

(Model.)

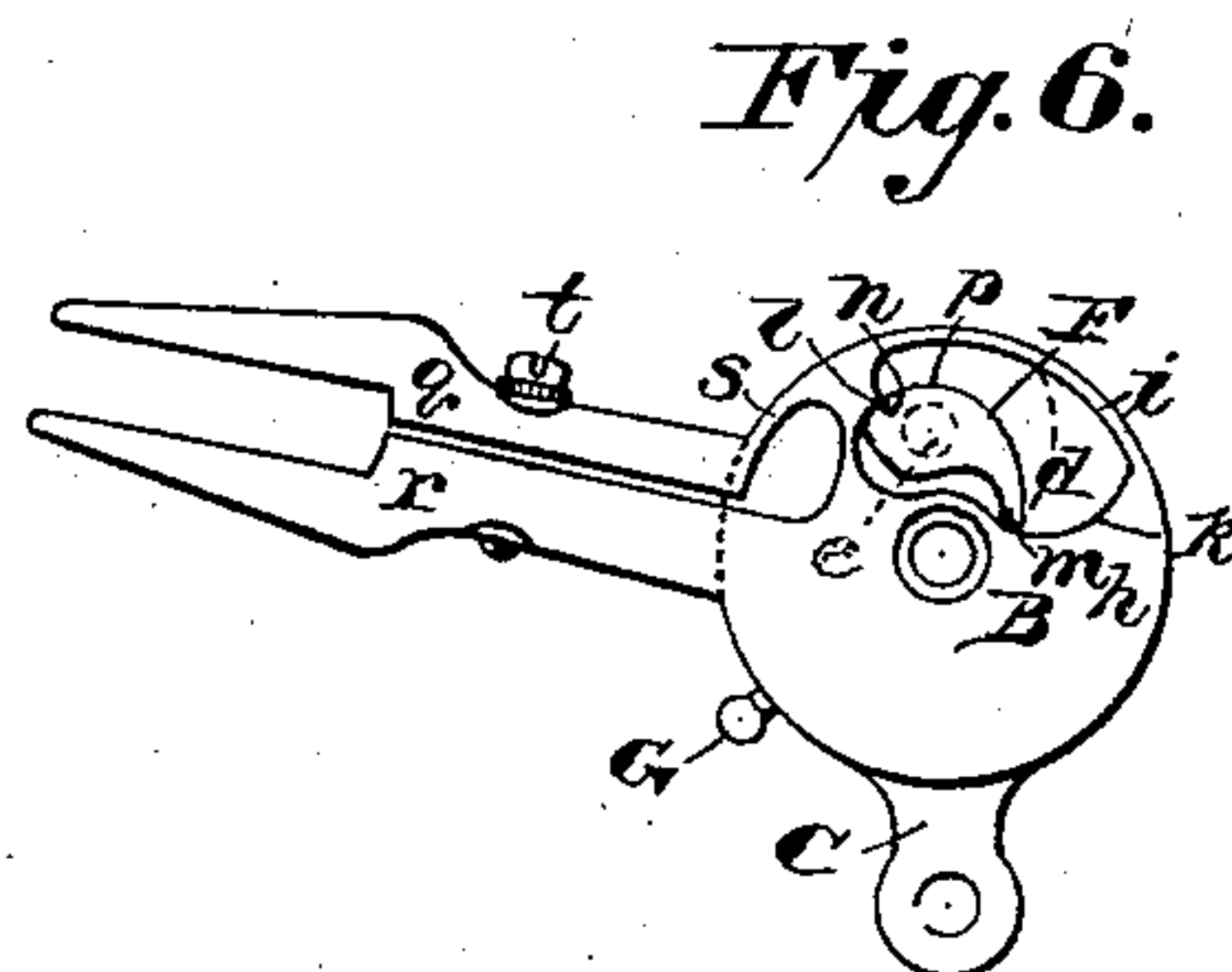
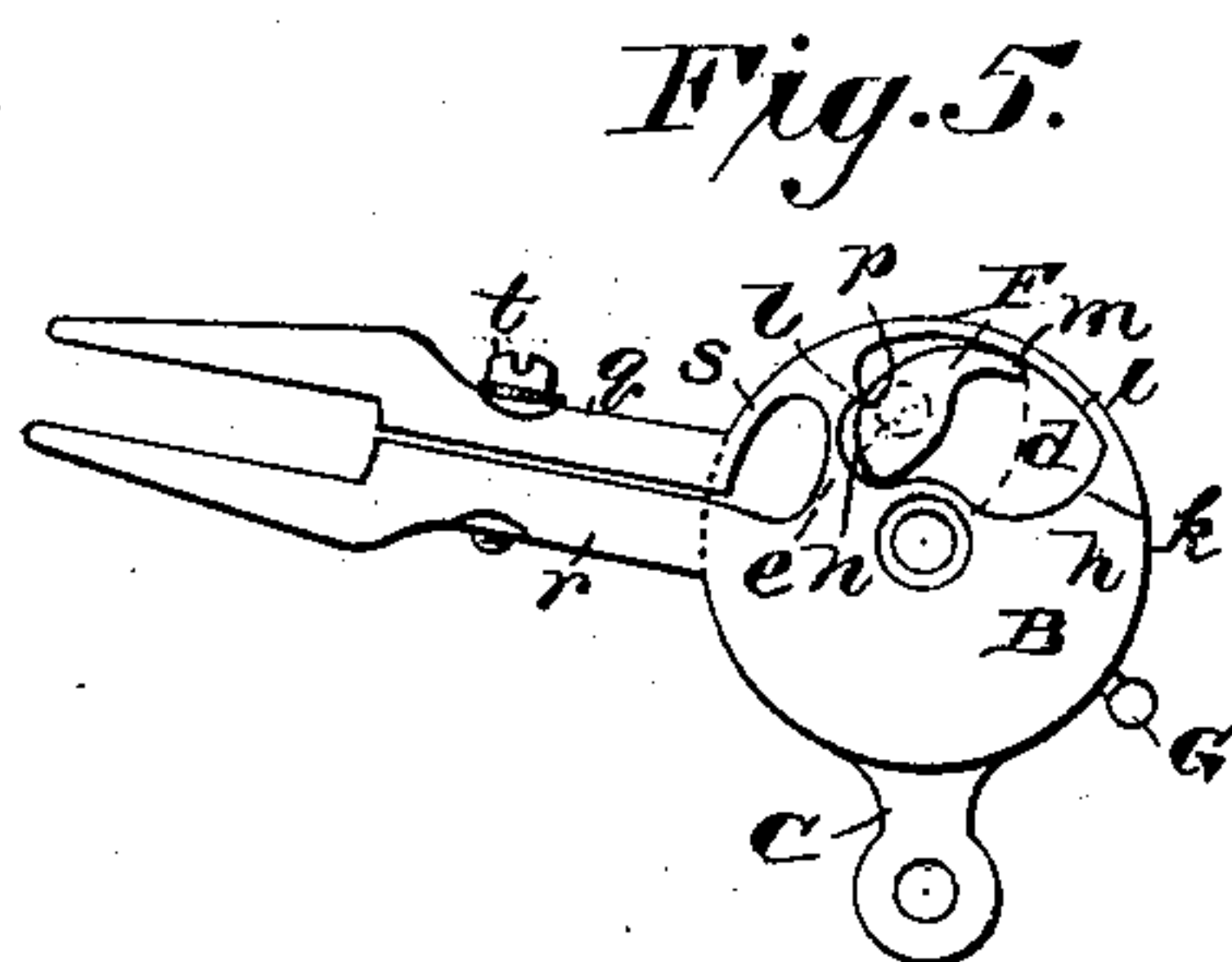
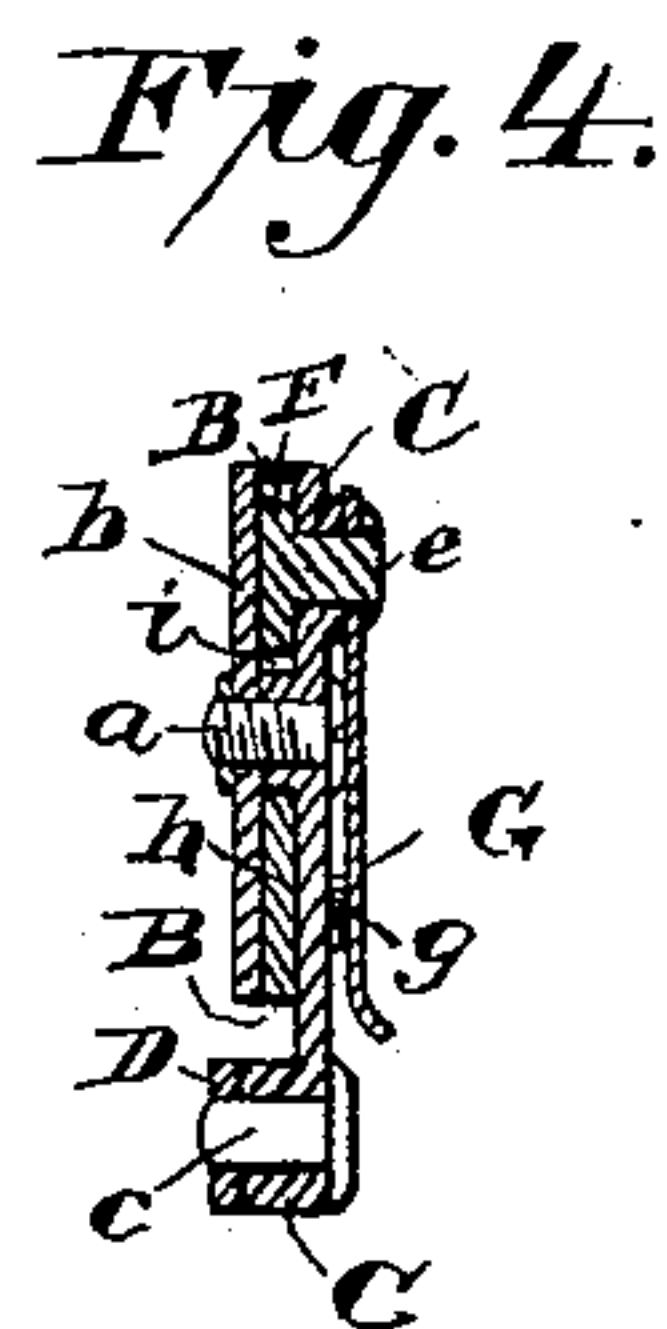
