April 30, 1946. K. F. MORBERG 2,399,374

MAGAZINE HAMMER

Filed Aug. 7, 1944 2 Sheets-Sheet 1

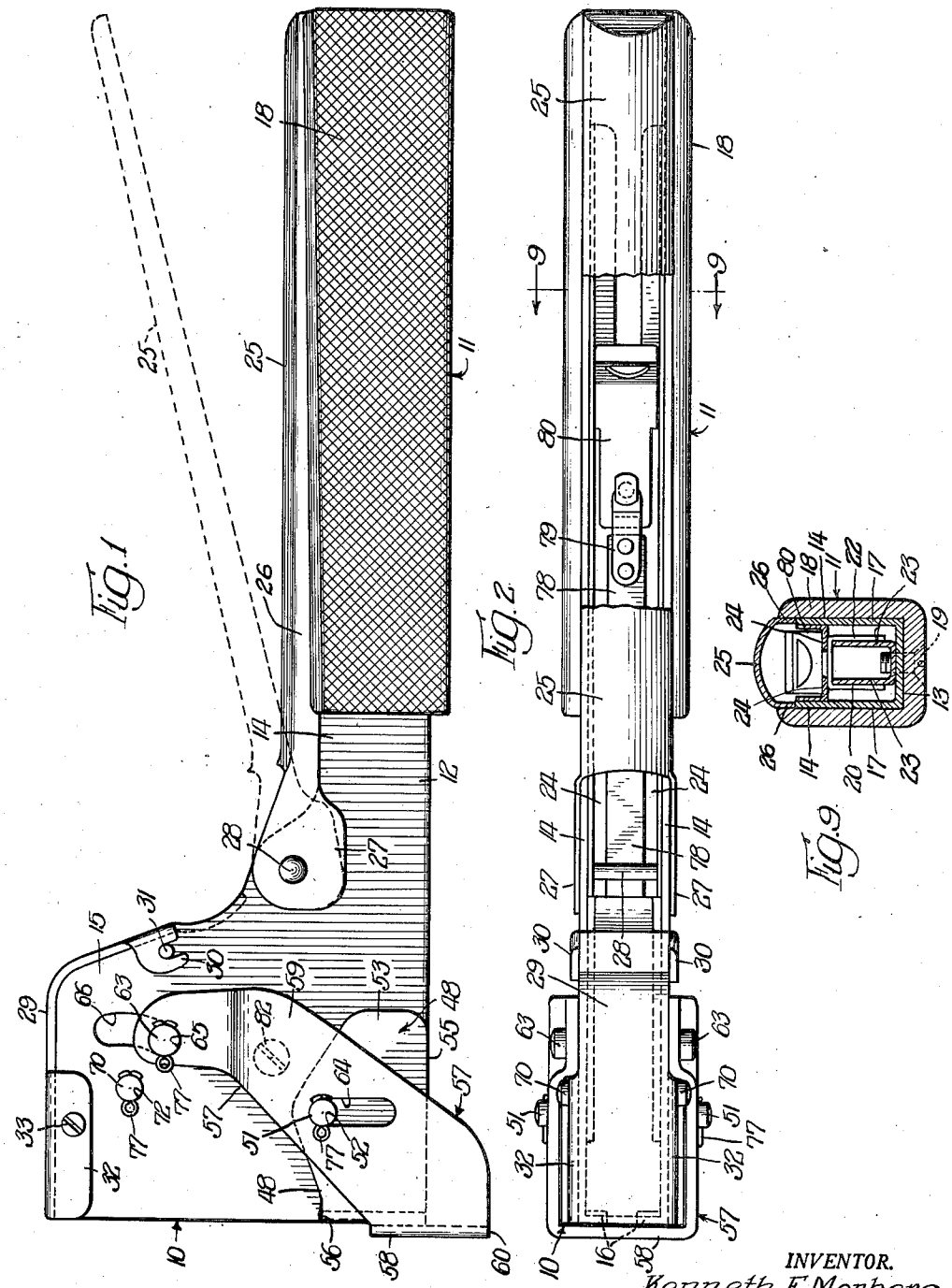

Fig. 1

Fig. 2

Fig. 3

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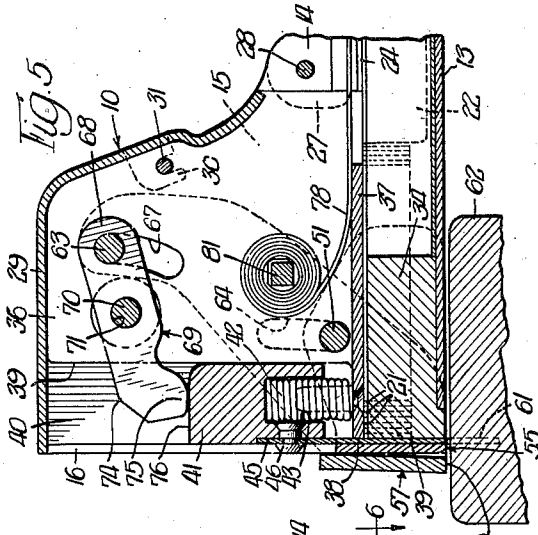

