

S. J. BAIRD.

Button-Holing Attachment for Sewing Machines.

No. 134,345.

Patented Dec. 31, 1872.

Fig. 1.

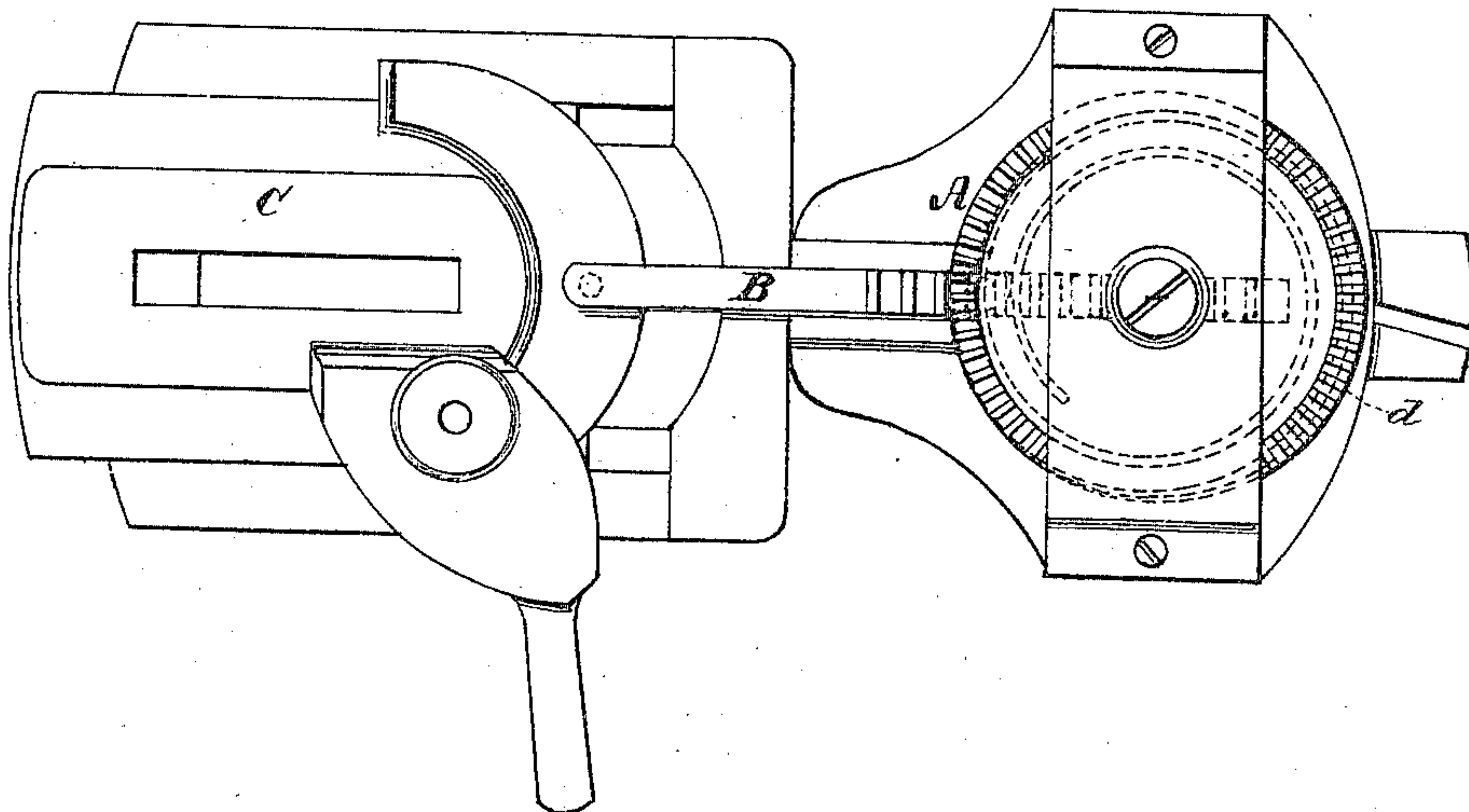


Fig. 3.

