C. M. BANKS.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

No. 187,082. Patented Feb. 6, 1877.

Fig. 1

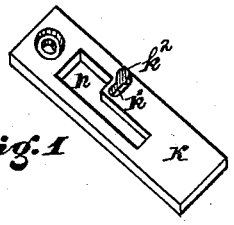


Fig. 2

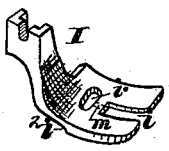


Fig. 3

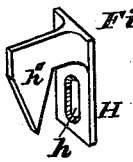


Fig. 4

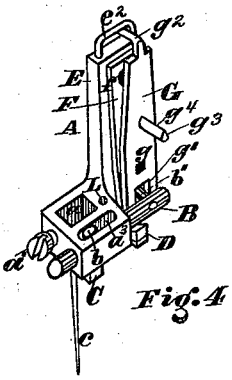


Fig. 5

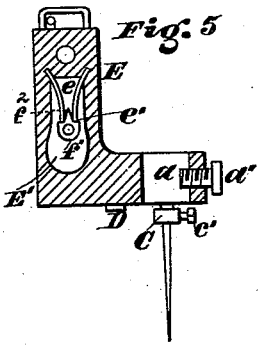


Fig. 6

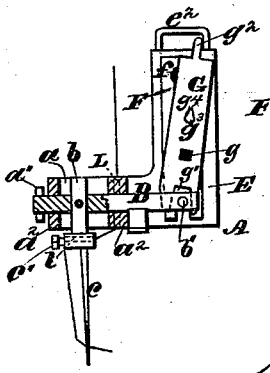


Fig. 7

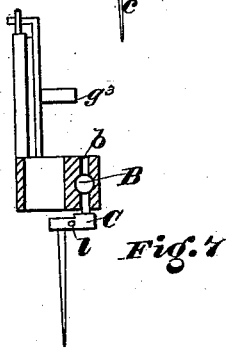
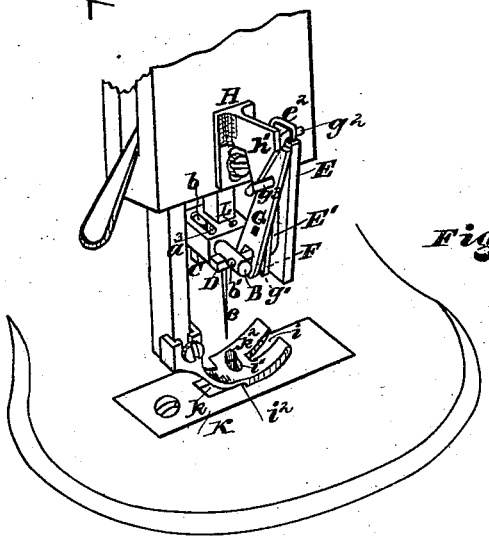


Fig. 8



Witnesses

Saml. J. VanStavoren.

Jos. B. Connolly

Inventor

Chas. M. Banks,

By Connolly Bros, Attorneys

UNITED STATES PATENT OFFICE.

CHARLES M. BANKS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BUTTON-HOLE ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **187,082**, dated February 6, 1877; application filed September 19, 1876.

To all whom it may concern:

Be it known that I, CHARLES M. BANKS, of 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, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a perspective of throat-plate. Fig. 2 is a perspective of the presser-foot. Fig. 3 is a perspective of the plate. Fig. 4 is a perspective of my invention. Figs. 5 and 6 are longitudinal vertical sections. Fig. 7 is a transverse vertical section. Fig. 8 is a perspective, showing my invention applied to a sewing-machine.

The object of my invention is to provide a simple and comparatively inexpensive attachment for sewing-machines, by means of which button-holes may be speedily and thoroughly worked. My invention accordingly consists in the peculiar construction and combination of parts hereinafter more fully described, having reference particularly to the means whereby the needle is caused to descend alternately in different lines, or at two different points, ascending, however, always in the line it has just descended.

