

(No Model.)

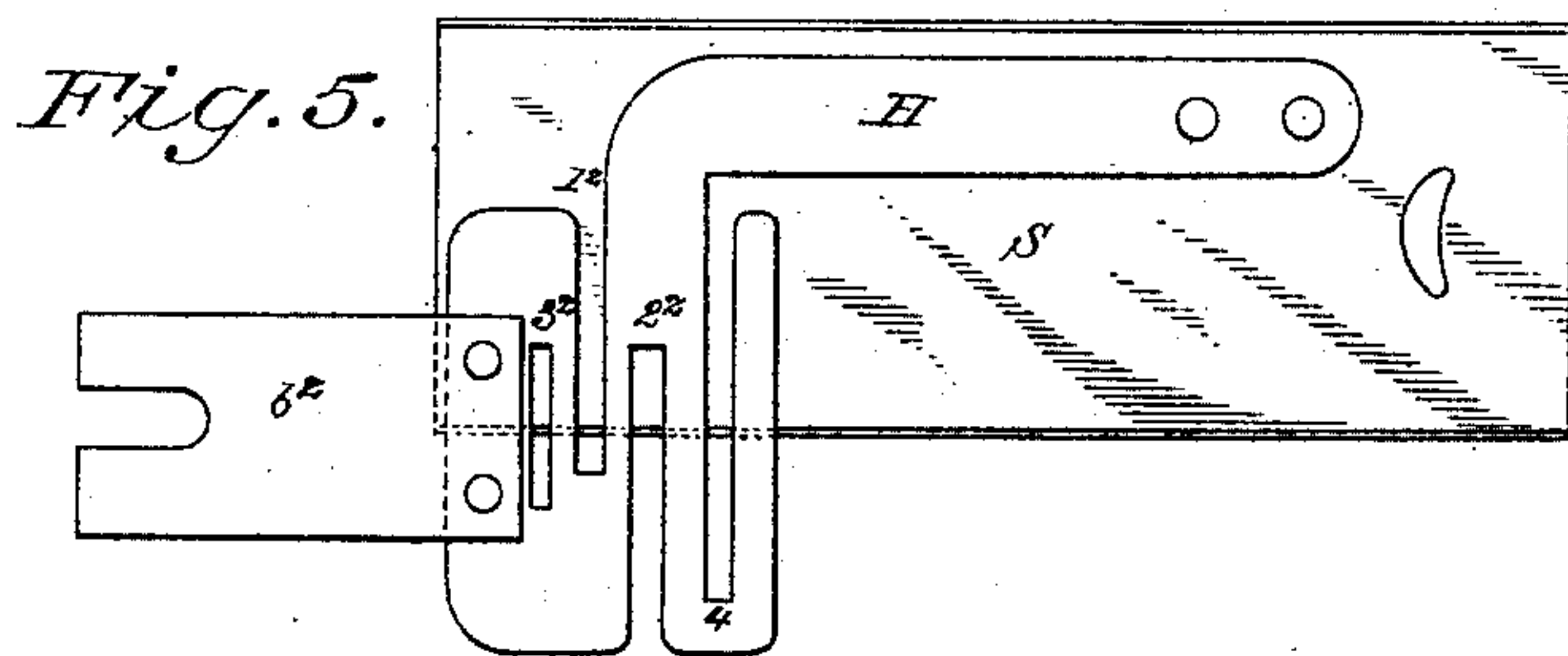
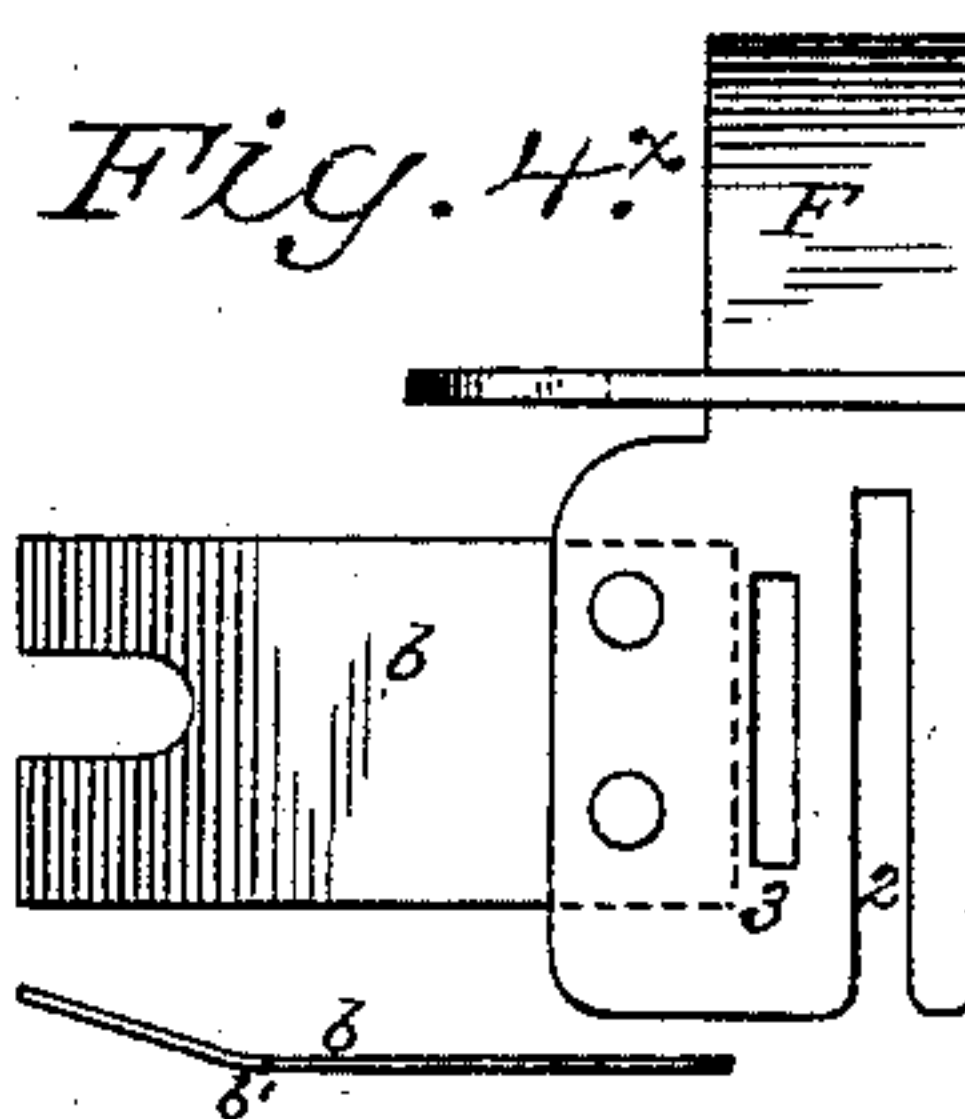
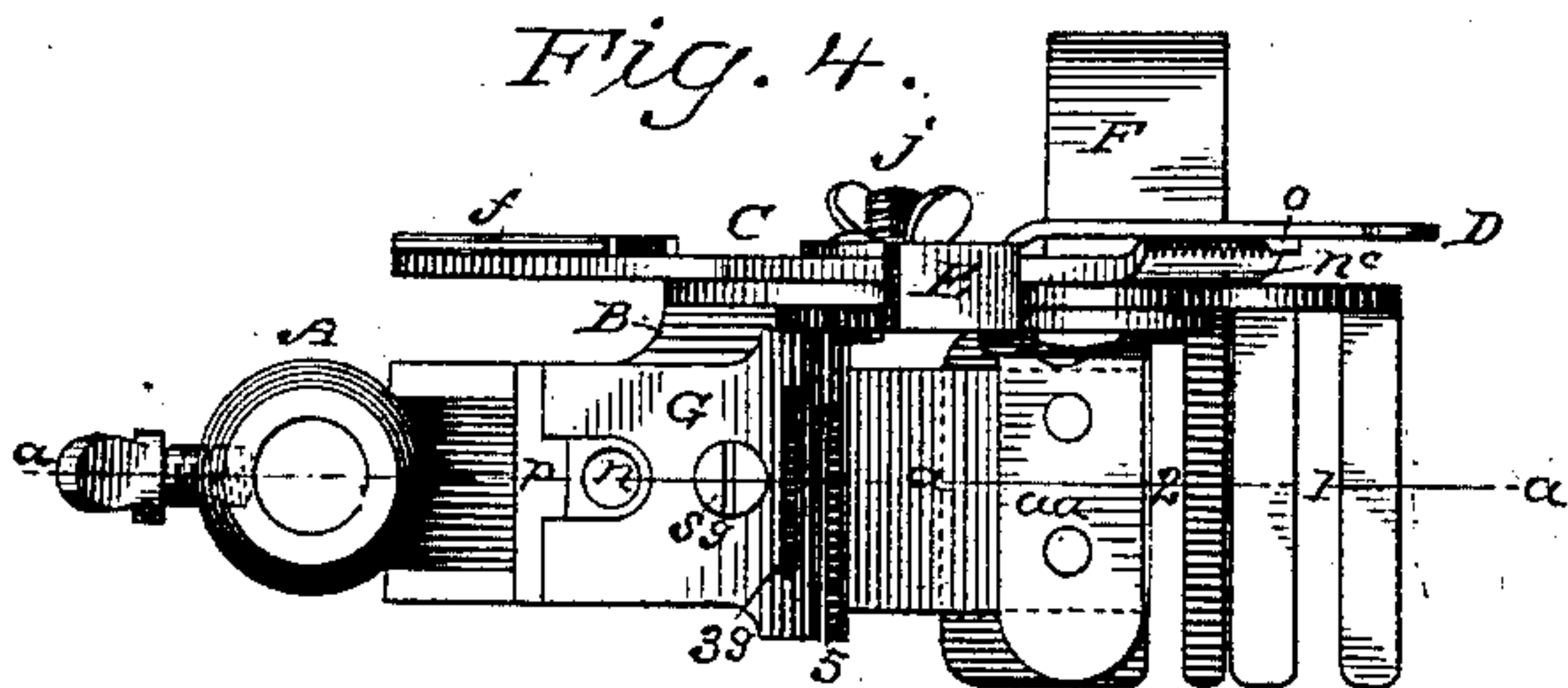
