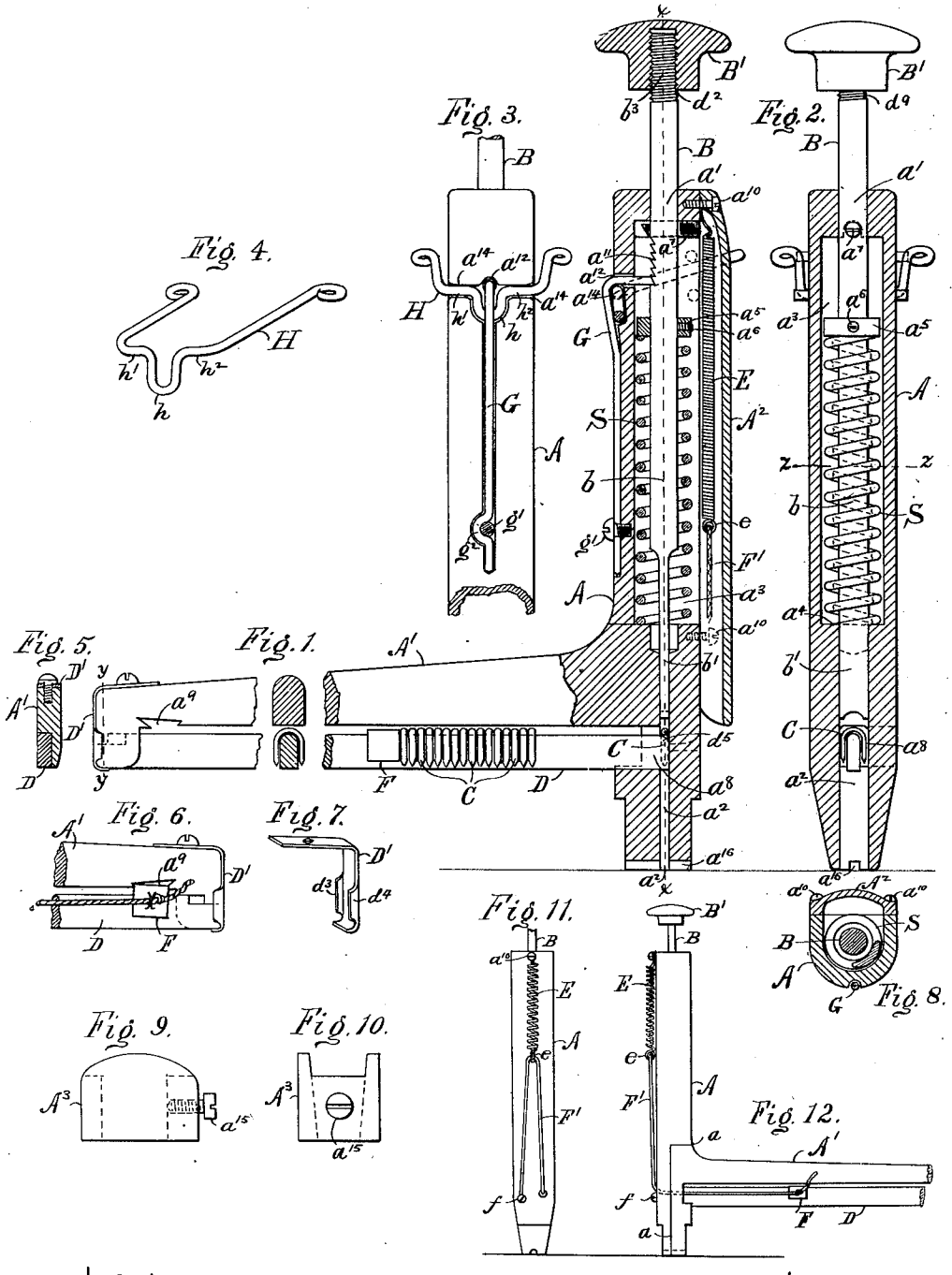
(No Model.) 2 Sheets—Sheet 1.

A. WHITE.

STAPLE DRIVER.

No. 406,075. Patented July 2, 1889.



Witnesses

William D. Rundlett.

Emma F. Kittredge.

Inventor

Albert White,

By Albert M. Moore,

His Attorney.

(No Model.) 2 Sheets—Sheet 2.

A. WHITE.

STAPLE DRIVER.

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Fig. 13.

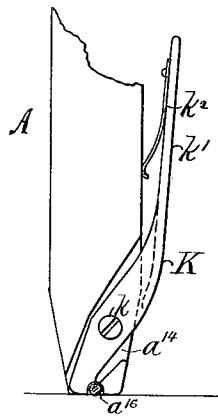


Fig. 14.

