

J. M. GRIEST.

RUFFLING AND GATHERING ATTACHMENT FOR SEWING MACHINES.

No. 246,126.

Patented Aug. 23, 1881.

Fig. 1.

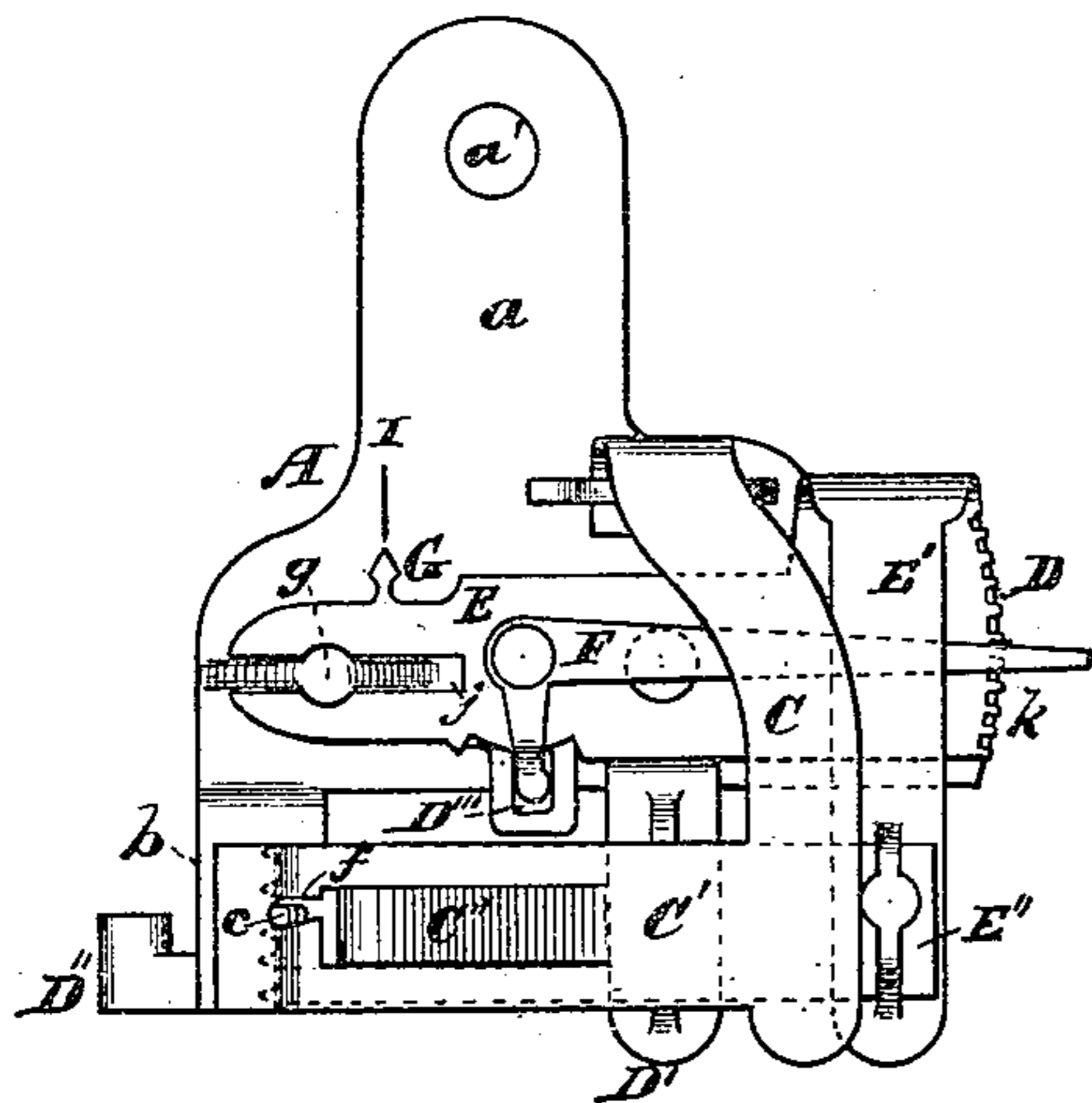


Fig. 2.