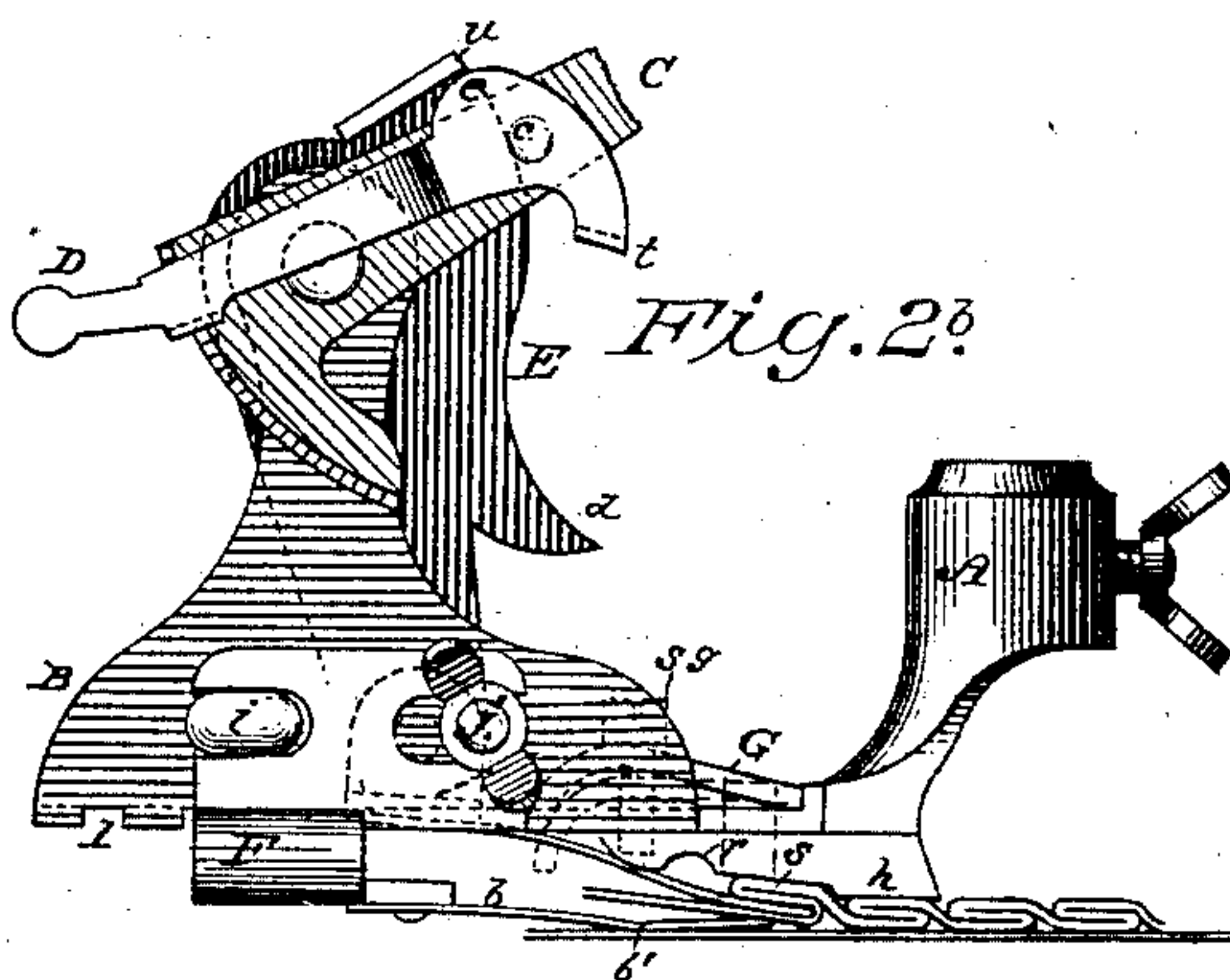
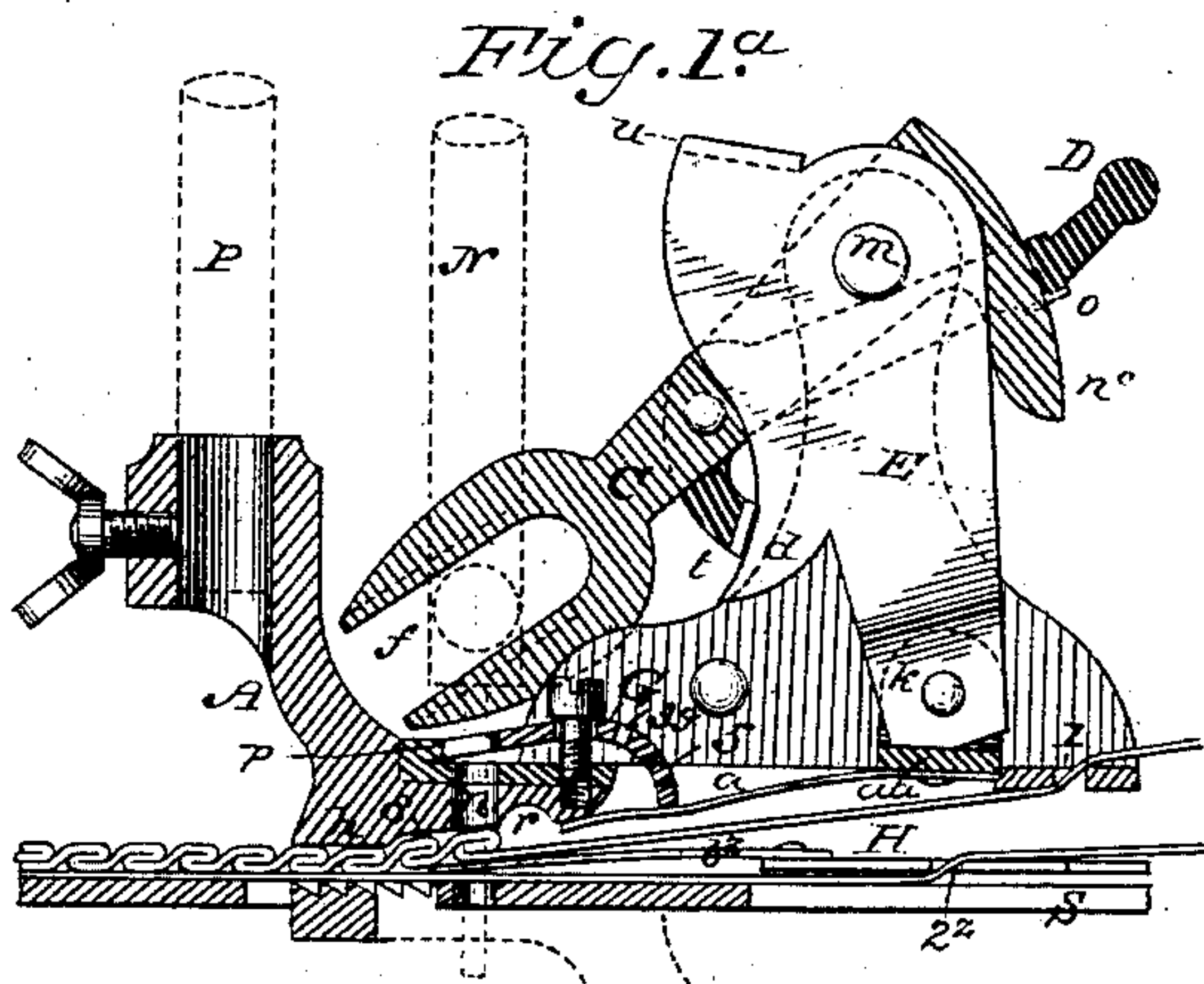
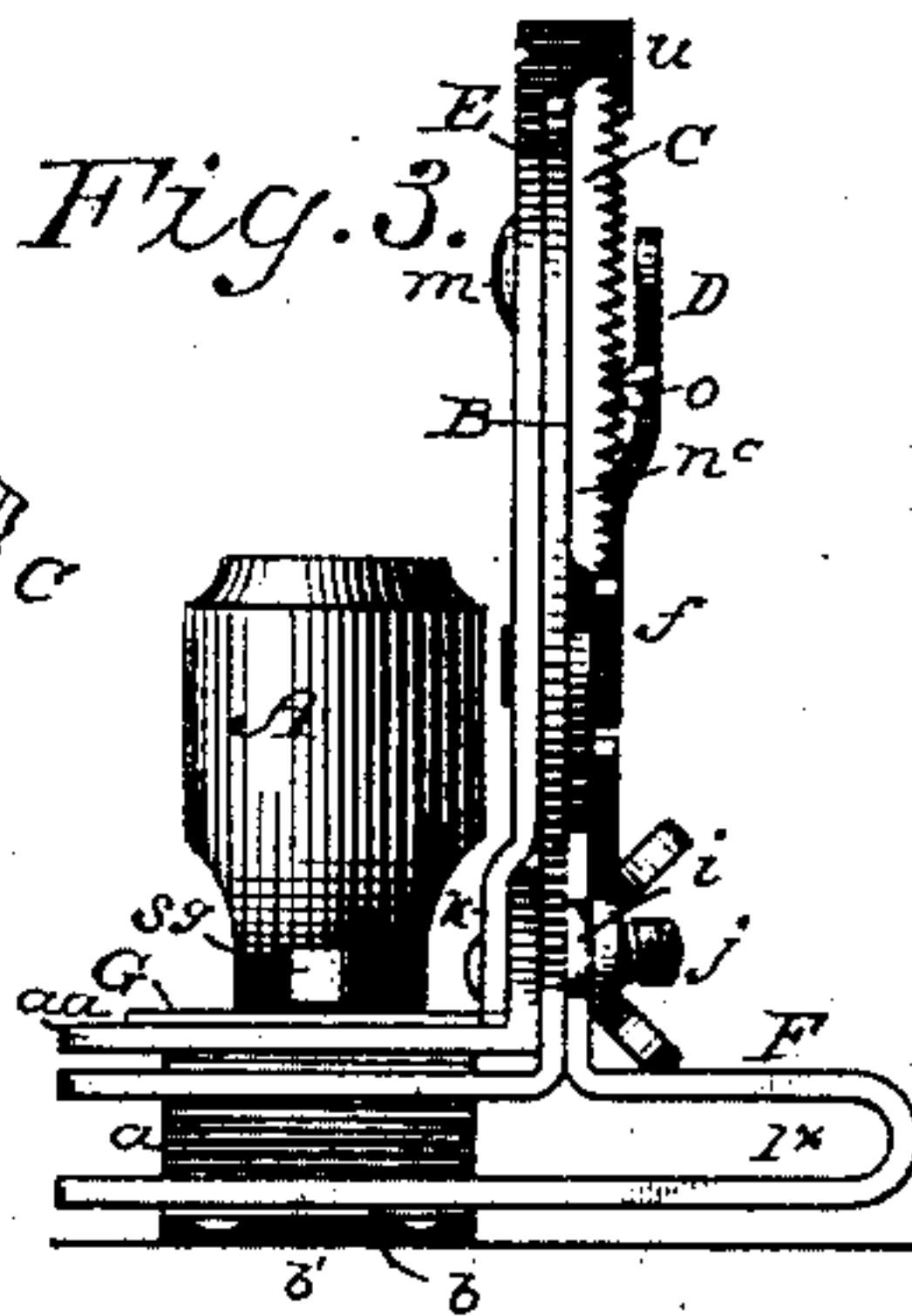