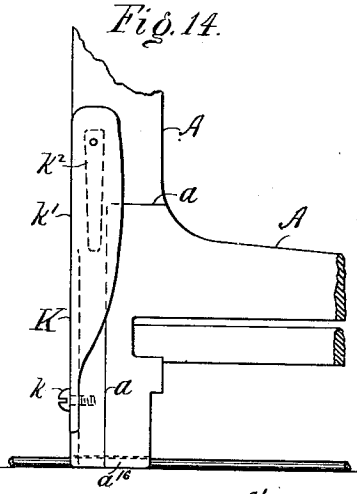
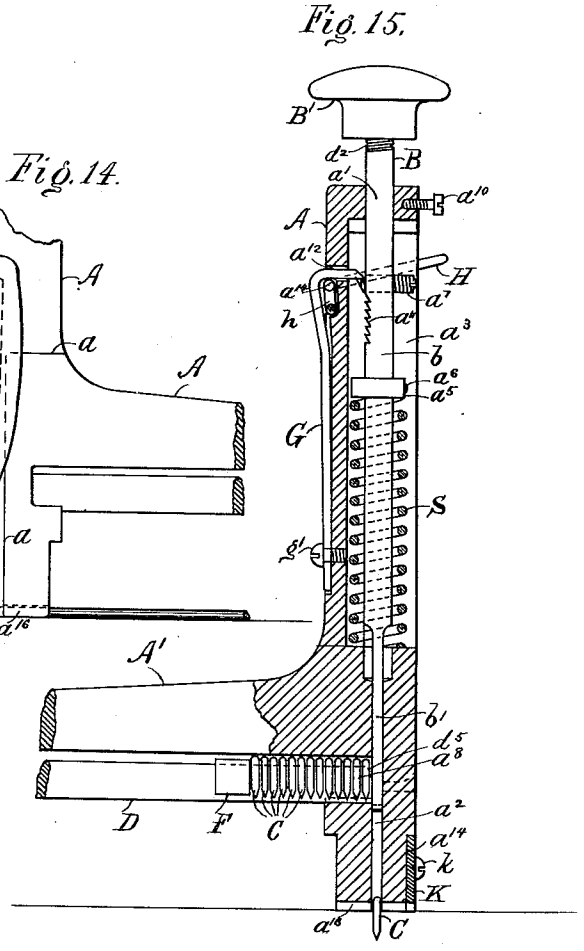


Fig. 15.



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UNITED STATES PATENT OFFICE.

ALBERT WHITE, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO FREDERICK TAYLOR, OF SAME PLACE.

STAPLE-DRIVER.

SPECIFICATION forming part of Letters Patent No. 406,075, dated July 2, 1889.

Application filed June 21, 1888. Serial No. 277,811. (No model.)

To all whom it may concern:

Be it known that I, ALBERT WHITE, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Staple-Drivers, of which the following is a specification.

My invention relates to staple-drivers; and it consists, principally, in means, hereinafter described, for holding said staples, means for feeding said staples, one at a time, to the plunger, means for preventing a second staple from getting under the plunger until the first staple is discharged, and in the devices and combinations hereinafter described and claimed.

In the accompanying drawings, on two sheets, Figure 1 is a vertical central section of the vertical part of the frame, the knob or handle, and the plunger-lifting spring, and a front elevation of the horizontal arm of the frame, the staple-carrying bar, the spring which retains said bar in position, the follower, the spring which actuates the follower, the plunger, the spring which prevents the return of the plunger, and of staples arranged on the staple-carrying bar, the middle portion of the horizontal arm and staple-carrying bar being broken out and turned ninety degrees, and shown in cross-section; Fig. 2, a vertical central section on the line $x\ x$ in Fig. 1; Fig. 3, a left side elevation of a part of the plunger, the upper part of the frame, the spring which prevents the return of the plunger, and the lever which disengages said spring from the plunger; Fig. 4, a perspective view of said lever; Fig. 5, a section on the line $y\ y$ in Fig. 1; Fig. 6, a rear elevation of a part of the horizontal arm, staple-carrying bar, and bar-retaining spring, the follower and a part of the cord attached to the same, showing the follower arranged in its retaining-notch; Fig. 7, a perspective view of the spring shown in Fig. 6; Fig. 8, a horizontal section on the line $z\ z$ in Fig. 2; Fig. 9, a front elevation, and Fig. 10 a side elevation, of the shoe; Fig. 11, a right side elevation of the plunger, except the knob, and of the frame, the follower-cord, and its actuating-spring; Fig. 12, a rear elevation of the staple-driver, the outer ends of the horizontal arm and staple-carrying bar being omitted; Fig. 13, a right side elevation of the lower part of the frame, showing the wire-gripping lever; Fig. 14, a rear elevation of the lower part of the frame, adjacent parts of the horizontal arm and staple-carrying bar, and a rear elevation of the wire-gripping lever, the staple-driver in Figs. 13 and 14 being shown applied to a wire; Fig. 15, a central vertical section of the vertical part of the frame and an elevation of the plunger, its retaining-spring, a front elevation of a part of the horizontal arm and a part of the staple-carrying bar, staples arranged on said bar, and the follower, the plunger being depressed below the staple-carrying bar and held from rising by said spring or pawl.

