(No Model.)

C. M. BANKS.

SEWING MACHINE ATTACHMENT.

No. 246,450. Patented Aug. 30, 1881.

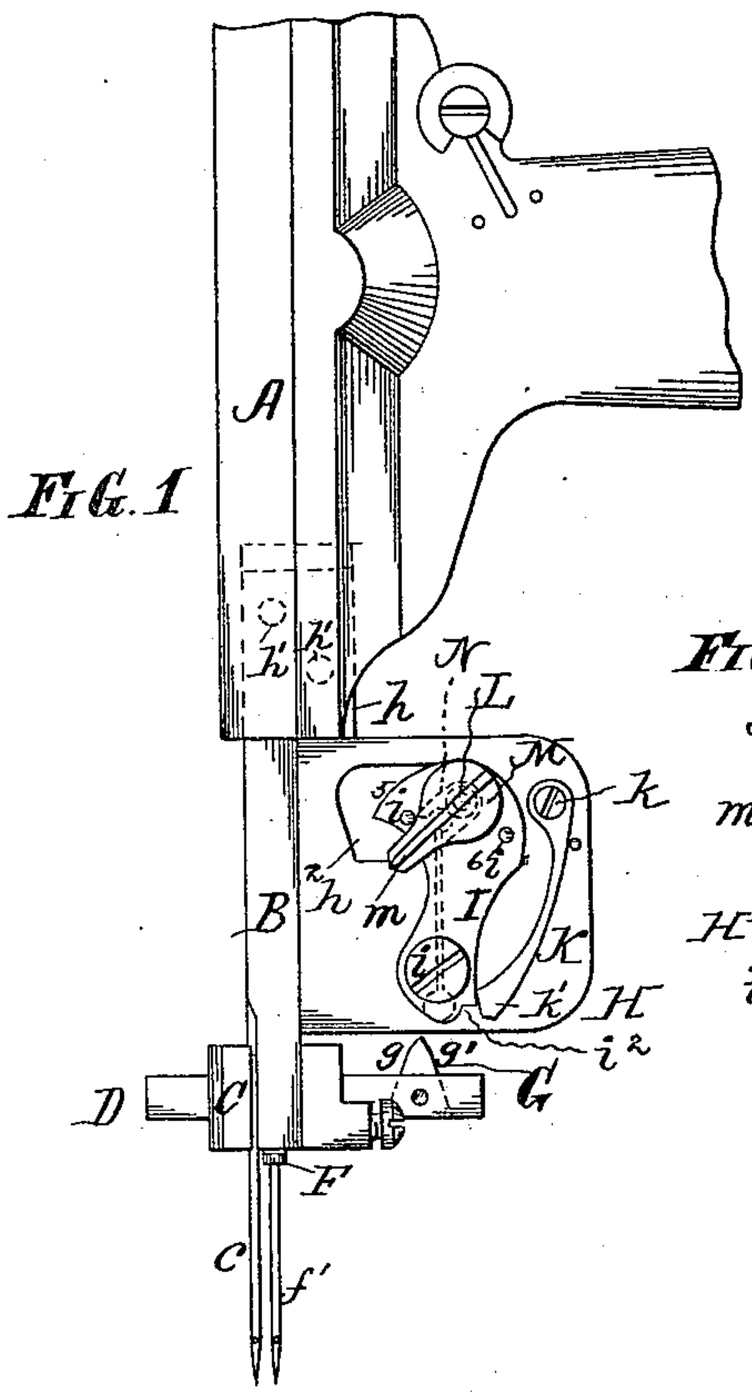

FIG. 1

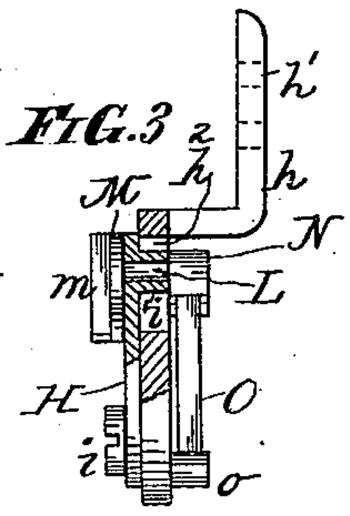

FIG. 3

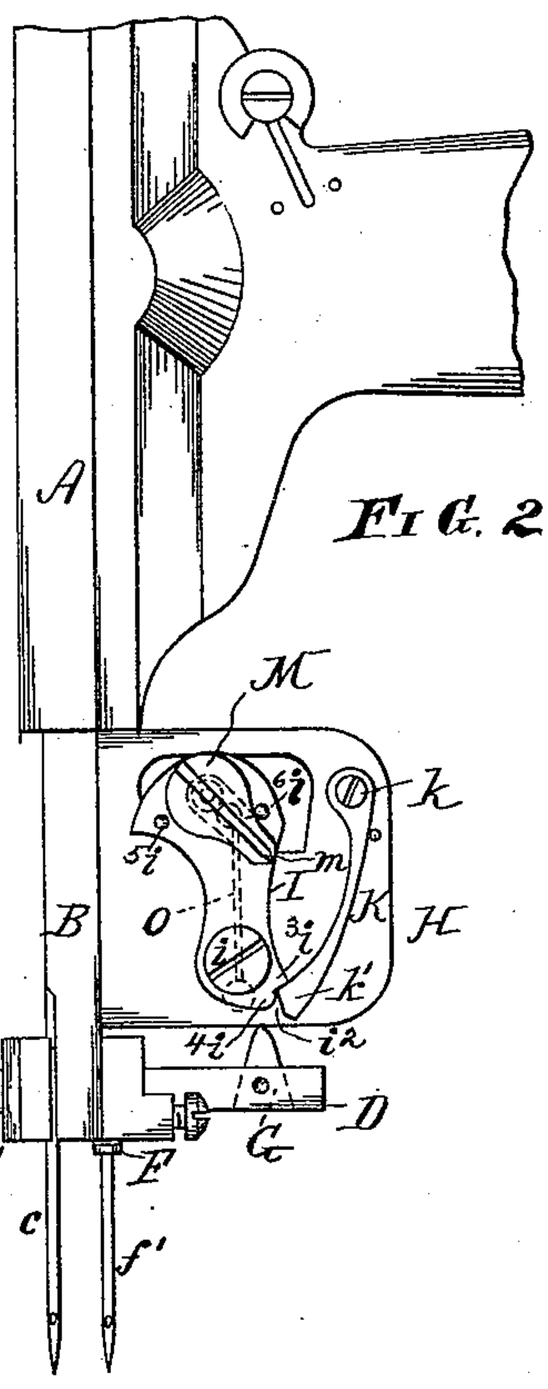

