

J. GUTMANN.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 251,434.

Patented Dec. 27, 1881.

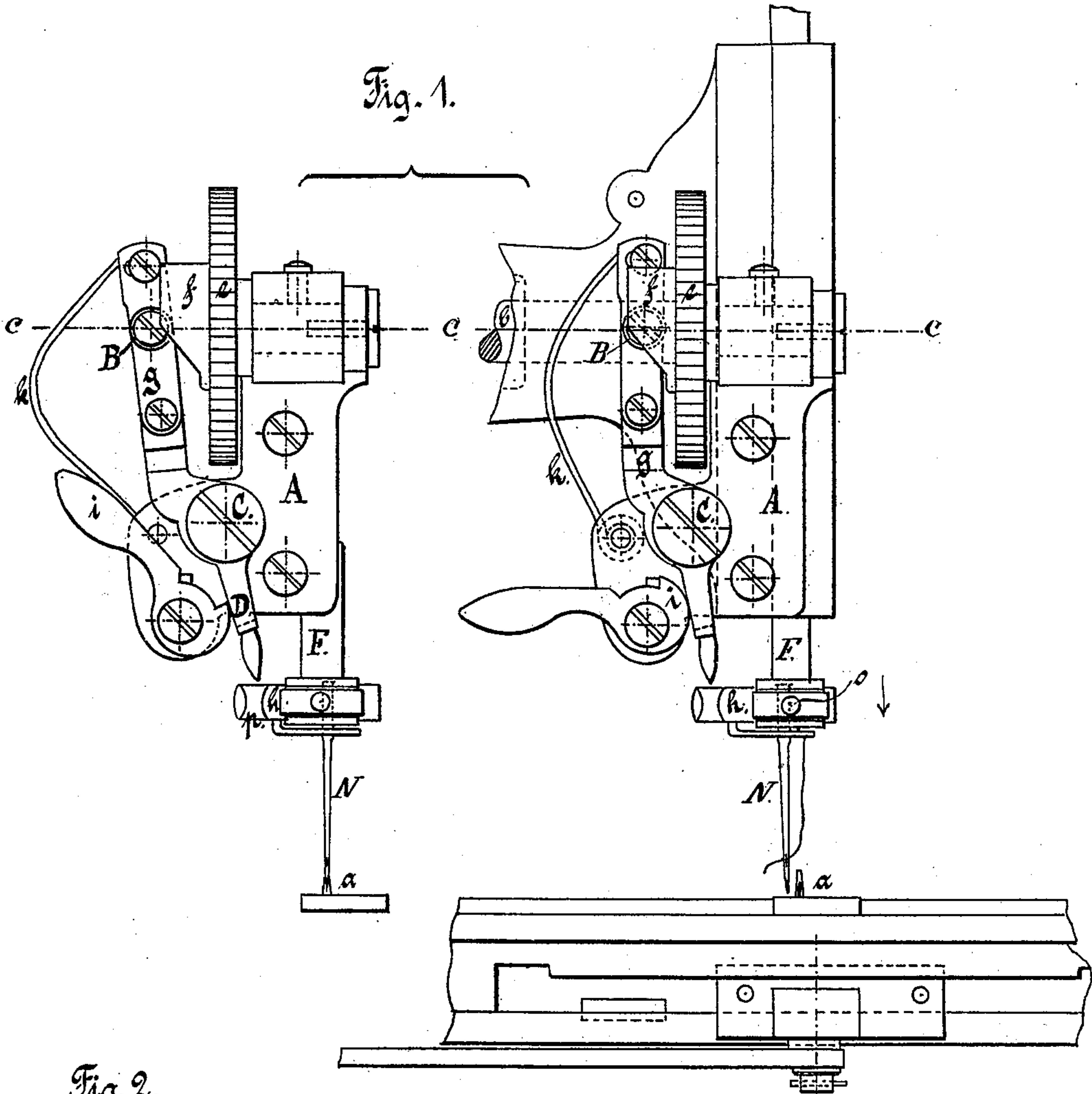