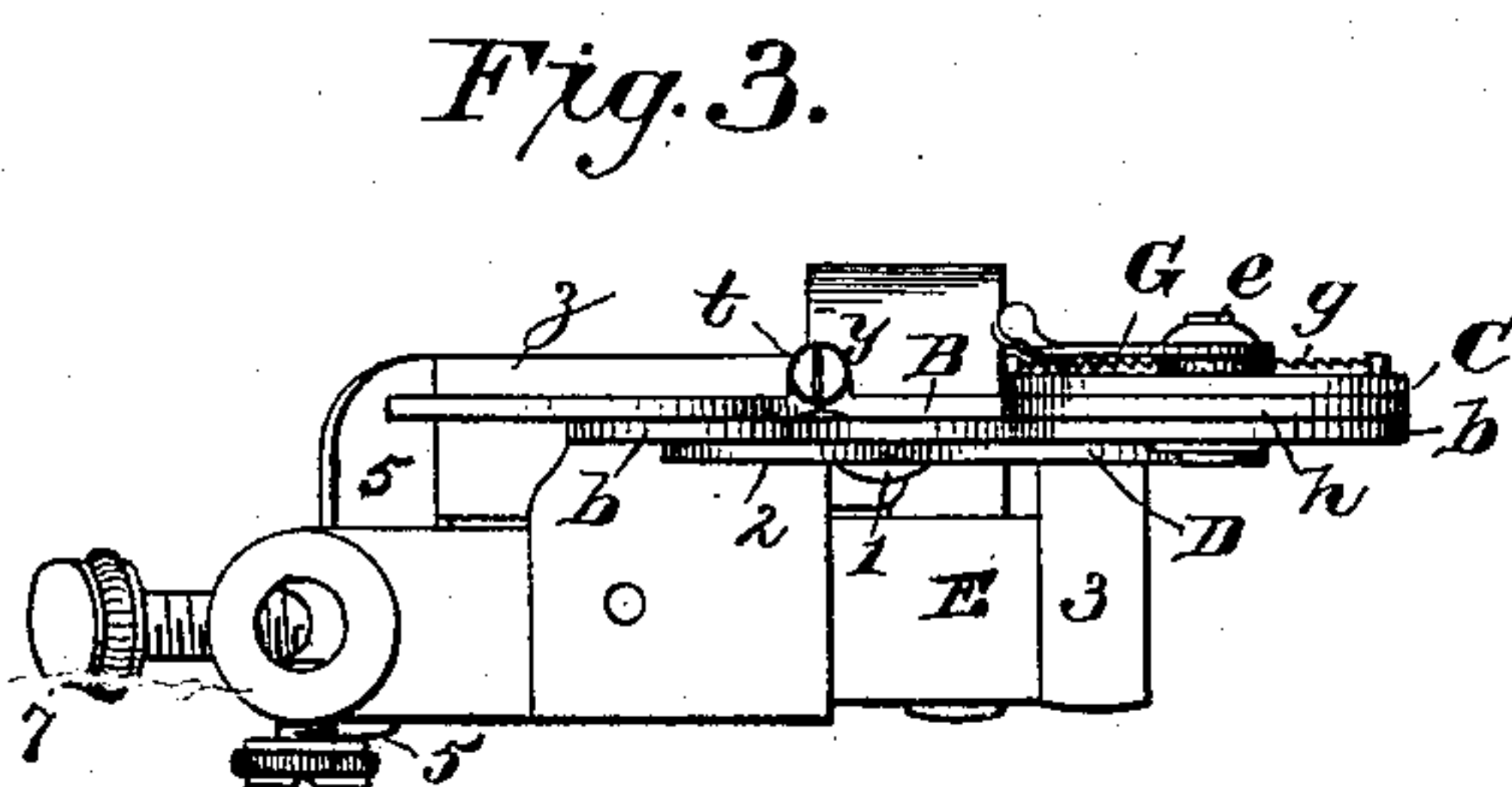
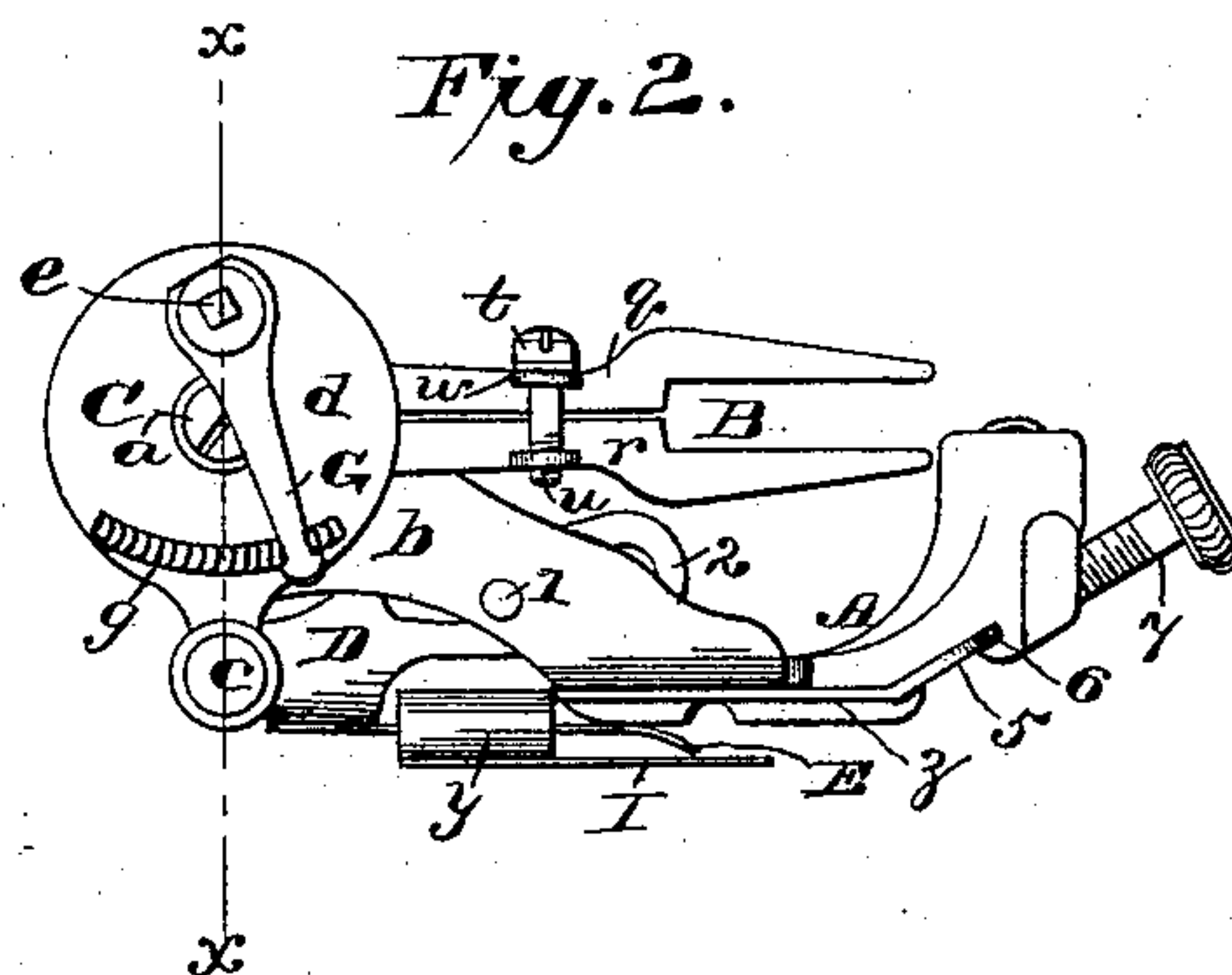
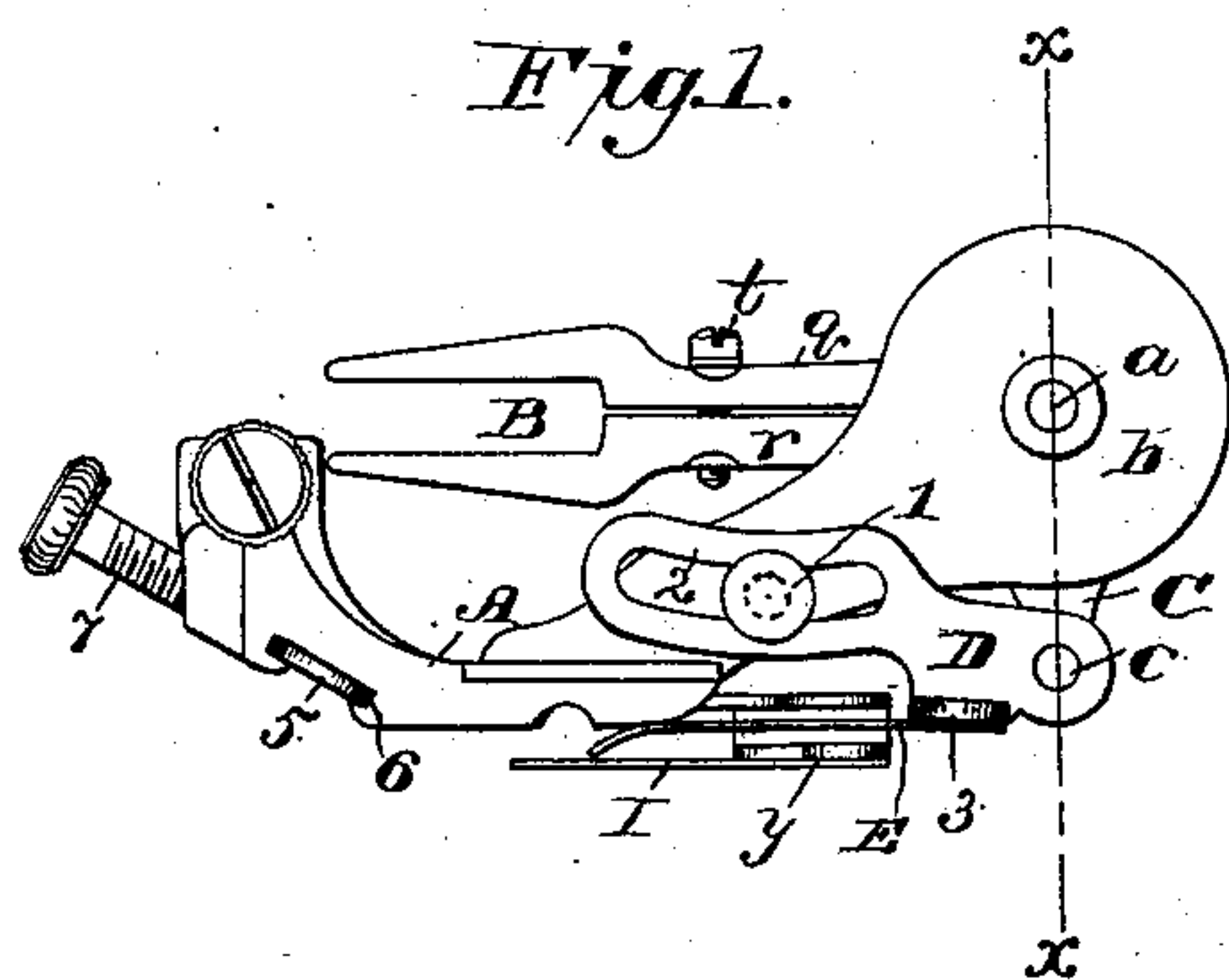
3 Sheets—Sheet 1.

