No. 621,748. Patented Mar. 21, 1899.

A. H. BUCHHOLZ.

STAPLING MACHINE.

(Application filed Dec. 7, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

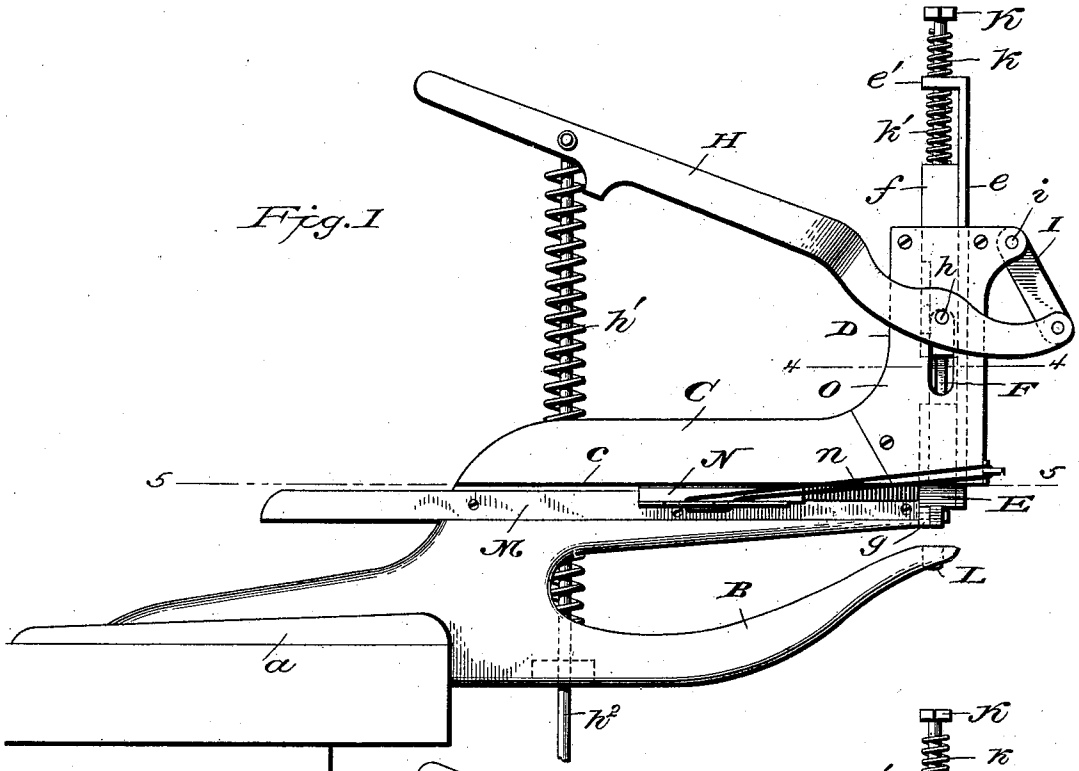


Fig. 6.

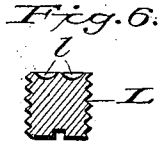


Fig. 3.

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Fig. 2.

