(No Model.)

W. H. GILBERT.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 332,511. Patented Dec. 15, 1885.

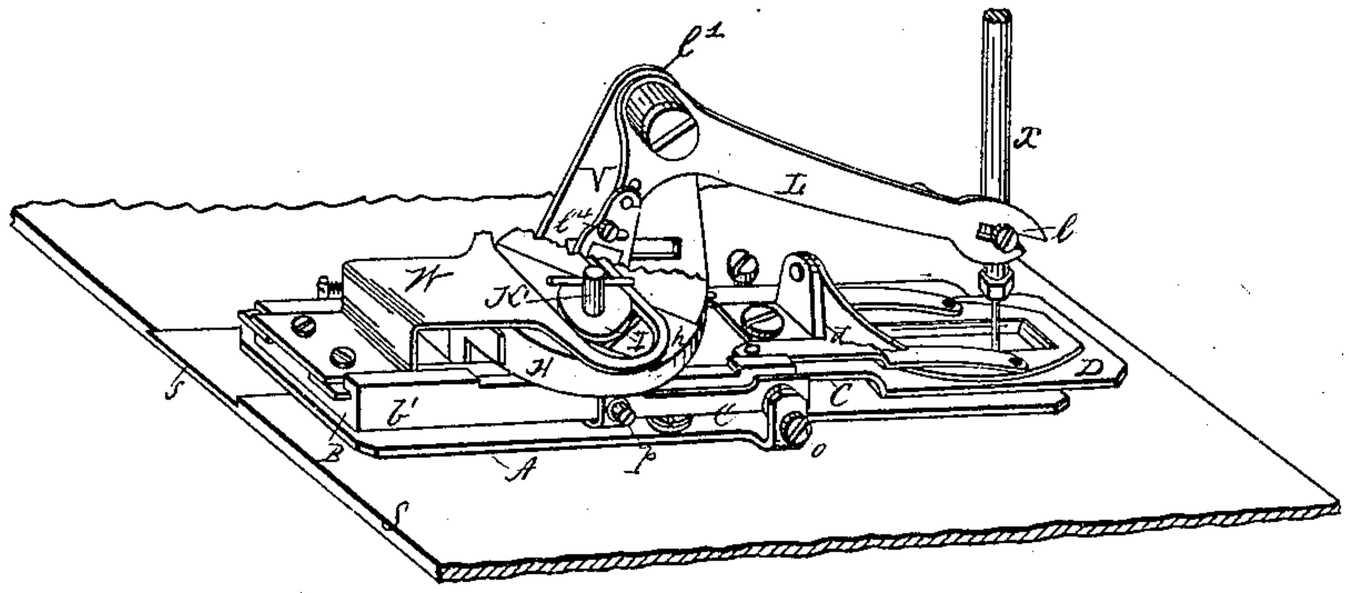

Fig 1.

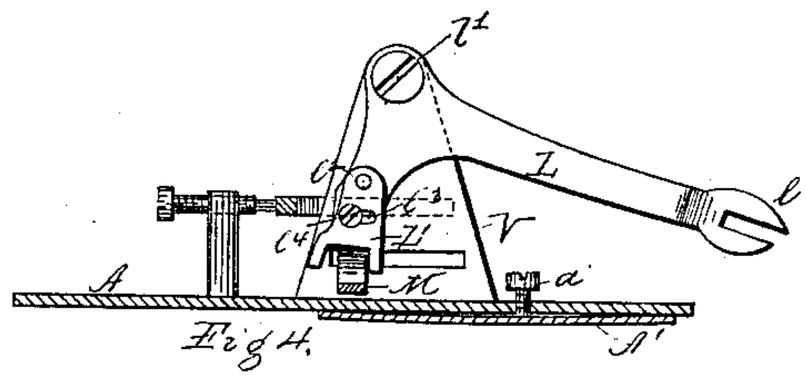

Fig 4.