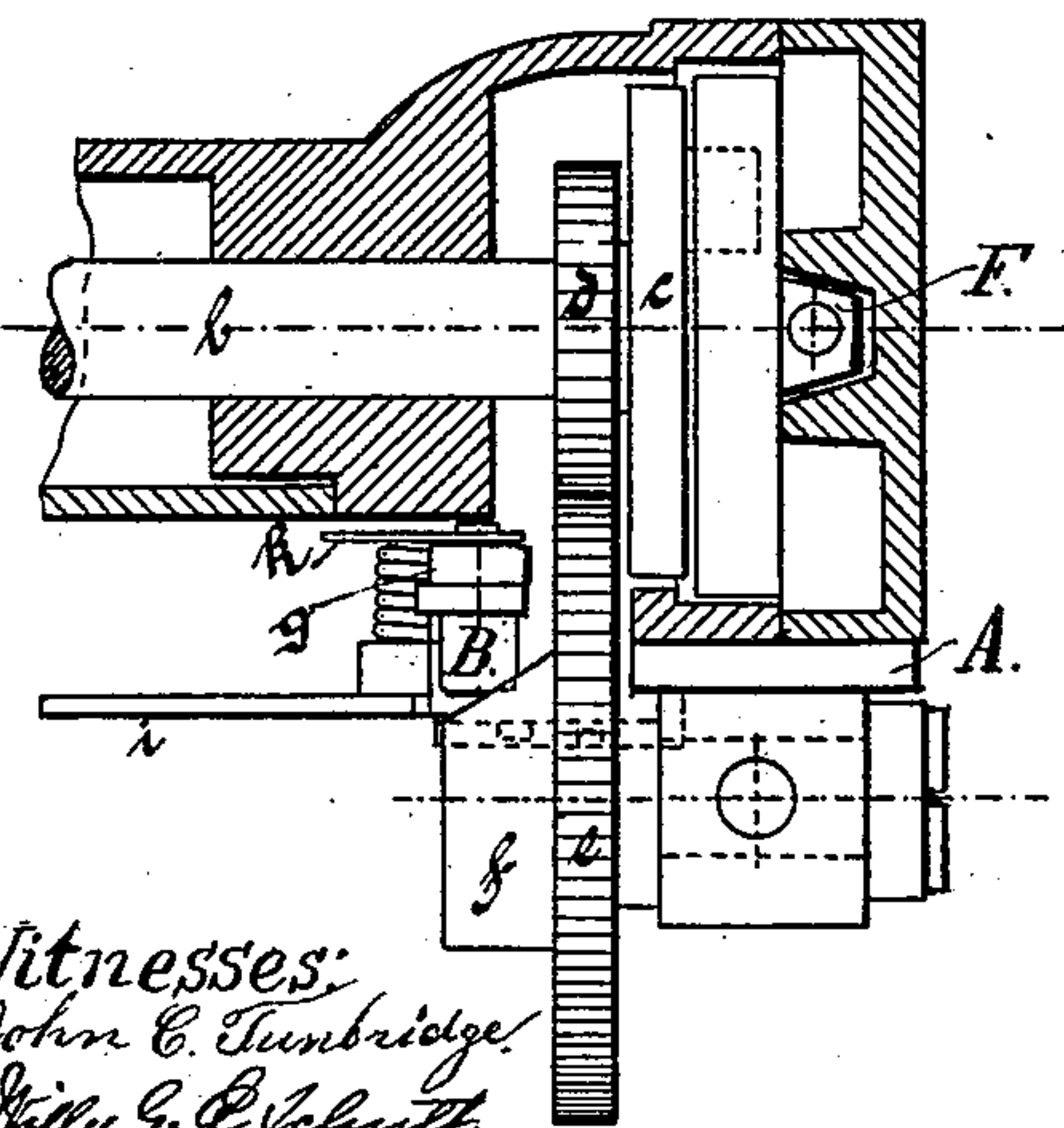
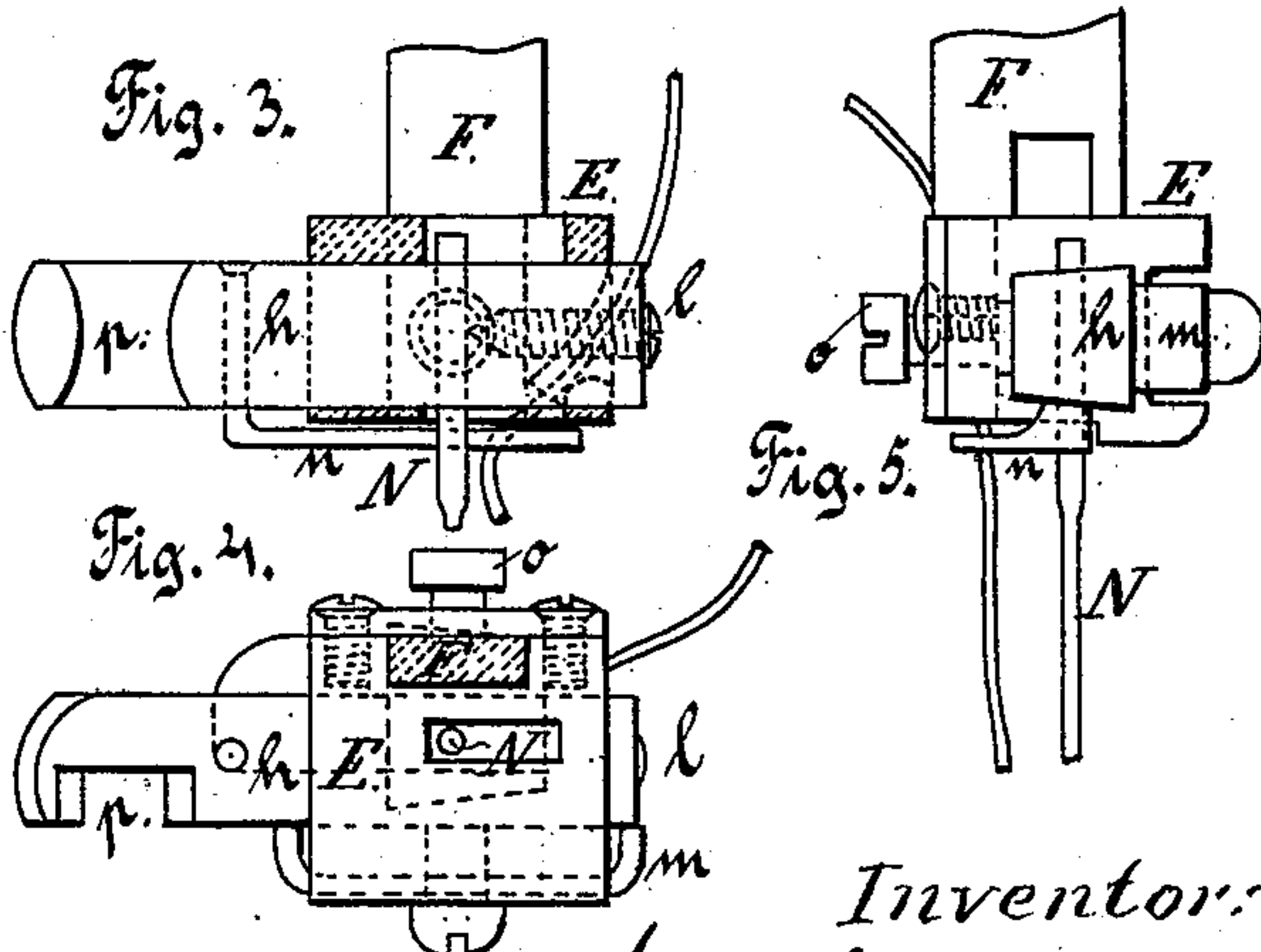