Fig. 5

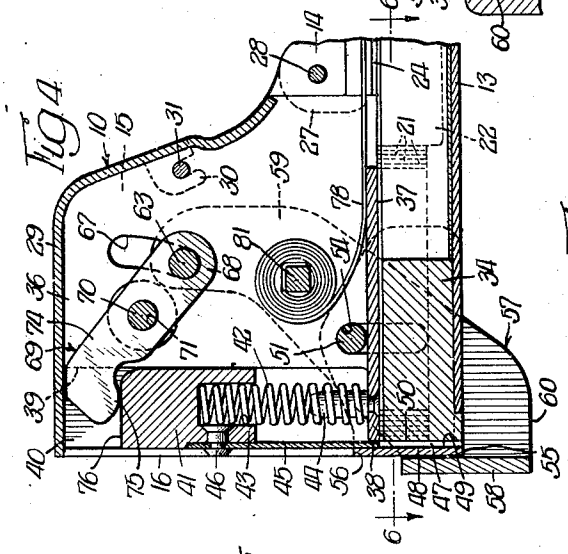

Fig. 4

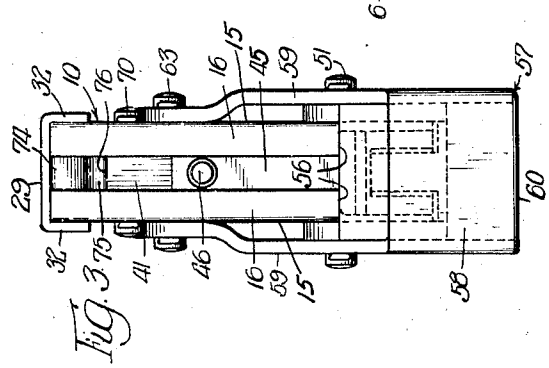

Fig. 3

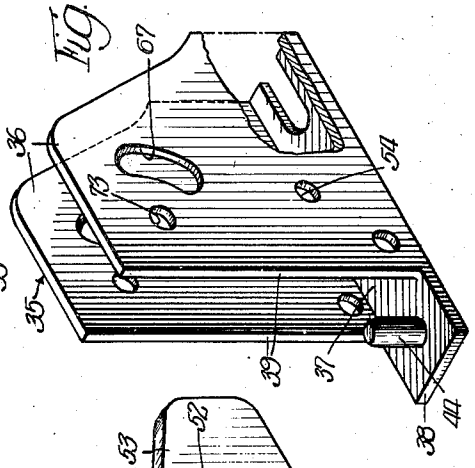

Fig. 8

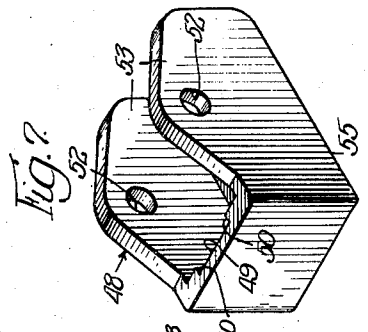

Fig. 7

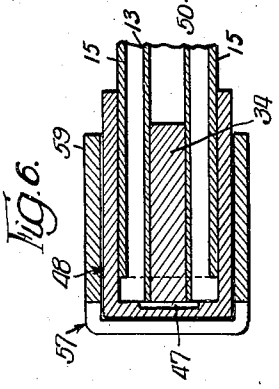

Fig. 6

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UNITED STATES PATENT OFFICE

2,399,374

MAGAZINE HAMMER

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Application August 7, 1944, Serial No. 548,396

10 Claims. (Cl. 1—49)

This invention has to do with magazine hammers of the type disclosed in Krantz application Serial No. 383,249 filed March 14, 1941.

The purpose of the present invention is to provide an improved magazine hammer of the type referred to which is quite economical to manufacture, will stand up without breakage under the most severe usage, is easy to keep in repair, can be used in driving staples close up into corners and near other obstructions affording but little space for the head, and will drive the staples rapidly one after the other with but a minimum of effort.

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 organization.

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 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 hammer constructed in accordance with the invention;

Fig. 2 is a plan view of the hammer, with a portion of the removable cover for the handle broken away;

Fig. 3 is an end view of the head of the hammer;

Fig. 4 is a vertical longitudinal section through the head, showing the several parts of the staple driving mechanism in the positions which the same assume before driving a staple;

Fig. 5 is a similar section, showing the same parts in the positions which they assume upon completing the driving operation;

Fig. 6 is a fragmentary horizontal section through the lower front portion of the head of the hammer, taken on the line 6—6 of Fig. 4;

Fig. 7 is a perspective view of the removable cap which forms the front and side walls of the vertical guideway through which the staple is driven into the work;

Fig. 8 is a perspective view of the bracket which lines the inside of the head and forms the rear wall of the vertical guideway for the driving member; and

Fig. 9 is a vertical transverse section through the handle, taken on the line 9—9 of Fig. 2.