The frame or stock A is provided with a horizontal arm A′, formed, preferably, in a separate piece therefrom and riveted or otherwise secured thereto, the line of division between the two parts being marked a. (See particularly Figs. 12 and 14.)

The plunger B is preferably cylindrical throughout the greater portion b of its length, the lower portion b' of the same being rectangular in horizontal cross-section and as large as a similar section of the staple C to be driven thereby, the upper portion of the plunger sliding in a vertical hole a' in said stock and the lower portion of said plunger in the rectangular hole a^2, arranged vertically in the lower portion of the stock. Dividing the stock on the line a allows the vertical contiguous faces of the stock proper and arm A′ to be the one plane and the other grooved at a^2 to receive and fit the rectangular part of the plunger. Within the central cavity a^3 of the frame A a spiral spring S surrounds the plunger and is compressed between the shoulder a^4 and an annular collar a^5 on said plunger, said collar being adjustable on the plunger to vary the compression of the spring and being held by a set-screw a^6, which turns in said collar and thrusts against said plunger. A stop a^7 (represented in the drawings as a screw) limits the upward motion of the plunger, and is so placed as to allow the lower end of the plunger to rise just above the staple-carrying bar D, hereinafter described. The

downward movement of the plunger is limited by the knob or enlarged head B′, secured to the top of the plunger and adjustable thereon, the upper end d^2 of the plunger being screw-threaded and entering a threaded hole b^3 in said head, so that by turning the head on the plunger the length of the stroke of the plunger may be varied to determine the distance to which a staple driven by a full stroke of the plunger shall project from the surface into which it is driven.

The staple-carrying bar D is a horizontal bar, over which are placed the staples C, the end of said bar entering a hole a^8 into the groove a^2, and the staples are drawn along toward said groove by a follower F, which straddles the bar D, and is drawn toward the plunger by a spiral spring E, the upper end of which is secured to the vertical part of the frame A and the lower end of which is provided with a ring or eye e, through which is passed a cord F′, one end of which is secured to a stud or screw f, driven into said frame below said spring E, and the other end of which passes through said frame and is connected to said follower.

The staple-carrying bar D is arranged horizontally below the arm A′, and is supported at one end in the hole a^8 and at the other end by a leaf-spring D′ of the form shown in Fig. 7, one end of which last-named spring is secured to the top of the arm A′ and the other end of which is bent under the outer end of the bar D, the spring just above its lower end pressing against the outer end of the bar D and being provided with ears d^3 d^4, which prevent the bar D from lateral motion. The inner end of the bar D is rounded or beveled off on top at d^5 for a distance sufficient to allow the plunger to crowd said bar D longitudinally outward. The bar D when the plunger is raised is forced by the spring D′ against the plane surface of the main part of the frame A, as shown in Fig. 1, so that there will always be when the bar D is filled with staples and the plunger is raised, one staple immediately below the plunger so that depressing the plunger will crowd one staple downward off from the inner end of the bar D and discharge it from the lower end of the frame A. By pulling the lower end of the spring D′ outward the bar D may be removed for the purpose of filling it with staples, and at such times the follower may be conveniently held in the dovetail notch a^9 formed in the under side of the arm A′, the follower being first drawn upward into the outer deeper part of said notch a^9 until the inner end of the follower can be lifted into the inner shallower part of said notch, against which it will be drawn by the spring E and cord F, the follower being retained in said notch, owing to the fact that the opening of the notch is narrower than the follower. The spring E and a part of the cord F are concealed and protected by a shield or guard A^2, secured by screws a^{10} to the frame A.