A. JOHNSTON.

RUFFLING OR GATHERING ATTACHMENT FOR SEWING MACHINES.

No. 324,261.

Patented Aug. 11, 1885.



Witnesses
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C. J. Hedrick

Inventor
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(Model.)

3 Sheets—Sheet 2.

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Fig. 7.

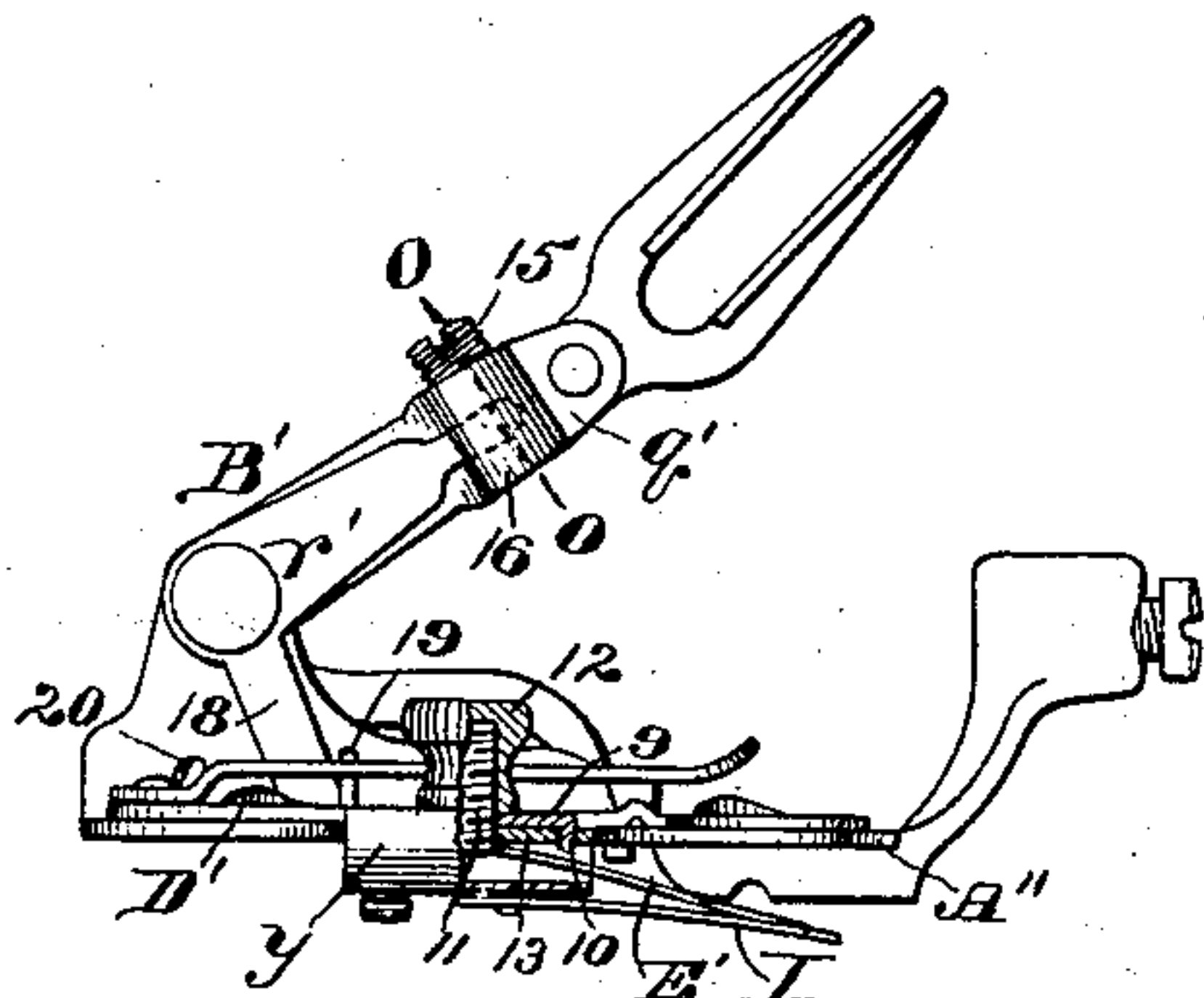


Fig. 8.