The hammer shown in the drawings is characterized primarily by an upstanding head portion 10 which contains the staple driving mechanism and by an elongated handle portion 11 which contains the supply of staples and the spring actuated follower for advancing the same.

The main frame of the hammer consists of a long upwardly opening sheet metal channel member 12 which is provided with a bottom web 13 and with upstanding side flanges 14. The front portions 15 of the side flanges are of sufficient height to house certain parts of the staple driving mechanism and are provided at their front ends with narrow vertically extending inturned flanges 16. The rear portions 17 of the side flanges 14 are enclosed within an upwardly opening composition channel member 18 which forms the hand grip.

The channel member 18 is secured to the channel member 12 by a plurality of screws 19. The screws 19 also serve to secure another upwardly opening sheet metal channel member 20 in position within the channel member 12. The member 20 constitutes a staple holding bar on which the supply of staples 21 are placed and along which they slide in moving forwardly under the impetus of the usual spring actuated follower 22. The sides 23 of the member 20 are spaced from the sides 17 of the member 12 to provide clearance for the legs of the staples. Small angle strips 24 are secured to the sides 17 above the sides 23 to keep the staples in position astraddle of the member 20.

The otherwise open top of the handle portion 11 is closed by a downwardly opening sheet metal channel member 25. The member 25 has side flanges 26 which rest upon the edges of the sides of the frame member 12 and fit with a certain amount of friction between the upwardly projecting portions of the sides of the hand grip member 18. The member 25 is provided at its front end with outwardly offset ears 27 which lap the sides 14 of the frame member 12 at a point just rearwardly of the head portion 10 and are pivotally connected with such sides by a cross pin 28. To obtain access to the staple holding bar within the handle portion 11 in order to replenish the supply of staples, it is merely necessary to swing the rear end of the member 25 upwardly into an out-of-the-way position.

