(No Model.)

J. L. SMITH.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 388,316. Patented Aug. 21, 1888.

Fig. 2.

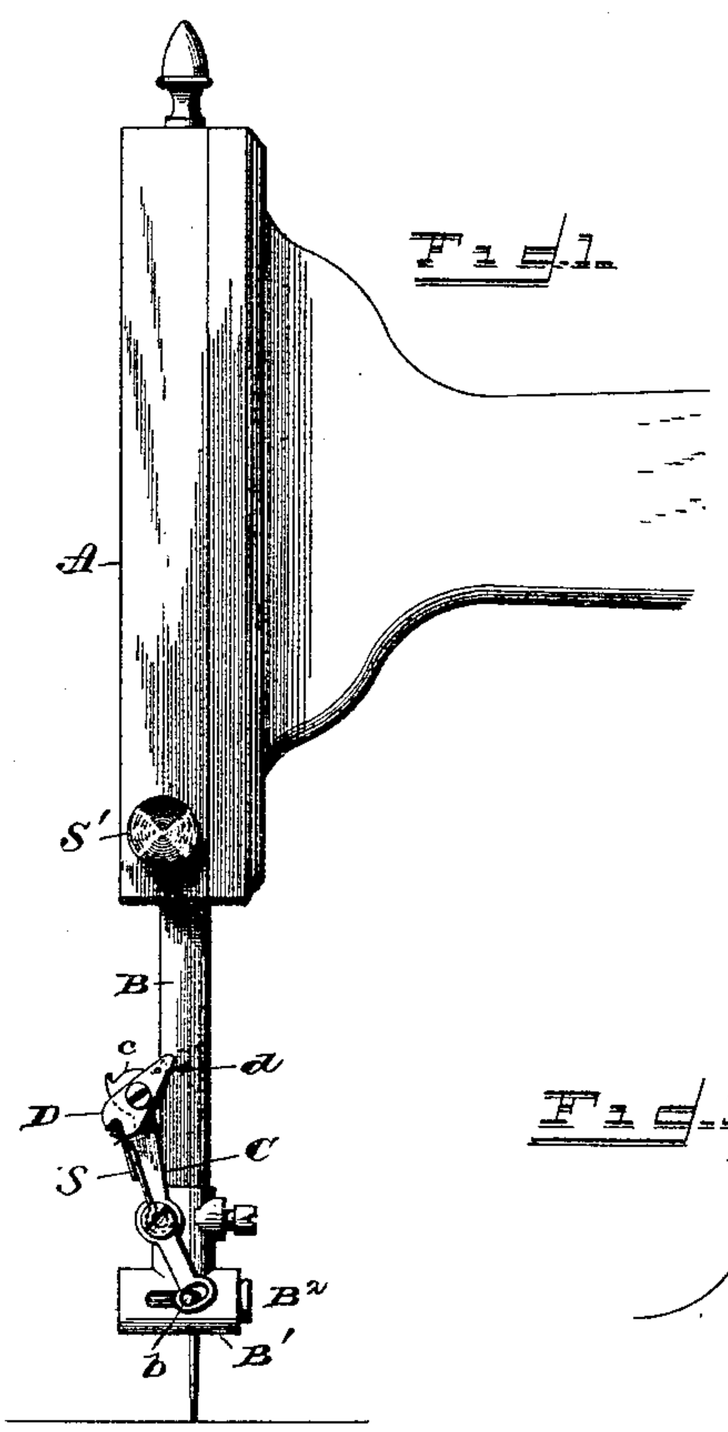

Fig. 1.