Fig. 2.



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Willy G. Schultz



Inventor:
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by his attorneys
Briesen & Betts

(No Model.)

2 Sheets—Sheet 2.

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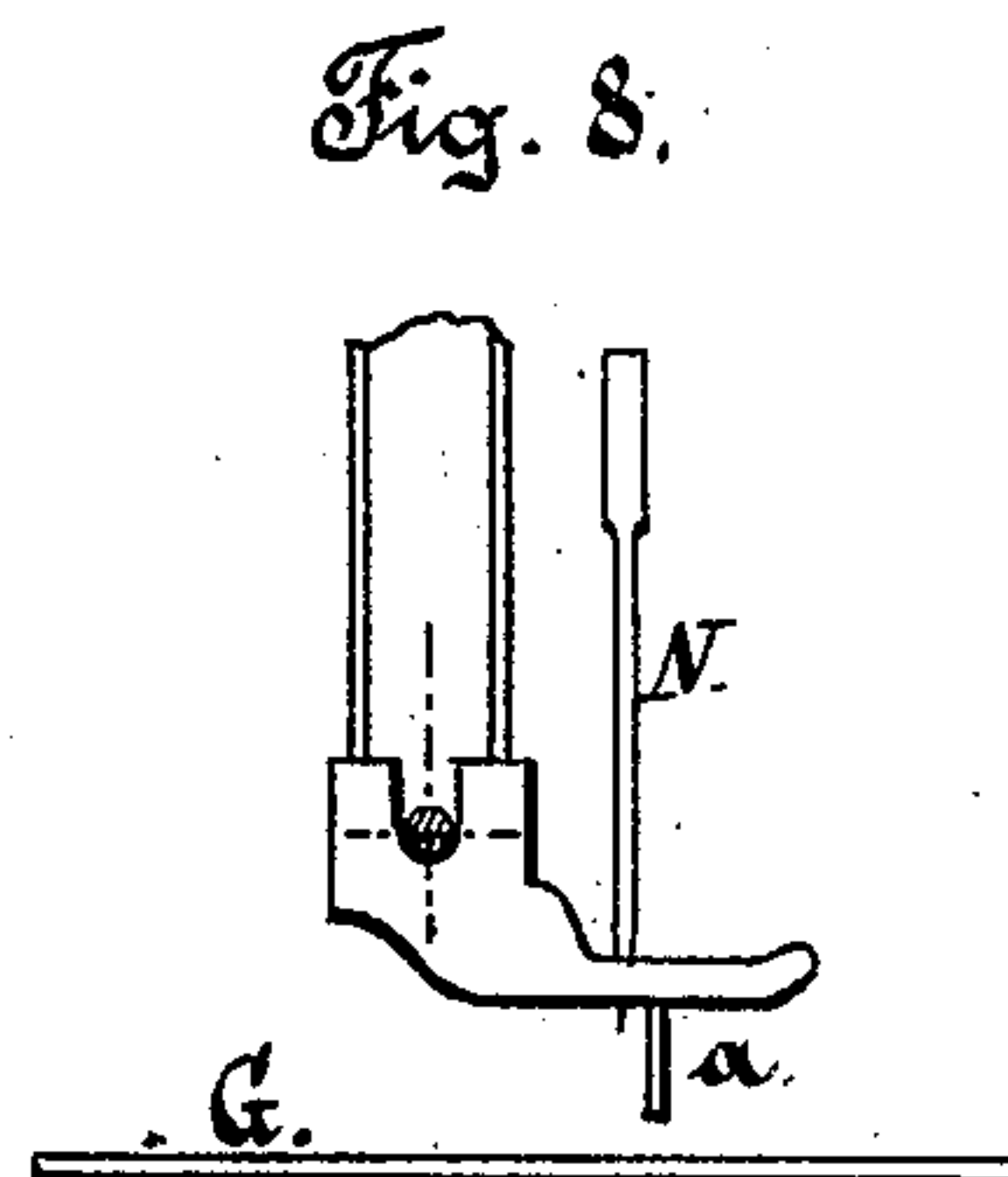