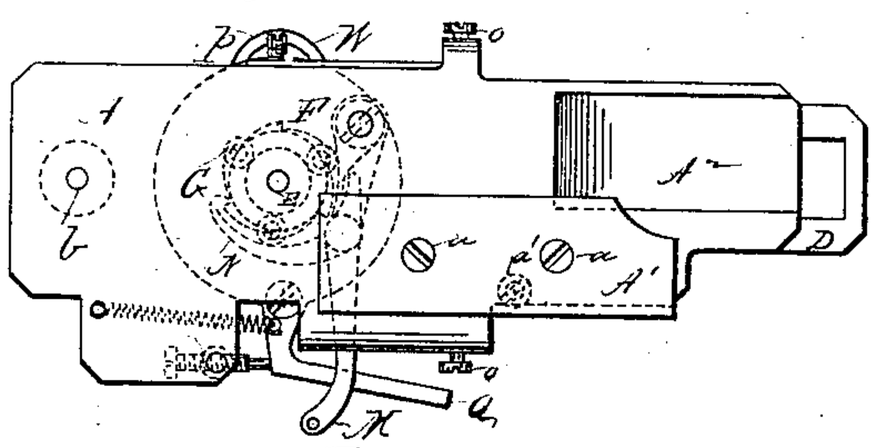

Fig 2

Fig 5

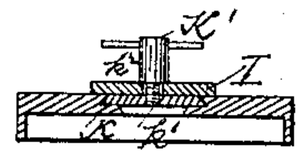

Fig 7

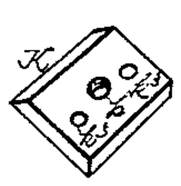

Fig 6

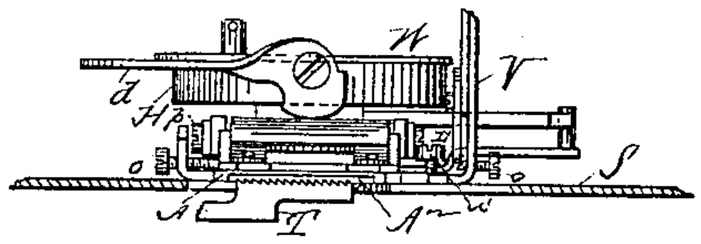

Fig 3

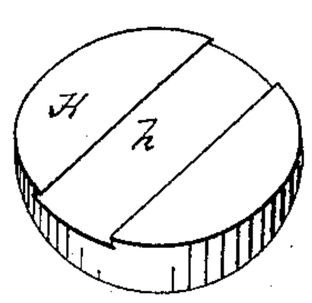

Fig 8

WITNESSES:

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WILLIAM HENRY GILBERT, OF PHILADELPHIA, PENNSYLVANIA.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 332,511, dated December 15, 1885.

Application filed February 12, 1885. Serial No. 155,727. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GILBERT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia 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, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a perspective, partly broken away, showing an attachment with my improvements in position on a machine. Fig. 2 is an inverted plan. Fig. 3 is a vertical transverse section. Fig. 4 is a vertical longitudinal section of the attachment. Figs. 5 and 6 are perspective views of, respectively, the heart-cam and the beveled block to which it is secured. Fig. 7 is a vertical central section of the clutch-casing with beveled block and heart-cam, and Fig. 8 is a perspective view of the rotary head or clutch-casing.

My invention relates to button-hole-stitching attachments for sewing-machines, and particularly to that class or form of attachment for which Letters Patent of the United States, dated October 14, 1884, No. 306,604, were granted to United States Automatic Button Hole Sewing Machine Company upon my application. Said patented attachment comprises, *inter alia*, the following parts: a base-plate which supports the moving parts of the mechanism, a frame pivoted at one end on said base-plate so as to be capable of oscillation thereon, and formed with ways or guides; a feed-slide carrying the cloth-clamp, a post or standard rigidly secured in the base-plate and forming the axis for a tappet-wheel, which communicates an oscillating movement to the pivoted frame; a ratchet by which motion is imparted to the tappet-wheel, and a rotary head carrying an adjustable heart-cam, which, in conjunction with a slotted yoke secured to the feed-slide, imparts the requisite feed-motion to said slide. On said base-plate there is also supported a bell-crank lever, one end of which engages with a screw on the needle-bar of the machine, the other end engaging with another lever that moves a pawl, which latter engages with the ratchet already mentioned.