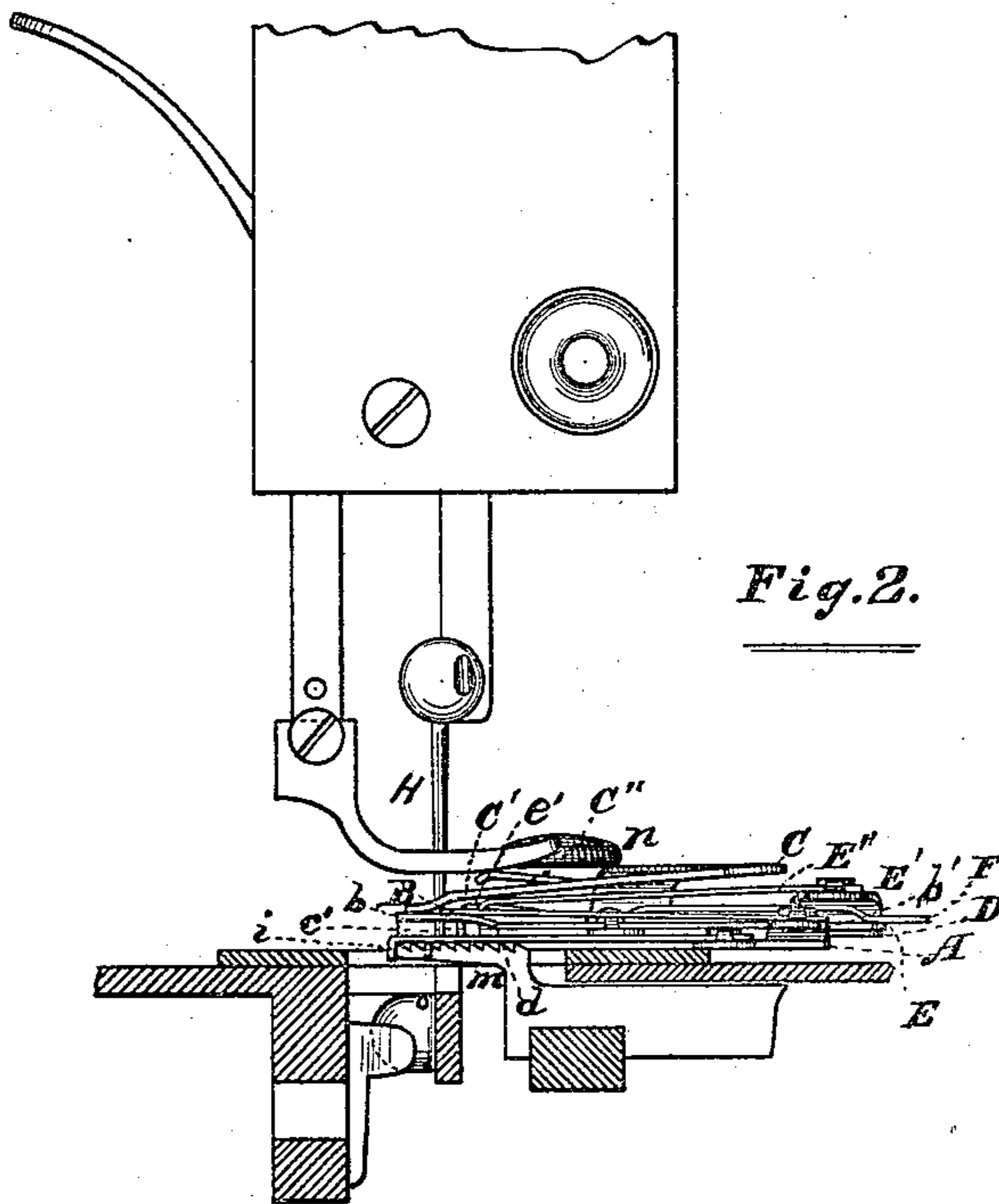


Fig. 3.