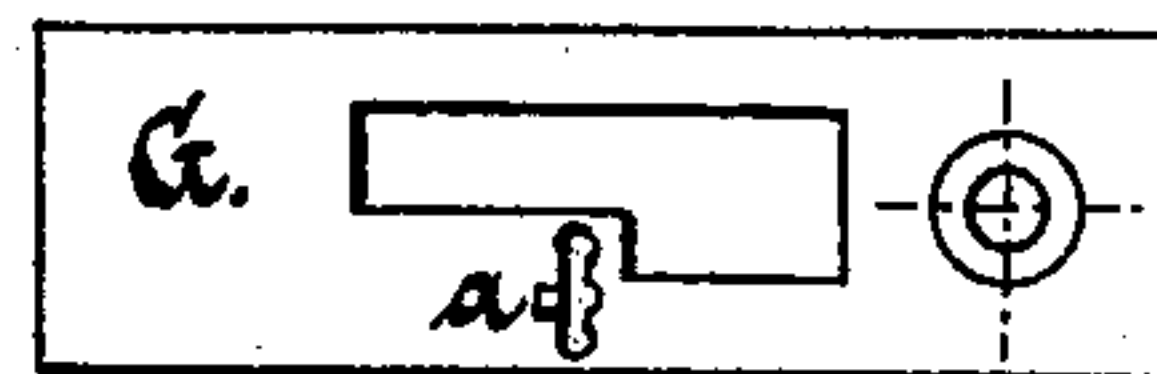
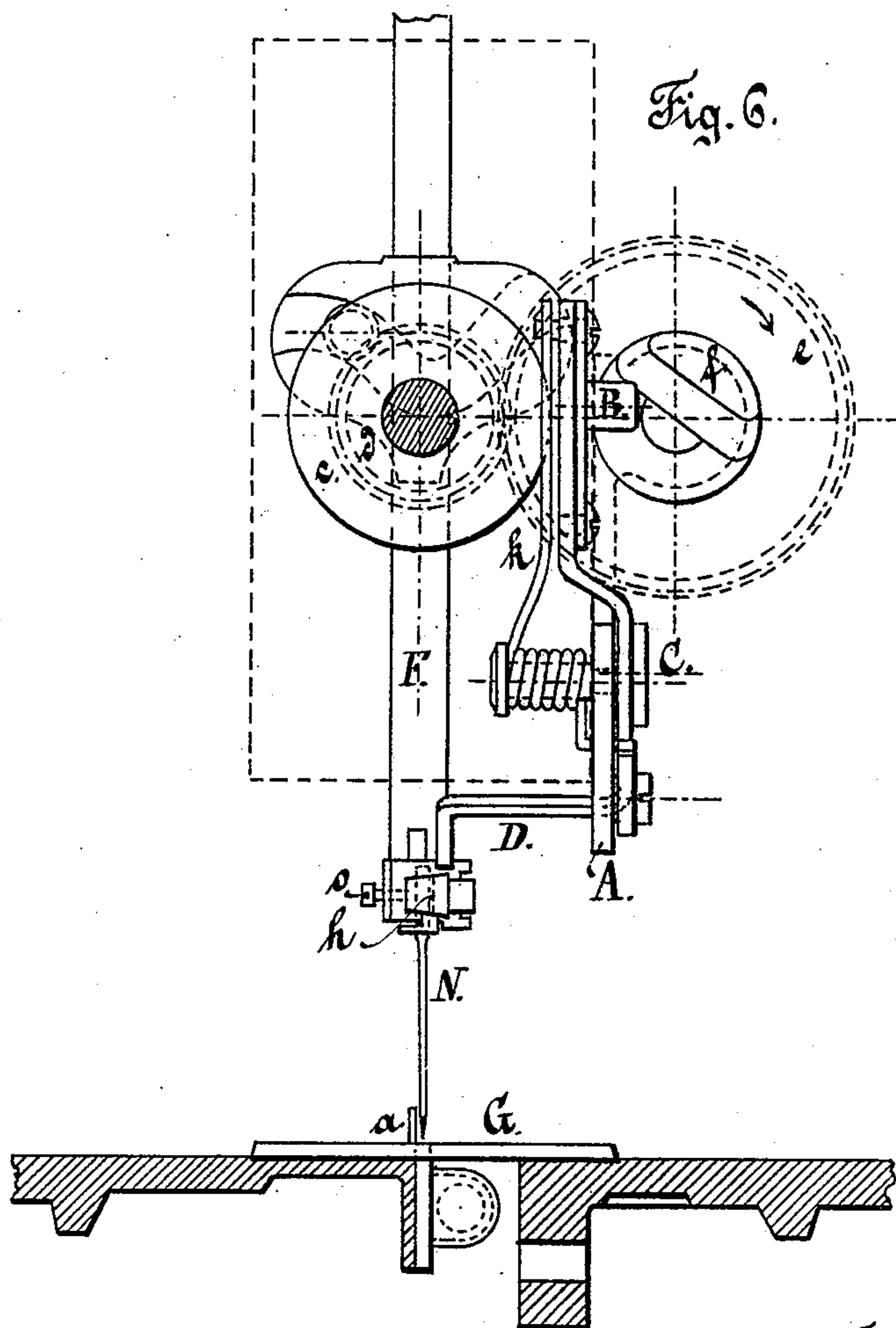
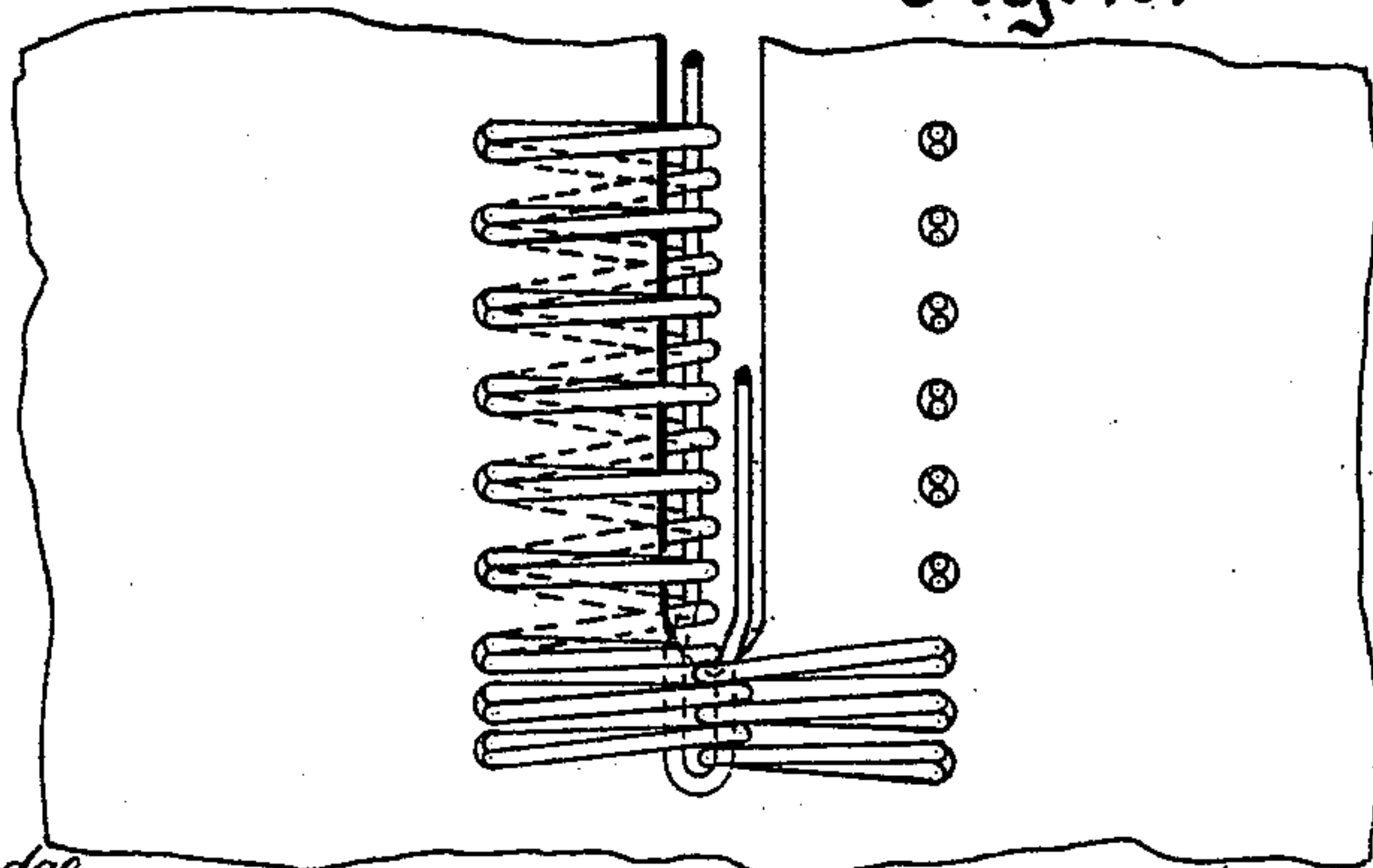


