

(No Model.)

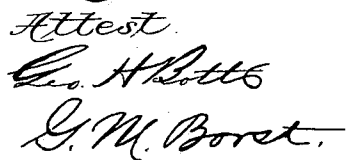
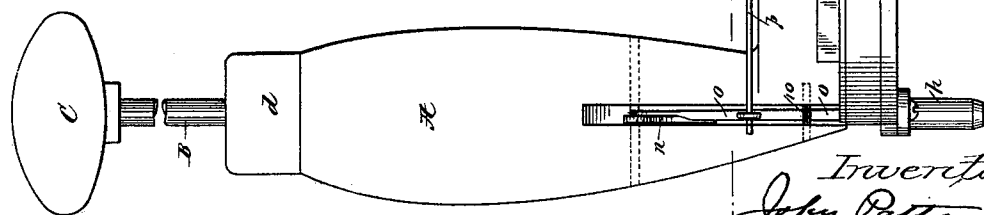
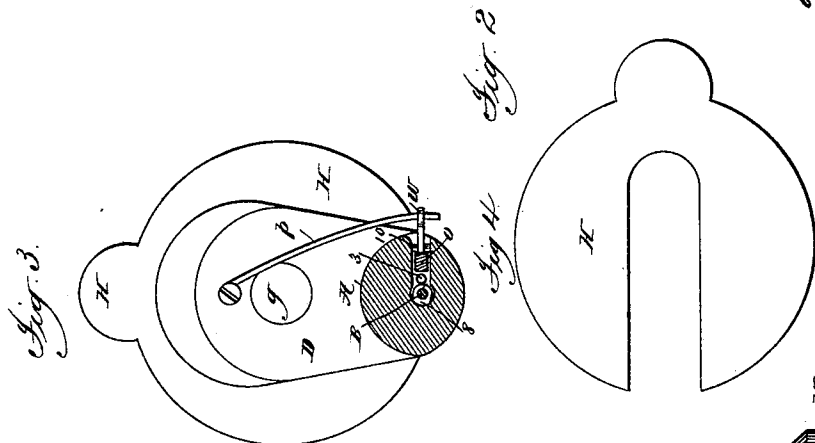
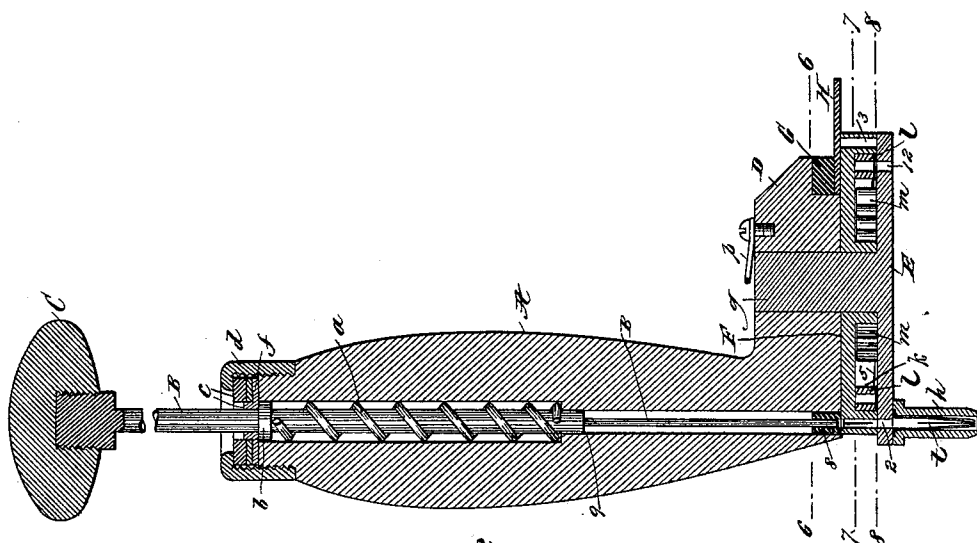
2 Sheets—Sheet 1.

J. PATTEN.

NAIL DRIVING IMPLEMENT.

No. 394,604.

Patented Dec. 18, 1888.



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Hys.

(No Model.)