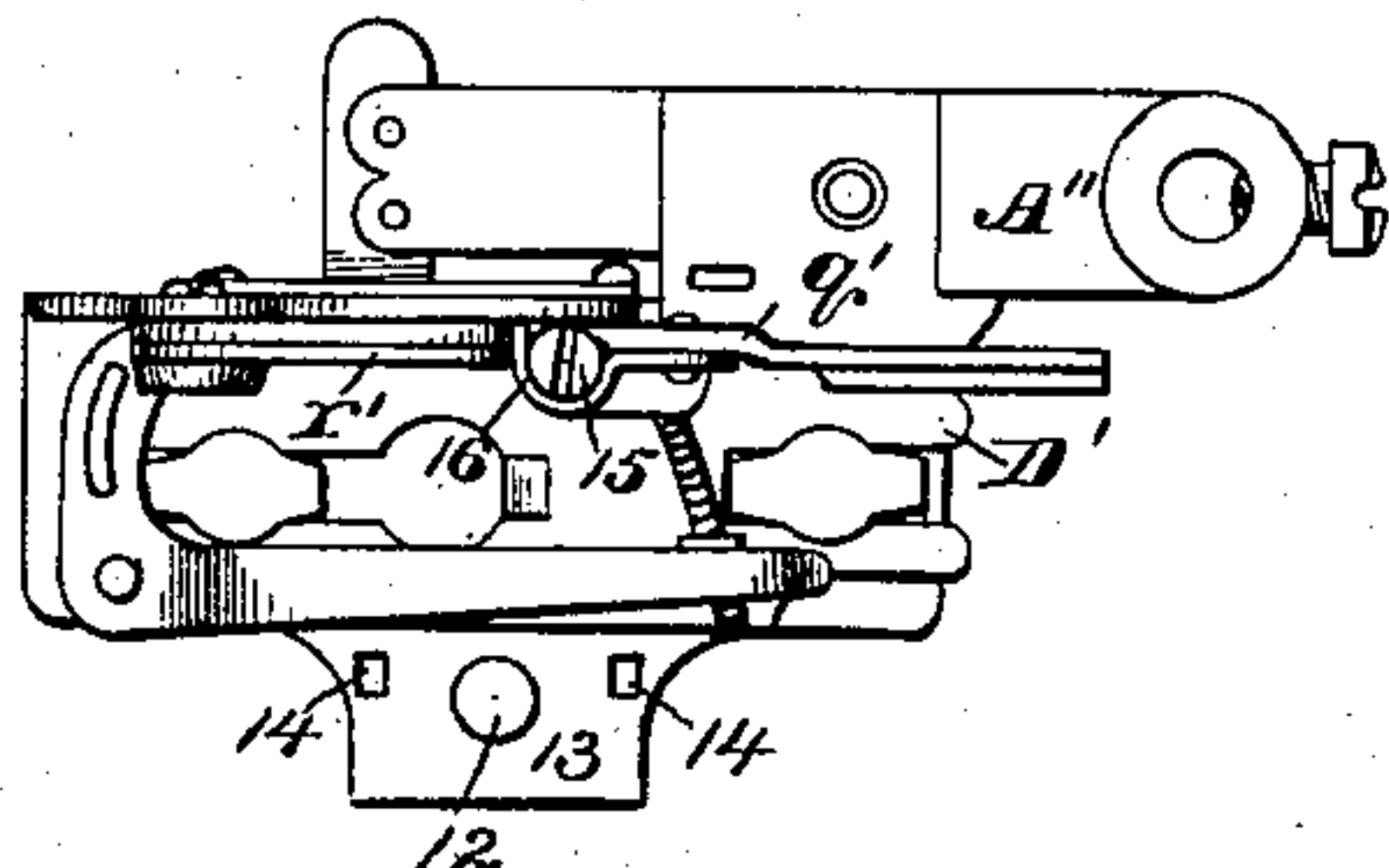


Fig. 9.

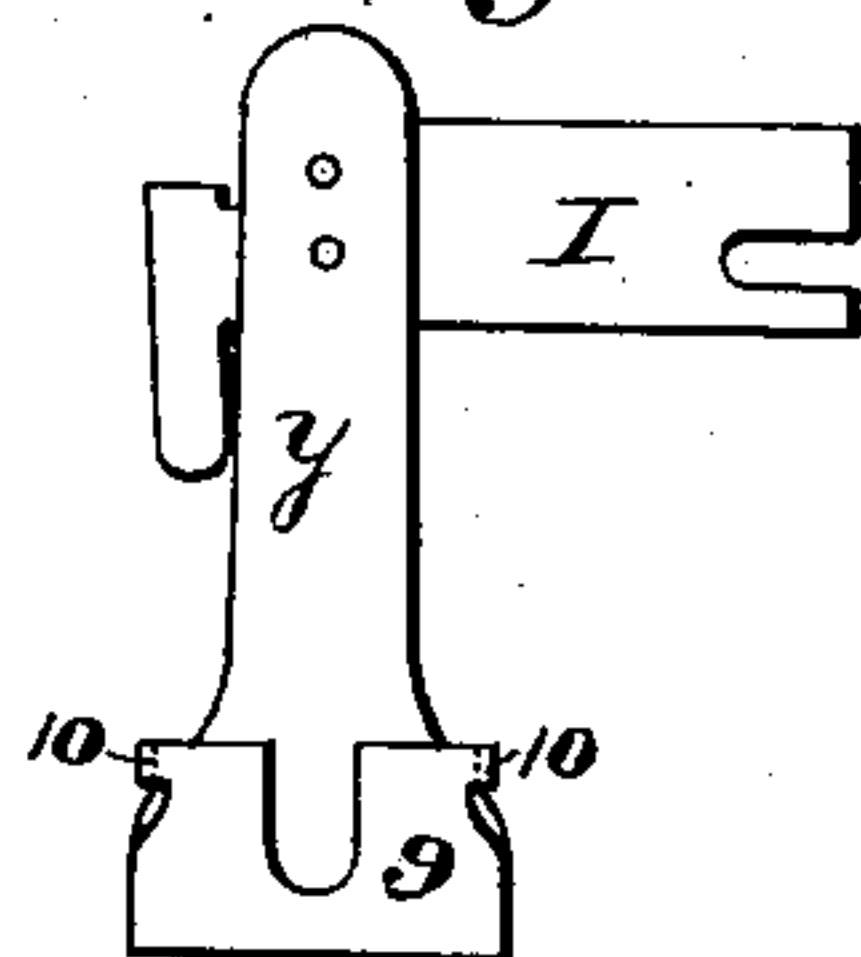
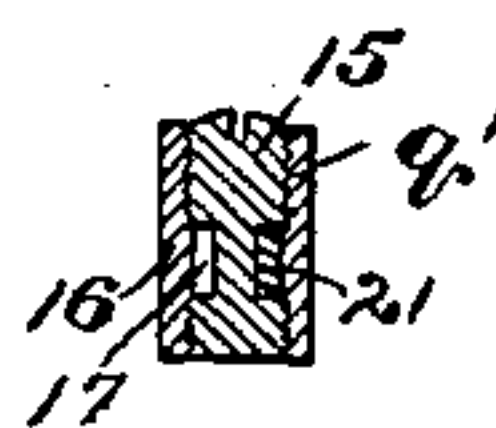


Fig. 10.



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(Model.)

3 Sheets—Sheet 3.

A. JOHNSTON.

RUFFLING OR GATHERING ATTACHMENT FOR SEWING MACHINES.

No. 324,261:

Patented Aug. 11, 1885.

Fig. 11.