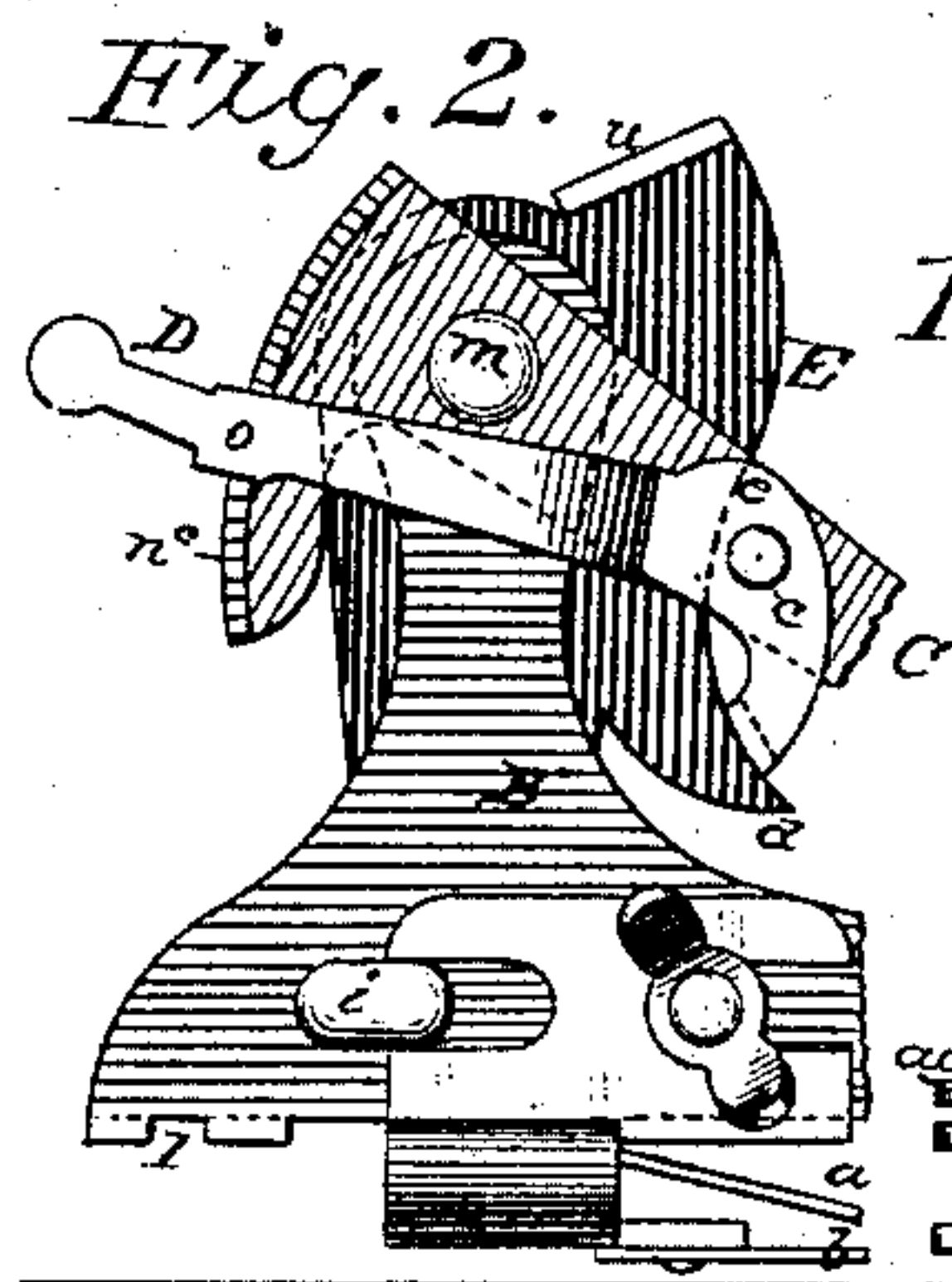
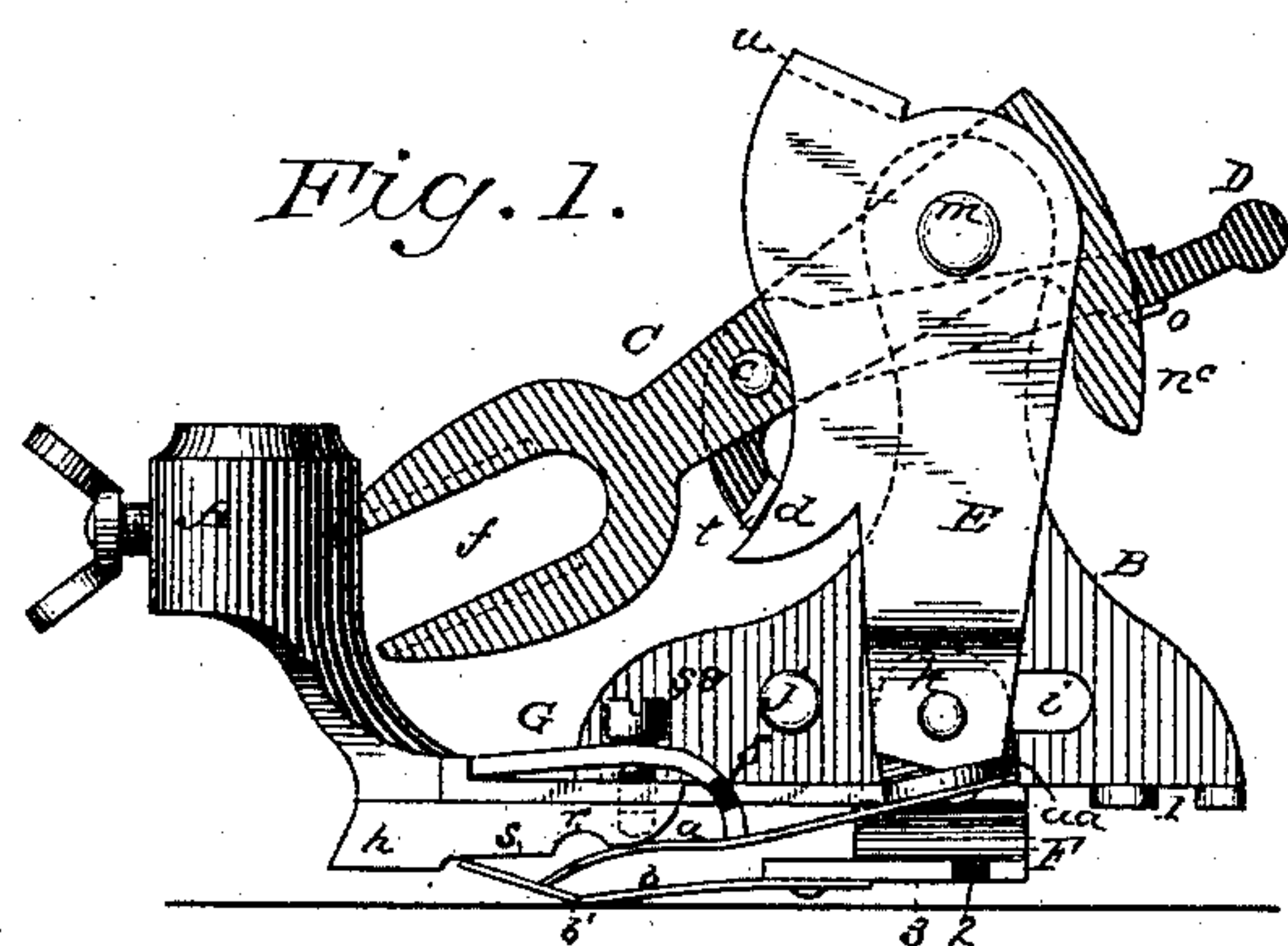
2 Sheets—Sheet 1.

