

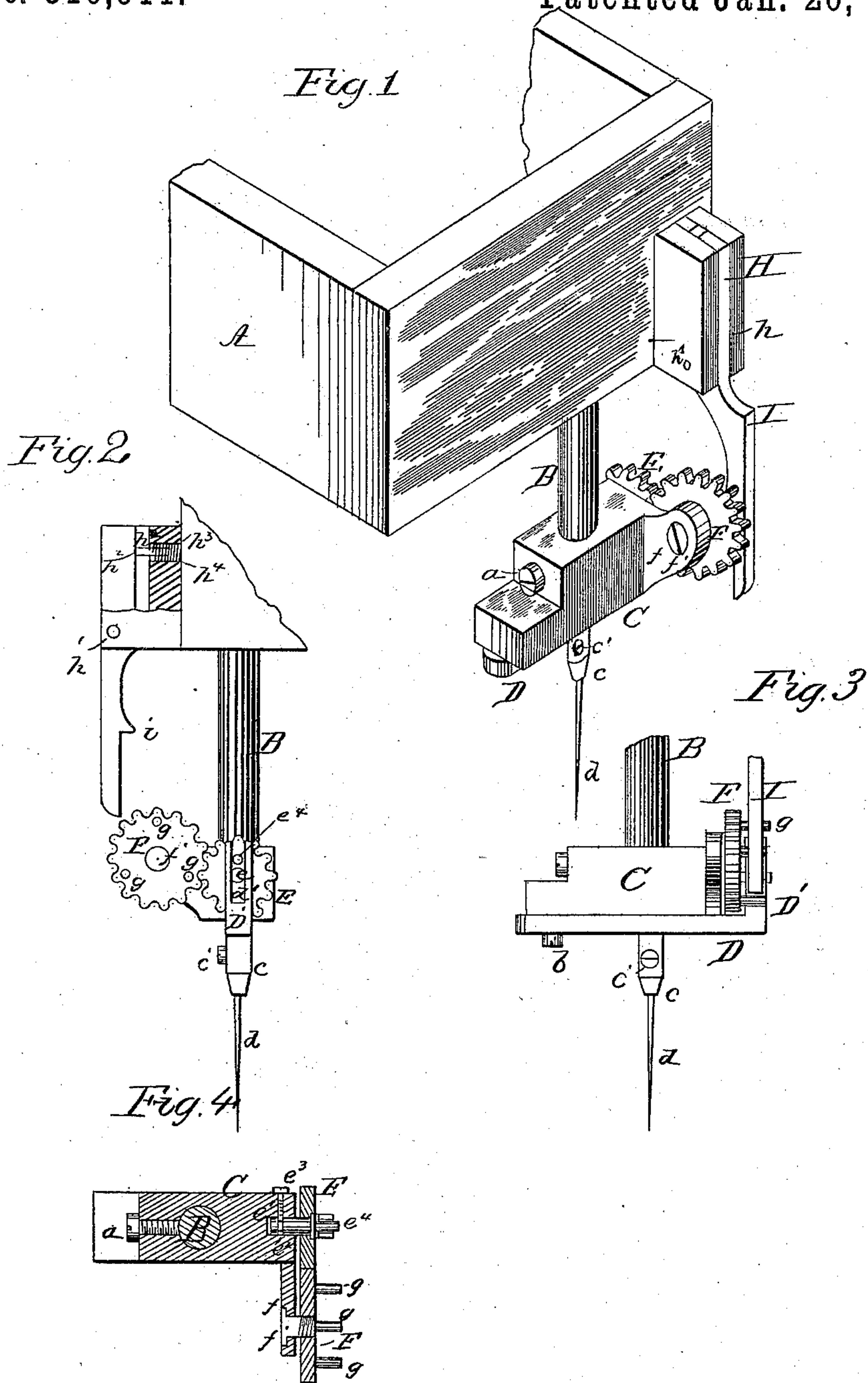
(No Model.)

G. REHFUSS.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 310,911.

Patented Jan. 20, 1885.



Witnesses  
Jas. B. Connolly  
Will H. Powell.

Geo. Rehfuß  
Inventor  
by Connolly Bros



# UNITED STATES PATENT OFFICE.

GEORGE REHFUSS, OF PHILADELPHIA, PENNSYLVANIA.

## BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 310,911, dated January 20, 1885.

Application filed March 13, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE REHFUSS, 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 view showing my improvements in position upon a sewing-machine. Fig. 2 is an end view, Fig. 3 is a side view, and Fig. 4 a horizontal sectional view, of the same.

This invention has relation to button-hole sewing-machines of that class wherein the zig-zag stitching forming the button-hole is produced by causing the needle to change its position from side to side before each stitch is made.