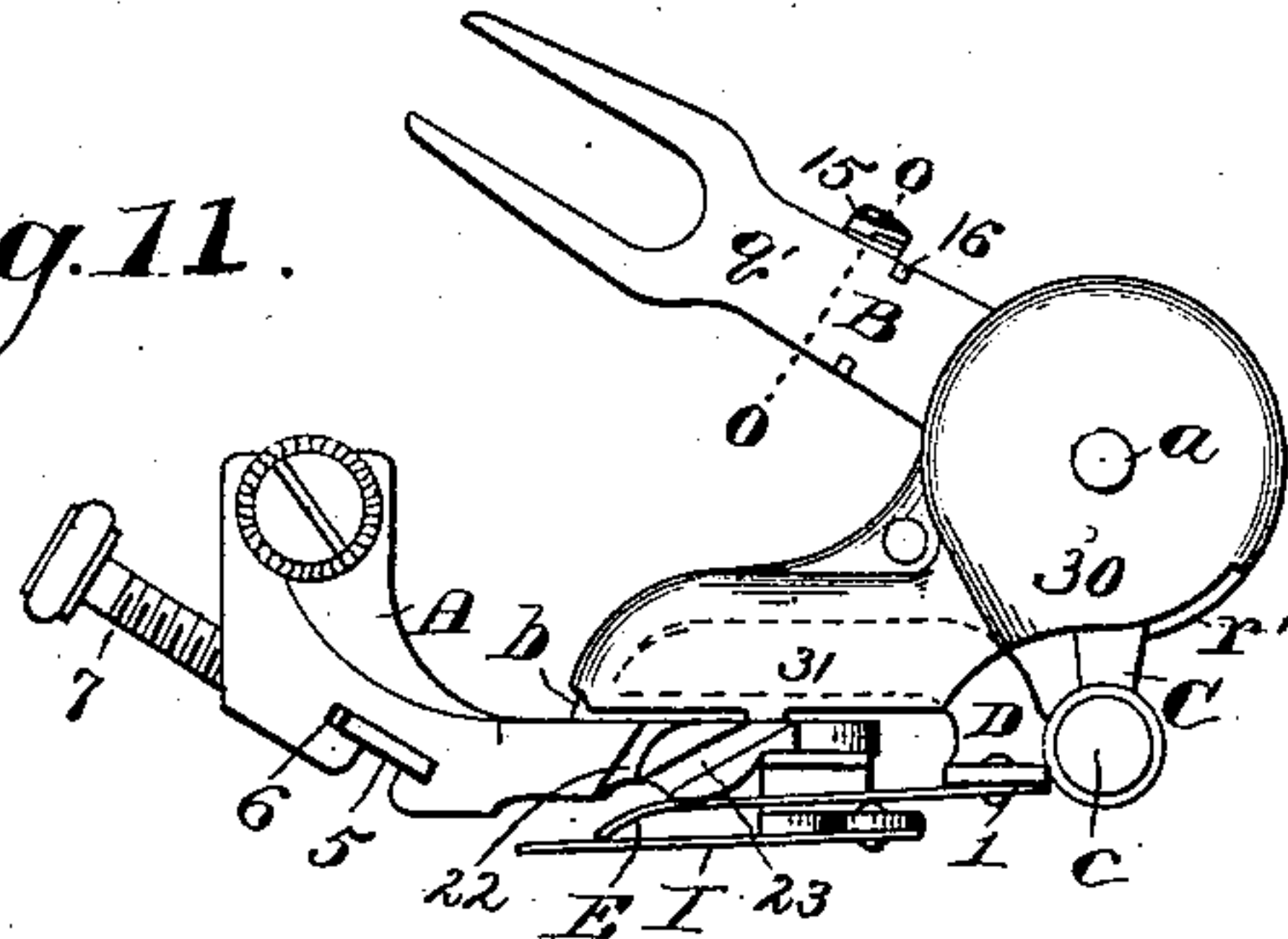


Fig. 12.

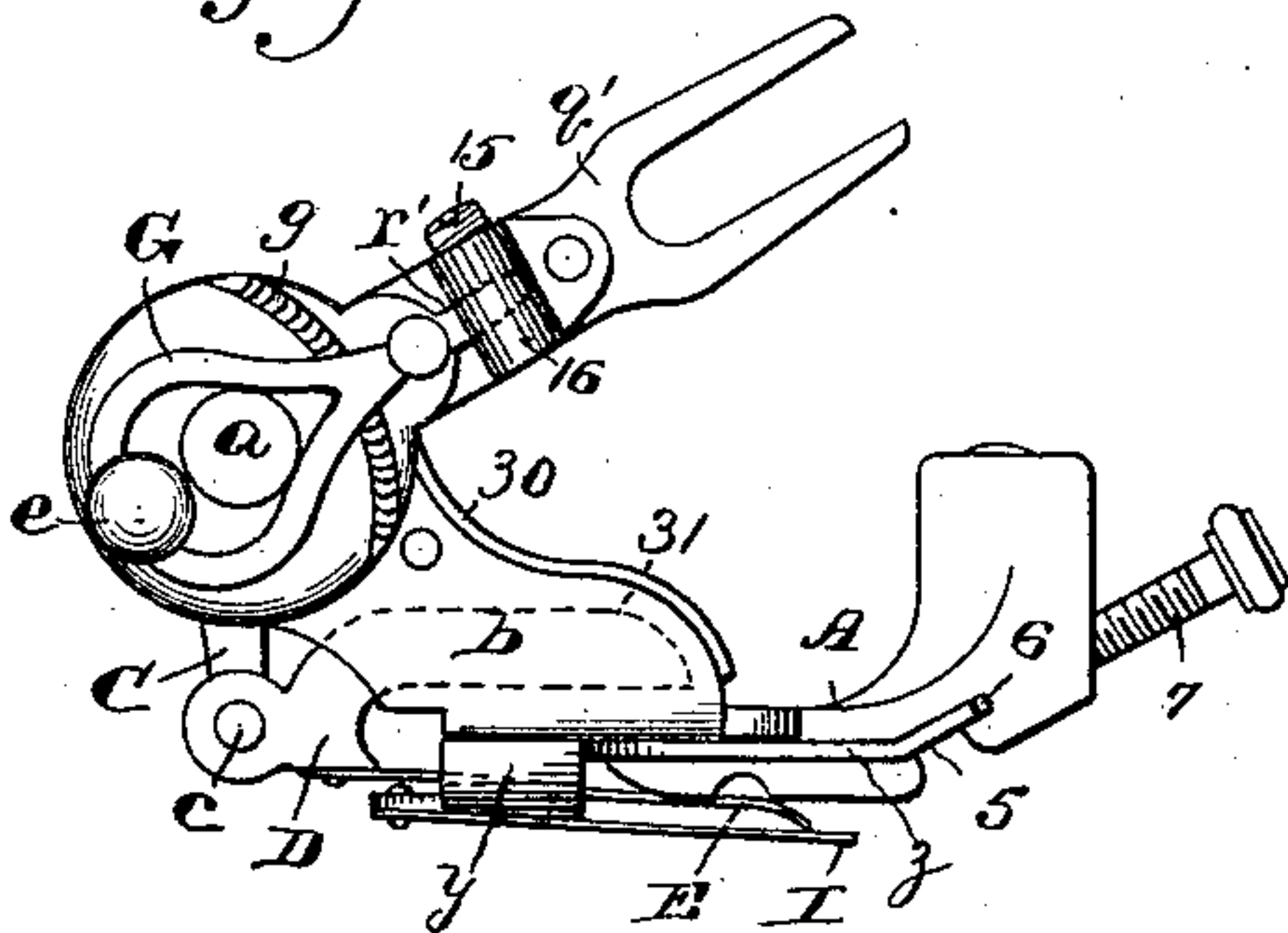


Fig. 13.

