the-way position to afford ready access to the bar.

9. In a magazine hammer, a staple carrying bar extending substantially the entire length of the hammer, a head on the front end of the bar, and a handle extending from the head to a point adjacent the rear end of the bar in encompassing relation to the latter, said handle comprising an upwardly opening channel member and a complementary cover member which is pivoted at its front end to the front end of the handle and may be swung forwardly and upwardly to afford ready access to the bar throughout substantially the entire length of the handle.

10. In a magazine hammer for driving staples or other fasteners, a head, a vertically movable striker slidably connected with the head, a vertically movable driver also slidable connected with the head, and a power transmitting connection between the striker and the driver for transmitting the movement of the striker to the driver, said striker comprising a vertically elongated sheet metal member which extends downwardly from a point adjacent the upper end of the front portion of the head and terminates at its lower end in an angularly disposed impact portion.

11. In a magazine hammer, a handle contain-

ing a longitudinally extending guideway for holding a supply of the staples to be driven, a head on the front end of the handle, a cap releasably secured to the front part of the head, said cap and head together forming a forwardly separable vertically extending guideway in communication with the front end of the first mentioned guideway for directing the foremost staple into the object into which it is to be driven, a vertically movable driver mounted in the head for driving the foremost staple downwardly through the second mentioned guideway, a vertically movable striker carried by the cap in front of the head, and a power transmitting connection between the striker and the driver for transmitting the movement of the striker to the driver, said striker upon release of the cap being removable with the latter as a unit into an unobstructive position in which the second mentioned guideway is opened up and exposed.

12. In a magazine hammer for driving staples or other fasteners, a head, a work striker movably associated with the head and provided with a vertically movable portion for impact with the work into which the staple is to be driven, a staple driver also movably associated with the head and provided at its upper end with a substantially flat top portion, a power transmitting member pivotally mounted in the head, said member being provided at one side of its pivotal mounting with an arm portion which is connected with the striker and at the opposite side of its mounting with another arm portion which projects over the top portion of the driver, and a spring housed under vertical compression within a recess in the under side of the driver between the latter and an underlying portion of the head for moving the driver upwardly into engagement with the overlying arm portion of the power transmitting member.

13. In a magazine hammer for driving staples or other fasteners, a head, a work striker movably associated with the head and provided with a vertically movable portion for impact with the work into which the staple is to be driven, a staple driver also movably associated with the head and provided at its upper end with a substantially flat top portion, a power transmitting member pivotally mounted in the head, said member being provided at one side of its pivotal mounting with an arm portion which is connected with the striker and at the opposite side of its mounting with another arm portion which projects over the top portion of the driver, and a spring housed under vertical compression within a recess in the under side of the driver between the latter and an underlying portion of the head for moving the driver upwardly into engagement with the overlying arm portion of the power transmitting member, said power transmitting member being located with its pivotal mounting above the top portion of the driver in all vertical positions assumed by the latter.

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