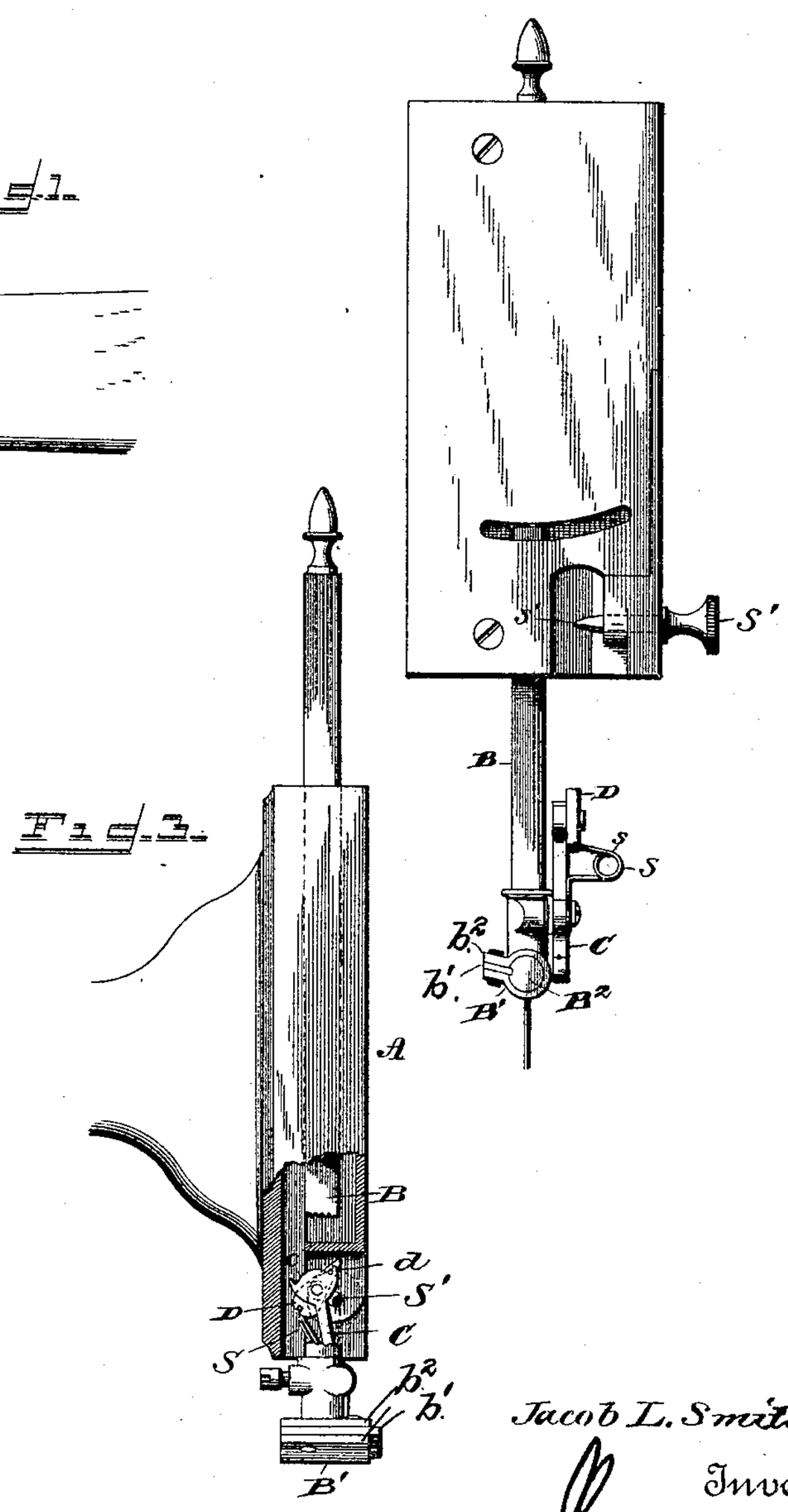

Fig. 3.

Witnesses,

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JACOB L. SMITH, OF ROCHESTER, PENNSYLVANIA.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 388,316, dated August 21, 1888.

Application filed January 19, 1888. Serial No. 261,248. (No model.)

To all whom it may concern:

Be it known that I, JACOB L. SMITH, a citizen of the United States of America, residing at Rochester, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Button-Hole Attachments for Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in button-hole attachments for sewing-machines; and it consists in the novel construction and arrangement of the parts thereof, which will be more fully hereinafter described, and fully pointed out in the claims.

The object of my invention is to simplify the mechanism in this class of devices, and in simplifying said construction the movement thereof is rendered positive and the needle reciprocated to throw the thread backward and forward in a zigzag line. I attain this object by the construction illustrated in the accompanying drawings, wherein like letters of reference indicate similar parts in the several views, and in which—

Figure 1 is a side elevation of a machine-head with a needle therein, showing my improvement applied thereto. Fig. 2 is a front elevation of the construction illustrated in Fig. 1. Fig. 3 is a side elevation of the head and needle-bar, taken from the side opposite to that shown in Fig. 1, and the head being partially broken away.

