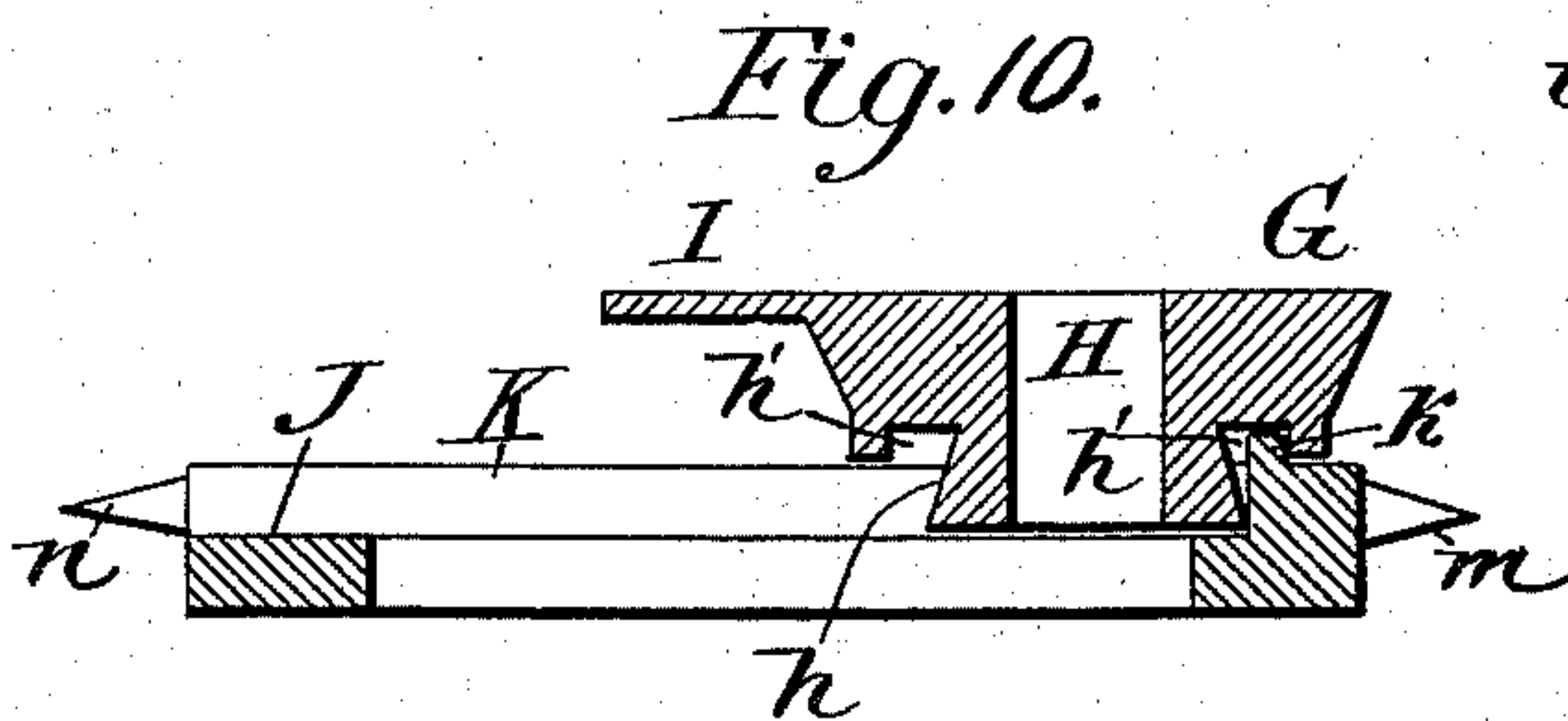
