

April 18, 1944.

J. T. WHEELER

2,346,884

NAIL DRIVING DEVICE

Filed Oct. 7, 1941

2 Sheets-Sheet 1

Fig. 1.

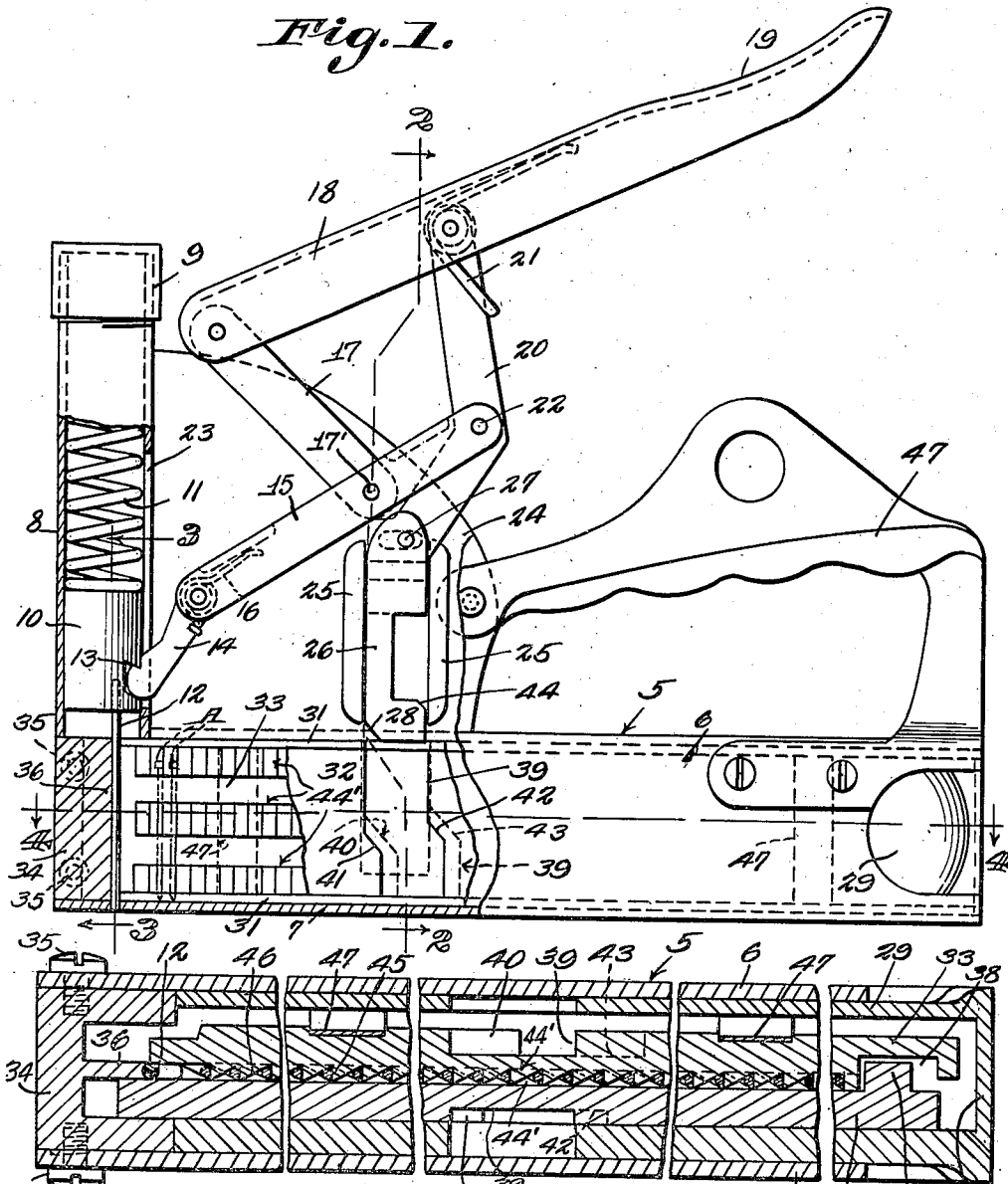
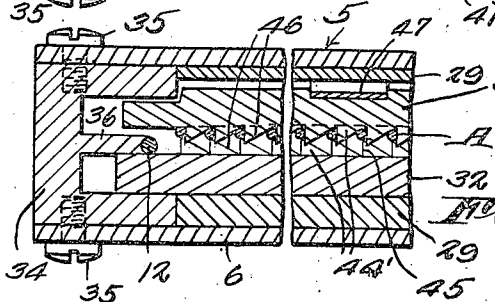


Fig. 4.