The invention has for its object the provision of means for accomplishing the change of position of the needle; and it consists in the novel construction and combination of parts, hereinafter described, and comprises devices attached to the head of the machine and to the needle-bar, which operate in conjunction to cause the needle-holder to reciprocate laterally before each downward movement, and thereby produce the desired effect.

Referring to the accompanying drawings, 35 A is the head of the machine, in which the needle-bar B works. To the lower end of said bar, and in place of the usual needle-holder, is secured a rectangular block, C, by a screw, *a*.

D represents a lever, which is pivoted upon 40 the bottom of block C by a screw, *b*, and upon the bottom of said lever, in a line with the needle-bar B, is the usual needle-holding device, *c*, in which a needle, *d*, is secured by a set-screw, *c'*. The lever D projects out beyond 45 the end of the block C and has an upturned end, *D'*, in which is an open-ended vertical slot, *d'*.

E represents a pinion, which is journaled upon the block B between the end thereof and 50 the upturned end of lever D by a pin, *e*, that projects into a hole, *e'*, in the end of block C. The pin *e* has a groove, *e<sup>2</sup>*, near its inner end.

The end of a screw *w*, *e<sup>3</sup>*, fits in said groove and retains the pin in position while allowing it to turn freely in hole *e'*. The pinion E is provided with a pin, *e<sup>4</sup>*, set upon its face, to one 55 side of the center, which projects into and works freely in the slot *d'*. The block C has a lateral arm, *f*, upon the side of which is journaled a gear-wheel, F, by a pin, *f'*, that gears 60 with the pinion E, and upon the face of wheel F are three pins, *g g g*, set at equal distances around the center of said wheel. The number of teeth in the gear-wheel are in such proportion to the number of teeth in the pinion 65 that one-third of a revolution of the former will give a half-revolution to the latter, and, as will be hereinafter set forth, when the gear-wheel revolves one-third way round, at each upward movement of the needle-bar the pinion 70 will perform one-half a revolution, thereby moving the lever D to one side a distance sufficient to make the proper stitch for a button-hole.

H represents a block, which is secured to 75 the head A, and has a vertical slot, *h*, into which fits an arm, I, pivoted to said block by a pin, *h'*. Within the block, at the bottom of the slot and near its upper end, is placed a plunger, *h<sup>2</sup>*, that works in a hole, *h<sup>3</sup>*, and is 80 forced against the inner edge of the arm I by a spiral spring, *h<sup>4</sup>*. The arm I projects downwardly from the block H, and has a tooth, *i*, upon its inner edge, which comes into contact with one of the pins *g* when the needle-bar ascends, thereby imparting motion to gear-wheel F. 85

The operation of the invention is as follows: When the needle-bar is at the extremity of its upward stroke, one of the pins *g* is in contact 90 with the tooth *i* and the pin next adjacent is in contact with the inner edge of arm I above said notch. The lever D is now at the extremity of its movement to one side, and remains in that position during the descent of the needle bar and until the needle is clear of the cloth on the upward movement of the same, 95 the lever I yielding and allowing the pin above the tooth to slip past the same. As the needle-bar ascends, the pin *g*, which was above the tooth, engages the same, and the gear-wheel is, by the continuance of the upward movement of the needle-bar, caused to make one-third of a revolution, thereby moving the 100



lever D to the other side, in which position it descends, and the needle penetrates the cloth to one side of the first stitch. The second ascent of the needle-bar causes the gear-wheel 5 to make another one-third revolution, which brings the lever D back to its original position. It will be noted that when the needle-bar is descending two of the pins *g g g* on the wheel F are in vertical alignment and bear 10 against the side or edge of the lever-arm I, the latter serving to preserve such alignment.

What I claim as my invention is as follows:

1. In a button-hole sewing-machine, the combination, with a pivoted lever attached to 15 the reciprocating needle-bar and carrying the needle, a pinion provided with a projecting pin, which engages with said lever, a gear-wheel engaging with said pinion and having pins upon its face, of an arm attached to the 20 sewing-machine head and provided with a tooth, which engages with the pins upon the

gear-wheel, thereby turning the same and causing the lever to vibrate, substantially as described.

2. In a button-hole sewing-machine, the combination, with the reciprocating needle-bar, a pivoted lever, D, attached thereto and carrying the needle, and a pinion, E, journaled upon a block, C, upon said needle-bar, said pinion engaging said lever, of a gear-wheel, 25 F, having pins *g*, and a pivoted spring-arm, I, having a tooth, *i*, for engagement with said pins, substantially as and for the purpose set forth. 30

In testimony that I claim the foregoing I 35 have hereunto set my hand this 8th day of March, 1884.

GEO. REHFUSS.

Witnesses:

THOS. A. CONNOLLY,  
FRANCIS S. BROWN.