Fig. 9.



Fig. 10.



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Fig. 11.



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UNITED STATES PATENT OFFICE.

JULIUS GUTMANN, OF BERLIN, PRUSSIA, GERMANY.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 251,434, dated December 27, 1881.

Application filed September 9, 1881. (No model.)

To all whom it may concern:

Be it known that I, JULIUS GUTMANN, of Berlin, Prussia, Germany, have invented an Improvement in Button-Hole Attachments for Sewing-Machines, of which the following is a specification.

The invention relates to button-hole attachment of sewing-machines which possess a needle-bar reciprocating in a straight line and a shuttle moving at a right angle to the direction of the feed motion; and its object is to provide an attachment which can be easily applied to any sewing-machine of the above description, and which is reliable in its performance.

In the accompanying drawings, in which similar letters of reference indicate corresponding parts, Figure 1 is a side view of the attachment, showing the needle-slide and other working parts in two different positions. Fig. 2 is a horizontal section taken on the line *cc*, Fig. 1. Fig. 3 is an enlarged sectional side view of the slide in the head of the needle-bar; Fig. 4, a sectional plan view, and Fig. 5 a back view, thereof. Fig. 6 is a rear elevation of the attachment. Fig. 7 shows the stitch-plate with guide-pin. Fig. 8 shows the guide-pin applied to the presser-foot. Figs. 9, 10, 11 show the stitched button-hole in a plan and two cross-sections.

The attachment is composed of the plate A, bearing different parts, the head E, with its parts, and the stitch-plate. The suitably-shaped plate A, screwed to the side of the head of the machine, forms the bearing of a short shaft, upon which is fixed the spur-wheel *e* gearing into a pinion, *d*, which is mounted upon the upper shaft, *b*, of the machine, near the crank-disk *c*. The relative diameters of the wheels *e* and *d* are as 2 to 1. A tappet or cam, *f*, is on the back of the wheel *e*, bearing against the pin or friction-roller B of the lever *g*, which, oscillating on the fulcrum C, has by means of the spring *k* the tendency to keep in contact with the cam *f*.

The lower arm, D, of the lever *g* is intended to actuate the horizontal slide *h*, which is guided in the piece E, that is fixed as a head to the end of the needle-bar F. By means of the screw *l* the needle N is secured to the slide *h*, which is steadied in its motions and kept in its respective

positions by the friction which the spring *m* exercises against its side.

To guide the cloth to which a button-hole shall be applied, the stitch-plate G is furnished with a round tapering pin, *a*, which enters the slit in the cloth. The stitch-plate G differs from those commonly used in so far as the needle-hole is elongated corresponding to the widest throw of the needle N in its different positions.

The process of making a button-hole is as follows: After the cloth is placed upon the table of the machine, the pin *a* entering the slit on one end, the needle N makes one full stitch right in the slit.