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Fig. 5. BY *Chas. H. Wheeler*



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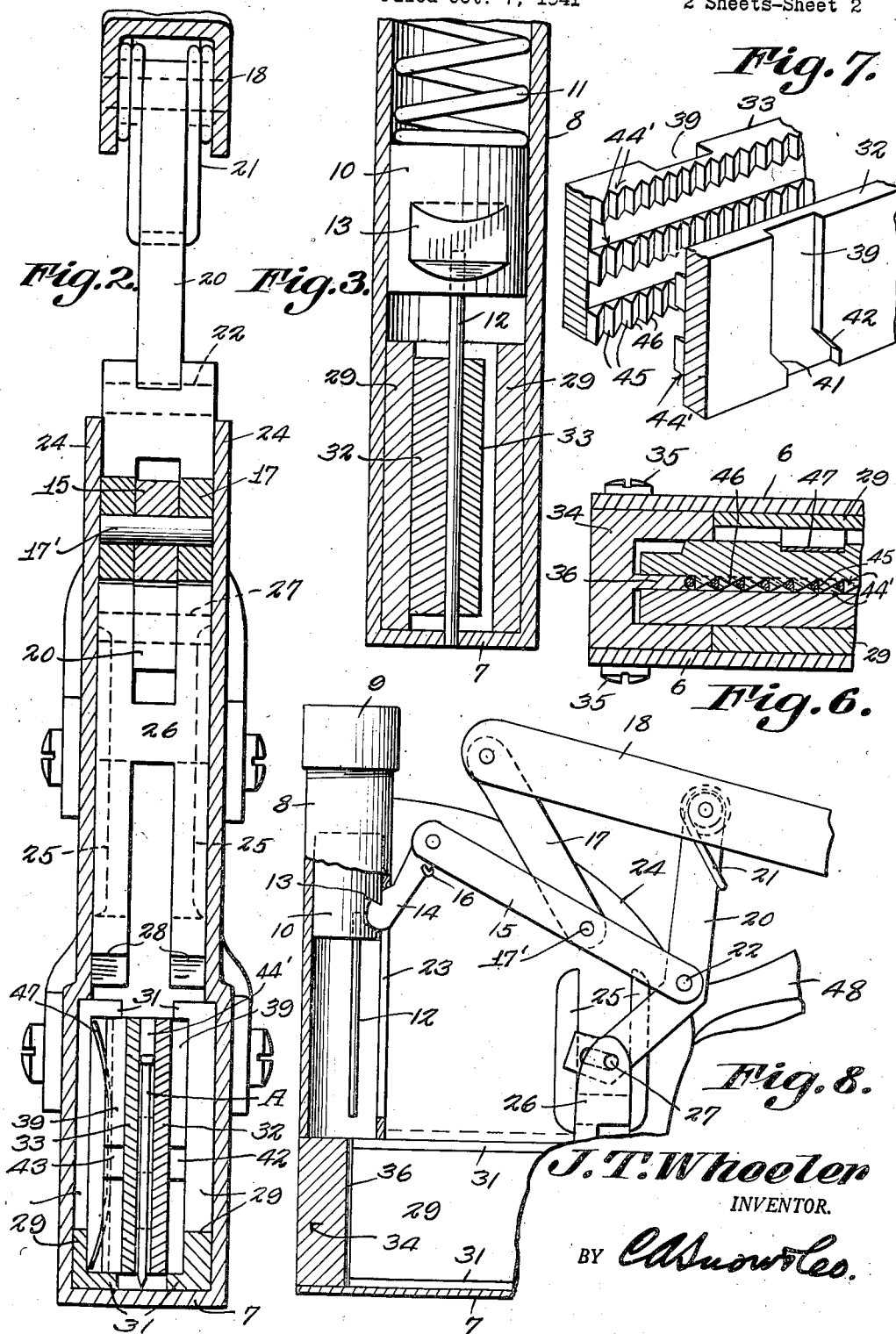
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,346,884

NAIL DRIVING DEVICE

James Thomas Wheeler, Atlanta, Ga.