The head portion 10 is closed across its top by a removable cover strip 29. The strip 29 is held in place at its rear end by notched side flanges 30 on the same which interlock with studs 31 on the sides of the member 12, and is held in place at its front end by apertured side flanges 32 on

the same which receive screws 33 threaded into such sides.

The staple supporting member 20 is provided within the head portion 10 with a solid metal filler block 34 which completes the front end of the horizontal guideway for the staples. The block 34 terminates rearwardly of the inside front face of the head portion 10 the distance of the thickness of a single staple. An upwardly opening U-shaped sheet metal bracket 35 is welded or otherwise fixedly secured within the head portion 10 with its side flanges 36 reenforcing the inner walls of the front portions 15 of the sides 14 of the frame member 12 and with its bottom 37 located just above the block 34 in horizontal alignment with the rearwardly disposed bottoms of the angle strips 24 in the handle portion 11.

The bottom 37 of the bracket 35 is disposed with its front edge 38 in vertical alignment with the front face 39 of the filler block 34 and forms with the latter the rear wall of the vertical guideway through which the staples are driven. The front edges 39 of the sides of the bracket 35 are set back with respect to the front edge 38 of the bottom 37 and are arranged in a vertical plane to form the rear wall of the vertical guideway 40 in which the driving member 41 of the staple driving mechanism operates. The driver 41 is adapted to move up and down within the guideway 40 in a position directly above the forwardly projecting portion of the bottom 37 of the bracket 35. A compression spring 42 for the driver 41 is located within a downwardly opening recess 43 in the bottom of the latter and is centered at its lower end on an upwardly projecting stud 44 carried by the forwardly projecting portion of the bottom 37.

The driver 41 is a solid metal block of rectangular form. It is recessed on its front face to receive a narrow downwardly projecting blade 45 flush with such face. The blade 45 is fixedly secured to the driver 41 by a headed rivet 46 which projects forwardly into the gap present between the inturned flanges 16. The blade 45 is of substantially the same thickness and width as one of the staples, and moves up and down with the driver 41 in a vertical guideway 47 located at the front edge 38 of the bottom 37 of the bracket 35. When the blade 45 moves downwardly in the guideway 47 it engages the top of the foremost staple and drives the latter down through the lower part of such guideway into the underlying work. The guideway 47 is formed in a shallow groove in the front part of a rearwardly opening U-shaped cap 48—the bottom of the groove defining the front wall 49 of the guideway and the sides of the groove defining the side walls 50 of the guideway.

The cap 48 is detachably fastened to the lower front portion of the head of the hammer by a pin 51 which extends through apertures 52 in the sides 53 of the cap and through other registering apertures 54 in the sides 14 of the member 12 and sides 36 of the bracket 35. The lower edge 55 of the cap is disposed substantially flush with the bottom 13 of the member 12, and the lower portions of the inturned flanges 16 on the sides 14 of the member 12 are cut away at 56 to accommodate the front part of the cap 48 and provide a fixed vertical abutment for the latter.

A work striking member 57 of generally U-shaped form having a vertically disposed front portion 58 and rearwardly and upwardly extending side portions 59 loosely encompasses the cap 48 and is adapted to reciprocate vertically with respect to the latter. The lower edge 60 of the striker 57 normally projects a substantial distance below the lower edge 55 of the cap 48. When the striker 57 is brought down smartly against the work it moves in a generally vertical direction relative to the head of the hammer from the position shown in Fig. 4 to the position shown in Fig. 5. In Fig. 5 the hammer is illustrated as just having driven a staple 61 into a piece of work 62.

The striker 57 is guided in its vertical movement by the previously mentioned stationary pin 51 and by an arcuately movable pin 63. The sides 59 of the striker are provided near their lower ends with vertically elongated slots 64 through which the ends of the pin 51 project, and are provided near their upper ends with circular apertures 65 within which the ends of the pin 63 fit. The pin 63 moves up and down in vertically elongated slots 66 of slightly arcuate form provided in the sides 14 of the member 12, and in registering slots 67 provided in the sides 36 of the bracket 35. The pin 63 is carried by the rear end 68 of a motion converting rocker member 69 located within the head portion 10.