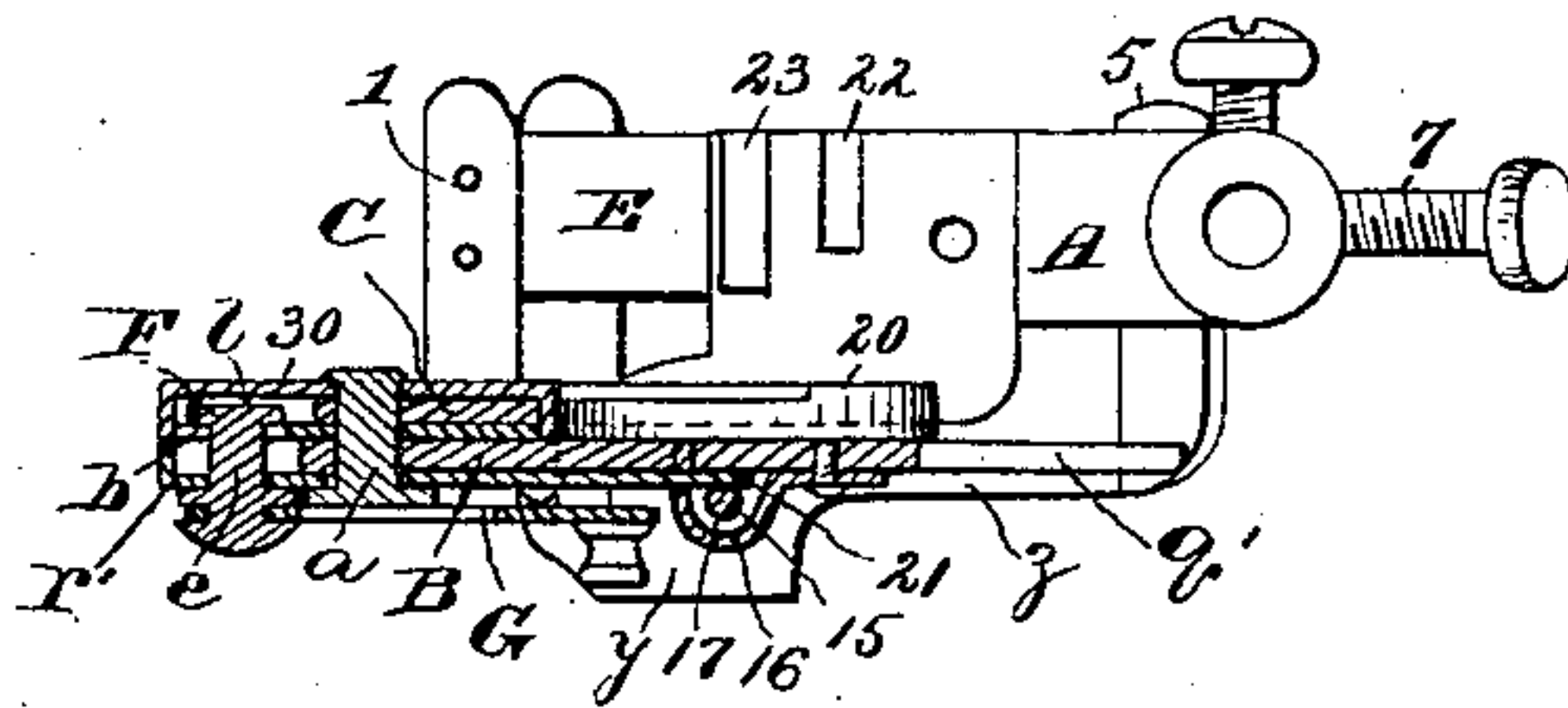
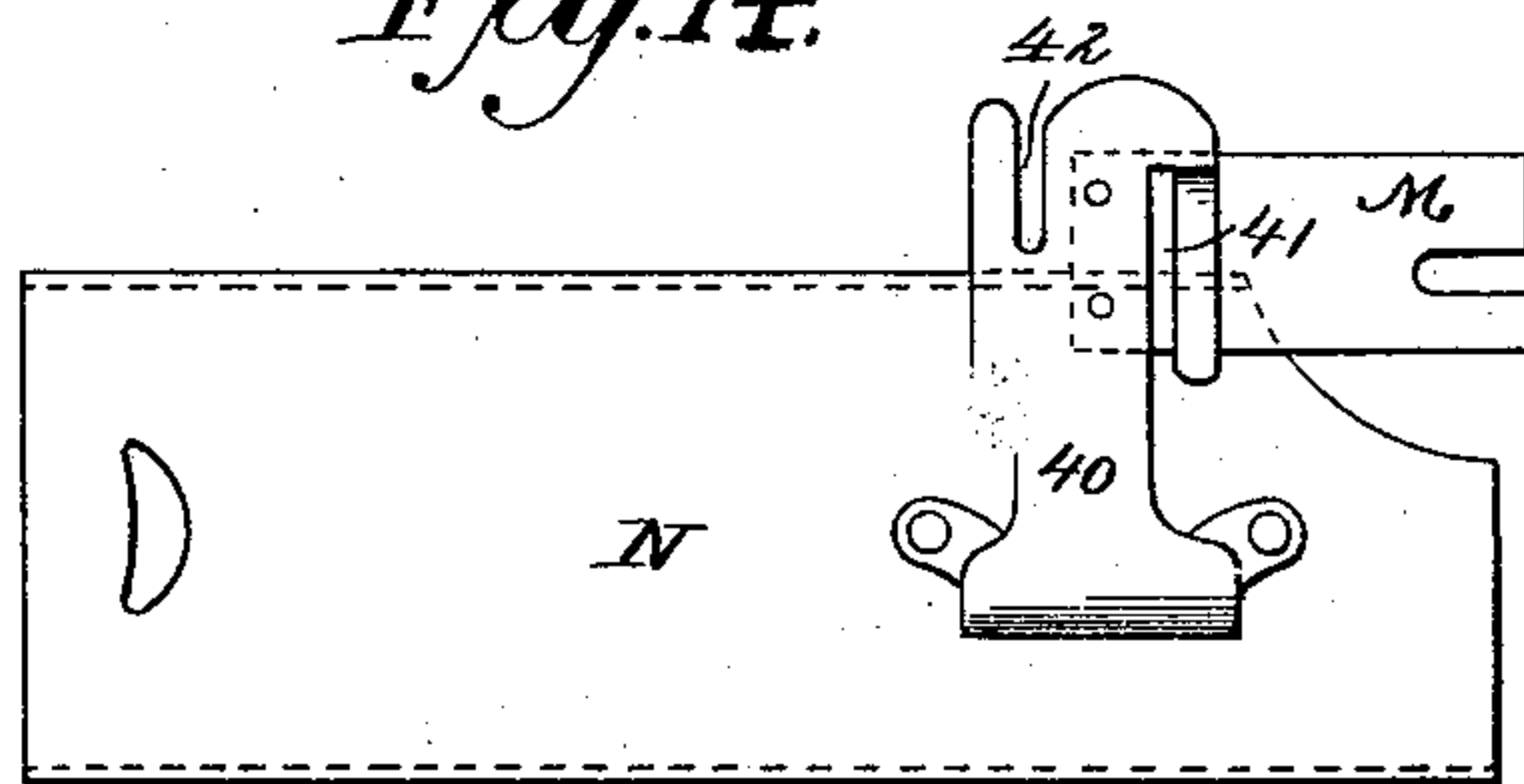


Fig. 14.



Witnesses

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C. J. Hedrick

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his attorney.

UNITED STATES PATENT OFFICE.

ALLEN JOHNSTON, OF OTTUMWA, IOWA.

RUFFLING OR GATHERING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 324,261, dated August 11, 1885.

Application filed March 29, 1884. (Model.)

To all whom it may concern:

Be it known that I, ALLEN JOHNSTON, of Ottumwa, in the county of Wapello and State of Iowa, have invented a new and useful Improvement in Ruffling or Gathering Attachments for Sewing-Machines, which improvement is fully set forth in the following specification.

This invention has reference to that class of ruffling or gathering attachments now most commonly used which have a reciprocating blade to form the goods into plaits or folds; but it is in part applicable to other rufflers or gatherers.

The invention consists, first, in new means for regulating the stroke of the ruffler-blade. In Letters Patent 259,643, granted to me June 13, 1882, a ruffler is described in which the blade is reciprocated by a pin moving between two stops, and the stops are made adjustable toward and away from each other by one movement of an adjusting device, so that the said blade moves farther forward in making full than in making scant gathers.

In Letters Patent No. 264,038, granted to me September 5, 1882, an improvement upon or modification of the former invention is described, the stops being formed by the walls of a groove of varying width cut in the periphery of a cylinder. By turning the cylinder the reciprocating pin acts in different parts of the groove, so that the lost motion is varied according to the different widths of said parts.

The present new means for regulating the stroke may be considered as an improvement upon or modification of both the former ones described in said patents.

Instead of the pin a contact device, pivoted or otherwise supported so that it can be turned, is interposed between the stops, and the adjustment is effected by turning the said contact device. The part to which the stops are fastened or in which they are formed may be reciprocated and communicate its motion to the part which carries the contact device; or the part carrying the adjustable contact device may be reciprocated and impart its motion to the other. Both forms will be shown. This construction of a contact device, adjustable by turning and interposed between stops, can be used not only when the said contact

device and stops are such that the ruffling-blade is advanced farther in making full than in making scant ruffles, but also when this is not the case, the effect depending upon the shape of the contact device and stops.

Another improvement consists in combining, with two levers for communicating motion from a moving part of the sewing-machine to the ruffler-blade, adjusting means carried thereby for altering the stroke of said blade when one or both said levers is supported and turned upon a fixed center or pivot, and when the adjusting means are so constructed and arranged that the ruffler-blade is advanced farther in making full than in making scant ruffles or gathers.

As will be shown herein, the ruffler-blade is attached to a blade-carrier, and one of said levers imparts motion to the blade through the carrier; but it is evident that the said lever could itself serve also as the blade-carrier, the blade being fastened directly to it or to a projecting arm thereof, as customary in some styles of rufflers.

It may be observed that there is no novelty, broadly, in placing the means for regulating the stroke upon the levers for operating the ruffler. The only novelty, so far as that feature is concerned, resides in the placing there of the particular kind of regulating means indicated, and in the adapting or constituting of such means to operate in that position.

This first part of the invention also consists in a construction and arrangement of parts which enables the stroke-regulating means—such as the stops and contact devices—to be entirely incased. In an attachment heretofore made by me, which will form the subject of a separate patent, (application filed April 19, 1884, and officially numbered 128,528,) these regulating means have been encased, all except a slot in which worked an arm for changing the adjustment. In the present invention the use of this slot is avoided, the adjusting device being operated by turning a journal-pin which extends through the covering-plate.

Certain other special combinations and arrangements of parts relating to the means for giving motion to the ruffler-blade or other ruffling device, and for adjusting the stroke,

which will be hereinafter particularly set forth, are also included in this part of the invention.