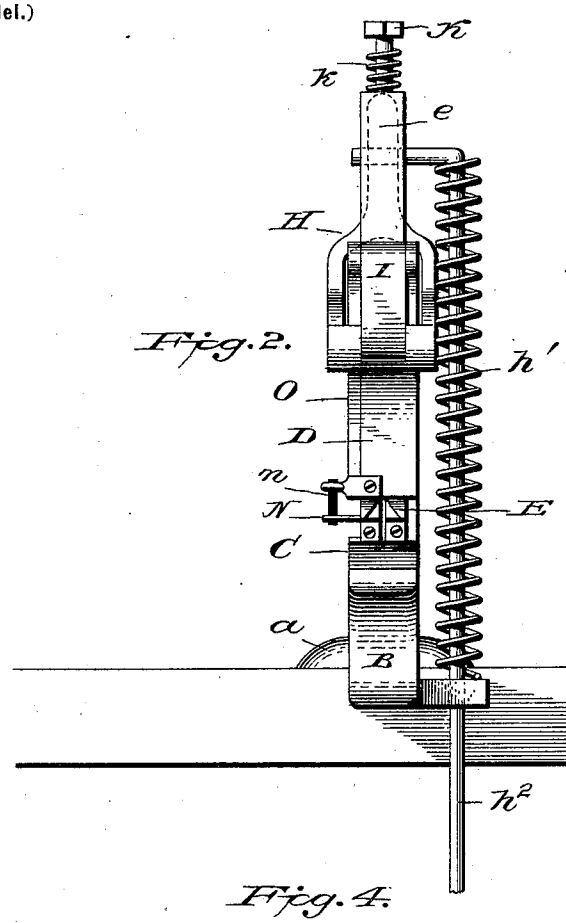


Fig. 4.

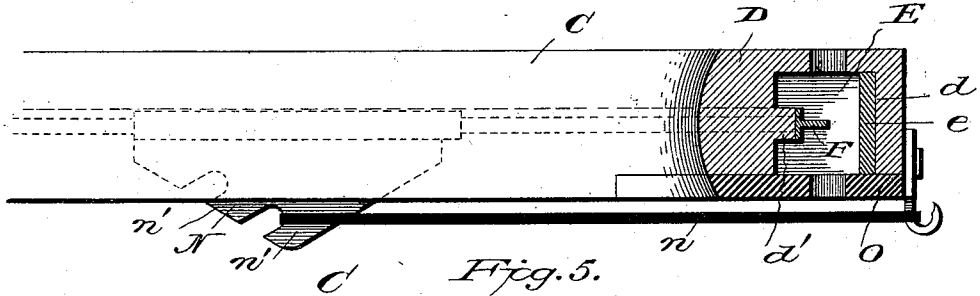
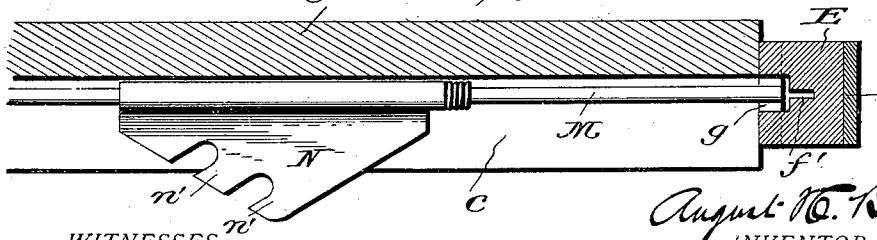


Fig. 5.



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UNITED STATES PATENT OFFICE.

AUGUST H. BUCHHOLZ, OF WASHINGTON, MISSOURI.

STAPLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 621,748, dated March 21, 1899.

Application filed December 7, 1898. Serial No. 698,564. (No model.)

To all whom it may concern:

Be it known that I, AUGUST H. BUCHHOLZ, a citizen of the United States of America, residing at Washington, in the county of Franklin and State of Missouri, have invented a new and useful Stapling-Machine, of which the following is a specification.

The object of this invention is to provide a stapling-machine for readily and conveniently connecting together two or more pieces of leather in manufacturing boots and shoes or repairing them, the particular construction and disposition of the parts producing a machine of this character which shall be simple and cheap and by the use of which the operation of applying the staples to the leather and clenching them thereon can be accomplished quickly and in a thorough manner.

The invention contemplates the employment in the machine of automatic feeding mechanism for the staples, a plunger or stop-block for firmly holding the work in place upon the anvil of the supporting-arm, a reciprocating staple-driver operating through the plunger or stop-block into which the staples are fed one at a time, a rod extending upward from the stop-block and having an inwardly-projecting arm through which the upper part of the staple-driver passes, and springs located above and below said arm and bearing against the opposite sides thereof by which the plunger or stop-block is automatically operated through the intervention of the staple-driver, while the latter is reciprocated by means of a lever connected to a foot-lever.