The rocker 69 is pivotally mounted intermediate its ends on a pin 70 which extends through aligned openings 71, 72 and 73 located respectively in the rocker 69, the sides 14 of the member 12 and the sides 36 of the member 35. The front end 74 of the rocker 69 is provided with a downwardly facing cam-shaped nose 75 which engages with the upper flat surface 76 of the underlying driver 41

The pins 51, 63 and 70 are all readily removable, and are held against inadvertent displacement by cotter pins 77 or other suitable means. The several parts of the staple driving mechanism can be quickly separated from the head portion 10 of the hammer for cleaning or repair by merely withdrawing these pins and removing the cover 29. In the event of a jam the vertical guideway 47 through which the staples are driven into the work can be quickly cleared of a deformed staple by simply withdrawing the lower pin 51 and moving the cap 48 forwardly far enough to release the staple from the guideway.

The follower 22 which rides on the staple holding bar 20 behind the supply of staples 21 is urged forwardly by a long ribbon-like spring 78 which is connected at its rear end by a link 79 to a handle 80 on the follower. The front end of the spring 78 is coiled under any desired degree of tension on a pin 81 located in the head portion 10. The pin 81 has a squared portion for non-rotatable engagement within a squared aperture in one of the side walls of the head portion and is secured in any desired position of adjustment by an exteriorly accessible screw 82.

The hammer operates as follows: The staples 21 on the staple guiding bar 20 are urged forwardly along the bar by the spring actuated follower 22, causing the foremost staple to be projected into the vertical guideway 47 directly beneath the lower end of the blade 45 carried by the driver 41. When the hammer is struck against a piece of work the striker 57 comes abruptly to rest upon contacting the work and the head portion 10 of the hammer continues moving downwardly. The resulting relative movement between the striker 57 and the head portion oscillates the rocker 69 causing the nose portion 75 of the latter to force the driver 41 and blade 45 downwardly, driving the foremost staple into the work. As soon as the hammer is raised from the work the driver 41, with the

blade 45, will return to its elevated position again, oscillating the rocker 69 in the opposite direction and shifting the striker 57 back into its normal position, in readiness for another staple driving operation.

I claim:

1. In a magazine hammer for driving staples or other fasteners, a head, a vertically movable upwardly spring pressed staple driver positioned in the head, a pivotally mounted rocker having a forwardly extending portion in engagement with the driver for moving the latter downwardly, a vertically movable work striker having a forwardly extending portion for contact with the work and upwardly and rearwardly disposed side portions connected rearwardly of the driver with a rearwardly extending portion of the rocker, and means for causing the striker to shift bodily relative to the head in a generally vertical direction when the forwardly extending portion of the striker is brought forcibly down into engagement with the work.

2. In a magazine hammer for driving staples or other fasteners, a head, a handle, an upwardly opening sheet metal channel member fixedly secured in the head and in the handle and extending longitudinally of the hammer from the front end of the head to the rear end of the handle, a second upwardly opening channel member nested within the first channel member and secured to the bottom of the latter with its sides in laterally spaced relation to the sides of the first channel member, and inwardly directed flange members on the sides of the first channel member in vertically spaced relation to the upper edges of the sides of the second channel member, the sides of the second channel member forming in conjunction with said inwardly directed flange members a longitudinally extending guideway in the handle of the hammer for supporting a supply of staples, and staple driving means located in the head at the front end of said guideway for receiving and driving the foremost staple.

3. In a magazine hammer for driving staples or other fasteners, an upwardly opening sheet metal channel member forming the head of the hammer, an upwardly opening U-shaped bracket positioned within the channel member, the front edges of the sides of the channel member being provided with inturned vertical flanges, and the front edges of the sides of the bracket being arranged rearwardly of the inturned flanges in spaced parallel relation to the same to provide therebetween a vertical guideway, and a staple driving mechanism for the hammer including a vertically reciprocable driver mounted in said guideway, said U-shaped bracket having a base portion extending partly beneath said driver, spring means connecting said driver and said extending base portion of said U-shaped bracket.