In order that a second staple may not get under the plunger before the first staple is driven or discharged from the staple-driver, the plunger is prevented from rising above the staple-carrying bar after the first stroke is given to the plunger by notches a^{11}, formed in the shank of said plunger, and by a spring-pawl G, of the form shown in Figs. 1 and 2, the free end of which is bent horizontally, passes through a hole a^{12} in the frame, and engages said notches, the vertical part of said spring G lying in a groove a^{11} in the outside of said frame and being held in said groove by a cap-screw g', the wire or spring G being bent, as shown at g^2, and the head of said screw resting upon the same. The pawl G is disengaged from the notches a^{11} by a lever, preferably formed of wire, and bent into the form shown in Figs. 3 and 4 and marked H. The middle of the lever H is bent into a loop h, and the parts h' h^2 of the wire or lever nearest to said loop are bent out from said loop horizontally in opposite directions and rest in transverse grooves a^{14} in the side of the frame A. The portions of the wire or lever H nearest the ends of the same are bent so as to lie nearly against the front and back of said frame at an angle with the plane of said loop h, and the horizontal portions of said lever are held in said groove a^{14} by the pressure of the spring-pawl G. It is evident that by depressing the free ends of the lever H the loop h will be forced against the spring-pawl and cause said pawl to be disengaged from the notches a^{11} and allow the plunger to be raised by the spiral spring, as above described. In practice the vertical part of the frame A is grasped by the left hand and the plunger is struck by the right hand, or by a mallet held in the right hand. To avoid injury of the surface into which the staples are to be driven, a foot A^3, having a large surface, as shown in Figs. 9 and 10, may be applied to the lower end of the vertical part of the frame and retained thereon by a set-screw a^{15}. The lower end of the frame is provided with a transverse groove a^{16}, to admit a wire which it is intended to secure by staples, and in order that the wire may be held taut a gripping-lever K is pivoted at k to the side of the frame, being let into a recess a^{14} in said frame, flush with said frame, and the handle k' or upper end of said lever being bent around onto the back side of the frame into a position to allow of its being grasped by the fingers of the left hand to bring the lower end of said lever against the wire, which is grasped between said lower end and the back side of the groove a^{16}. When the fingers are removed from the lever, the lever is restored to position by the spring k^2, arranged between the handle of the lever and the frame.

I claim as my invention—

1. The combination of the plunger provided with notches, the spring to return the same, and a spring-pawl engaging said notches to prevent the return of said plunger to its

starting-point, as and for the purpose specified.

2. The combination of the frame provided with a staple-guiding groove and with a hole opening laterally into said groove to admit staples, the plunger provided with a collar, a spring surrounding said plunger within a central cavity, with which said frame is provided, and compressed between said collar and a shoulder in said central cavity, said plunger being provided with notches, and a spring-pawl to engage said notches and prevent said plunger when forced downward from rising above said hole and admitting a second staple below said plunger, as and for the purpose specified.

3. The combination of the frame provided with a staple-guiding groove and with a hole opening laterally into said groove to admit staples, the plunger provided with a collar, a spring surrounding said plunger within a central cavity, with which said frame is provided, and compressed between said collar and a shoulder in said central cavity, said plunger being provided with notches, a spring-pawl to engage said notches and prevent said plunger when forced downward from rising above said hole and admitting a second staple below said plunger, and a lever turning on said frame to force said pawl out of said notches to allow said plunger to be raised, as and for the purpose specified.

4. The combination of the frame, the staple-carrying bar removable therefrom, and the spring-impelled follower arranged to travel on said bar, said frame having an arm arranged above said staple-carrying bar and provided with a notch to secure said follower to said frame while said staple-carrying bar is removed therefrom and to hold said follower in a position to receive said staple-carrying bar when said bar is replaced in said frame, as and for the purpose specified.

5. The combination of the frame, the plunger movable therein, a spring attached to said frame and provided with a loop, a cord one end of which is attached to said frame and the other end of which is attached to a follower, said follower, and a staple-carrying bar on which said follower travels, said cord passing through said loop to draw said follower on said bar toward said plunger to feed staples on said bar under said plunger, as and for the purpose specified.

6. The combination of the frame provided with a horizontal arm and with a hole, a spring secured to the free end of said arm, and a staple-carrying bar adapted to be engaged by said hole and said spring and to be held in place thereby, as and for the purpose specified.

7. The combination of the frame provided with a horizontal arm and with a vertical staple-guiding groove and with a hole opening into said groove, a staple-carrying bar having the top of its inner end beveled off, said inner end being adapted to enter said hole and to be held centrally therein by staples on said bar, a spring secured to the free end of said horizontal arm to engage the outer end of said staple-carrying bar, and a plunger moving in said frame at right angles to said staple-carrying bar, as and for the purpose specified.

8. In a staple-driver, the combination of the frame provided with a groove to receive the wire to be secured by staples, and a gripping-lever pivoted on said frame within a recess formed in said frame to grasp a wire between said lever and the side of said groove, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 12th day of June, A. D. 1888.

ALBERT WHITE.

Witnesses:

ALBERT M. MOORE,

KIRKLEY HYDE.