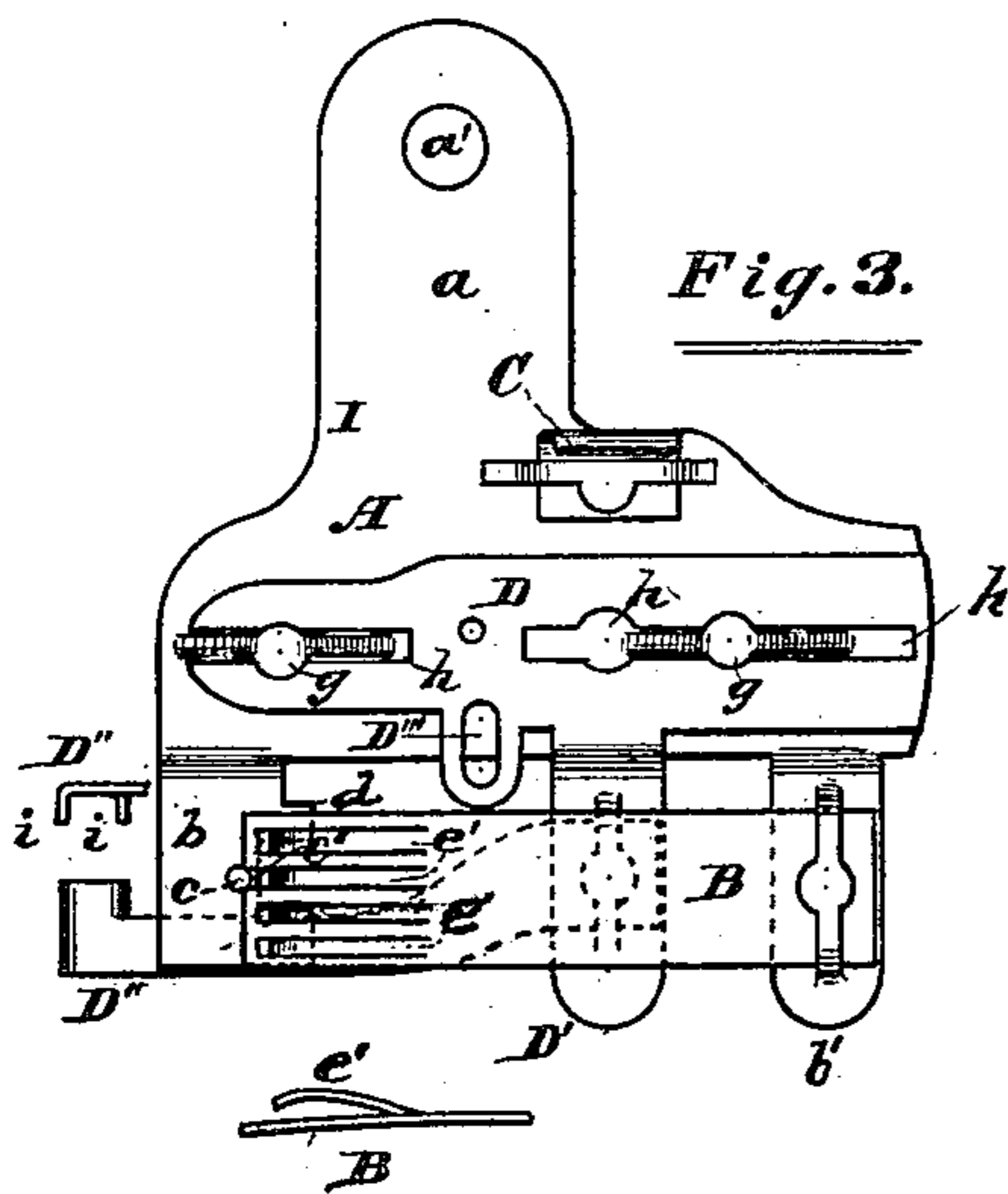


Fig. 4.