The second part of the invention consists in the combination, with two connected lever-arms for imparting motion from the needle-bar or needle arm to the ruffler-blade, of an adjusting-screw or its equivalent, for regulating the position of said levers for taking up wear, or adapting the attachment to the small differences which occur in machines on the market, whether of the same or of different manufacture. This screw, or its equivalent, is additional to the means for regulating the stroke of the ruffler-blade. It is used simply for adjusting the position of the ruffler-blade so that it comes to the right point. The third part of the invention consists in providing a ruffler attachment with means for giving three adjustments of the ruffler-blade, to wit: first, an adjustment of the length of stroke of said blade; second, an adjustment for altering the forward limit of the blade's motion in accordance with the length of stroke, so that it is advanced farther in making full than in making scant gathers, and, third, the independent adjustment of the blade's forward position irrespective of the length, so as to compensate for wear or variation in sewing-machines to which the attachment is applied.

It also consists in certain special constructions and combinations, hereinafter set forth, in which a readily detachable and replaceable separator forms an element. The detachable and replaceable separator broadly is not claimed, the claim thereto being contained in my application filed March 3, 1884, and officially numbered 122,865.

In order that those skilled in the art may fully understand the invention, and be enabled to make and use the same, a description will be given of how the principles involved are or may be applied.

Figures 1 to 6 of the drawings illustrate an attachment embodying the invention. Figs. 1 and 2 are views in elevation from opposite sides of the said ruffling attachment; Fig. 3, a plan; Fig. 4, a section on line *x x*, Figs. 1 and 2; and Figs. 5 and 6 partial views showing in detail the construction and operation of the means for regulating the stroke of the ruffler-blade. Figs. 7 to 10 illustrate a ruffler embodying part of the invention, but in a form somewhat modified from that shown in Figs. 1 to 6. Fig. 7 is an elevation taken from the side corresponding to Fig. 2, and partly in section; Fig. 8, a plan with the separator detached; Fig. 9, a view of the detached separator, and Fig. 10 a section on line *o o*, Fig. 7. Figs. 11 and 13 illustrate another form of ruffling attachment embodying the invention, Figs. 11 and 12 being views in elevation from opposite sides, and Fig. 13 a plan partly in horizontal section. It is almost identical with that shown in Figs. 1 to 6, but it is in some respects considered better

adapted to manufacture and use. It is deemed on the whole the best mode of applying the principle of the invention. Fig. 14 is a plan of a bed-plate separator, the same being fastened to the slide which covers the shuttle-race in many machines. This separator can be used for shirring with any of the ruffling attachments shown, the ordinary separator being detached from the ruffler-frame.

Referring to Figs. 1 to 6, A is the ruffler-frame, which is provided with a socket for fastening the same to the lower end of the presser-bar, and which supports the levers B C. Both levers are pivoted at *a* to the upright plate *b* forming part of the ruffler-frame. The lever B receives motion from the needle-screw or projection on the needle-bar, or it may be by a link from the needle-arm or from other movable part of the machine.

The lever C is connected at its lower end by the journal-pin *c* with the blade-carrier D. The latter is guided in its movements by a headed pin, 1, over which plays the slotted part 2 of the carrier. The ruffling device in the form of a blade, E, is fastened to the horizontal arm 3. The lever C receives motion from the lever B through the device F, and imparts motion to the blade-carrier D and ruffler-blade E. This device F is the substitute for the pin which in my former patents is arranged between the stops. It is carried by the upright lever C. It is placed on the inner side of the plate or disk *d*, which forms part of said lever C, and is journaled in said disk. The journal *e*, which extends entirely through the disk, is connected on the outside with the spring-arm G. By this arm the device F can be turned and its position regulated. The engagement of a projection on the spring-arm G with the ratchet *g* on the lever C retains the device F in whatever position it may be adjusted. The position of the device F regulates the stroke of the ruffler-blade by controlling the amount of lost motion between the levers B C. The disk *h* at the inner end of the lever B is recessed or cut away at *i*. The device F is set within the recess. The edge *k* and the point *l* on opposite sides of the recess form stops, which at each reciprocation of the lever B by the needle-bar alternately strike the device F. After either of them strikes the said device the lever B carries with it the device F and lever C. Until this happens the lever B moves independently, and its motion is ineffective to move the ruffler-blade.

When the device F is in the position shown in Fig. 6, it makes contact with both stops, *k* and *l*, and there is practically no lost motion; but the full movement of lever B is communicated to lever C, and the largest stroke is given the ruffler-blade. When the device F is moved into the position shown in Fig. 5, or when it occupies a position intermediate between those of Figs. 5 and 6, it can no longer make contact with both said stops simultaneously, and

there is more or less lost motion, according to the position of the contact device F. The positions successively occupied by the end *m* of the device F, when the latter is turned to the fullest extent by the spring-arm G, are represented by the dotted arc. The lost motion is mainly due to the constant recession of the edge or stop *k* from the dotted arc as it approaches the periphery of the disk *h*. From this constant or progressive recession it results that the nearer the end *m* is to the periphery the later in the descent of the needle-bar does the said edge or stop *k* strike said end *m*, and consequently the less the distance to which the lever C, blade-carrier D, and ruffler-blade E are withdrawn. The variation in the stroke, therefore, is effected mainly by varying the backward limit of its motion. It is obvious that the regulation of stroke could wholly be made in this way, so that the forward limit would be unaltered, and the ruffler-blade would always be advanced to the same point, no matter what the length of stroke might be.

In adjusting the device F the point which makes contact with the stop *l* is constantly changed. In the position shown in Fig. 6 the stop *l* makes contact at the point *n*. In the position shown in Fig. 5 it makes contact at *p*. In every intermediate position it makes contact with a point intermediate between *n* and *p*. If the edge of the device F from *n* to *p* were concentric with the axis of the journal *e*, it is evident that the adjustment of the device F would not alter the forward limit of the ruffler-blade's motion, for it would be immaterial whether the stop *l* struck *n* or *p* or some intermediate point. As, however, it is desirable to alter this forward limit at the same time that the stroke of the ruffler-blade is altered, and to a corresponding extent the said edge from *n* to *p* is made eccentric. In order that the change may be in the direction for giving a farther advance in making full than in making scant gathers, the said edge is so shaped that the surface recedes from the axis of journal *e* in passing from *p* to *n*. The lever B having a uniform motion will therefore advance the ruffler-blade farther as the device F is adjusted to give a longer stroke.

The position which the ruffler-blade when at its forward limit of motion occupies with respect to the needle is important in the operation of the attachment, as may be collected from what has just been said. The wear of the parts, and also variations in the position of the needle-screw or other part of the machine which operates the ruffler, affect this position. The device F, although it varies the forward limit of the ruffler-blade's movement, does so only with respect to the stroke of the blade.

To give an independent adjustment to counteract the effects of wear and the variations referred to, the lever B is split or divided into two arms, *q* and *r*. The former or upper arm is elastically connected with the body of the

lever B by the thin metal at *s*. The latter is rigidly connected with the said body. The head of a screw, *t*, which is tapped into a lug, *w*, on the lower arm, *r*, bears against the lug *w* on the upper arm, *q*, and retains the latter in position against the elasticity of the connection *s*. If the parts become worn so that the ruffler-blade is not advanced sufficiently, the screw *t* is turned so as to force the arm *q* nearer to the arm *r*. This corrects the difficulty. If the fault be in the needle-screw, the same adjustment corrects it. On the other hand, if the needle-screw be a little higher than usual, so that the ruffler-blade is advanced too far, the screw *t* is turned in the opposite direction, so as to relieve the arm *q* and allow it to spring away from the arm *r*.

The separator I is fastened to the bowed arm *y*, which is carried at one end of a flat spring-arm, *z*, at the opposite end of which is the flat attaching-shank 5. This shank is at right angles to the arm *z*. It fits in a slot or groove, 6, in the heel of the presser-foot, and is held therein by a set-screw, 7, tapped in from the rear, and bearing at the end against the shank.

In my application for improvement in sewing-machine attachments, filed October 8, 1883, and officially numbered 108,464, there is described and shown an attachment-holder in the form of a presser-foot, having a transverse groove or recess on the upper surface of the presser-foot behind the needle-hole, in connection with a series of attachments having each a flat shank or attaching-plate adapted to fit in said groove or recess, and a set-screw which is tapped through the presser-foot from the rear.

It is evident that the same arrangement of groove or recess and set-screw could be used to secure the separator to the ruffler-frame to enable it to be detached and replaced. The arrangement shown herein is, however, an improvement, first, in that the attaching-shank is more nearly under the presser-bar, and second, in that the separator is supported by a spring-arm which will yield to permit the passage of a seam or other inequality in the work to which the ruffled strip is to be attached.