My present invention consists of improvements in certain details of construction and combination pertaining to some of the above parts, as hereinafter fully described and particularly claimed.

The base-plate of the attachment has a supplementary plate or shoe, which occupies the space in the cloth-plate of the machine usually filled by the throat-plate or slide, and it fits in the grooves or ways in the edge of the cloth-plate opening or throat. The base-plate should be fastened very rigidly and securely to the cloth-plate, and should be made to fit its place without disturbance of or lowering the ordinary feed-bar or feed-dog of the machine, so as to permit the machine to be used for ordinary work without other change than the removal of the button-hole attachment and the insertion of the throat-plate. To accomplish these ends, I make the base-plate of unusual thickness to permit a recess to be cut on its under side, which allows play-space therein for the machine feed-bar, and I also attach to said base-plate a spring-shoe or supplementary plate, with a set-screw so arranged that said shoe may be buckled or sprung, and thereby tightly fastened in the opening or throat of the cloth-plate of the machine, the base-plate of the attachment being thereby firmly clamped to the cloth-plate of the machine.

The heart-cam is secured to a block adjustable in a dovetailed groove in the rotary head. This block, when adjusted, should be very securely fastened, and yet be capable of being readily loosened when required for adjusting purposes. To effect this, I form the block with a threaded opening and the heart-cam with a smooth or plain hole registering therewith, said opening and hole extending completely through the respective parts in which they are formed, and the smooth hole being of larger diameter than the threaded opening. A screw with enlarged neck has its threaded portion passed through the hole in the heart-cam and entered into the threaded opening in the block, its shoulder bearing upon the heart-cam. As the diameter of said heart-cam is greater than the width of the groove in which the block

fits, it follows that when the screw is turned down the block is thereby drawn up against the walls of the dovetailed groove and very firmly clamped in position.

To prevent the heart-cam from turning independently of the slide, the former is provided with dowel-pins, which enter and fit loosely suitable openings therefor in the latter.

The patented attachment hereinbefore referred to is designed to be capable of use on different forms of sewing-machines; but as these vary in their proportions, it has been found that the attachment-lever, which engages with a screw on the machine needle-bar, if made of the proper dimensions and with a definite adjustment for one style of machine, will sometimes be unsuited for other forms or makes of machines.

To render said lever adjustably adaptable to all or manifold forms of machines, I provide it with an adjustable fork at its inner end, so as to secure the proper play of the other lever which it moves, said other lever being the one that carries the pawl which imparts motion to the ratchet.

For the purposes of more exact definition, the lever having the adjustable fork, and which vibrates in a vertical plane, may be called the "needle-bar lever," while the other lever, which oscillates in a horizontal plane, may be designated as the "ratchet-lever."

Referring to the accompanying drawings, which illustrate the patented attachment hereinbefore mentioned with my present improvement applied thereto, A is the base-plate, on which is pivoted at *b* the oscillating frame or carrier B, the side bars, *b' b'*, of which are grooved to receive the feed-slide C. Said slide extends beyond the end of the frame B and carries the cloth-clamp D, which is held down on said slide by an eccentric lever, *d*.

E is the post, on which are fitted the ratchet F, tappet-wheel G, and rotary head H, said head forming the support for the heart-cam I, and also constituting a clutch-casing. The heart-cam is secured to the radially-adjustable bevel-edged block K, fitted in the dovetailed groove *h* in the rotary head.

L is the level, whose forked end *l* engages with a screw on the vertically-reciprocating needle-bar *x* of the sewing-machine, its other adjustable forked end, L', engaging with the horizontal lever M, which carries the pawl N, that imparts motion to the ratchet F.