W. R. PARSONS.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 354,577.

Patented Dec. 21, 1886.



Witnesses.

Ed. C. Newman.
Ed. C. Newman.

Inventor

WINSLOW R. PARSONS,

By his Attorney

W. L. Ewing.

(No Model.)

2 Sheets—Sheet 2.

W. R. PARSONS.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 354,577.

Patented Dec. 21, 1886.

Fig. 6.

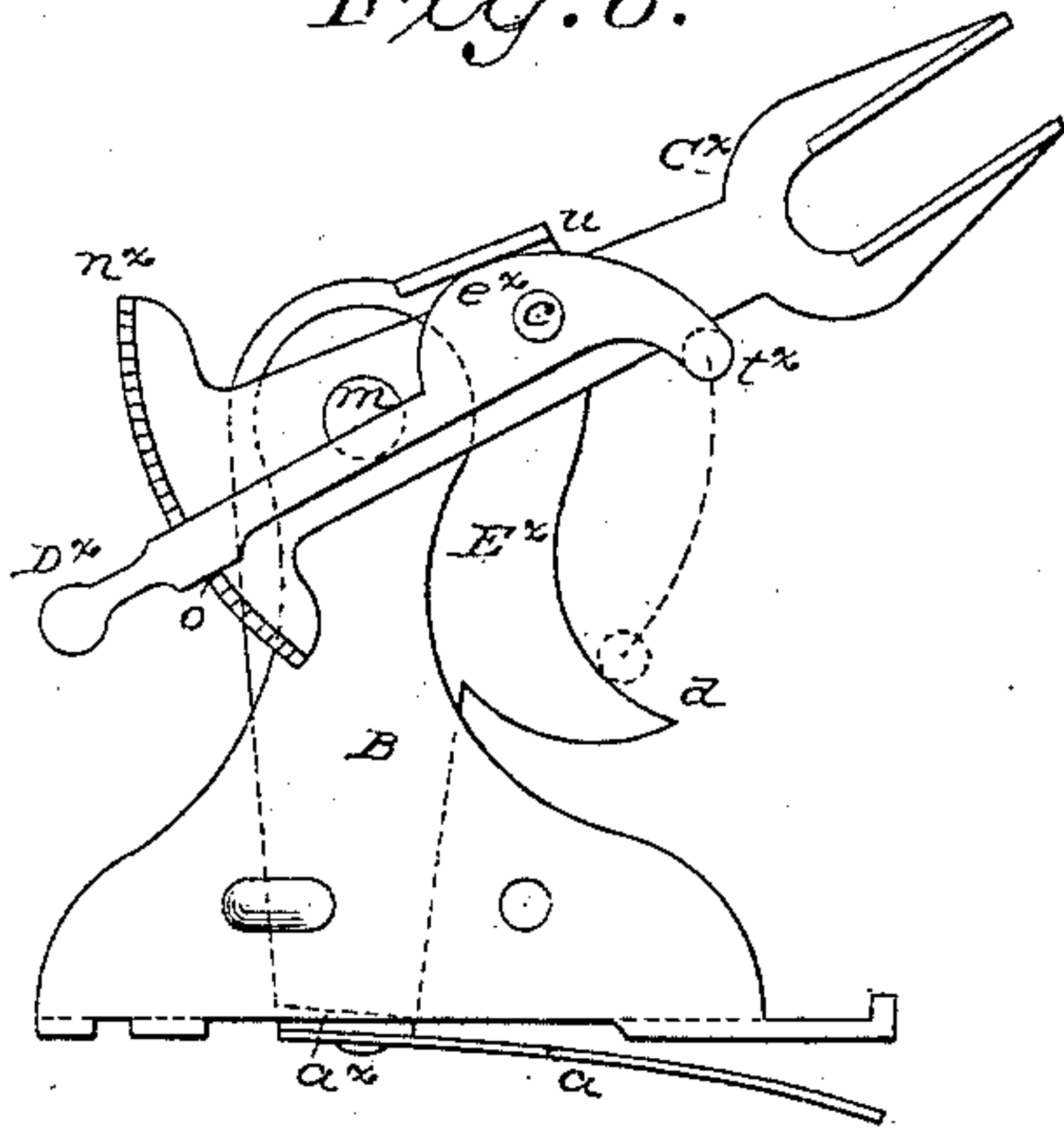


Fig. 8.

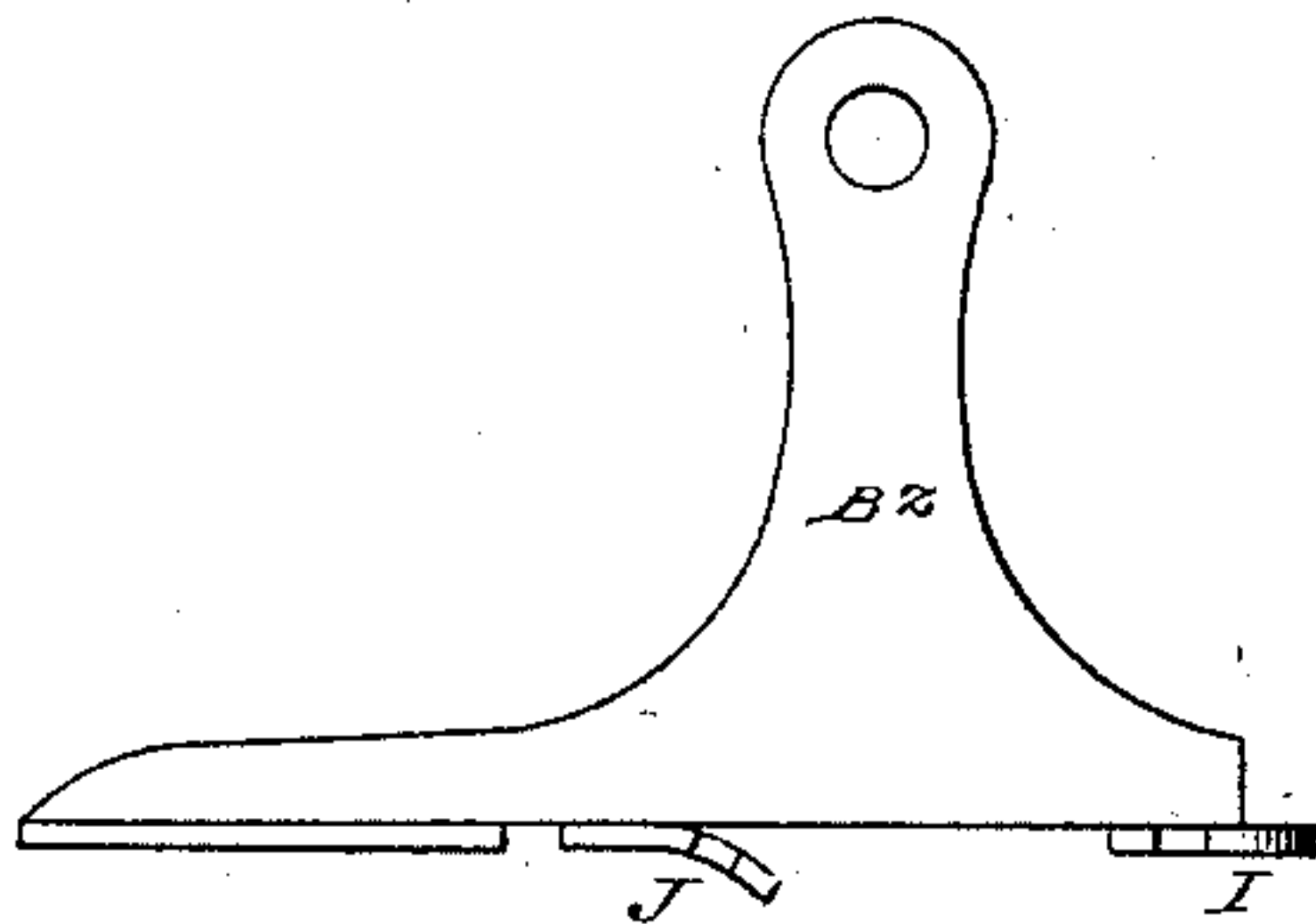


Fig. 8².