4. In a magazine hammer for driving staples or other fasteners, a head provided with a vertically extending guideway, a vertically movable staple driver positioned in the head for driving a staple downwardly through the guideway into a piece of work, a cap on the head which forms the front part of the guideway, a pin for releasably securing the cap in position, a vertically movable work striker which embraces the cap and slidably engages the ends of the pin, and motion converting means within the head in connection with the striker and the driver for moving the driver downwardly within the head to drive a staple upon the striker forcibly engaging with the work and moving upwardly with respect to the head.

5. In a magazine hammer for driving staples or other fasteners, a head provided with a vertically extending guideway, a vertically movable staple driver positioned in the head for driving a staple downwardly through the guideway into a piece of work, a cap on the head which forms the front part of the guideway, a pin for releasably securing the cap in position, a vertically movable work striker which embraces the cap and slidably engages the ends of the pin, and motion converting means within the head in connection with the striker and the driver for moving the driver downwardly within the head to drive a staple upon the striker forcibly engaging with the work and moving upwardly with respect to the head, said pin upon being withdrawn permitting both the striker and the cap to be moved into an out-of-the-way position to afford access to the guideway.

6. In a magazine hammer for driving staples or other fasteners, a head, a vertically movable upwardly spring pressed staple driver positioned in the head, means having a forwardly extending portion in engagement with the driver for moving the latter downwardly, a vertically movable work striker having a forwardly extending portion for contact with the work and rearwardly disposed side portions connected rearwardly of the driver with a rearwardly extending portion of said first means, and means for causing the striker to shift bodily relative to the head in a generally vertical direction when the forwardly extending portion of the striker is brought forcibly down into engagement with the work.

7. In a magazine hammer for driving staples or other fasteners, a head, a vertically movable staple driver positioned in the head, resilient means urging said driver upwardly, pivotal means having a portion in engagement with the driver for moving the latter downwardly, a vertically movable work striker having a forwardly extending portion for contact with the work, operating means connecting the work striker and said pivotal means to move the driver downwardly, said connections being located rearwardly of the forward portion of the work striker.

8. In a magazine hammer for driving staples or other fasteners, a head provided with a vertically extending guideway, a vertically movable staple driver positioned in the head for driving a staple downwardly through the guideway into a piece of work, a cap on the head which forms the front part of the guideway, a vertically movable work striker which embraces the cap, means guiding the work striker in its vertical movement, motion converting means connecting the striker and the driver for moving the driver downwardly within the head to drive a staple upon the striker forcibly engaging with the work and moving upwardly with respect to the head.

9. In a magazine hammer for driving staples or other fasteners, a head provided with a vertically extending guideway, a vertically movable staple driver positioned in the head for driving a staple downwardly through the guideway into a piece of work, a cap on the head which forms the front part of the guideway, a vertically movable work striker which embraces the cap, means guiding the work striker in its vertical movement, motion converting means connecting the striker and the driver for moving the driver downwardly within the head to drive a staple upon the striker forcibly engaging with the work

and moving upwardly with respect to the head, said motion converting means being located rearwardly of the forward face of the movable work striker.

10. In a magazine hammer for driving staples or other fasteners, a head, a handle comprising an elongated U-shaped member, an upwardly opening sheet metal channel member secured within the U-shaped handle member and extending from the front end of the head to the rear end of the handle, a second upwardly opening channel member nested within the first channel member and secured to the bottom of the latter with its sides in laterally spaced relation to the sides of the first channel member, and inwardly directed flange members on the sides of the first channel member in vertically spaced relation to the upper edges of the sides of the second member, the sides of the second channel member forming in conjunction with said inwardly directed flange members a longitudinally extending guideway in the handle of the hammer for supporting a supply of staples, a cover member pivoted to said head and having downwardly directed flanges adapted to fit snugly within the U-shaped handle member and in engagement with the first mentioned channel member when in closed position.

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