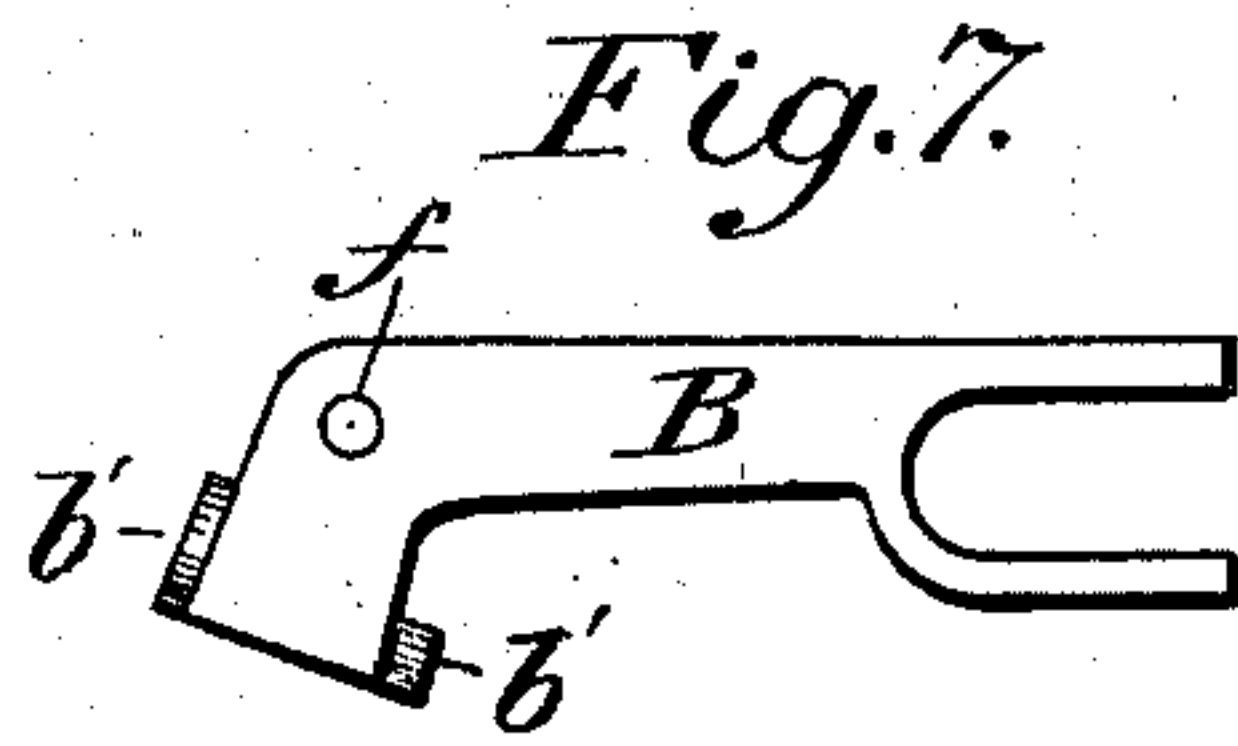
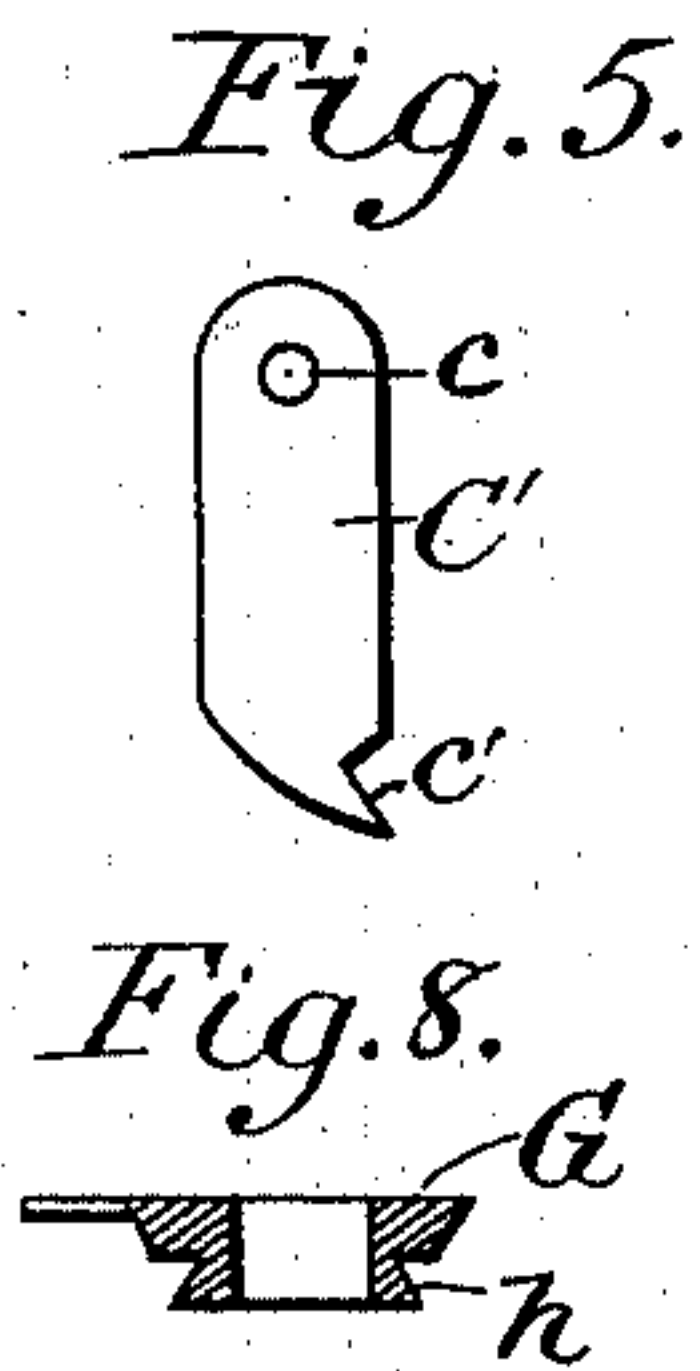