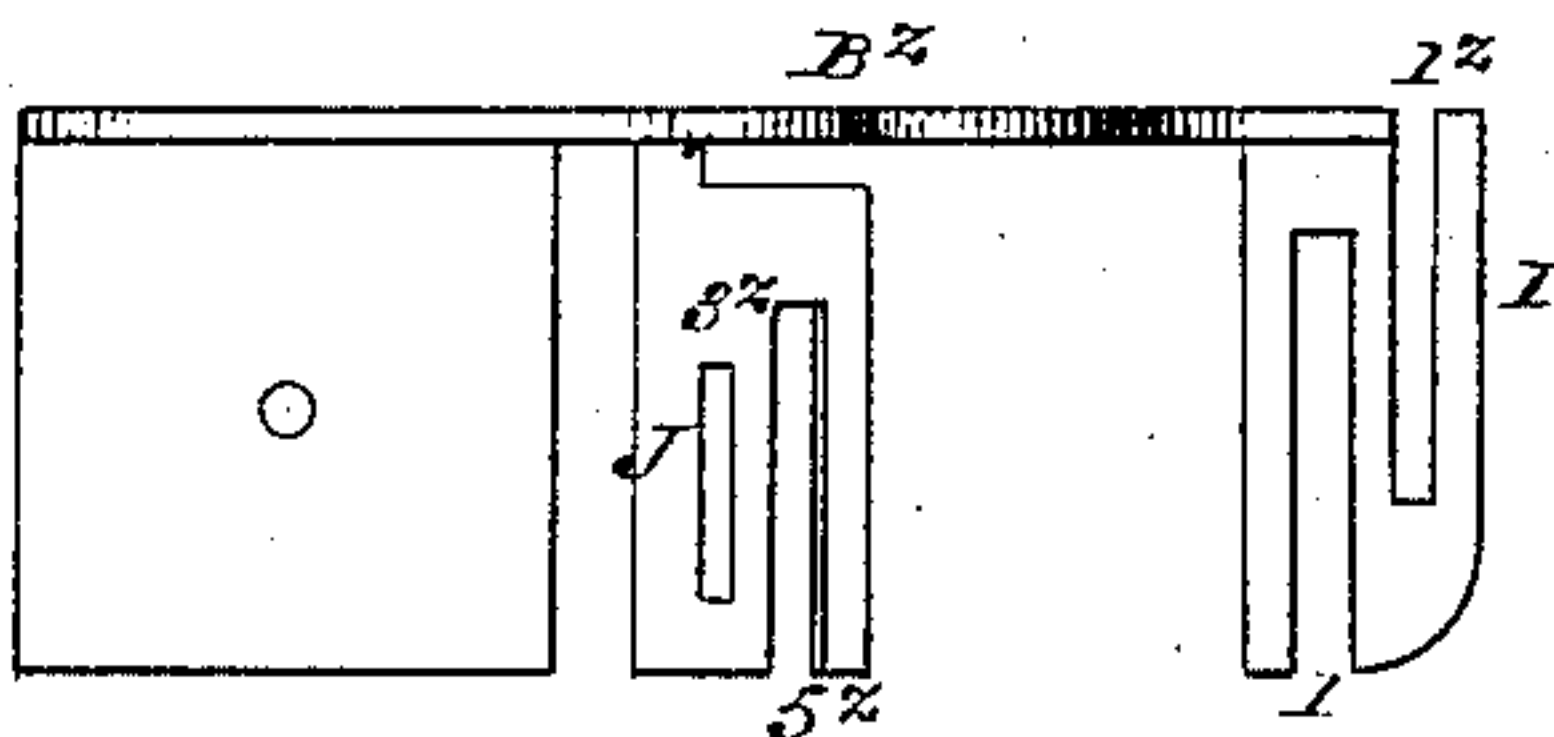


Fig. 7.

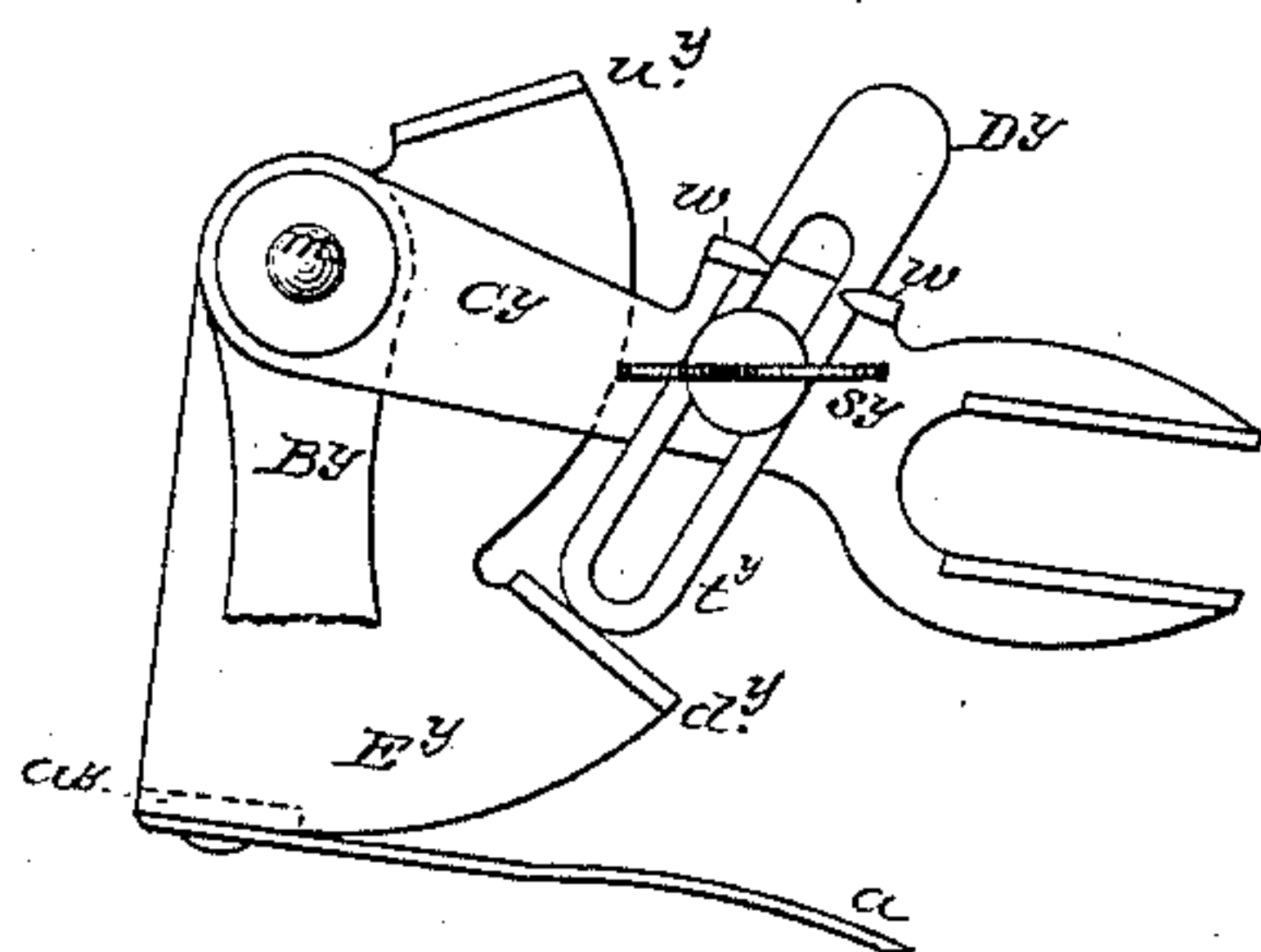


Fig. 9.