The following specification enters into a detail description of my machine for driving and clenching staples, reference being had to the accompanying drawings and to letters thereon which designate the different parts, and what I claim in the peculiar construction and arrangement of parts and desire to protect by Letters Patent is more specifically stated in the appended claims.

In the accompanying drawings, forming part hereof, Figure 1 is a side elevation of a stapling-machine constructed in accordance with my invention. Fig. 2 is a front elevation of the machine. Fig. 3 is a side elevation, the forward part of the machine being shown in section to illustrate the internal construction. Fig. 4 is a transverse sectional view on the line 4 4 of Fig. 1. Fig. 5 is a transverse sectional view through the plunger or stop-block on the line 5 5 of Fig. 1. Fig. 6 is a detail sectional view.

My improved stapling-machine is adapted to be attached to a work-bench, table, or other suitable support, and to this end the frame or body of the machine is provided with a rearwardly-projecting horizontal flange *a*, which bears flat upon the work-bench or table and through which the securing bolts or screws are passed, so that the frame or body will project in front of the work-bench. The body or frame of the machine presents practically a horizontal yoke, from the contiguous ends of the arms of which the attaching-flange *a* projects rearwardly, as shown, the lower arm B forming the support or anvil upon which the work is placed, while the upper arm C carries the staple feeding and driving mechanism, which I shall now proceed to particularly describe.

The forward end of the upper arm C is enlarged or extended upwardly to form a head D, and in one side of this head is a vertical groove or recess *d*, extending the full length of the same. In the lower part of this groove or recess plays a plunger or stop-block E, to which is secured an operating-rod *e*, extending upward at one side of the groove or recess and provided at its end which is beyond the head with an arm *e'*, while in the upper part of said groove or recess plays the stem *f* of the staple-driver F. From the rear wall of the groove or recess *d* projects a guide-flange *d'*, which enters corresponding grooves in the rear side of both the stem *f* and stop-block E, the said guide-flange terminating a slight distance above the lower end of the rear wall, for the purpose hereinafter mentioned.

The staple-driver F projects from the center of its stem and is practically T shape in cross-section, the said staple-driver having a movement in a corresponding recess *f'*, extending vertically through the plunger or stop-block E, this vertical recess in the plunger or stop-block being practically a continuation of the

groove that receives the guide-flange d'. The lower end of the plunger or stop-block is cut away, as shown, exposing the recess through which the staple and staple-driver pass, so that the operation can be watched by the operator, and at the rear side of this lower end is secured a cross-piece g, forming a guide for the staple.

The staple-driver is reciprocated by means of a yoke-lever H, which is pivoted at its forward end to a link I, pivotally supported by a pin i, passed through ears projecting from the upper part of the head D, the said lever being connected to the stem of the staple-driver by a pin h, which extends through slots in the side pieces of the head and through an opening in the stem. A spring h' is interposed between the lever and main frame to automatically move the lever, so that in the normal position of the parts the staple-driver will be elevated. The yoke-lever is operated from a treadle or foot-lever (not shown) by way of the connecting-rod h^2.

Movement is imparted to the stop-block or presser-bar E through the intervention of the staple-driver, and to this end a bolt K is passed through an aperture in the arm e' of the operating-rod e and screwed into the upper end of the shank f of the staple-driver, helical springs $k\,k'$ encircling the bolt to bear upon opposite sides of the arm. The upper spring k contacts with the head of the bolt, while the lower spring k' contacts with the upper end of the stem f.