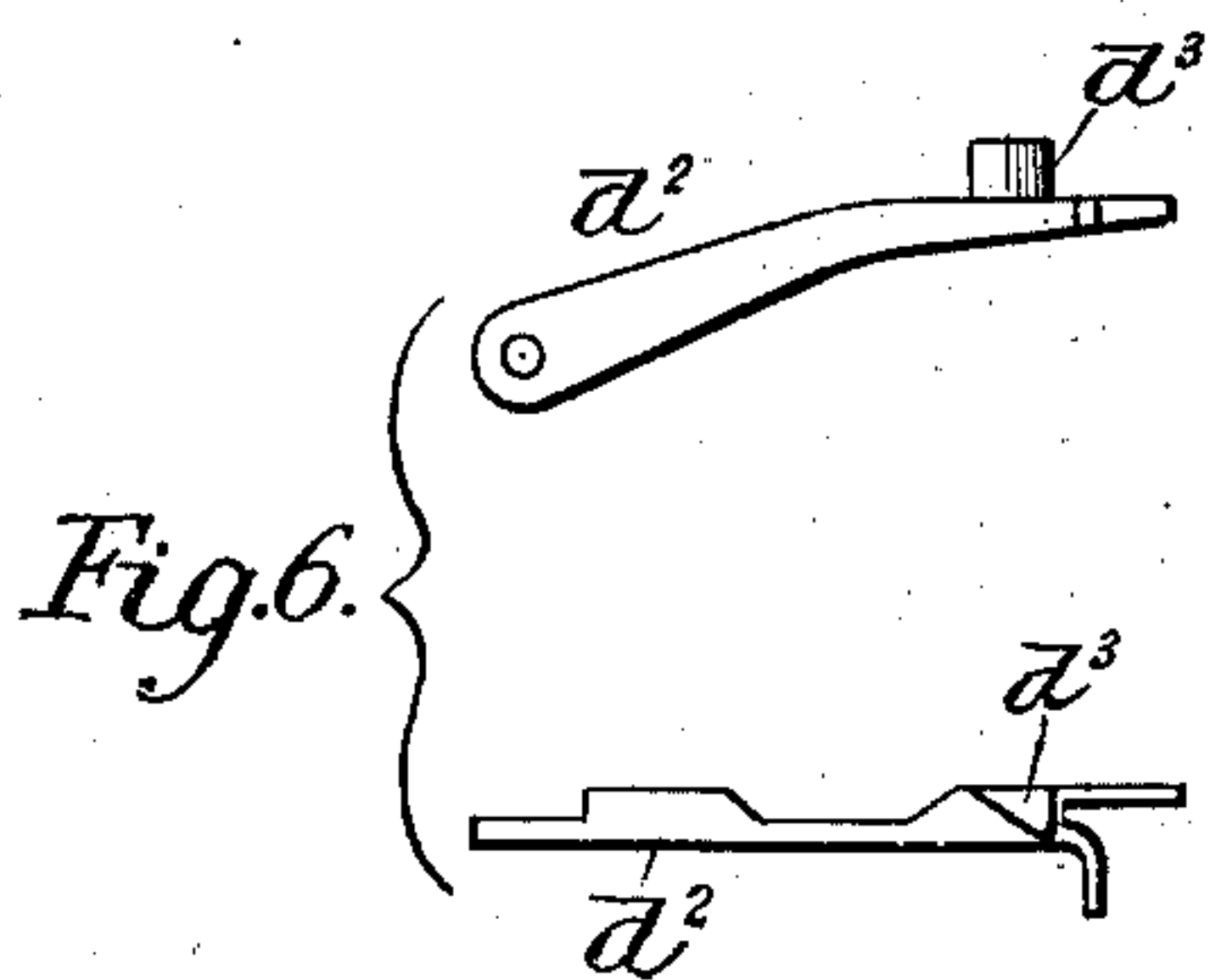