FIG. 2

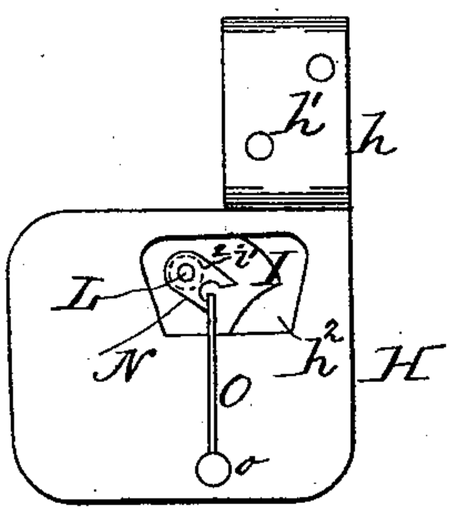

FIG. 4

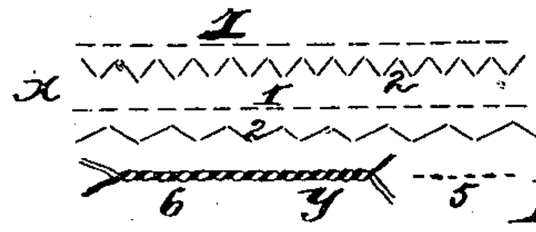

FIG. 7

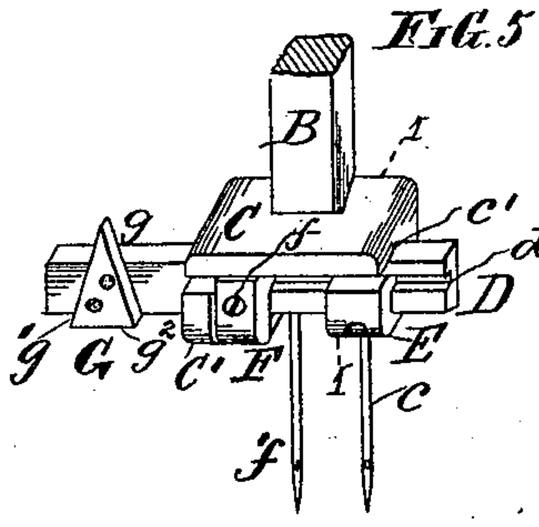

FIG. 5

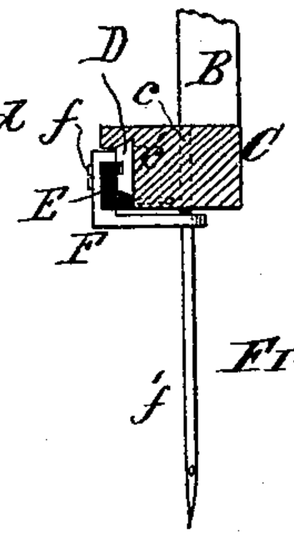

FIG. 6

WITNESSES:

S. J. VanStavoren

A. A. Connolly

INVENTOR

Chas. M. Banks,

By Connolly Bro,

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES M. BANKS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ST. JOHN W. MINTZER AND CHARLES H. MINTZER, OF SAME PLACE.

SEWING-MACHINE ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 246,450, dated August 30, 1881.

Application filed May 12, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. BANKS, 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 Overseaming and Button-Hole-Working Sewing-Machine Attachments, of which the following is a specification, reference being had to the annexed drawings, wherein—

Figures 1 and 2 are broken side elevations of the head of a sewing-machine, with my improvements shown as applied thereto. Fig. 3 is an end elevation, partly in section, of the mechanism for effecting the lateral reciprocation of the needle sewing the zigzag stitch. Fig. 4 is a rear-side elevation of the same. Fig. 5 is a detail perspective of needle-bar and clamp for the straight needle, and of the sliding mechanism for the laterally-reciprocating needle. Fig. 6 is a section on line 1 1, Fig. 5; and in Fig. 7 I have shown diagrams of the ornamental stitch produced with my improvements.

My invention has for its object to provide means whereby straight and zigzag stitching may be produced at one and the same time on a sewing-machine.

A further object of my invention is to provide an attachment for a sewing-machine for doing zigzag stitching which will permit the machine to be run with the presser-foot raised.

A still further object of my invention is to produce by means of an attachment applied to an ordinary sewing-machine a stitch which consists, essentially, of a straight and a zigzag stitch interlocked, as hereinafter set forth.

A still further object of my invention is to produce a zigzag-stitch sewing-machine attachment of simple but effective and durable construction.

My improvements consist in the peculiar construction and combination of parts constituting the attachment, and the combination of the same with the needle-bar of the machine.

Referring to the accompanying drawings, A indicates the head or face plate of a Singer or other sewing-machine having a vertically-reciprocating needle-bar, B.

C represents the needle-clamp secured to the lower end of the needle-bar and holding in the ordinary manner a needle, *c*, for doing customary straight stitching. The rear side of said clamp is formed with a dovetail groove, *c'*, for the reception of a slide, D, which fits and is designed to reciprocate longitudinally therein.

C' E represent two lugs, one of which, for convenience of manufacture, is integral with the clamp C, the other being detachable therefrom to permit the slide to be inserted. Said lug E enters, as shown, a groove, *d*, on the outer side of the slide D and holds the same in position, while permitting its free horizontal movement within due limits, the lug C' also bearing against said slide or forming a guide therefor.

F represents a needle-clamp secured by a screw, *f*, to the slide D, or it may be integral with the latter. Said clamp carries a needle, *f'*, and is secured to the slide between the lugs C' E, which lugs thus form limiting-stops to the slide in either direction of its movement.

G is a cam-stud secured to, or it may form a part of or projection from, the slide D. Said stud has two oppositely-inclined sides, *g g'*. Its third side, g^2, which I have shown horizontal, may be of any inclination, as it has no operation to perform.

It will be noted that by the foregoing construction the clamp which secures the straight needle *c* to the needle-bar forms the stock for the slide D, and hence that a separate stock for the latter is not required. Economy of construction is thus secured in the first place, and as said clamp, which also forms the slide-stock, does not extend below the end of the needle-bar, it in no way interferes nor at any time or in any position comes in contact with the presser-foot; hence the machine can be run (for winding bobbins, &c.) with the presser-foot raised, which is not possible with attachments having a stock which projects downwardly below the lower end of the needle-bar, and which comes in contact with the presser-foot when the latter is raised.

H represents a plate secured by means of a projection or lug, *h*, to one side of the head or face-plate of the sewing-machine, screws *h' h'* passing through said lug into said head, as shown. The plate H has a slot or opening, h^2,

and carries on one side a lever, I, pivoted at its lower end by a screw, *i*, and a holding spring or dog, K, fastened at its upper end by a screw, *k*, its lower end or toe, *k'*, bearing against the lever I.