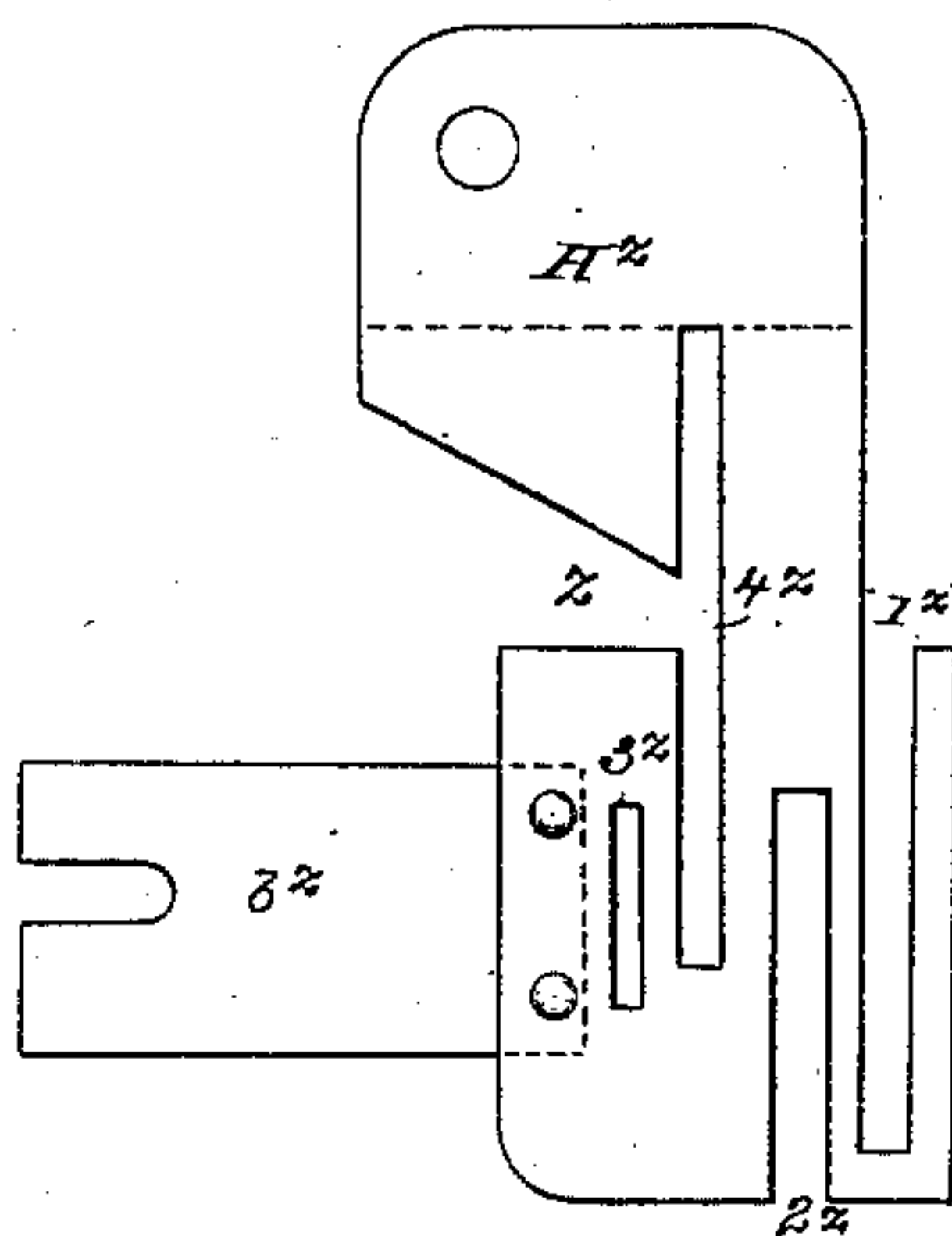
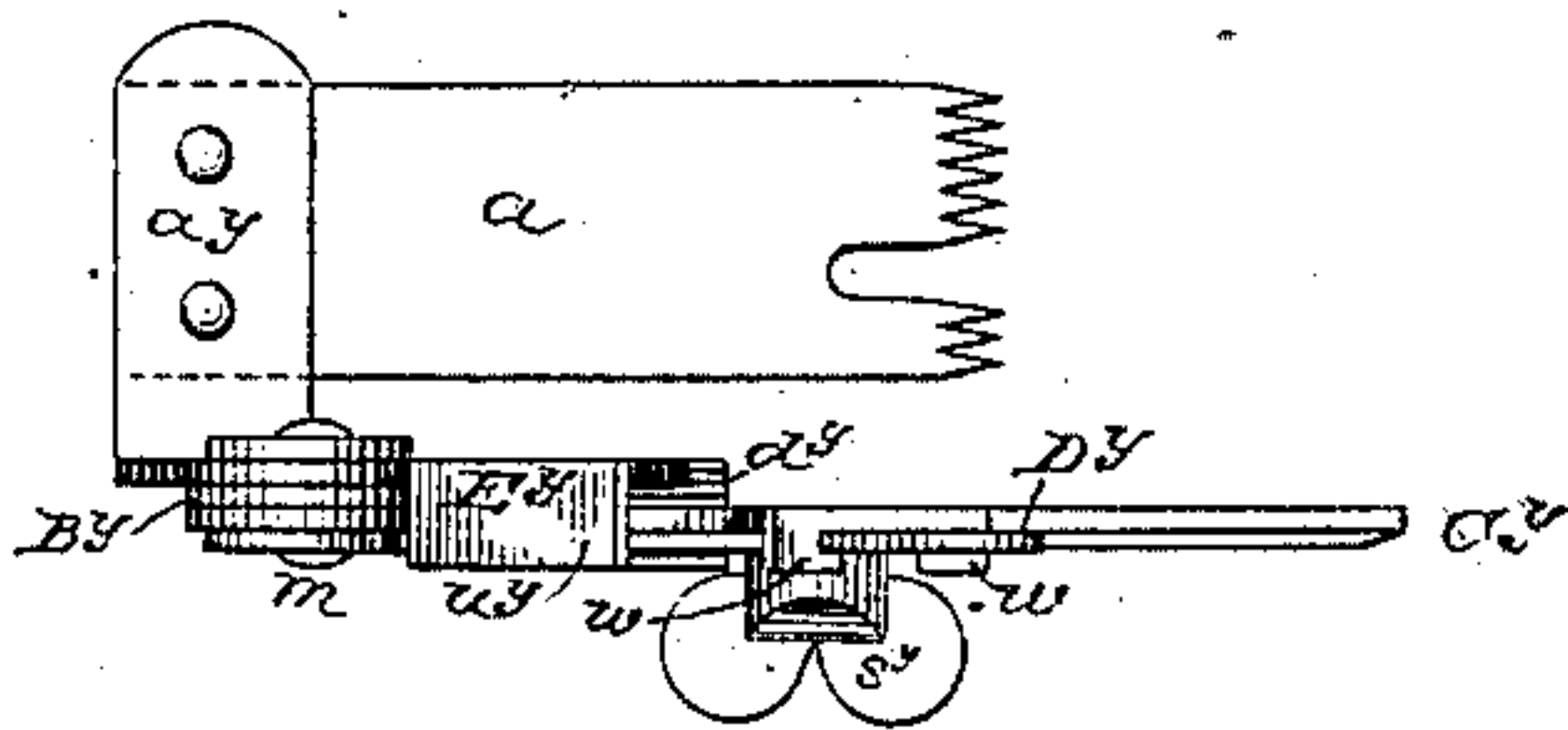


Fig. 7².



Witnesses

Cal. C. Newman,
Ed. A. Newman.

Inventor

WINSLOW R. PARSONS,
By his Attorney
W. L. Evans

UNITED STATES PATENT OFFICE.

WINSLOW R. PARSONS, OF WATERLOO, IOWA.

RUFFLING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 354,577, dated December 21, 1886.

Application filed January 23, 1885. Serial No. 153,757. (No model.)

To all whom it may concern:

Be it known that I, WINSLOW R. PARSONS, a citizen of the United States, residing at Waterloo, in the State of Iowa, have invented a new and useful Improvement in Ruffler Attachments for Sewing-Machines, of which the following is a specification.

My improved ruffler is of that class or type known as "foot attachments" with reciprocating ruffling-blades; and my present invention consists in certain novel features of construction and combinations of parts, hereinafter set forth and claimed, by which as a whole my said ruffler is adapted to do a great variety of work, to operate with precision, to be easily adjusted and converted for different kinds of work, and also to guide the respective pieces of cloth and a piping or fold, if desired, the latter automatically, so as to specially adapt it for use by unskilled operators.

The special object of the first part of this invention is to adapt a ruffling-blade carried by a swinging arm to be forced into mesh with the cloth in a positive manner at the beginning of each push-stroke, and at the same time to release it from excessive bending by permitting it to work in an approximately-straight path.

Another object is to so mount the swinging arm carrying the ruffling-blade, together with the lever or arm by which motion is transmitted, as to equalize the strain on a pivotal rivet common to both.

Another object of the invention is to provide in a peculiar way for regulating the length of the stroke of the ruffling-blade, which determines the fullness of the gathers or the width of the plaits.