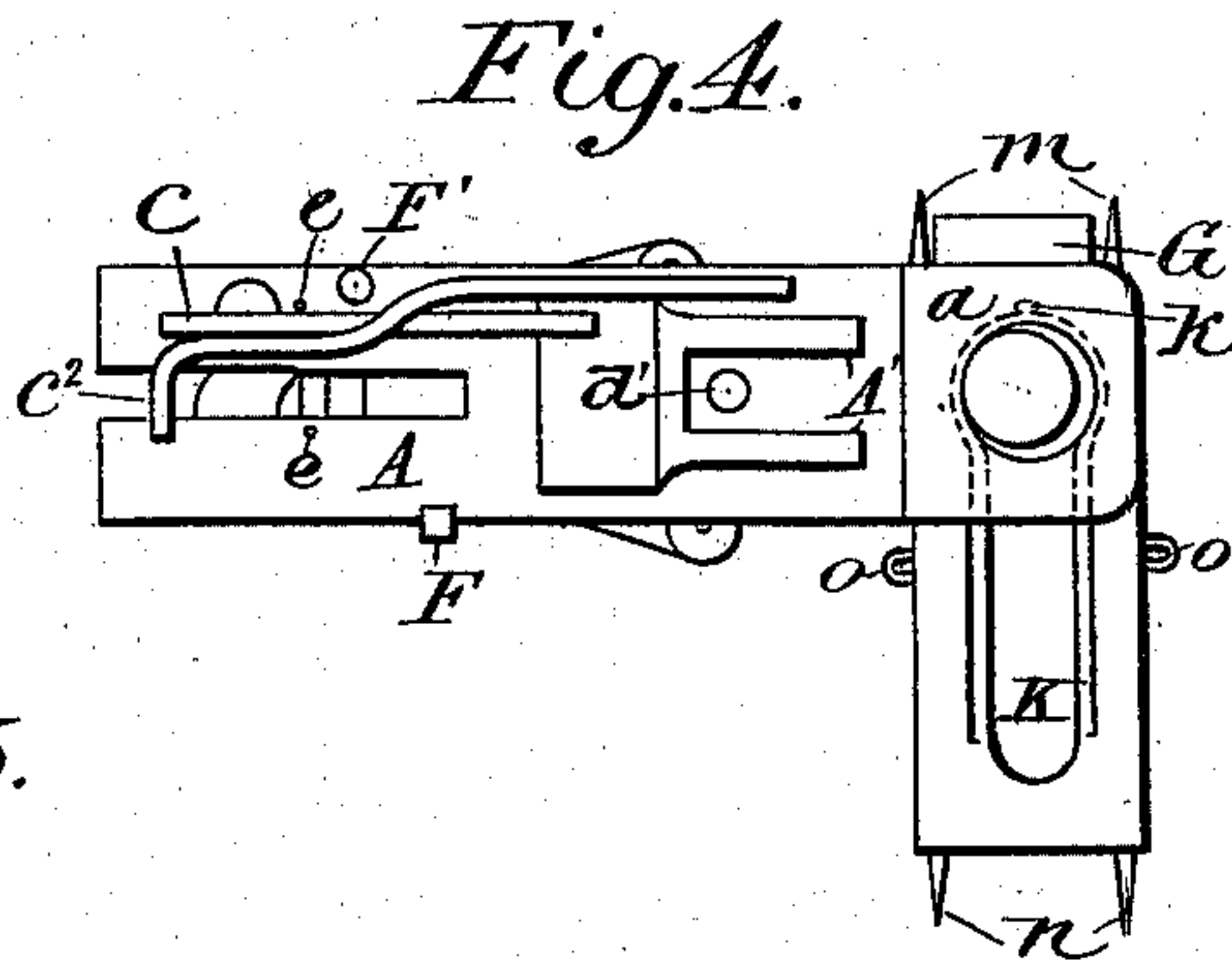