Though the same forms no part of my present improvements, it may be here remarked that when the tappet G rotates its points alternately strike spring-bars O O, secured to the sides of the frame B, and so produce an oscillation of the latter, the extent of such oscillation being limited by stop-screws *o o;* also, that on the post E there is a rotary stop-cam which operates, in conjunction with contacting-screws *p p* on the frame B, to cause the attachment so to move as to effect the stitching first of one side and then the other side of a button-hole, as well as the barring of the end thereof, and that a lever, Q, is provided to operate the clutch-band in the rotary head or clutch-casing H.

A' represents a steel plate or shoe, fastened at or near both its ends to the under side of the base-plate A by screws *a a*, and *a'* is a set-screw passing through a threaded opening in said base-plate, and bearing upon the plate A' at or about the middle of the latter or midway between the screws *a a*. This plate A' fits in the dovetailed groove *s* in the cloth-plate S of the sewing-machine, and when the screw *a'* is turned down it causes said plate A' to buckle or spring at its middle, whereby it and the base-plate A are firmly clamped to and secured on the cloth-plate of the sewing-machine. The base-plate A is made of unusual thickness to permit an undercut recess, A^2, to be cut on its lower side, affording play-space for the feed-bar T of the sewing-machine, so that the latter may remain undisturbed by reason of the presence of the button-hole attachment, and also so that said feed-bar shall not project through the base-plate. The block K has a threaded opening, *k*, which receives the threaded end *k'* of a screw, K', that passes through a registering smooth hole, *i*, of larger diameter in the heart-cam I, the diameter of said heart-cam being greater than the width of the dovetailed groove *h* in the rotary head H, and said screw K' having an enlarged neck, k^2, the shoulder of which bears upon the heart-cam. When the screw K' is turned down, the block K is drawn up against the walls of the groove *h* and firmly clamped therein, while by a reverse movement or upward turn of said screw the block is loosened to permit its being moved along in the groove in which it rests. Dowel-pins *i i'*, fastened in the heart-cam I, project downwardly and enter corresponding openings, k^3, in the block K, and serve to prevent said cam from turning independently of the block, both of these parts rotating with the rotary head H and serving, in connection with the slotted yoke W, to impart the requisite feed-motion to the slide C. The needle-bar lever L, which is fulcrumed at I' on a standard, V, integral with the base-plate A, has a supplementary fork, L', at its inner end, said fork being swung on a screw, l^2, and having a segmental slot, l^3, through which passes into the lever L a set-screw, l^4, having a wide head, as shown. Said fork L' therefore moves with the lever L, and, as it can be adjusted laterally thereon, due movement of the ratchet-lever M can be secured for the attachment on the different machines to which it may be applied, notwithstanding variances in the altitudes of the screws on the needle-bars of such machines with which the lever L engages.

What I claim as my invention is as follows:

1. In a button-hole attachment for sewing-machines, the combination, with the base-plate A, of a supplementary plate or shoe, A', fastened at or near both its ends to said base-plate, and a screw, *a'*, passing through said base-plate and bearing upon the supplement-

ary plate, whereby, when said supplementary plate is entered to the grooves in the cloth-plate of the machine, it may be buckled or sprung therein by turning the screw *a'*, thereby securing the attachment firmly to the cloth-plate of the machine, substantially as shown and described.

2. In a button-hole attachment for sewing-machines, the combination, with a rotary head, H, through which motion is imparted to the feed-slide, said head having a dovetailed groove, of an adjustable block fitted in said groove and having a threaded opening, a heart-cam carried on said block and having a smooth hole of larger diameter than the threaded opening in said block, the diameter of said cam being greater than the width of the groove in the rotary head, and a screw with enlarged neck, said screw entering the threaded opening in the block and passing the smooth hole in the cam, its shoulder bearing upon the latter, whereby, when the screw is turned down, the block is firmly clamped in the groove, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of December, 1884.

WILLIAM HENRY GILBERT.

Witnesses:
CURTIS TILTON,
JAMES M. CASSADY.