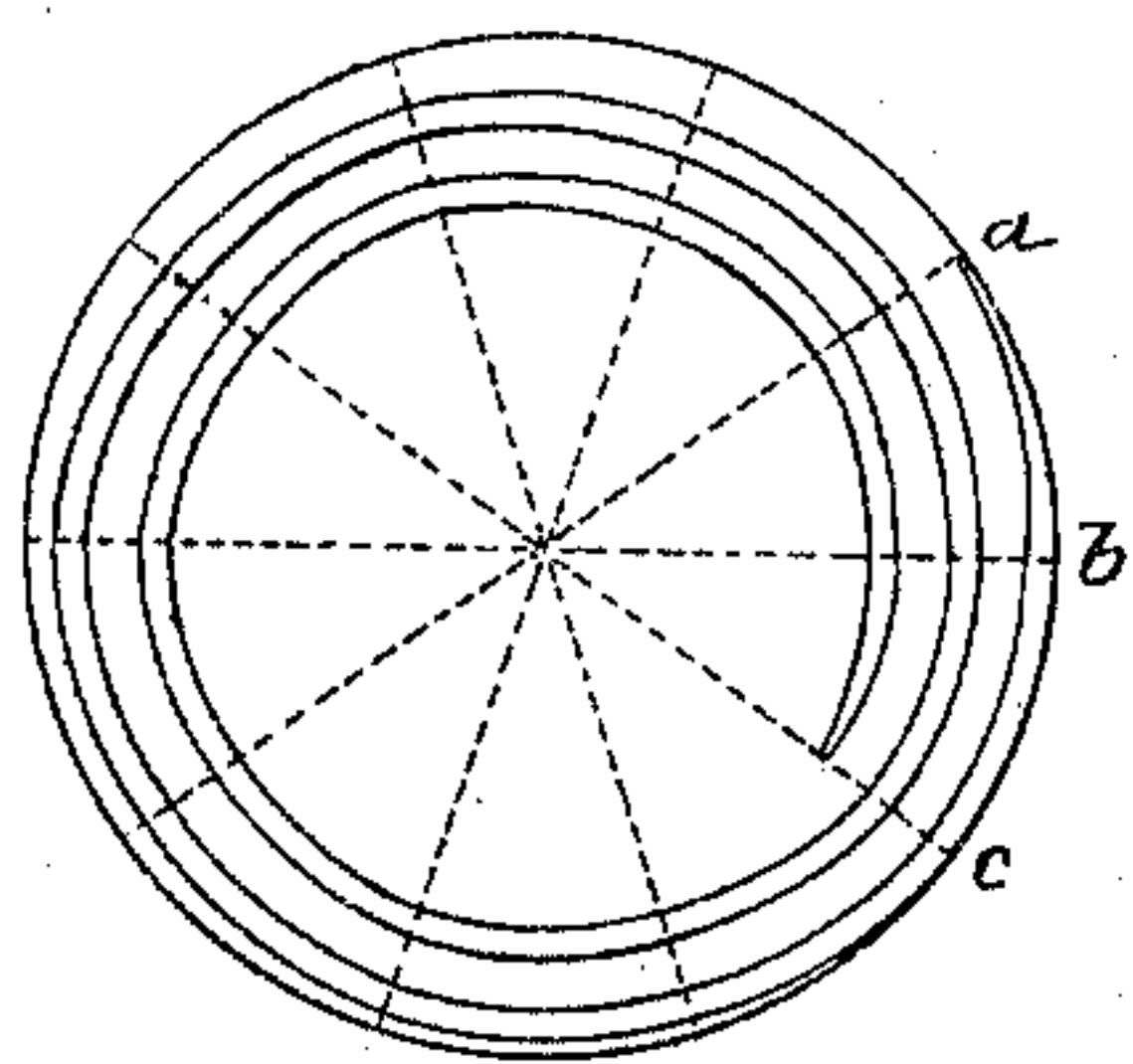


Fig. 2.