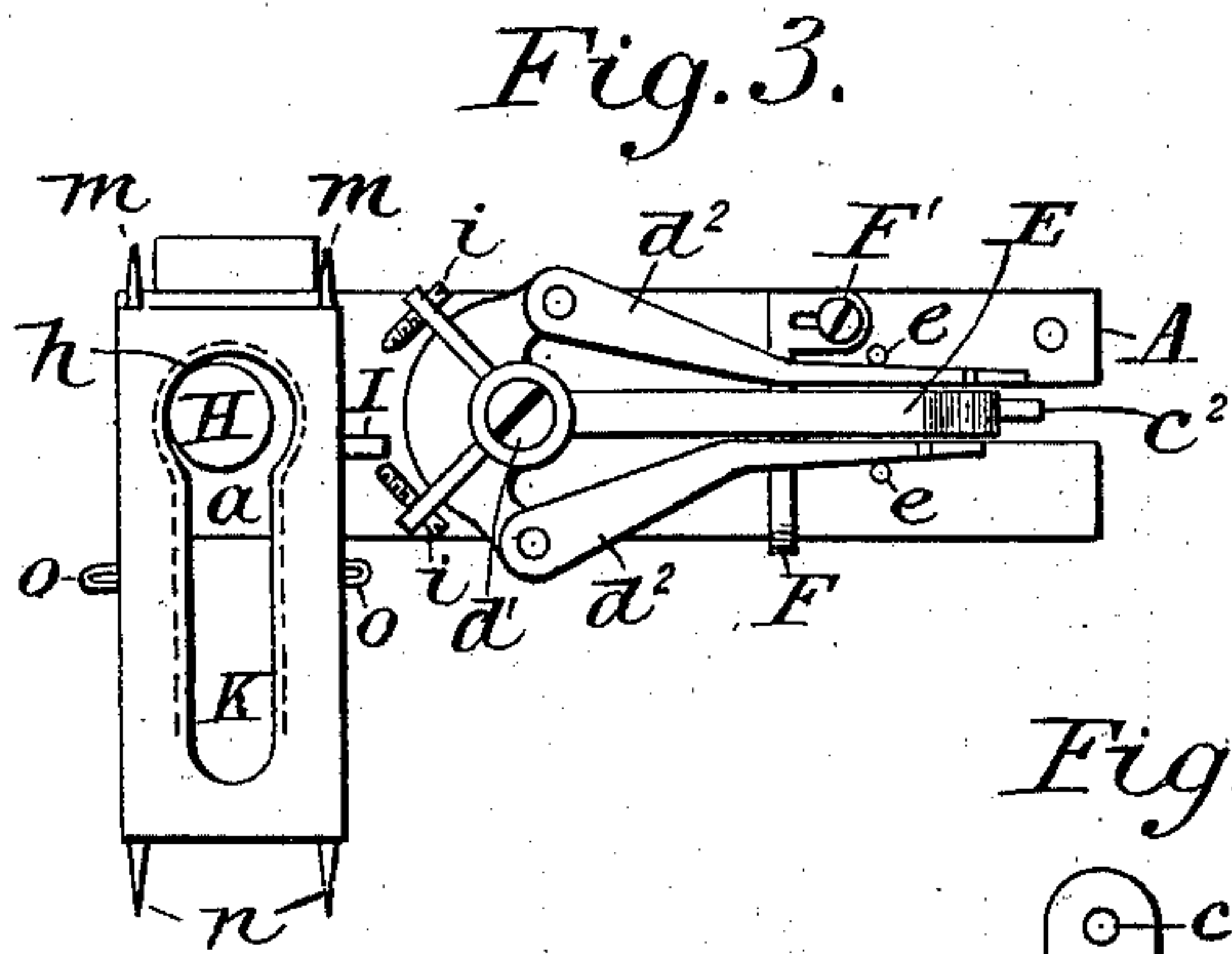
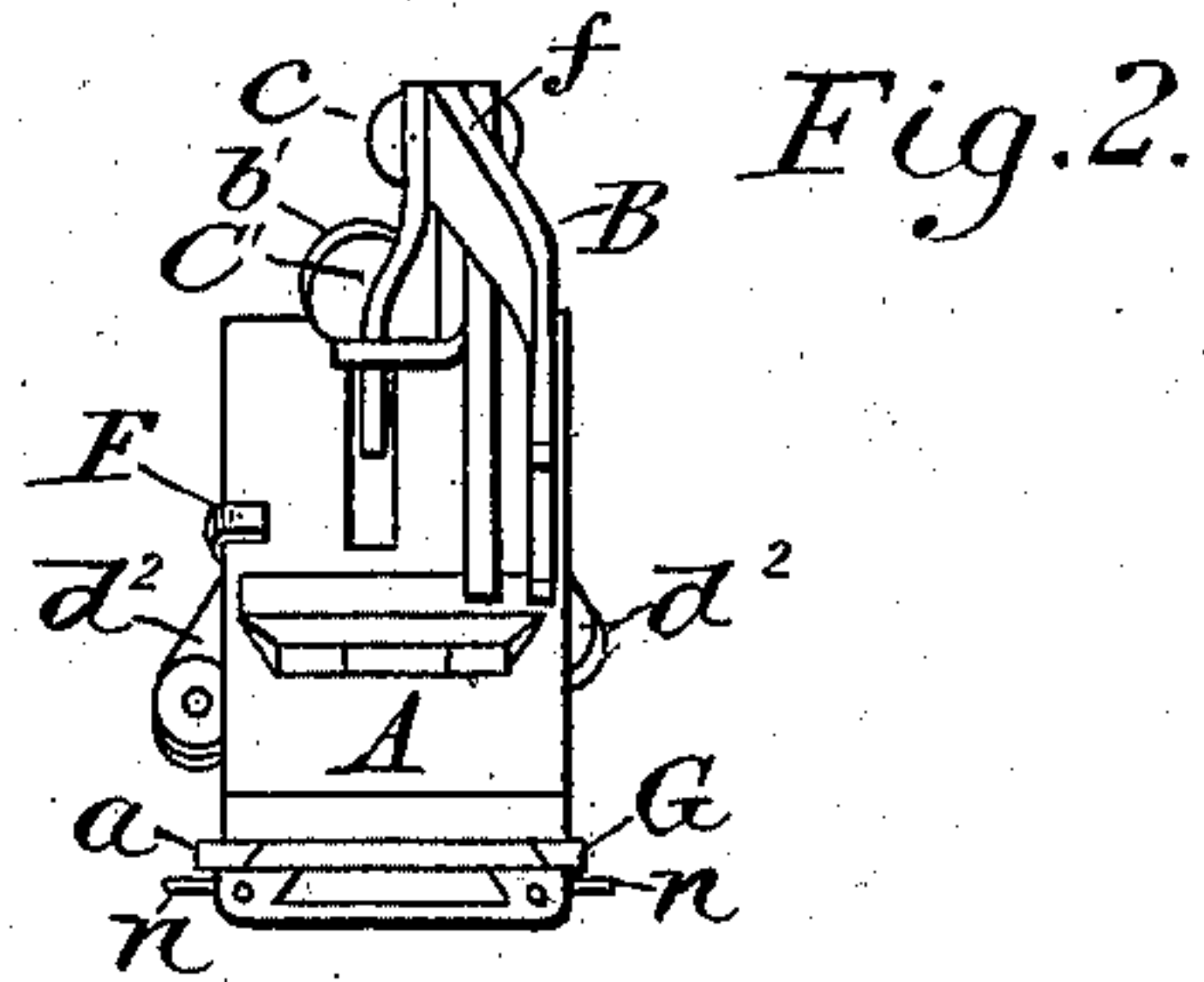