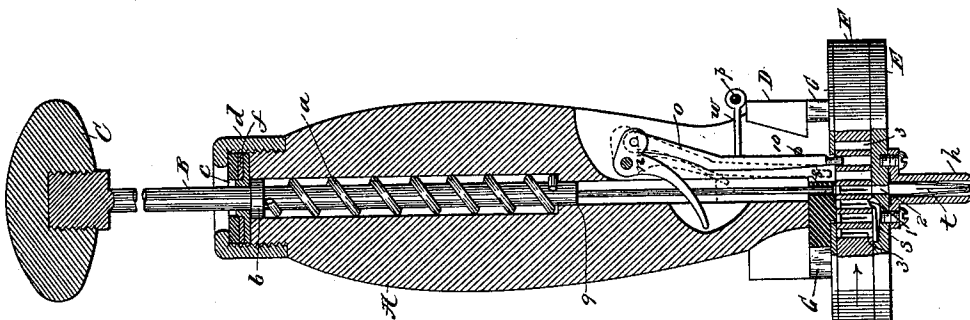
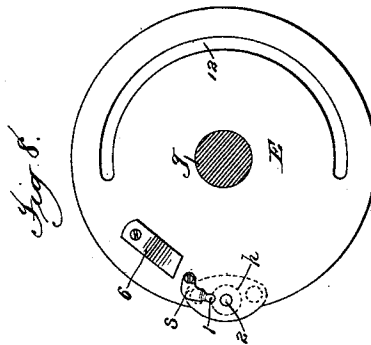
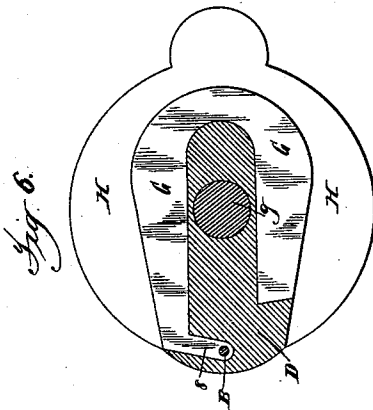
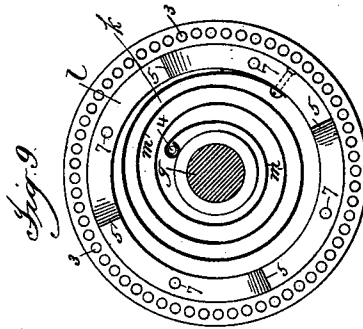
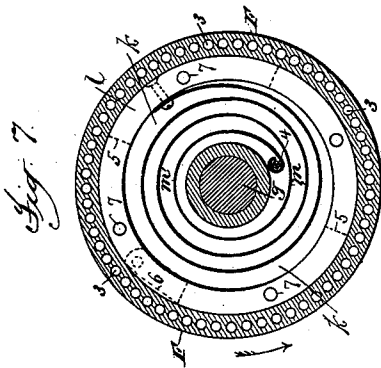
2 Sheets—Sheet 2.

J. PATTEN.

NAIL DRIVING IMPLEMENT.

No. 394,604.

Patented Dec. 18, 1888.



Attest:
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UNITED STATES PATENT OFFICE.

JOHN PATTEN, OF NEW YORK, N. Y.

NAIL-DRIVING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 394,604, dated December 18, 1888.

Application filed March 31, 1888. Serial No. 269,116. (No model.)

To all whom it may concern:

Be it known that I, JOHN PATTEN, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Nail-Driving Implements, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a hand tool or implement for driving tacks or other small nails, it being the object of the invention to provide an implement of this class in which the nails shall be automatically presented to the driver in such a way that they can be driven with great rapidity without the necessity of handling each individual nail.

A full understanding of the invention can be best given by an illustration and a detailed description of an implement embodying the same. All preliminary description will therefore be omitted and a detailed description given, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the implement. Fig. 2 is a central vertical section of the same. Fig. 3 is a horizontal section taken on the line 3 of Fig. 1. Fig. 4 is a view of the magazine-cover removed from the other parts. Fig. 5 is a vertical section taken at right angles to Fig. 2, showing particularly the escapement mechanism. Figs. 6, 7, and 8 are horizontal sections taken, respectively, on the lines 6, 7, and 8 of Fig. 2. Fig. 9 is a view of the magazine and its actuating-spring inverted.

Referring to said figures, it is to be understood that A represents a handle or hand-piece, of suitable form for conveniently grasping and handling the instrument. This handle is perforated longitudinally to receive a driver, B, an extension of which projects upward through the end of the handle and is provided with a head, C, of suitable form to receive a blow from the hand for operating the driver. The driver is held in its normal or raised position by means of a spring, *a*, located within the handle and acting against a collar, *b*, upon the driver. The driver is held within the handle by means of washers *c*, which are held in place by a screw-cap, *d*, with which the end of the handle is pro-

vided. Located between the washers *c* is a washer, *f*, of rubber or other yielding material, which serves to relieve the hand of the operator from concussion in case the driver is forced downward so far as to bring the head C against the washers *c*.