It must be here remarked that the tension of the shuttle-thread is much lighter than that of the needle thread. The slide *h*, being now elevated by the bar F, is caught with the recess *p* by the lancet-shaped end of the lever-arm D and shifted a little to the right, the cam *f* having moved the lever *g* to the left, and therefore the arm D to the right. This brings the next stitch on the side of the slit in the cloth. The under thread, which is taken along by the needle-thread, is by this movement placed properly on the cloth. (See Figs. 9 and 10.) While the stitch is being made the cam *f* leaves the roller B, and the arm D is caused to rest on the highest point of the cam-lever *i* by means of the spring *k*. In reascending the slide *h* is again caught by the arm D and pulled back to its former position, in which the needle will make the next stitch, and so on. In this way a seam will be produced, as shown in the upper part of Fig. 10, the shuttle-thread being alternately on both sides of the cloth and the needle-thread running along the edge of the cloth in consequence of the different tension of these two threads. The last three stitches are made differently. The cam-lever *i* is brought by hand to the position of the right figure of Fig. 1. The ascending slide *h* will now be drawn a little more to the left, so that the corresponding stitch is not made into the slit, but into the cloth on the left side of the slit. The cloth is now turned around the pin *a* one hundred and eighty degrees, and three more stitches are made, after which the eccentric *i* is brought back into the starting position, (left figure of Fig. 1,) and the button-hole finished by seam-

ing the remaining part of the slit in the first-described manner.

It will be seen that the lock on the end of the slit is made with great ease. It is also a great advantage to line the inner edge of the button-hole with the needle-thread.

It will also be understood that the number of stitches for the lock is not limited to six, but may be varied to suit; further, that the lock may be applied on both ends of the button-hole; and, finally, that the described attachment may be used not only for making button-holes, but for seaming or for ornamenting.

For certain purposes the stitch may be varied by giving to the wheels *e* and *d* other relative diameters—such as, 3 to 1, 4 to 1, &c.—and by using another tension than that above mentioned. The length of the stitch may be varied by giving to the roller B another position on the lever *g*, for which purpose a slot may be provided in the lever *g*, so that the roller B can be fixed at different places, whereby the lever *g*, and therefore the arm D, receives correspondingly different throws.

To change the machine into one for common sewing work, the button-hole attachment is taken off by removing the screws which attach the plate A to the machine-frame, the slide *h* is fixed by the screw *o* in its middle position, and a common stitch-plate applied. In readjusting the button-hole attachment, care must be taken to gear the wheels *e* and *d* together in the right way, for which purpose two teeth of them, which ought to come together, should be marked when the apparatus is once in right order. To keep the needle-thread always in the right position to the needle, notwithstand-

ing the latter alters its position horizontally, the guide-plate *n*, through a hole of which the thread passes, is fastened to the slide *h*, moving with it.

Instead of applying the pin *a* to the stitch-plate G, it can be applied to the presser-foot, as in Fig. 8, in which case the stitch-plate is provided with a suitable hole to receive the pin.

I claim—

1. A button-hole attachment for sewing-machines, consisting of the combination of the gear-wheels *d* and *e* with the cam *f*, double-armed lever *g* D, having rollers B, spring *k*, and cam-lever *i*, and with the needle-bar head E, slide *h*, having recess *p*, thread-guide *n*, and needle N, all arranged and operating substantially as described.

2. The combination of the needle-bar F and its head E with the slide *h* to which the needle N is fastened, and with the gear-wheels *d* and *e*, cam *f*, lever *g* D, spring *k*, and cam-lever *i*, all arranged for operation by the rotation of the upper shaft, *b*, of a sewing-machine, substantially as described, and for the purpose specified.

3. In a button-hole attachment, the combination of the cam-lever *i* with the lever *g* D, roller B, spring *k*, and cam *f*, for limiting the length of stitch, substantially as described.

This specification signed by me this 25th day of July, 1881.

JULIUS GUTMANN.

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