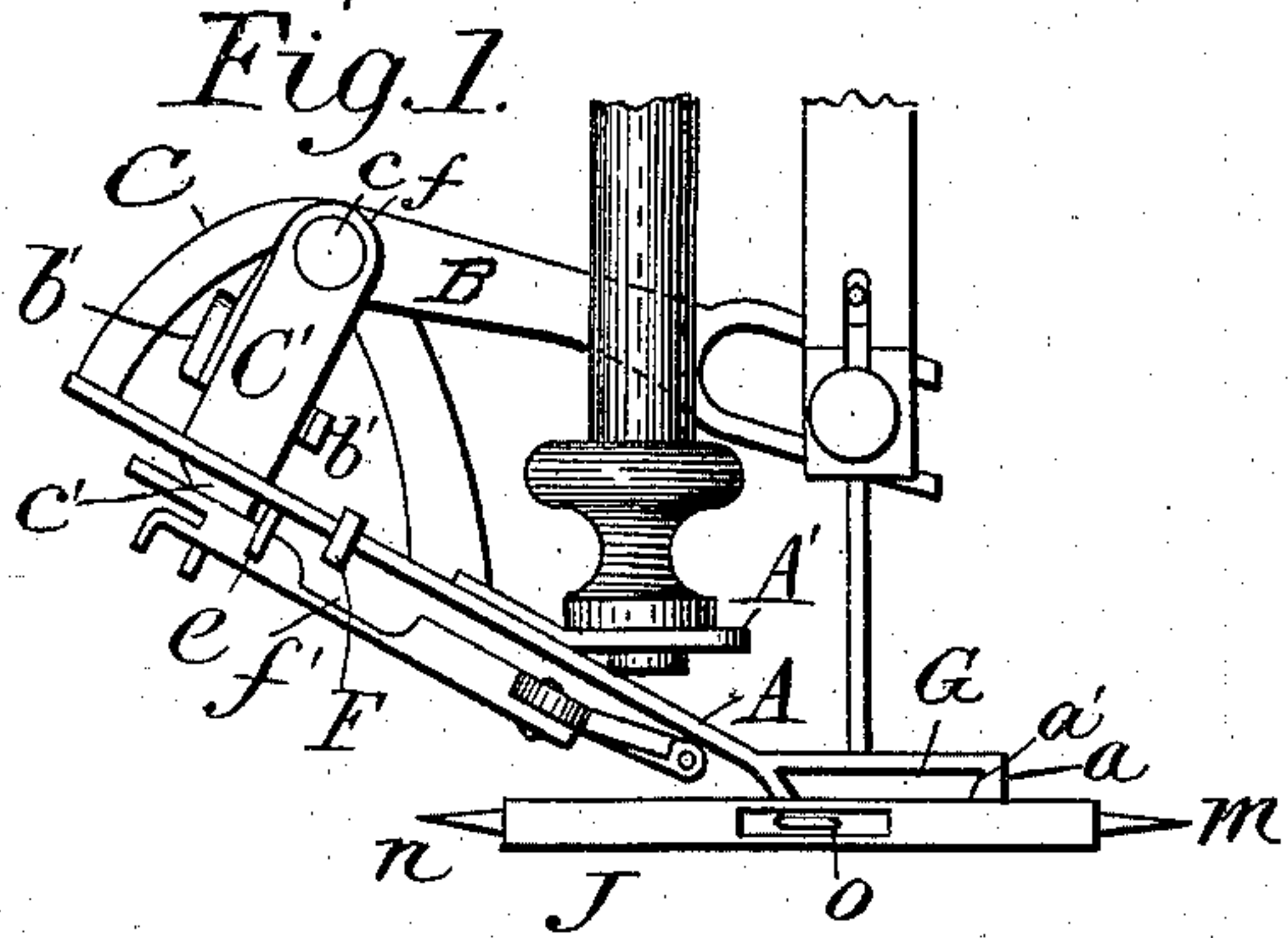