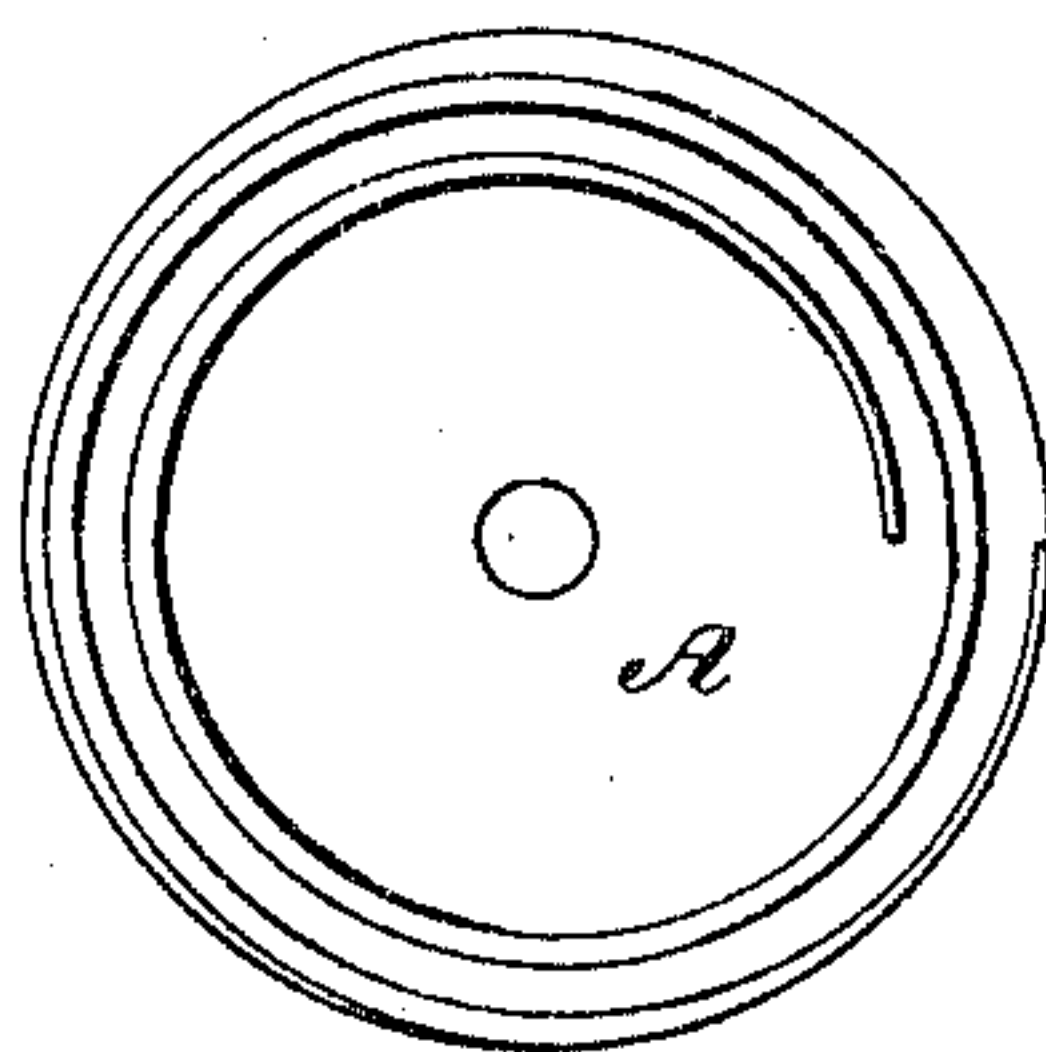


Fig. 4.