L represents a short rock-shaft having bearings in the upper part of the lever I, the latter having a boss, *i'*, which projects through the slot h^2 in the plate H. The rock-shaft L passes through this boss, projecting beyond the same and beyond the plate H, as shown, and carrying at either end the arms M and N, respectively. The arm M is pear-shaped in plan or front elevation, and has a rib, *m*, which runs down its middle. The arm N is notched or bifurcated at its outer end, receiving the upper end of a spring, O, whose lower end is made fast to the plate H at *o*. The lower end of the lever I is notched at i^2, thus affording two shoulders, i^3 i^4, against which the toe *k'* alternately impinges when the device is in operation. Said lever has also two pins or studs, i^5 i^6, near its upper end, which serve as limiting-stops for the arm M, as hereinafter specified.

The operation is as follows: The parts being secured in position, as shown, the lever I and arm M will be inclined in opposite directions, the spring or dog K holding said lever at one inclination, and the spring O, acting through the arm N and shaft L, holding said arm M at a contrary inclination. When the needle-bar of the machine ascends it will bring the cam-stud G in contact with one side of the rib *m*, bearing against said rib and holding the arm M against one of the studs i^5 or i^6. This causes the slide D to be moved longitudinally until the clamp F meets one of the lugs C' or E. Until this time the pressure of the spring K has been sufficient to prevent the bearing action of the cam-stud G on the rib *m* from moving the lever I; but when the clamp F meets one of the lugs C' or E the spring K is overcome and the lever I moved from the position shown in Fig. 1 to that shown in Fig. 2, or vice versa. This movement of the lever I allows the action or bearing of the spring O with respect to the arm N by changing the center of motion of the latter (which is the shaft L) from one side of said spring to the other. This causes said spring to produce a rocking motion or oscillation of the shaft L, thereby throwing the arm M secured to said shaft into an inclination opposite to that of the lever I. The arm M can attain only a vertical or approximately-vertical position while the needle-bar is up and the cam-stud G in contact with the rib *m*. As soon, however, as the needle-bar descends sufficiently to permit the cam-stud G to clear the rib *m*, the arm M, through the pressure of the spring O on the arm N, assumes the inclination with respect to lever I shown in Fig. 1 or as in Fig. 2. This throws the lower extremity of rib *m* to the opposite side of the apex of cam-stud G, so that when the needle-bar next ascends said cam-stud will meet the side of said rib *m* other than that which it met on its previous ascent. This will cause the slide D to be slid in the direction contrary to its previous movement, the lever I and arm M being moved as before, but in reverse directions. The necessary reciprocation of the slide to produce zigzag stitching with the needle *f'* is thus accomplished.

The stitch produced by the combination of a straight and a zigzag needle is peculiar and novel. The threads from both said needles are engaged by and looped with the thread of one and the same shuttle. Where both of said needles penetrate the cloth the stitching on the upper surface thereof will consist of two lines of stitching, as shown at *x* in Fig. 7—viz., a line of straight stitching, 1, and a line of zigzag stitching, 2. The under stitch in such case is a fancy stitch, composed of the two needle-threads with a zigzag shuttle-stitch connecting the same. A different form of stitch will be produced by running the straight needle close to the edge of the cloth and the zigzag needle outside of said edge, so as not to penetrate the cloth. In this case only the usual straight stitch, 5, will appear on the upper surface of the cloth, while the stitch on the under side presents the appearance of a twist, the zigzag needle-thread being looped by and, in effect, corded by the shuttle-thread 6. This stitch (shown at *y* in Fig. 7) is the same as the preceding described stitch (shown at *x* in Fig. 7) in this respect, that both consist of the two needle-threads interlocked by one and the same shuttle-thread.

What I claim as my invention is—

1. The combination, with a vertically-reciprocating needle-bar and its clamp C, for holding the needle *c*, of a horizontally-reciprocating slide, D, carrying a needle, *f'*, said clamp C forming a stock for the said slide, whereby a straight and a zigzag stitch may be made at one and the same time.

2. The combination of the clamp C, having lugs C' E, with the needle-carrying slide D, having clamp F, substantially as shown and described.

3. The combination of the plate H, having slot h^2, with lever I, spring-dog K, rock-shaft L, having arms M N and spring O, substantially as shown and described.

4. The combination, with needle-bar B, its clamp C, and slide D, having cam-stud G, of plate H, having slot h^2, lever I, spring-dog K, rock-shaft L, arms M N, and spring O, said parts being constructed and combined for operation substantially as shown and described.

In testimony that I claim the foregoing, I have hereunto set my hand this 6th day of May, 1880.

CHARLES M. BANKS.

Witnesses:
M. D. CONNOLLY,
S. J. W. MINTZER.