(Model.)

W. M. AMMERMAN.
BUTTONHOLE ATTACHMENT FOR SEWING MACHINES.

No. 558,920.

Patented Apr. 28, 1896.



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UNITED STATES PATENT OFFICE.

WILLIAM M. AMMERMAN, OF CHARLESTON, ILLINOIS, ASSIGNOR TO EDWIN J. TOOF, OF NEW HAVEN, CONNECTICUT.

BUTTONHOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 558,920, dated April 28, 1896.

Application filed April 16, 1888. Serial No. 270,780. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM M. AMMERMAN, a citizen of the United States, and a resident of Charleston, county of Coles, State of Illinois, have invented new and useful Improvements in Buttonhole Attachments for Sewing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to buttonhole attachments adapted for use in connection with sewing-machines; and it consists in the construction and combination of the several parts forming the device in a manner and for the purpose hereinafter set forth in detail, and pointed out in the claims.

Referring to the drawings, Figure 1 represents a side view of the attachment in position on the presser-bar; Fig. 2, a front end view of the same; Fig. 3, a bottom view; Fig. 4, a top view, and Figs. 5, 6, 7, 8, 9, and 10 represent detached parts of the device.

A represents the frame for supporting the actuating mechanism, provided with a bifurcated arm or extension A', projecting horizontally therefrom, or nearly so, for connection with the presser-bar of a sewing-machine. (More clearly shown in Fig. 1.) The toe or end *a* of the said frame A is provided with an opening therein for the needle to pass through when in operation, and is also provided on its under side with a guideway *a'*, extending transversely across the same, having undercut sides.

B is a bell-crank lever pivotally secured at *f* to an arm or bridge C, which extends vertically from the said frame A and is bifurcated at the end of its longer or horizontal arm for engagement with the needle-nut or other projections of the needle-bar and provided with flanges *b' b'* at the end of its shorter arm extending at right angles therefrom for contact with a pendent arm C', which is pivotally secured at *c* to the said arm or bridge C at the same point of connection with the bell-crank lever B. The said pendent arm at its lower end *c'* is made slightly hooking, (see Fig. 5,) which is adapted to project and operate within a longitudinal slot *c²* in the frame A.

D is a plate of a semicircular form, or nearly

so, pivotally secured at *d* to the bottom of the frame A by a screw or other means *d'*, and to which is attached at each side thereof arms *d² d²*, pivotally secured thereto. The said arms *d² d²* are both provided on their inner sides with projections *d³ d³*, adapted to span the said slot *c²* in the frame A, the under surfaces of which are inclined or slanting to enable the same to ride over each other when in operation, as will be explained hereinafter.

E is a flat spring secured at one end by the said screw or rivet *d'* and bearing with its free end on the said projections *d³ d³*.

e e are two pins or projections on the under side of the frame A, located one on each side of the two arms *d² d²*, serving to guide and prevent them from spreading apart.

F is an adjustable throw-off consisting of a bar flanged at one side to embrace the edge of the frame A and provided with an arm having a longitudinal opening therein at the opposite end for the purpose of adjustment, by a set-screw F', within depressions *f' f'* in the said arms *d² d²* to alternately raise the said arms *d² d²* on their backward stroke to throw the projection *d³* from its contact with the pendent arm C', thereby stopping the throw or vibration of the cloth-holder before the feeding mechanism comes in contact with the cloth on said cloth-holder.

G is a vibrating device or plate which is fitted in the transverse guideway *a'* in the toe or forward end of the frame A in a manner to slide or vibrate therein and is provided with an opening H therein for the passage of the needle. On its lower side and surrounding the opening H therein this said vibrating plate is provided with a circular tapering annular flange *h*, as more clearly shown in Figs. 8 and 10, for connection with the cloth-holder J to operate the same, as will be described. This vibrating plate or carrier G is provided with an arm or extension I, which projects between two adjusting-screws *i i*, supported by the rocking plate or lever D, as shown in Fig. 3, to be operated by the latter, and the movement or length of vibration of the vibrating device is regulated by said engaging adjusting-screws, as will be readily understood.

The cloth-holder J consists of a plate provided with a longitudinal slot K, having undercut sides to receive the tapering annular flange *h*, which projects from the under side of the vibrating carrier G. One end of that portion of the slot which is undercut is open to allow the carrier to be readily drawn off or on the flange *h*. The inner or opposite end of the slot is enlarged to form a circle, or nearly so, as shown, to enable the cloth-holder J to be moved in the line of a circle when being turned for the purpose of stitching the eyelet at the end of the buttonhole.