In Figs. 7 to 9 another mode of detachably securing the separator to the ruffler-frame is represented. The bowed arm *y*, instead of being secured at the end of a spring-arm, is fastened directly to the ruffler-frame, and the securing means, instead of being a flat shank fitting within a slot and secured by a set-screw, consist of a slotted plate, 9, having depending lugs or projections 10, a screw, 11, and a set-nut, 12. The plate 9 rests upon the projection 13 of the ruffler-frame, and is clamped thereon by the set-nut 12. The slot fits over the screw 11, which is fixed at the lower end in said projection, and the lugs 10 fit in holes 14 in the projection 13. These lugs prevent the bowed arm from turning.

The two modes of securing the separator to

the ruffler-frame shown in Figs. 1 to 6 and Figs. 7 to 9, respectively, are alike in this, that there is a flat attaching plate or shank, that it is clamped by a set-screw or set-nut, that means are used to prevent the separator from turning when in place, that the separator can be detached on loosening the set-nut or set-screw, and that it is slipped into or out of place by a movement in a direction across the length of the attachment.

Figs. 7, 8, and 10 show another mode of adjusting the two arms of the lever through which motion is imparted to the ruffler-blade. As these arms correspond to those marked *q* and *r* in Figs. 1 to 6, but differ in details, they are lettered *q'* and *r'*, respectively, the whole lever being lettered *B'*. The arms *q'* *r'* are both pivoted to the frame at a common point, and are connected with each other through the screw 15 and the threaded socket 16. The socket is fast on the arm *q'*. The screw has a groove, 17, turned in the middle. The end of the arm *r'* projects into this groove. By turning the screw up or down the arm *r'* is moved up or down also. The result is that the third arm, 18, strikes the stop 19 sooner or later in the ascent of the needle and advances the ruffler farther, or not so far, as the case may be. The arm 18 plays between the stops 19 and 20 on the sliding blade-carrier *D'*, to an arm of which the ruffler-blade *E'* is fastened. The blade-carrier and ruffler-frame *A''* are such as commonly used in the well-known Johnson ruffler, which has for many years been on the market.

The use of the arm *q' r'* adjustably connected is new.

In Figs. 11 to 13 the levers *B C*, which correspond to the levers *B C* of Figs. 1 to 6, are arranged on opposite sides of the plate *b* instead of on the same side, as in Figs. 1 to 6; and, moreover, the contact device *F* is carried by the lever *B*, and the stops are formed in the lever *C*. The shape of the contact device and the stops are the same as shown in Figs. 5 and 6, and their operation is not changed. The upper part of lever *C* is inclosed in a cap or housing, 30, which is riveted or otherwise fastened to the plate *b* of the ruffler-frame. The part 31 of blade-carrier *D*, which corresponds to the part 2 in Figs. 1 and 2, but is not slotted, slides between an extension of the cap and the plate *b*. The lever *B* has two arms adjustably connected with each other. The means shown in Figs. 7 to 9 are adopted. The parts are designated by letter or number as in those figures. Fig. 10 is a sectional view on the line *o o* of Fig. 11, as well as on that line in Fig. 7. The contact device *F* is fulcrumed in the arm *r'*. This arm *r'* has the edges struck up to form a cap, which covers the inner end of arm *q'*. The spring-arm *G* is shaped to leave the head of pivot *a* exposed, so that access can be had to said head through the opening in the arm. (See Fig. 12.) The separator *I* is fastened to the ruffler-frame by the same

means before described with respect to Figs. 1 to 6. The parts are lettered and numbered as in said figures. The presser-foot forming part of the ruffler-frame is provided with guide-slots 22 and 23 formed therein.

The bed-plate separator *M*, Fig. 14, is attached to the bowed arm 40, which is riveted to the slide *N*. The bowed arm is provided with two guide-slots, 41 and 42.

It is evident that modifications may be made in details without departing from the spirit of the invention, and that parts of the invention may be used separately.

Having now fully described my said invention, and the manner in which the same is or may be carried into effect, what I claim is—

1. In combination with a ruffler-blade operating mechanism comprising two reciprocatory parts, stops upon one of them, and an interposed pivoted contact device carried by the other of said parts and adjustable with respect to both stops to vary the amount of lost motion, and also to a less extent the forward limit of the blade's motion, so that said blade is advanced farther in making full than in making scant gathers, substantially as described.

2. In a ruffling or gathering attachment wherein the motion is conveyed to the ruffling device or blade through stops and an interposed contact device with more or less lost motion, according to adjustment, a lever turning on a fixed center or pivot and having in the side thereof a recess of varying width, the edges of which recess form stops, in combination with a contact device extending into said recess and adjusting means whereby the relative position of the stops and contact device can be regulated, substantially as described.

3. The combination, with the ruffler-blade and ruffler-frame, of the two levers pivoted at a common point to the ruffler-frame, stops on one lever, and an adjustable interposed contact device carried by the other, substantially as described.

4. The ruffling device or blade and the levers enlarged at their inner ends, in combination with the plate forming part of the ruffler-frame, to which said levers are pivoted, an inclosed device adjustable to vary the stroke of said ruffling device or blade, and a projecting journal-pin, through which said device may be adjusted, substantially as described.

5. The combination, with a ruffling device or blade, two reciprocatory parts, and stops on one of said parts, of a journaled or pivoted contact device interposed between the stops and adjustable by turning on its journal or pivot, substantially as described.

6. In a ruffler or gatherer, a lever forming part of the operating mechanism and comprising two arms adjustably connected, in combination with the ruffler-blade and adjusting means—such, for example, as an adjustable stop or an adjustable contact device interposed between stops—for regulating the stroke of

said blade, the adjustment of the two arms aforesaid operating to regulate independently the position of the ruffler-blade at its forward limit of motion, substantially as described.

5 7. The combination, with the ruffler-blade, mechanism for reciprocating the same, and means—such, for example, as adjustable stops or an adjustable contact device between stops—
10 for regulating the stroke and at the same time changing the forward limit thereof, so that the ruffler-blade is advanced farther in making full than in making scant gathers, of additional independent means—such, for example, as the adjusting-screw described—for
15 regulating the position of the ruffler-blade at its forward limit of motion, substantially as described.

8. The combination, with the movable ruffling-blade, the ruffler-frame, the operating
20 mechanism, the means—such, for example, as adjustable stops or an adjustable contact device between stops—for regulating the stroke of the said blade, and also for regulating the forward limits of the blade's motion, of a separator, an attaching plate or shank for securing
25 it to the ruffler-frame, a clamping screw or nut for holding said plate or shank, and means—such, for example, as the walls of the groove which receives the said attaching-plate, or the lugs on the said plate—for preventing the
30 separator from turning when attached, substantially as described.

9. A ruffler or gatherer comprising in combination the following elements: a ruffler-
35 frame, of which a presser-foot forms part, said presser-foot having a transverse slot or groove under the heel thereof, a separator carried at the end of a flat spring-arm and detachably connected with said ruffler-frame by a flat
40 shank or attaching plate fitting in said slot or groove, a ruffling device or blade, a pair of levers pivoted to an upright plate or frame forming part of the ruffler-frame, and means for conveying motion to the ruffling device or
45 blade through said levers, and for regulating the stroke of said ruffling device or blade, to cause it to move farther forward for full than for scant gathers, the regulating means being carried by said levers, substantially as described.
50

10. A ruffling or gathering attachment com-

prising, in combination with a ruffler-blade and mechanism for reciprocating the same, regulating means—such, for example, as the
55 adjustable contact device between stops and the adjusting-screw—for giving the three adjustments described, to wit: one to regulate the fullness of the gather, a second to carry the blade farther forward in making full than
60 in making scant gathers, and the third for regulating the forward position of the ruffler-blade independently of the length of stroke, substantially as described.

11. A ruffling or gathering attachment provided with a detachable separator, and comprising, also, in combination with the ruffler-blade, mechanism for reciprocating the same, and regulating means for giving the three
65 adjustments described. 70

12. The two levers for moving the ruffling device or blade, one of said levers comprising two arms adjustably connected with each other, in combination with the said ruffling device or blade, the stops on one lever and the inter-
75 posed contact device on the other, substantially as described.

13. The combination, with the ruffler-blade and the reciprocatory part for receiving motion from the sewing-machine, the said part
80 being in the form of a lever with two arms adjustably connected, of a reciprocatory part receiving motion from said lever and communicating it to the ruffler-blade, the stops carried by one of said reciprocatory parts,
85 and the interposed contact device carried by the other, substantially as described.

14. The combination, with the ruffler-blade and the lever for receiving motion from the sewing-machine, the said lever having two
90 arms adjustably connected, of a second lever for communicating motion from said former lever to the ruffler-blade, the stops stops on one of said levers and the adjustable interposed contact device carried by the other,
95 substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALLEN JOHNSTON.

Witnesses:

J. T. HACKWORTH,
W. T. MAJOR.