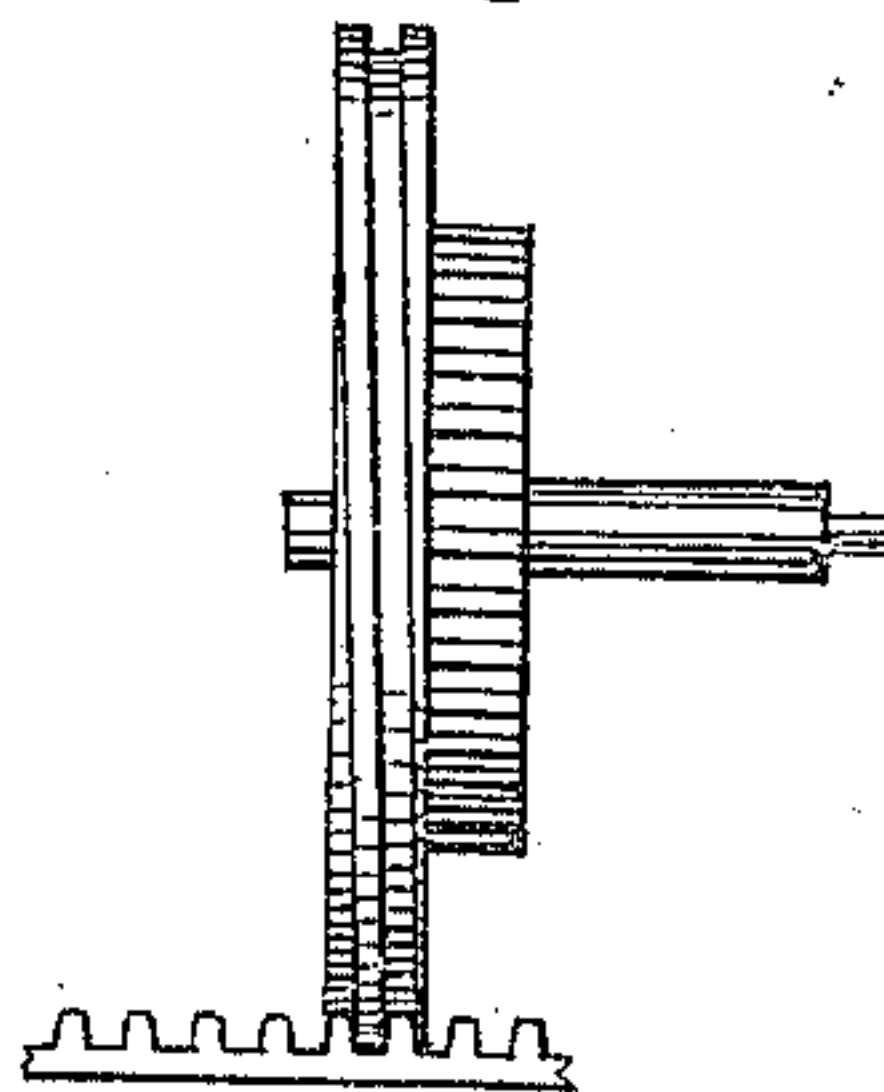
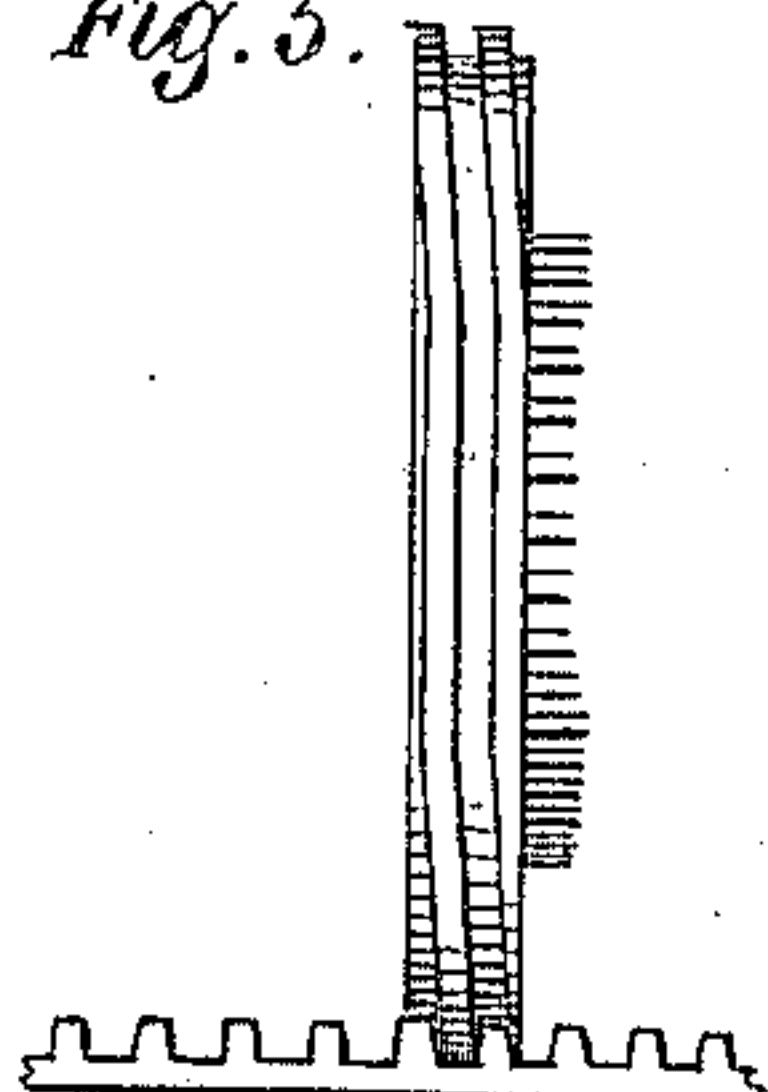


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

SAMUEL J. BAIRD, OF WAYNESBOROUGH, VIRGINIA.