In order that the cloth-holder J may be guided in a circle, as described, without the aid of the operator, I have formed a lip or projection *k* on the upper surface of the cloth-holder J at a central point adjacent to the circular end of the slot K, as more clearly shown in Fig. 4, which is adapted to enter a groove *h'*, formed in the under side of the vibrating carrier G, as shown in Figs. 8 and 10, and extending in a circle around the flange *h* through an opening in the front wall of the same and be guided thereby until the cloth-holder J has made a complete turn, at which time the lip *k* passes out through the said opening in the wall of the groove or guideway *h'* and allows the cloth-holder to be again moved in a straight line to allow the opposite side of the buttonhole to be stitched.

In order to secure the cloth to the cloth-holder J, I provide two fixed pins *m m*, which project from one end of the same, and a pair of sliding pins *n n*, which are arranged to slide within the body of the plate at the opposite end, so as to project or be withdrawn, as may be desired.

Having given details of a device such as will be deemed sufficient to enable others to construct an attachment embodying the principles of my invention, I will now describe the operation of it by parts and entirety.

The frame A in the present instance is secured to the presser-bar of the sewing-machine parallel with the line of feed, and the bifurcated end of the lever B is connected with the needle-bar, as described. The part of the material to be operated upon is now secured to the cloth-holder by inserting the fixed pins into the material at the desired point to present the slot to be operated upon about central with the opening K. The material opposite the end already pinned is slightly raised enough to receive the movable pins, which are pushed outwardly into the material, by which means the part is held in a smooth firm position for the action of the feed-dog against it beneath and the needle above. The cloth-holder is then slipped over the tapering flange *h* at the open end of the undercut portion of the slot K, the slot lying parallel with the line of feed of the sewing-machine. The sewing-machine now being put in motion the long or horizontal arm of the

lever B is raised at the upward stroke of the needle-bar, carrying forward the pendent arm C', which is embraced by the flanges on the shorter arm of the lever B. The end of the arm C' comes in contact with one of the projections *d*³, carrying the arm *d*² forward, which pushes one of the adjusting-screws *i i* laterally in contact with the arm I of the carrier G. At the downward stroke of the needle-bar the end of the arm C' is carried back in position for contact with the opposite projection *d*³, which, when carried forward, causes the opposite adjusting-screw *i* (from the one referred to) to operate upon the arm I of the carrier G in the opposite direction and by the same means as the one previously described, which action of the said two adjusting-screws on the arm I of the carrier G gives the cloth-holder J its vibrating motion. The said cloth-holder is carried forward by the direct action of the feeding device upon the cloth secured to its under side until the inner circular end of the opening K is reached, when the lip *k* thereon enters the groove *h'* in the carrier G through the opening in the wall of the same and guides the cloth-holder when being turned to stitch the eyelet of the buttonhole until the cloth-holder has made a complete turn and the lip *k* passes out through the opening in the wall of the groove to allow the cloth-holder to feed along while the opposite side of the buttonhole is being stitched.

Having thus set forth my invention, I do not wish to be understood as confining myself to the particular construction and arrangement of the several parts as set forth, as it is obvious that various slight changes might be made without departing from the spirit of my invention.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States of America, is—

1. In a buttonhole attachment for sewing-machines, the combination with a supporting-frame, a vibrating carrier provided with an annular flange or projection and an annular groove or guideway, and means for operating said carrier, of a cloth-holder provided with a longitudinal slot or opening therein adapted to receive the said annular flange or projection, and with a lip or projection for traversing said annular groove or guideway, substantially as described and for the purpose set forth.

2. In a buttonhole attachment for sewing-machines, the combination with a supporting-frame, a vibrating device or carrier having a tapering annular flange projecting from its under side and an annular groove therein surrounding said flange and having a central opening in its front wall, and mechanism for operating said carrier; of a cloth-holder having a longitudinal slot therein formed with undercut sides to receive said tapering flange, and provided with a lip or projection on its upper surface adjacent to one end of said open-

ing, which is adapted to enter said annular groove through the opening in its wall and traverse the same to guide the cloth-holder, substantially as described and for the purpose set forth.

5 3. In a buttonhole attachment for sewing-machines, the combination with a supporting-frame, a vibrating device or carrier supported thereby and a cloth-holder operated by said carrier, of a rocking or vibrating device for
10 engaging with and operating said carrier, provided with two pivoted arms each having a lip or projection thereon, a lever for engaging with said lips or projections alternately to op-
15 erate said arms and connecting device, and a throw-off device for engaging with said arms to move the same alternately from engage-

ment with their operating-lever, substantially as described and for the purpose set forth.

4. In a buttonhole attachment for sewing- 20 machines, the combination with a supporting-frame, a vibrating carrier supported thereby and a cloth-holder operated by said carrier, of a pivoted rocking device for engaging with and operating said carrier, provided with two 25 pivoted arms, a lever for engaging with said arms or part thereof, and an adjustable throw-off device for engaging said arms, substantially as described and for the purpose set forth.

WILLIAM M. AMMERMAN.

Witnesses:

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J. T. TOOF.