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6 Claims. (Cl. 1-46)

This invention relates to hand machines designed primarily for driving nails, an object of the invention being to provide a device of this character embodying a magazine in which the nails are held, means being provided for advancing a nail to a position to be driven, with each operation of the handle to operate the hammer and driving pin.

An important object of the invention is to provide a device of this character wherein the nails held within the magazine, will be advanced one at a time, with each operation of the handle and hammer of the machine.

Another object of the invention is the provision of a nail feeding means which will insure against more than one nail being moved to a position directly under the hammer, at each operation of the handle, thereby eliminating any possibility of the nails jamming, to render the operation of the machine difficult.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein described, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 is a side elevational view of a nail driving device constructed in accordance with the invention, parts thereof being broken away illustrating the hammer and forward end of the nail magazine.

Figure 2 is a sectional view taken on line 2-2 of Figure 1.

Figure 3 is an enlarged sectional view taken on line 3-3 of Figure 1.

Figure 4 is a sectional view taken on line 4-4 of Figure 1.

Figure 5 is a fragmental sectional view illustrating the nail being fed from one compartment of the magazine to another.

Figure 6 is a fragmental sectional view illustrating the positions of the feeding bars of the magazine when a nail has been moved to a position under the hammer.

Figure 7 is a fragmental perspective view of the cooperating feed bars of the magazine.

Figure 8 is a fragmental elevational view partly in section, illustrating the position of the hammer, prior to its release.

Referring to the drawings in detail, the body

portion of the device is indicated generally by the reference character 5 and is of channel construction, the body portion comprising side plates 6 and a bottom 7. Rising from one end of the body portion, and formed integral therewith, is a hammer barrel 8 which is circular in cross section, the upper end thereof being closed by means of the removable cap 9.

As shown, the hammer which is indicated at 10, is of a size and shape to fit within the hammer barrel 8 for free sliding movement. A coiled spring indicated at 11 is disposed within the hammer barrel and rests on the upper end of the hammer 10, to normally urge the hammer downwardly. Secured to the hammer 10, is a driving pin 12 which is so located that it will fall directly over a nail which is fed through the body portion, and which is to be driven by the hammer.

A recess indicated at 13 is formed in the outer surface of the hammer, and the recess is so constructed that a sharp edge is provided, to be engaged by the pivoted arm 14, which is provided with a notch to receive the sharp edge. The arm 14 is pivotally connected at the forward end of the bar 15 and a spring member 16 is provided on the bar, one end of the spring member being connected with the arm 14, while the opposite end thereof bears against the bar 15, to normally urge the arm 14 towards the hammer 10. The bar 15 is pivotally connected with the stationary links 17 which are secured to the side plates 24 of the body portion, by means of the pin 17'. The forward end of the lever 18 is pivotally connected with the stationary links 17 and has its rear end constructed to provide a handle 19. A bell crank lever indicated at 20 has pivotal connection with the lever 18, at a point slightly in advance of the vertical line drawn intermediate the ends of the lever.

A spring indicated at 21 has one of its ends bearing against the bell crank lever 20, the opposite end thereof bearing against the lever 18, normally urging the lever 18 and particularly the handle end thereof, upwardly. The bar 15 connects with the bell crank lever 20 at 22. In order that the arm 14 may move longitudinally of the hammer barrel, a longitudinal slot 23 is formed in the hammer barrel.

The body portion also includes side plates 24 spaced apart, adjacent to the front end of the body portion. Extending inwardly from the inner surfaces of the side plates 24, are pairs of spaced vertical ribs 25, between which the vertically movable cam 26 operates, the cam 26 being piv-

totally connected to the lower end of the bell crank lever 20, at 27. The cam 26 embodies spaced leg members, the lower ends of which are beveled as at 28.