The handle A is provided at its base with a lateral projection, D, which receives a stud, *g*, projecting from a circular base-plate, E, which is supported a short distance from the base of the handle and is provided with an opening, 2, for the passage of the driver. Beneath the opening 2 the base-plate E is provided with a tubular nozzle, *h*, into which the driver projects as it is depressed through the base-plate. Located between the base-plate E and the base of the handle is a circular magazine, F, which is mounted to turn freely upon the stud *g* and is provided around its periphery with a series of chambers, 3, each of sufficient size to receive one of the nails which are to be used in the implement, and which are so arranged that as the magazine is revolved around the stud *g* they are successively brought into position beneath the driver and in register with the opening 2 of the base-plate.

The plate forming the magazine F is cut away upon its under side, so as to form a broad annular recess, *k*, into which is fitted a loose ring, *l*. Located in the space inside the ring *l* is a spring, *m*, one end of which is secured to the ring *l*, while its opposite end is secured to the magazine by means of a stud, 4. The ring *l* is provided upon its under side with a number of ratchet-teeth, 5, which engage with a spring-pawl, 6, secured to the base-plate, so as to prevent the ring from revolving in one direction, but allow it to be moved in the reverse direction for the purpose of winding the spring. To permit the ring *l* to be operated for this purpose, the base-plate is provided with a curved opening, 12, through which a loose pin can be inserted, so as to enter one or another of a number of openings, 7, in the ring.

Located above the magazine is a magnet, G, which embraces the base of the handle, with one of its poles, 8, extending directly beneath the driver B, and provided with an opening for the passage of the driver. The chambers 3 in the magazine, except the one

that is in register with the opening 2 in the base-plate, are closed at their bottoms by the base-plate and are similarly closed at their tops by a removable cover, H, which is recessed to straddle the base of the handle and slides in and out between the magazine and the magnet G.

From what has been said it will be seen that the tendency of the spring *m* when wound is to turn the magazine F in the direction indicated by the arrows in Figs. 5 and 7, thus bringing the chambers 3 successively in line with the driver. In the operation of the implement, however, it is necessary that the magazine should be arrested as each chamber is brought into that position, and retained in that position until after the driving operation, and then advanced to allow the next chamber to be brought into position, and so on. For this purpose the instrument is provided with an escapement mechanism operated by the driver, which permits the magazine to be operated with this step-by-step movement. This mechanism consists of an escapement-lever, *n*, which is pivoted in a recess in the side of the handle, with its end in position to be engaged by a shoulder, 9, formed upon the driver as the latter is depressed in the driving operation. Pivoted to the other end of the lever *n* is an escapement-dog, *o*, the free end of which enters one of the chambers 3 of the magazine, so as to hold the magazine in position by being carried against a stop, 10. The dog *o* is provided with a lateral arm, *w*, to which is connected a light spring, *p*, the tendency of which is to move the dog inward toward the driver and at the same time depress it, so as to cause it to enter one of the chambers of the magazine.

The manner of using the implement thus constructed and organized is as follows: To load the magazine, the cover H will be removed, thus exposing the tops of the chambers 3, and a tack or nail of the proper kind will be dropped into each chamber with its point downward. The cover will then be restored and the tacks or nails will be confined in the chambers, so as to be prevented from falling out no matter in what position the implement is held. The spring *m* will then, if necessary, be wound so as to be put under the proper tension, and to do this it is only necessary to insert a loose pin through the slot 12 in the base-plate and into one of the openings 7 in the ring *l* and turn the ring in the direction indicated by the arrow in Fig. 7. By removing the pin and inserting it in the next opening to the rear, and so repeating the operation the required number of times, the spring will be put under the proper tension, the ring being held from retrograde movement by the pawl 6, and the magazine from being advanced by the escapement-dog *o*. After the magazine has been thus filled and the spring put under the proper tension the implement is ready for use. The escapement-