A indicates the head, and B the needle-bar. On the lower end of the needle-bar a T-extension, B′, is secured, having apertures in the lower side thereof, in which the needle is placed and secured therein by screws centrally passing through the said T-extension. This T-extension is also formed with an outer casing, which surrounds the needle-retaining block B^2, and at its upper end fits over the lower end of the needle-bar and is secured thereto by a set-screw, and may be removed when desired, to be replaced by the ordinary needle-clamp. The T-extension B′ is formed with flanges b^2, between which a guide-key, b', is mounted and secured. The said guide-key projects inward and engages with a groove, b^3, formed in one side of the needle-retaining block B^2. By this means the said retaining-block is caused to operate in a true line and is prevented from turning in its bearing. The said needle-retaining block B^2 is provided with a stud or wrist-pin, b, which engages with the lower apertured end of the lever C, fulcrumed to the said extension or casting and projects above the same parallel with the needle-bar. The upper end of this lever C is formed with a recess or way, c, which is engaged by a pin, d, projecting from the one side of a rocking lever, D, secured on the upper end of the said lever C.

The lower end of the rocking lever D is slotted and receives one end or arm of a spring, S, which is formed with a coil, s, and whose lower end is bent to form a loop to surround the fulcrum-screw of the lever C, as shown in dotted lines, Fig. 1.

The face-plate of the machine is provided with suitable slots and grooves to allow the mechanism above described to operate in connection therewith and moved upwardly therein. From one side of the face-plate a thumb-screw, S′, projects inward into the main slot formed in the face-plate and head, and has a conical point, s', formed on its inner end.

The operation of my improved device is as follows: When the needle-bar is operated so that it will rise and fall vertically, the rocking lever D strikes first one side of the conical point of the screws S and the other alternately, and when this operation takes place the lever C reciprocates and slides the needle-retaining block B^2 in its bearing through the medium of the wrist-pin b in connection with the lower end of the said lever C. The reciprocation of the lever C is due to the engagement of the upper recessed end thereof by the pin d in the one side of the rocking lever D, which alternately strikes the projecting portions of the upper recessed end of the lever C and knocks it from one side to the other, as the said rocking lever engages with either side of the thumb-screw S′.

The function of the spring S is to retain the

rocking lever D in its adjusted position after striking the inner conical point of the screw S′. By this means the said rocking lever D will always be in the proper position to engage with the said inner point of the screw S′ and produce the desired function.

It will be understood that when the needle-retaining block B^2 is reciprocated the needle will be thrown backward and forward and the required stitching be formed.

The utility of this class of devices being well known, it is unnecessary to further enlarge upon the same herein.

What I claim as new is—

1. The combination, with the face-plate of a sewing-machine formed with slots and grooves, and having a set-screw mounted therein, the end of which projects into the main slot, and with the needle-bar having vertical movement in said face-plate, of the T-extension removably secured to the lower end of the needle-bar, having flanges formed with one side thereof and a slot in the opposite side, an inwardly-projecting guide-key mounted between and held by said flanges of the extension, the horizontally-arranged transversely-sliding needle-holding block mounted in the lower part of the T-extension, provided with a groove engaging the guide-key, and with a stud passing through the slot in said extension, the needle carried by said sliding needle-block, the lever C, pivoted to the vertical member of the extension, having its lower end apertured to engage the stud or pin of the sliding needle-holding block and its upper end provided with a guideway, the smaller lever, D, pivoted to the upper part of the lever C and having a stud projecting from one side thereof, which engages with and moves in the guideway in the upper end of the lever C, and provided with a slot in its opposite end, and a spring having its lower end bent into a loop and surrounding and held by the fulcrum-screw of the lever C and its upper end in engagement with the slotted end of the lever D, substantially as described.

2. The combination, with the face-plate having slots and grooves therein, and a set-screw having its end projecting into the main slot thereof, and with the needle-bar, of the T-extension having the upper end of its vertical member provided with a socket for removable attachment to the lower end of the needle-bar and its horizontal member forming a tubular bearing, the sliding needle-holding block mounted in the horizontal member of the T-extension, the needle carried by said needle-holding block, the lever C, pivoted to the vertical member of said extension and engaging at its lower end with the sliding needle-holding block, the lever D, pivoted on the upper end of the lever C, and the spring secured at its lower end to the fulcrum of the lever C and its free end engaging with the lower end of the lever D, substantially as described.

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

JACOB L. SMITH.

Witnesses:
J. F. BIXBY,
H. J. HINDE.