The lower arm B of the main frame presents a support for the work, the outer end forming an anvil which acts in conjunction with the staple-driver to clench the ends of the staples upon the under side of the leather, and for this purpose the arm is provided with a threaded aperture receiving a screw L, the upper end of which is flush with the anvil and has formed therein curved recesses $l\,l$, which serve to turn the ends of the staples inward. The arm B dips downward from the anvil, and the shape of the frame leaves an open yoke which permits the work or shoe-upper to be turned in applying staples along the seams to reinforce them.

To provide for automatically feeding the staples into the stop-block or presser-bar below the staple-driver, the arm C of the frame is provided on one side with a horizontal recess c, which communicates with the vertical recess d in the head at the lower end of the guide-flange d'. In this horizontal recess is secured a staple-carrying bar M, upon the upper edge of which the staples are strung, as shown, the staples being forced into the stop-block or presser-bar by means of a follower N, connected to a rubber band n, which maintains a pressure of the follower against the line of staples. The follower is provided with three or more projections n', so that the connection of the rubber band thereto can be changed to insure a full movement of said follower. Though I have shown and described a rubber band for moving the follower to cause a proper feed of the staples, a spring-weight and cord or other equivalent device could be used, and it will be noted that the staple-carrying bar can be readily removed to string a supply of staples thereon. The lower part of the forward end of the staple-carrying bar is cut away to receive the cross-piece g at the lower end of the stop-block or presser-bar.

In the normal position of the parts of the machine a staple is fed into the recess of the stop-block or presser-bar below the staple-driver or opposite flanges thereof, and upon a downward movement of the operating-lever the staple-driver is first moved a short distance to bring the staple to the lower end of the presser-bar. The head of the bolt carried by the staple-driver then compresses the spring k upon the operating-rod of the presser-bar, forcing the latter down upon the work, and a further movement of the lever causes the staple-driver to force the staple through the work and the ends are clenched on the under side by means of the anvil. When the operating-lever is released, the parts automatically resume their normal position, and the staple-driver, moving to a position a slight distance above the inner end of the staple-carrying bar, permits of a staple being fed into the presser-bar. The lower end of the guide-flange d', being a slight distance above the inner end of the staple-carrying bar, forms a guide for the staples and prevents them moving upward when the presser-bar is reciprocated. The presser-bar bears upon the work by pressure of the spring k, and the length of the staple-driver proper is such with respect to the presser-bar that the stem f will contact with said presser-bar when the lower end of the staple-driver is at the lower end of the presser-bar, thereby forming a stop to limit the movement of the staple-driver and prevent it from being forced too far into the work.

A plate O covers the working parts in the head of the stapling-machine, and by the particular construction and arrangement of said parts a simple, compact, and durable machine is provided. The operation is positive, for upon each movement of the operating-lever the presser-bar is brought down upon the work to hold it in place, and then the staple-driver acts to force a staple through the work and clench it thereon, said presser-bar also limiting the movement of the staple-driver.

The machine is particularly adapted for reinforcing the seams of boots and shoes, and the particular construction of the frame permits the shoe to be readily manipulated. The machine may also be used for connecting pieces of leather together for various purposes and being comparatively small can be attached to a work-bench or table without occupying very much room.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a stapling-machine, for the purpose set forth, the combination, of a head having a recess in one side, a presser-bar movable in the lower part of the head and provided with a vertical recess therethrough, a rod projecting upward from the presser-bar and having an inwardly-projecting apertured arm, a staple-driver movable in the presser-bar and extending upward through the aforesaid arm, springs mounted on the staple-driver to bear upon opposite sides of the arm, and an operating-lever connected to the staple-driver; together with means for feeding the staples into the presser-bar, and a support for the work located below the head and on a line with the presser-bar, substantially as shown and described.

2. In a stapling-machine, for the purpose set forth, the combination, of a frame presenting upper and lower arms, the upper arm having a head at its forward end and the lower arm forming a support for the work, a presser-bar movable in the lower part of the head and provided with a vertical recess therethrough, a rod projecting upward from the presser-bar and having an inwardly-projecting apertured arm, a staple-driver movable in the presser-bar and extending upward through the aforesaid arm, springs mounted on the staple-driver to bear upon opposite sides of the arm, and an operating-lever connected to the staple-driver; together with means for feeding the staples into the presser-bar, substantially as shown and described.