Another object is to increase in a peculiar way the relative forward movement of the ruffling-blade so operated in making plaiting or plaited ruffles, as aforesaid, without affecting its ruffling-strokes. This has heretofore been done by means of screw-adjustments, which are liable to become changed by the screw or screws working loose, and which operators, moreover, sometimes fail to understand or to recollect. I provide the additional throw, and proportion the same to the width of the plaits automatically and by simple means.

Another object is to provide by one and the

same simple combination of parts for adjusting the under blade or separator longitudinally, for increasing the space between the end of the blade and the offset in the foot or presser portion of the ruffler, so that plaiting will pass therethrough, for wholly detaching the separator with facility when shirring is to be produced, and for tightly fastening it in place while it is in use.

Another object is to provide for guiding the respective pieces of cloth in making ruffling and plaiting in different ways by means of the attachment, with provision in each case for automatically guiding a piping cut and folded to fit the same.

Another object is to locate an automatic fold-guide immediately in front of the presser-foot by means of a part which serves in plaiting to keep the teeth of the ruffling-blade in mesh with the upper cloth throughout the long strokes of the blade, to aid in producing plaited ruffles or plaiting with uniform plaits as wide as may be desired within the scope of the attachment, as hereinafter more fully set forth.

Two sheets of drawings bearing fourteen figures accompany this specification as part thereof.

Figures 1 and 2 of these drawings are elevations of my improved ruffler in a condition of rest, showing its respective sides. Fig. 1^a is another side elevation from the same point of view as Fig. 1, showing the ruffler, partly in longitudinal section, adjusted for shirring. Fig. 2^b is another side elevation showing the same side as Fig. 2, with the ruffler adjusted for plaiting. Fig. 3 is an end view, and Fig. 4 is a top view, of the ruffler as seen in Fig. 1. Fig. 4^x is a top view of its removable separator part shown in Fig. 1, with an edge view of the under blade or separator appended, and Fig. 5 is a top view of the substitute shirring-blade part shown in Fig. 1^a; and Figs. 6 to 9, inclusive, are detail views illustrating modifications, as hereinafter referred to.

Like letters of reference indicate corresponding parts in the several figures.

Except as converted for shirring, the improved ruffler represented by Figs. 1 to 5, inclusive, of the drawings, is composed of a foot part, A, a frame-piece, B, three lever parts, C D E, the latter carrying the ruffling-blade *a*,

and a separator part, F, carrying the under blade or separator, *b*, with a clamp-piece, G, and accessories of the respective parts. Said foot part A and said frame-piece B are rigidly and fixedly united with each other, and the former is adapted to be attached to the presser-bar of the sewing-machine, (P, Fig. 1^a), as a substitute for the stitching presser-foot, in an ordinary manner. Said foot part is constructed with the customary heel, *h*, to form its pressing-surface at its rear end, having a relatively elevated sole surface, *s*, in front thereof, extending behind the needle-hole *n*, and a transverse recess, *r*, in front of the needle-hole to permit the upper cloth to rise freely in front of the ruffling-blade; and the under blade, *b*, is provided with a permanent transverse bend, *b'*, near its free end, directing the extremity of the blade upward, and forming a fulcrum upon the throat-plate of the machine, whereby said free end of the under blade is caused to press upward against said sole-surface *s*, as indicated in Fig. 1, with greatly-increased force.

In operation, as the ruffling-blade *a* advances to the position in which it is represented in Fig. 1, or that represented in Fig. 2^b, and deposits a crimp or gather or plait of the upper piece of cloth in position beneath the needle, as shown in Fig. 2^b, the crimp or gather or plait is caught by the upwardly-sprung end of said under blade, *b*, and held thereby against the elevated sole-surface *s*, immediately behind the needle, while the heel *h* is allowed to press with undiminished force upon both pieces of cloth as they lie beneath it, thus providing against either piece of cloth being pushed through beneath said heel by the ruffling-blade. In the retraction of the ruffling-blade from its advanced position, as represented, for example, by Fig. 2^b, the same action of said bent under blade serves to prevent the retraction of the upper cloth therewith to a sufficient extent to guard the partly-sewed crimp or gather or plait last formed from being thus opened or impaired.

In making plaiting, as illustrated by Fig. 2^b, said clamp-piece G becomes effective in said retracting-stroke in holding the free end of the ruffling-blade *a* down beyond the toe of the foot A, so that its serrated extremity shall catch the cloth promptly in the succeeding push-stroke. To this end said clamp-piece is located above the foot and attached by a vertical screw, *s*^s, tapped into the latter, the bifurcated rear end of the clamp-piece resting upon said frame-piece B and embracing a projection, *p*, which holds it in place laterally, as clearly shown in Figs. 1^a and 4. Ordinarily the clamp-piece rests lightly upon the blade; but for making plaiting said screw *s*^s is tightened so as to cause the effective edge of the clamp-piece to project downward more or less, as shown in dotted lines in Fig. 2^b, and perform its function as aforesaid. The ruffling-blade *a* is connected with the body of said lever-piece E, which is the "swinging arm" of the

ruffler, by a "lateral arm," *a*^a, which in turn is connected with the lower end of said arm E by a knuckle-joint, *k*, constructed as clearly shown in Figs. 1 and 3, the lower extremity of said arm E having two angular surfaces which coact with the upper surface of the horizontal portion of said lateral arm *a*^a, and provide for limiting to the proper extent the independent or lost motion of the blade permitted by said joint. In the advanced position of the ruffling-blade (represented in Fig. 1, for example) the axis of said knuckle-joint *k* is somewhat in front of the perpendicular plane of the main pivot *m* on which the arm E swings, and in starting from this position toward the retracted position represented in Fig. 1^a the lateral arm *a*^a is lowered and permitted to turn freely on the axis of the knuckle-joint until it passes said perpendicular plane, and the serrated end of the blade is thus caused to rise and free itself to a considerable extent before beginning its backward movement; but more particularly in passing from the retracted position, Fig. 1^a, to the advanced position, Fig. 1, the reverse turn of said arm *a*^a on the axis of the knuckle-joint, together with the action of the extremity of the guide G or the toe end of the foot A as a fulcrum above said blade *a*, as seen in Fig. 1^a, causes the serrated end of the blade to bite the cloth before it begins to move forward, and throughout the push stroke the blade is enabled to move in a more nearly straight path than if it were rigidly attached, and consequently with less bending of the blade. To equalize the strain on said main pivot *m*, which is a rivet uniting the main lever C and said swinging arm E with the standard of said frame-piece B, said lever and arm are located on the respective sides of said standard, as clearly shown in Figs. 3 and 4, and the same is thus adapted to wear well and to work smoothly. Said main lever C receives continuous vibrating motion in a customary manner through a fork, *f*, from the needle-fastening screw of the needle-bar N, as represented in dotted lines in Fig. 1^a, and motion is transmitted therefrom to said arm E toward the end of each stroke of the needle-bar up or down for an effective and variable intermittent reciprocating movement of the ruffling-blade *a*. To adapt it to receive such motion, said arm E is constructed with a pair of shoulders, *u d*, for the up and down strokes respectively, the same being properly located, as represented, between said main pivot *m* and the path of the needle-bar. Said upstroke-shoulder is adapted to engage with said lever C itself, and said lever part D being a finger-lever with a tappet, *t*, at its effective extremity, is attached to said lever C by a pivotal rivet, *c*, said tappet *t* being adapted to engage with said downstroke-shoulder *d*. Said upstroke-shoulder and said tappet are formed by lateral bends in opposite directions. It will be seen that by holding said tappet *t* in different positions below the lever C the length of the retracting-stroke of the ruffling-blade

will be varied by thus filling more or less of the space between said shoulders u d , so as to reduce the idle motion of the lever more or less. Said tappet is so held in the most simple and effective manner which I have conceived by a notched sector, nc , formed on said lever C, coacting with a detent-tooth, o , formed on said finger-lever D and held in mesh by the elasticity of the latter, as best seen in Figs. 2 and 3. To provide when the attachment is adjusted for plaiting for varying the push-stroke of the ruffling blade also, so that it shall carry wide plaits proportionately farther than narrow gathers, and leave them in the most effective position beneath the needle, an eccentric, e , is formed at the tappet end of the finger-lever adjacent to its pivot c , so as to rise above the upper edge of the lever C and take the place of the latter for coaction with said upstroke-shoulder u whenever the tappet t is set for a plaiting-stroke, as illustrated by Fig. 2^b, without additional action on the part of the operator.

To provide for correspondingly adjusting the separating-blade b for plaiting, so as to increase the space at the presser-offset, as aforesaid, its holder F (shown detached in Fig. 4^x) is provided with horizontal slots, as clearly shown in Figs. 2, 2^b, and 3, fitted to a guide-stud, i , and a guide-screw, j , the latter of which is provided with a clamp-nut, as shown, for holding the blade tightly in any position in which it may be placed. By simply loosening said nut the separating-blade may be adjusted to suit the work, or said holder F may be detached in a moment for shirring, while when said nut is tightened the separating-blade is rigidly held and secured against displacement in any direction.