IMPROVEMENT IN BUTTON-HOLING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 134,345, dated December 31, 1872.

To all whom it may concern:

Be it known that I, SAMUEL J. BAIRD, of Waynesborough, Augusta county, Virginia, have invented certain Improvements in Button-Holing Attachments for Sewing-Machines, of which the following is a specification:

My invention consists in the combination, with the clamp or cloth-holder of a button-hole sewing-machine, of a rack and a scroll-wheel, or its equivalent, which engages with the teeth of the rack, and is so operated as to impart to the rack and to the clamp a longitudinal movement. My invention further consists of the combination, with the said rack, of a scroll or worm wheel having a thread of such a character as to impart an intermittent movement to the rack.

A, Figures 1 and 2, is a scroll-wheel, the thread of which, in the present instance, has a pitch equal to twice the transverse measurement of the threads, and is continued at least so far as to complete one circuit of the wheel, and begin a second, which will be parallel to the first, and separated from it by a distance equal to half the pitch. B represents a rack or toothed shaft, the teeth of which are of a thickness, distance apart, and depth to correspond with those of the scroll. One end of this shaft is connected with the cloth-holder C, to which motion is to be given. The shaft lies in a groove, or may be held in position laterally by guide-pins, or other equivalent means. The scroll-wheel lies upon the shaft in such a position that the center of the former is over the axis of the latter, while the threads of the one fit between the teeth of the other. If, now, the wheel be revolved in that direction toward which the inner end of the scroll points, the scroll presses against the engaged tooth or teeth of the rack and pushes it forward, so that when a revolution of the wheel is completed the rack, driving the cloth-holder before it, will have advanced a distance equal to the pitch of the scroll. Before the outer end of the scroll has passed out and become disengaged from the tooth behind which it has traversed, the inner end has re-entered the rack and engaged the tooth next in order, so that the outward movement of the rack is continuous with the revolution of the scroll, until the last tooth is pushed outside the scroll, when the advance of the rack and cloth-holder

ceases. If, now, the revolution of the wheel be reversed, and the rack be gently pressed back on the scroll, its teeth are immediately engaged therewith, and the process is reversed. By arranging the wheel A on an axis slightly inclined, so as to raise the inner edge *d* of the wheel above the rack, the latter may be extended to any desired length.

In the drawing the wheel is provided with a crown-gearing on the upper side. By this it is adapted to take the place of the feed-screw in my button-holer patented December 14, 1869, the pinion of the latter being engaged with the crown-gearing. The device may also be operated by a gear or ratchet on the edge of the wheel, or any other appliance adapted to the purpose.

Fig. 3 represents a modification of the wheel. In the movement, as above described, the advance of the rack and cloth-holder is partially made while the needle is in the cloth, thus causing the latter to drag more or less. The object of the modification shown in Fig. 3 is to obviate this inconvenience. In this modification the face of the wheel is divided by imaginary radial lines into five equal sections corresponding with the number of stitches to be made during the revolution of the wheel. Each of these sections is again subdivided into two parts, thus making in all ten sections of the scroll or worm, the demarcations of which are indicated in Fig. 3 by the dotted lines *a*, *b*, *c*, &c. In each alternate section, beginning with *a b*, the worm is a geometrical spiral, while in the intermediate sections *b c* it is a segment of a circle concentric with the center of the wheel. The aggregate pitch of the worm as thus formed is the same as that of the scroll before described, and the mode of its combination with the rack is the same. It is to be so adjusted to the other parts of the machinery that the concentric parts of the worm shall traverse the rack while the needle is in the cloth, thus throwing the whole advance of the rack into that part of the movement when the needle is withdrawn.

Fig. 4 illustrates a worm-wheel gearing with the rack, so as to impart the desired sliding motion thereto; and in Fig. 5 is shown a worm with an irregular thread, portions of which, being parallel to the face of the wheel, insure a dwell during parts of the revolution of the

wheel, as described, in reference to the scroll-wheel, Fig. 3.

Claims.

1. The combination, in a button-holing attachment for sewing-machines, of the clamp or cloth-holder, a rack attached thereto, and a scroll or worm wheel operating on the rack

to impart a sliding movement to the rack and clamp, substantially as set forth.

2. The combination of the rack and a worm or scroll wheel, having a thread of such a form as to impart an intermittent motion to the rack.

Witnesses: SAMUEL J. BAIRD.

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