Referring to the accompanying drawing, A designates a metallic block, having an opening, *a*, for the passage of the needle-bar, to which latter said block is firmly secured by a screw, a^1. B is an arm sliding longitudinally in bearings a^2 a^2 in the block A, having a stud, *b*, projecting through a slot, a^3, by means of which its movement in either direction is limited. C is a hanger depending from the arm B, having an opening for the reception of the needle *c*, which is held in position by a set-screw, *c'*. D is a friction-pad, the object of which is to bind the bar B and prevent it from moving, except as positively impelled by the devices now to be described. E represents a standard firmly fastened to or forming an integral part of the block A. The outer face of said standard is formed with a recess, E', in which are fastened two springs, *e e*, whose free ends meet at *e'*. F represents a lever pivoted to the standard E at *f*, and provided on its back side with a collar, f^1, having a thin plate or point, f^2, which rests between the free ends of the springs *e e* at the point e^1. The lower end of the lever F is bifurcated to embrace the pin b^1, which projects rearwardly from the arm B. G represents another lever pivoted at *g* to the lever F, having its lower end bifurcated at g^1 to straddle the pin b^1 while its upper extremity is formed with a hook, g^2, which moves laterally in a loop or elongated slot, e^2, in the standard E. g^3 represents a stud having two beveled sides, which meet and form an edge, g^4. H represents a plate fastened adjustably by means of a set-screw, which passes through the elongated slot *h* into the head of the sewing-machine, to which the attachment is applied. This plate is made with a projection cut or fashioned to form a point or spear-head, *h'*, upon the opposite sides of which the stud g^3 strikes alternately with every upward movement of the machine needle-bar, causing the bar B to be reciprocated longitudinally back and forth, and the needle *c* alternately to pass into the cloth and through the slot or opening cut in said cloth for the formation of the button-holes. I represents a presser-foot, made somewhat wider than usual, having the customary openings *i* i^1, the latter, however, being an elongated slot instead of the ordinary circular opening. K represents the throat-plate, having a slot, *k*, through which the feed works, and an elongated slot, k^1, for the passage of the needle. One side of this slot is provided with a half-nipple, k^2, which serves as a guide or center for the cloth and a guard for the needle *c*. The presser-foot I is formed on its under face with an offset, i^2, the object of which is to prevent said foot from binding on the cloth at this point, the effect being that the feed, if the cloth be not guided, will cause the latter to be rotated around the needle or guide k^2, so that a stud-hole or the rounded end of a button-hole will be formed without the operator's guiding the cloth at all. To work the straight edges of a button-hole the cloth must be guided, as, owing to the offset i^2, the feed takes hold only of the cloth on

one side of the needle, causing said cloth to be rotated around the guide k^2, as already described.

The described movement of the needle-carrying bar and needle is accomplished as follows: When the needle-bar of the machine descends, it carries with it the block A, and causes the needle to pierce the cloth. When the needle-bar ascends, the needle is withdrawn from the cloth (the stitch having been formed by the passage of the carrier through the loop in the usual manner) until its point is just clear of said cloth. The stud g^3 now meets the spear-head h', and, pressing against the same, causes the lower end of the lever G to be moved away from the friction-pad D, carrying the lower extremity of the lever F, which turns on its pivot f in the same direction. This moves the bar B longitudinally, and changes the position of the needle laterally, so that when it next descends it will not pierce the cloth, as before, but will pass through the slot cut in said cloth for the formation of the button-hole. While the needle is down the carrier forms the stitch, in the usual manner, and the needle then ascends with the needle-bar. The stud g^3 again meets the spear-head h', but on the side opposite to that on which it met it on the previous ascent of the needle-bar, and the bar B is then reciprocated, as in the manner already described, but in the contrary direction, restoring it and the needle to their normal position, so that when said needle again descends it will, as at first, pierce the cloth, and not pass through the button-hole slit therein. The action of the springs e e on the collar f^1 (which is made fast to the pivotal stud g of the lever G, said stud passing through the lever F) has the effect of bringing the stud g^3 on opposite sides of the spear-head h' alternately at each ascent of the needle-bar of the machine. In other words, after the lower end of the lever G is moved, as described, by contact of the stud g^3 with the spear-head h', the plate f^2 is caused to impinge against one of the springs e. The spring so impinged, reacting, causes the lever G to be moved in the contrary direction, throwing the stud g^3 on the other side of the center of motion and on the opposite side of the spear-head h', so that when the needle-bar next ascends, the movement of the lever will be reversed.

L l are openings, by means of which the thread is carried through the block A and carrier C, passing thence through the needle-eye outwardly, so as to avoid springing the needle when it is moved laterally by means of the bar B.

The presser-foot may have an opening, m, to admit a thread when it is desired to "cord" the button-hole; and in lieu of the fixed friction-pad D, an adjustable screw, working against the side of the bar B, may be employed.

What I claim as my invention is—

1. The combination, with the reciprocating needle-bar B, standard E, and spear-head h', of the lever F, pivoted to said standard at f, and the lever G, pivoted to lever F at g, said levers and standard being constructed and provided with mechanism substantially as described, so that the lever G shall be alternately thrown on opposite sides of the spear-head and the proper intermittent reciprocating motion imparted to the bar B, as set forth.

2. The combination, with the reciprocating needle-bar B, recessed standard E, provided with loop or equivalent e^2 and spear-head H, of the levers F and G, constructed and arranged substantially as described, springs e, collar f^1, as and for the purpose set forth.

3. The adjustable plate H, carrying the spear-head h', in combination with the head of the machine, the reciprocating needle-bar B, standard E, and intermediate mechanism, substantially as described, for imparting motion to said needle-bar, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of September, 1876.

CHARLES M. BANKS.

Witnesses:

M. DANL. CONNOLLY,

CHAS. F. VAN HORN.