For shirring, a substitute under blade or separator, b^x , is supported preferably by a holder, H, of peculiar construction, attached to a shuttle-race slide S, as shown in Figs. 1^a and 5, said holder being of thin spring-brass, and adapted to hug the top of said slide and the cloth-plate tightly, or to yield vertically so as to accommodate one or more thicknesses of cloth beneath it.

For guiding the respective pieces of cloth and a piping or fold in various ways, and automatically, so far as possible, to adapt the attachment for use by unskilled operators, my provisions in said ruffler (shown in said Figs. 1 to 5, inclusive,) are as follows, viz: first, a guide-slit, 1, (best seen in Figs. 1 and 4,) formed by a pair of horizontal fingers integral with said frame-piece B, to guide a ruffle piece or band introduced from the left in customary manner, with a guide space, 1^x, Fig. 3, formed by a lateral bend of said separator part F, to accommodate a ruffle-piece introduced from the right of the needle; secondly, a slit, 2, Figs. 1 and 4^x, in the sole of said separator part F, for guiding a band introduced from the left when said guide 1 is used for the ruffle-piece, as shown in Fig. 2^b, or for guiding a folded strip passing upward therethrough and between the two blades to

form "straight plaiting;" thirdly, short slots 3 3^z 3^s, Figs. 4^x, 5, 4, formed, respectively, in said sole of the separator part F and in the shirring-blade holder H and in said clamp-piece G, to guide automatically a piping cut and folded to the proper width and inserted through either, as may be most convenient, this piping-guide being in each case in front of the presser-foot, so that the piping may pass therethrough at an easy angle, and pass freely, in contact with one of the blades, beneath the foot to the needle; fourthly, a slot, 4, Fig. 5, in said shirring-blade holder H, for automatically guiding a band cut to fit the same, together with slots 1^z and 2^z in the same for alternate use as guides for ruffle-pieces and bands in making ruffling while this part is in position; fifthly, a slit, 5, Figs. 1, 1^a, 4, in said clamp-piece G, to guide a band which has one edge folded over first when a folded band is to be stitched to the top of the ruffle.

Fig. 6 represents a side elevation of said frame piece B, provided with modified lever-pieces C^x D^x E^x. The lever C^x may be identical with said lever C. An immaterial change of form is shown at its notched sector n^x . The finger-lever D^x embodies the main modification sought to be illustrated by this figure—that is to say, its eccentric e^x is adapted to engage at all times with the upstroke-shoulder u of the swinging arm E^x, so that in making all widths of gathers and plaits the forward throw of the ruffling-blade a shall be proportioned to their width. An immaterial change of form is represented at t^x , and the ruffling-blade a is represented as attached to a rigid lateral arm, a^x , of said arm E^x, as it may be without affecting said stroke-varying devices.

Fig. 7 represents a side elevation, and Fig. 7^y a top view, of another ruffler illustrating additional modifications of the same part of this invention. B^y represents a frame-piece, c^y a main lever, and E^y a swinging arm united by a horizontal pivot, m , and corresponding, respectively, in general functions with said frame-piece B, levers C C^x, and arms E E^x. Said lever E^y carries the ruffling-blade a by means of a rigid lateral arm, a^y , (or it may be in the manner represented in Figs. 1 to 4, inclusive,) and has upstroke and downstroke shoulders u^y d^y , both of which are formed by lateral bends, and said lever C^y carries in place of a finger-lever a slide, D^y, the lower end of which forms an adjustable tappet, t^y , to engage with said downstroke-shoulder, said slide being held in place by ways w w , formed by bending and notching the metal of the lever, and a thumb-screw, s^y , (or it may be a stud-screw and thumb-nut,) the screw being accommodated by a longitudinal slot in the slide, as shown in Fig. 7. The retracting-stroke is thus varied at will in substantially the same manner as before described, but by different means, beyond the adjustable tappet itself.

Fig. 8 is a side elevation, and Fig. 8^z a top view, of a modified frame-piece, B^z, correspond-

ing in general form and function with said frame-pieces B B', but differing therefrom as to guides. This frame-piece B² has, in addition to the pair of fingers at its front end, forming said guide-slit 1 for a ruffle piece or band introduced from the left, a third finger, I, integral with the outer of the fingers first named, and this finger I forms a guide-slit, 1², for a ruffle piece or band introduced from the right. Another integral part, J, in the same horizontal plane takes the place of said clamp-piece G, for the accommodation of a piping-guide, 3², and a top-band guide, 5², corresponding in function to said guides 3^s and 5. By partly severing this part J and bending it downward at its outer edge, as shown in the figures, the passage of the cloth through the guides is facilitated; and this may be done with said part I also, or it may be omitted, especially if the frame-piece be of thin and stiff metal.

Fig. 9 represents a top view of another holder, H², for the shirring-blade b², illustrating additional modifications of the guides. This holder is made of stiff metal with a thick end, through which the attachment-screw of the cloth-plate passes to attach it in customary manner, and in addition to guides 1², 2², and 3², corresponding in form as well as in function with the guides in said holder H, correspondingly lettered, it has an automatic band-guide, 4², possessing the function of said guide 4, and also adapted, by a central opening, z, to guide the seam-edge of a wide straight piece introduced from the right through said opening, while the closed ends of the guide proper increase its efficiency in automatically guiding a band cut to fit it.

Having thus described my said improvement in ruffler attachments for sewing-machines, I claim as my invention, and desire to patent under this specification--

1. The combination, with a reciprocating ruffling-blade, a fulcrum above the same, and a swinging arm for carrying the blade, of a lateral arm at the lower end of said swinging arm, having said blade riveted thereto, and connected with said swinging arm by a knuckle-joint, which comprises a horizontal pivot carried past the perpendicular plane of the axis of said swinging arm in each stroke, and angular surfaces on the lower extremity of said swinging arm coacting with the horizontal portion of said lateral arm, as herein specified, for the purposes set forth.

2. The combination, in a sewing-machine ruffler having a reciprocating ruffling-blade, of the customary frame-piece having an upright portion, a main lever to engage with the needle-screw, embracing one side of said upright, a swinging arm to carry said blade, embracing the other side of said upright, and a pivotal rivet, the respective ends of which pivot said lever and said arm at the upper end of said upright, as herein specified, for the purpose set forth.

3. The combination, in a sewing-machine

ruffler having a reciprocating ruffling-blade, of a main lever adapted to receive continuous vibrating motion from the needle-bar, a swinging arm carrying said blade and having upstroke and downstroke shoulders at a fixed distance apart between its pivot and the path of said needle-bar, and an adjustable piece carried by said lever and having a tappet end below the lever to engage with said downstroke-shoulder, said upstroke-shoulder being adapted to engage with the upper edge of the lever itself, substantially as herein specified, for varying the intermittent reciprocating motion of the blade, in the manner set forth.

4. The combination, in a sewing-machine ruffler having a reciprocating ruffling-blade, of a main lever adapted to receive continuous vibrating motion from the needle-bar, a swinging arm carrying said blade and having upstroke and downstroke shoulders at a fixed distance apart, and a finger-lever carried by said main lever, and having a tappet end below the latter to engage with said downstroke-shoulder, and an eccentric projecting above the upper edge of the main lever when said tappet end is set for plaiting, to engage with said upstroke-shoulder, substantially as herein specified, for the purpose set forth.

5. The combination, in a sewing-machine ruffler having a reciprocating ruffling-blade, of a main lever adapted to receive motion from the needle-bar, a swinging arm carrying said blade and having upstroke and downstroke shoulders, and a lever-piece having a tappet end to engage with said downstroke-shoulder, and an eccentric to engage with said upstroke-shoulder when said tappet end is set for plaiting, substantially as herein specified, for the purpose set forth.

6. In a sewing-machine ruffler having a reciprocating ruffling-blade, the combination, substantially as herein specified, of mechanism for transmitting motion to said blade in its effective movements from the needle-bar, comprising a pair of unvarying contact-surfaces which coact with each other in ruffling-strokes, and devices for effecting and varying the retractions of said blade, comprising a lever-piece provided with a stroke-increasing eccentric which projects beyond and takes the place of one of said contact-surfaces in said effective movements when said lever-piece is set for a plaiting-stroke, for the purpose set forth.

7. In a sewing-machine ruffler, a separating-blade holder having an upright portion provided with a pair of horizontal slots, each having an open end, in combination with a frame-piece having a stud and a stud-screw fitted to said slots, and a thumb-nut permanently applied to said screw, as herein specified, for the purposes set forth.

8. In a sewing-machine ruffler having a reciprocating ruffling-blade and an under blade or separator, a series of cloth-guides, including a guide slot or passage closed at both ends and crossing the path to the needle, for auto-

5 matically guiding a piping cut and folded to fit the same, said guides being formed in stationary parts and located wholly in front of the presser-foot, so as to be supplemented by the blades, substantially as herein specified, for the purposes set forth.

9. In a sewing-machine ruffler, in combination with a reciprocating ruffling blade and devices for actuating the same, the within-de-

scribed clamp-piece G, provided with a series of guides, including a slot-guide for a piping or fold, substantially as shown, for the purposes set forth.

WINSLOW R. PARSONS.

Witnesses:

J. M. THAYER,
E. S. WHEELER.