dog *o* will be withdrawn from the chamber 3, into which it projects, and the magazine will be allowed to move the space of three or four chambers, until one of the chambers containing a nail is brought beneath the driver and in register with the opening 2 of the base-plate. The escapement-dog will then be allowed to enter one of the chambers 3 and hold the magazine in that position. As soon as any chamber containing a nail is brought beneath the pole 8 of the magnet, the attraction of the magnet will at once raise the nail and draw its head upward against the magnet, so that as any chamber containing a nail arrives in register with the opening 2 the nail, instead of falling through that opening into the nozzle *h*, will be held in position in the magazine by the attraction of the magnet. To drive the nail, the nozzle *h* is placed in the position where the nail is to be driven, and a blow or pressure is applied to the head C, so as to force the driver downward against the tension of the spring *a* and through the chamber 3 of the magazine and opening 2 of the base-plate and into the nozzle *h*. This will force the nail away from the magnet and out of the magazine and outward through the nozzle and drive it. As the driver approaches the limit of its driving movement, the shoulder 9 will engage with the escapement-lever *n* and rock said lever, so as to withdraw the escapement-dog *o* from the chamber 3 of the magazine. The driver, however, will at this time be projected through one of the chambers of the magazine, so as to prevent the latter from being moved by the spring *m*. As soon as the escapement-dog is thus withdrawn from one of the chambers of the magazine the spring *p* will swing the dog inward into the position indicated by dotted lines in Fig. 5 and directly over the next chamber to the rear. As the head C is released after the driving operation, the spring *a* will restore the driver to its normal position, thereby withdrawing it from the chamber of the magazine through which it has passed; but before the driver is thus withdrawn from the magazine, so as to release the latter, the shoulder 9 will be withdrawn from the escapement-lever *n*, so as to permit the escapement-dog to be moved downward by the spring *p* and enter the chamber of the magazine over which it has been swung by the spring *p*. As soon as the driver has been withdrawn from the chamber of the magazine through which it has passed, the tension of the spring *m*, being greater than that of the spring *p*, will at once move the magazine in the direction indicated by the arrow in Fig. 5 until it is arrested by the coming of the escapement-dog *o* into contact with the stop 10. This will advance the magazine one step, so as to bring the next chamber and the nail contained therein into position beneath the driver, and so the operation will be repeated, the magazine being ad-

vanced automatically after each nail is driven, so as to bring the next nail into position to be driven.

If the nails used are considerably shorter than the lengths of the chambers of the magazine, their heads will not be in close proximity to the pole 8 of the magnet as they are brought beneath it, and, this being the case, it may sometimes happen that the magnet will not be sufficiently powerful to attract the nails such a distance, and thus prevent them from falling through the opening 2 as the chambers are brought into register with that opening. To avoid this, the base-plate E is provided with a recess, (see Fig. 5,) in which is located a light spring-finger, s, having an upturned end, 1, which is arranged in position to enter the lower end of each chamber of the magazine as the latter is revolved. As the magazine is revolved, the walls between the chambers, acting upon the upturned end of the spring s, will depress it slightly, so that as each chamber arrives above the end of the spring the latter will be caused to snap upward quickly, and thus act upon the point of the nail contained in the chamber, so as to throw the nail upward against the magnet, in which position it will be attracted and retained. It is also preferable to provide the nozzle h with an interior conical guide, t, formed of a light metal tube having its walls split, so as to spring apart, and which will operate in case a nail falls from the magnet before the descent of the driver to retain the nail in the nozzle h in position to be acted upon by the driver as it descends.

What I claim is—

1. The combination, with the base-plate having the opening 2, of the rotating magazine E, having the chambers 3, for containing the nails, which chambers are arranged to successively register with the opening in the base-

plate, and the reciprocating driver working through said chambers, substantially as described.

2. The combination, with the rotating magazine having the chambers 3, of the reciprocating driver and the magnet G, arranged above the magazine, substantially as described.

3. The combination, with the magazine having the chambers 3 and the spring for rotating the same, of the reciprocating driver working through the chambers of the magazine and the escapement mechanism operated by the driver to permit the magazine to be moved by the spring with a step-by-step movement, substantially as described.

4. The combination, with the magazine having the chambers 3 and the spring for rotating the same, of the reciprocating driver working through the chambers of the magazine, the escapement mechanism operated by the driver, and the magnet G, located above the magazine, substantially as described.

5. The combination, with a rotating magazine having the chambers 3, of the spring u and the pawl-and-ratchet mechanism for winding the spring, the reciprocating driver working through the chambers of the magazine, and the escapement mechanism operated by the driver, substantially as described.

6. The combination, with the rotating magazine having the chambers 3, of the reciprocating driver working through the chambers, the magnet G, located above the magazine, and the spring s, for throwing the nails toward the magnet, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN PATTEN.

Witnesses:

T. H. PALMER,
G. M. BORST.