3. In a stapling-machine, for the purpose set forth, the combination, of a frame presenting upper and lower arms, the upper arm having a head at its forward end and the lower arm forming a support for the work, a presser-bar movable in the lower part of the head and provided with a vertical recess therethrough, a rod projecting upward from the presser-bar and having an inwardly-projecting apertured arm, a staple-driver movable in the presser-bar, a bolt or screw passed through the arm into the staple-driver, and springs mounted upon the bolt above and below the arm; together with an operating-lever connected to the staple-driver, and means for feeding the staples into the presser-bar, substantially as shown and described.

4. In a stapling-machine, for the purpose set forth, the combination, of a frame presenting upper and lower arms, the upper arm having a head at its forward end and the lower arm forming a support for the work, a presser-bar movable in the lower part of the head and provided with a vertical recess therethrough, a rod projecting upward from the presser-bar and having an inwardly-projecting apertured arm, a staple-driver movable in the presser-bar and extended upward through the apertured arm, said staple-driver presenting a shoulder above the presser-bar, and springs mounted upon the staple-driver to bear upon opposite sides of the arm of the operating-rod; together with a lever connected to the staple-driver, and means for feeding staples into the presser-bar, substantially as shown and described.

5. In a stapling-machine, for the purpose set forth, the combination, of a frame presenting upper and lower arms, the upper arm having a head at its forward end and the lower arm forming a support for the work, a presser-bar movable in the lower part of the head and provided with a vertical recess therethrough, a rod projecting upward from the presser-bar and having an inwardly-projecting apertured arm, a staple-driver movable in the presser-bar and having an enlarged stem moving in the upper part of the head of the frame, a bolt or screw passed through the apertured arm into the stem of the staple-driver, and springs mounted upon the bolt or screw to bear upon opposite sides of the arm; together with a lever connected to the staple-driver, and means for feeding the staples into the presser-bar, substantially as shown and described.

6. In a stapling-machine, for the purpose set forth, the combination of a frame presenting upper and lower arms, the upper arm having a head at its forward end with a vertical recess in one side and the lower arm forming a support for the work, a guide-flange on the rear wall of the recess terminating above the lower end thereof, a presser-bar movable in the lower part of the recess and provided with a vertical recess therethrough into which the guide-flange projects, a staple-driver movable in the inner part of the vertical recess in the presser-bar, an operating-lever connected to the staple-driver, and means for automatically moving the presser-bar; together with a staple-carrying bar let into a recess in the frame and projecting into the presser-bar below the guide-flange in the head, a follower on the staple-carrying bar, and means for moving the follower, substantially as shown and described.

7. In a stapling-machine, for the purpose set forth, the combination, of a frame presenting upper and lower arms, the upper arm having a head at its forward end and the lower arm forming a support for the work, the aforesaid head having a vertical recess in one side, a guide-flange on the rear wall of the recess terminating above the lower end thereof, a presser-bar movable in the lower part of the recess and provided with a vertical recess therethrough, a rod projecting upward from the presser-bar and having an inwardly-projecting apertured arm, a staple-driver movable in the vertical recess of the presser-bar, an enlarged stem forming part of the staple-driver and having a recess for the guide-flange, a bolt extending through the apertured arm into the stem, and springs

mounted upon the bolt to bear upon opposite sides of the arm; together with a horizontal staple-carrying bar let into the frame with its inner end projecting into the presser-bar, a follower mounted upon the staple-carrying bar, and means for moving the follower, substantially as shown and described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

AUGUST H. BUCHHOLZ.

Witnesses:
WM. LAUMANN,
H. W. STOENNER.