The magazine in which the nails are contained and fed to the hammer, is of exceptional importance in the operation of the device, since the magazine insures against more than one nail being fed to the driving pin, at each operation of the lever 18. The magazine is also constructed to insure against the nails jamming to prevent the operation of the machine. The magazine comprises a removable main section embodying spaced plates 29 that are connected at their outer ends, by means of the end member 30, formed integral therewith. These side plates 29 are so arranged that they will slide between the side plates 6 of the body portion of the device, from the open end of the body portion and be held in place by frictional contact with said side plates, as clearly shown by Fig. 4 of the drawings. Upper and lower inwardly extended flanges 31 are formed along the longitudinal edges of the side plates 29, and extend inwardly therefrom, the flanges providing guides for the movable bars 32 and 33 of the magazine. Mounted between the forward ends of the side plates 6, is a spacing block 34, which is held in position by means of the screws 35, the spacing block being formed with cutout portions, providing a web 36 that has its inner edge curved to conform to the curvature of the driving pin 12, and nails which may pass from the magazine, to the curved surface of the web. The spaces between the web 36 and side edges of the block 34, provide guides for the forward ends of the bars 32 and 33, as clearly shown by Figures 4 and 5 of the drawings. Extending inwardly from the bar 32, at a point adjacent to the rear end thereof, is a rib 37 which is adapted to fit within the recess 38 formed in the inner surface of the bar 33, the recess 38 being appreciably wider than the rib 37, so that the bar 33 may slide with respect to the bar 32. Formed in the bars 32 and 33, and disposed at points adjacent to the centers of the bars, are recesses 39, which recesses provide upwardly facing inclined surfaces 40 and 41 and downwardly facing inclined surfaces 42 and 43. These recesses, are disposed directly under the vertically movable cam member 26, so that as the cam member 26 moves downwardly, it will pass into the recesses 39. As the cam member 26 moves downwardly into the recesses, it will be obvious that the beveled surfaces 28 thereof will engage the inclined surfaces 40 and 41, moving the bars 32 and 33 forwardly and since the inclined surface 40 is disposed above the inclined surface 41, the cam surface 40 will be engaged prior to the engagement of the member 26 with the cam surface 41, moving the bar 33 in advance of the bar 32. Upon upward movement of the cam 26, the beveled surfaces 44 thereof, will move over the cam surfaces 43 and 42 sliding the bars rearwardly, or reversing the movement of the bars. Disposed on the adjacent inner surfaces of the bars 32 and 33, and arranged longitudinally thereof, are spaced ribs 44', the ribs of one bar being arranged so that they will move between the ribs of the adjacent bar. The ribs 44' are formed with teeth, which are so constructed that they provide shoulders 45 and inclined surfaces 46, leading to the shoulders. The spaces formed by the teeth, provide compartments for the nails which are driven with the machine, and which

in the present showing are indicated at A. Wide spring members 47 are disposed in recesses formed in the outer surface of the bar 33. The free ends of the spring members bearing against the side plate 29, adjacent thereto. These spring members 47 tend to urge the bar 33, towards the bar 32, gripping the nails within their compartments.

The handle is indicated by the reference character 48 and rises from one end of the body portion 5. The forward end of the handle is secured in position by the bolts 49 which extend through the handle and side plates 24.

When using the device, the magazine is removed from the body portion and the nails to be driven are positioned in the various compartments of the magazine, and the magazine is repositioned.

The device is held in the hand of the user by gripping the handles 47 and 19. As pressure is applied to the handle portion 19 of the lever 18, the hammer 10 is elevated within the hammer barrel, against the tension of the coiled spring 11. When the hammer has reached the limit of its upward movement, the coiled spring is tensioned, and upon further pressure applied to the handle portion 19 of the lever 18, the pivoted arm 14 snaps away from the hammer 10. It will of course be understood that the driving pin 12 is now directly over a nail, and that the pressure of the spring 11 acts to urge the hammer and driving pin downwardly, setting the nail.

With the downward movement of the lever 18 caused by pressure directed to the handle 19, the beveled edges of the vertical movable cam 26, move over the inclined surfaces 40, moving the bar 33 forwardly, and since the nails rest against the shoulders of the compartments of the bar 33, the nails will be advanced over the inclined surfaces of the compartments, to take the positions shown by Figure 5 of the drawings. Upon further movement of the lever, the bevel surface of the cam 26, at the opposite side of the cam, engages the inclined surface 41 of the bar 32, moving both the bars 32 and 33 of the magazine forwardly and causing the nails to be advanced in the compartments, the nail nearest to the forward end of the portion being deposited directly under the driving pin 12 to be set by the hammer and driving pin.

From the foregoing it will be seen that upon repeated movement of the lever 18 as described the nails will be advanced and driven by the hammer, until the supply of nails has become exhausted.

In view of the foregoing detail description, it is thought that further disclosure as to the operation of the device is unnecessary.

Having thus described the invention, what is claimed is:

1. In a nail driving machine, a body portion, a vertically movable hammer mounted on the body portion, a lever adapted to operate the hammer, a nail carrying magazine mounted within the body portion and adapted to deliver nails under the hammer to be driven by the hammer, said magazine comprising a pair of horizontal bars slidable with respect to each other, and having their adjacent faces contacting, said bars having registering notches in their contacting surfaces providing nail compartments, and a member operated simultaneously with the upward movement of the hammer, adapted to move the bars forwardly, consecutively advancing

ing the nails to a position under the hammer to be driven by the hammer.

2. In a nail driving machine, a body portion, a vertically movable hammer mounted on the body portion adjacent to one end thereof, a nail magazine mounted disposed longitudinally of the body portion and comprising a pair of bars having their adjacent faces contacting, the adjacent faces of said bars having registering recesses providing nail compartments, and means for operating the hammer and bars, whereby the nails in the magazine are successively advanced to a position under the hammer to be driven by said hammer.

3. In a nail driving machine, a body portion, a vertically movable hammer, a lever adapted to operate the hammer, a nail magazine, a pair of contacting bars movable longitudinally with respect to each other and disposed within the magazine, said bars having recesses in the contacting surfaces thereof, said recesses cooperating in providing nail compartments, means operated by said lever for moving said bars, whereby the nails are consecutively advanced through the compartments, toward the driving end of the machine to positions under the hammer to be driven by the hammer.

4. In a nail driving machine, a body portion, a vertically movable hammer mounted at one end of the body portion, a nail magazine mounted within the body portion and embodying a pair of contacting longitudinally sliding bars, said bars having recesses in the contacting surfaces thereof, said recesses presenting inclined surfaces and shoulders adjacent to the inclined surfaces providing nail compartments, an operating lever for the hammer, a cam operated by

said lever and adapted to move one bar of the magazine in advance of the adjacent bar, and then move the bars simultaneously towards said hammer, whereby said nails are moved over the inclined surfaces of the bars and advanced to the adjacent forward compartments to positions under the hammer.

5. In a nail driving machine, a body portion, a hammer barrel at one end of the body portion, a vertically movable hammer mounted within the barrel, a magazine, a pair of bars mounted within the magazine and movable longitudinally of the magazine, said bars adapted to deliver nails to a position directly under said hammer, a hammer pin mounted on the hammer and adapted to engage nails, whereby said nails are driven, a lever for operating said hammer, and a cam operated by said lever adapted to engage said bars moving the bars towards the front end of the body portion and advancing the nails held within the magazine, to a position directly under the hammer pin.

6. In a nail driving machine, a body portion, a vertically movable hammer mounted on the body portion, a lever adapted to operate the hammer, a nail carrying magazine within the body portion, means for successively delivering nails held within the magazine to the hammer, said means comprising a pair of horizontally slidable bars having pockets in which the nails to be driven are held, a vertically movable cam operated by said lever with each movement of the lever to operate the hammer, and said bars having inclined surfaces over which said cam moves, sliding the bars forwardly, delivering a nail under said hammer.

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