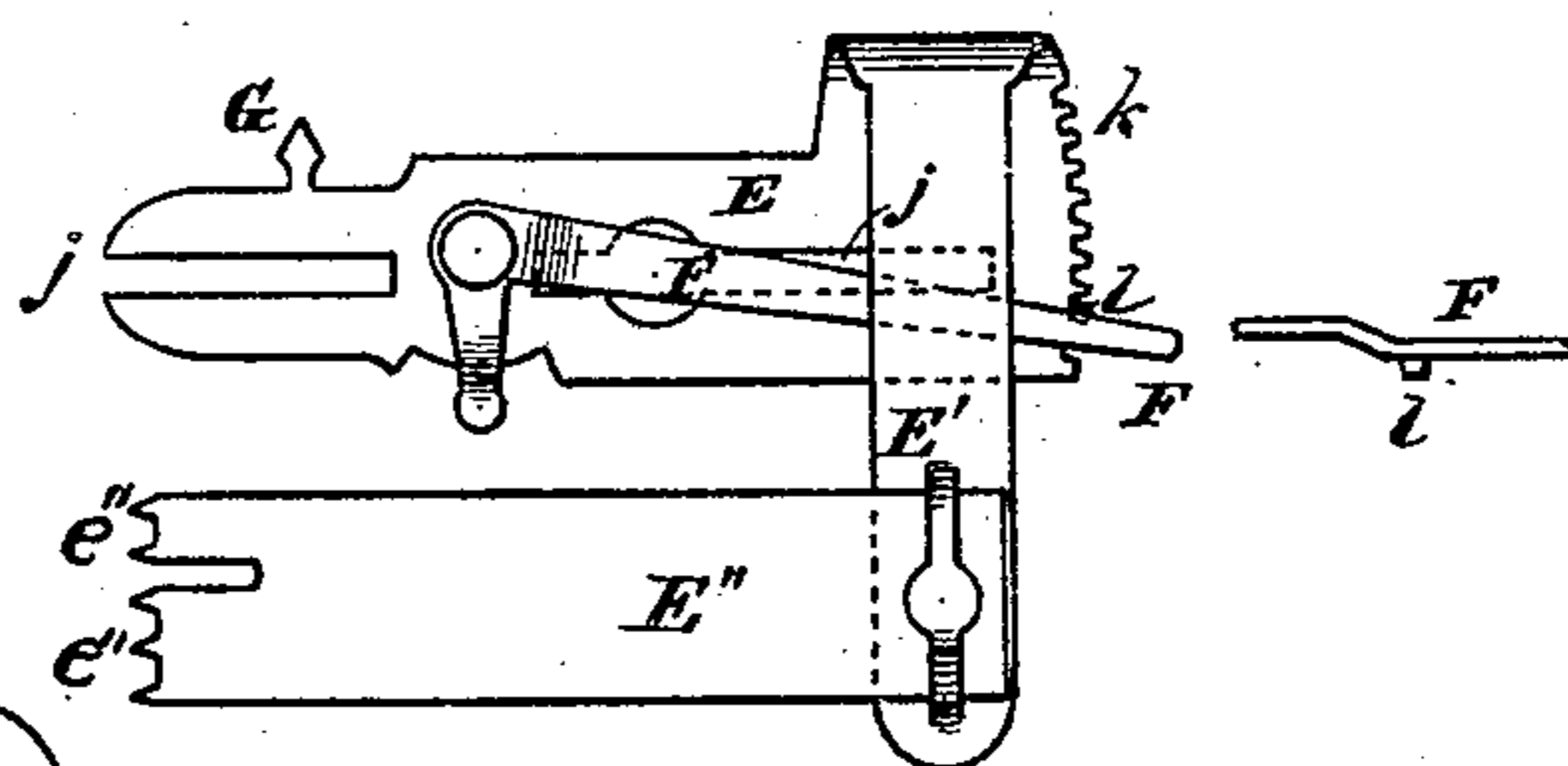
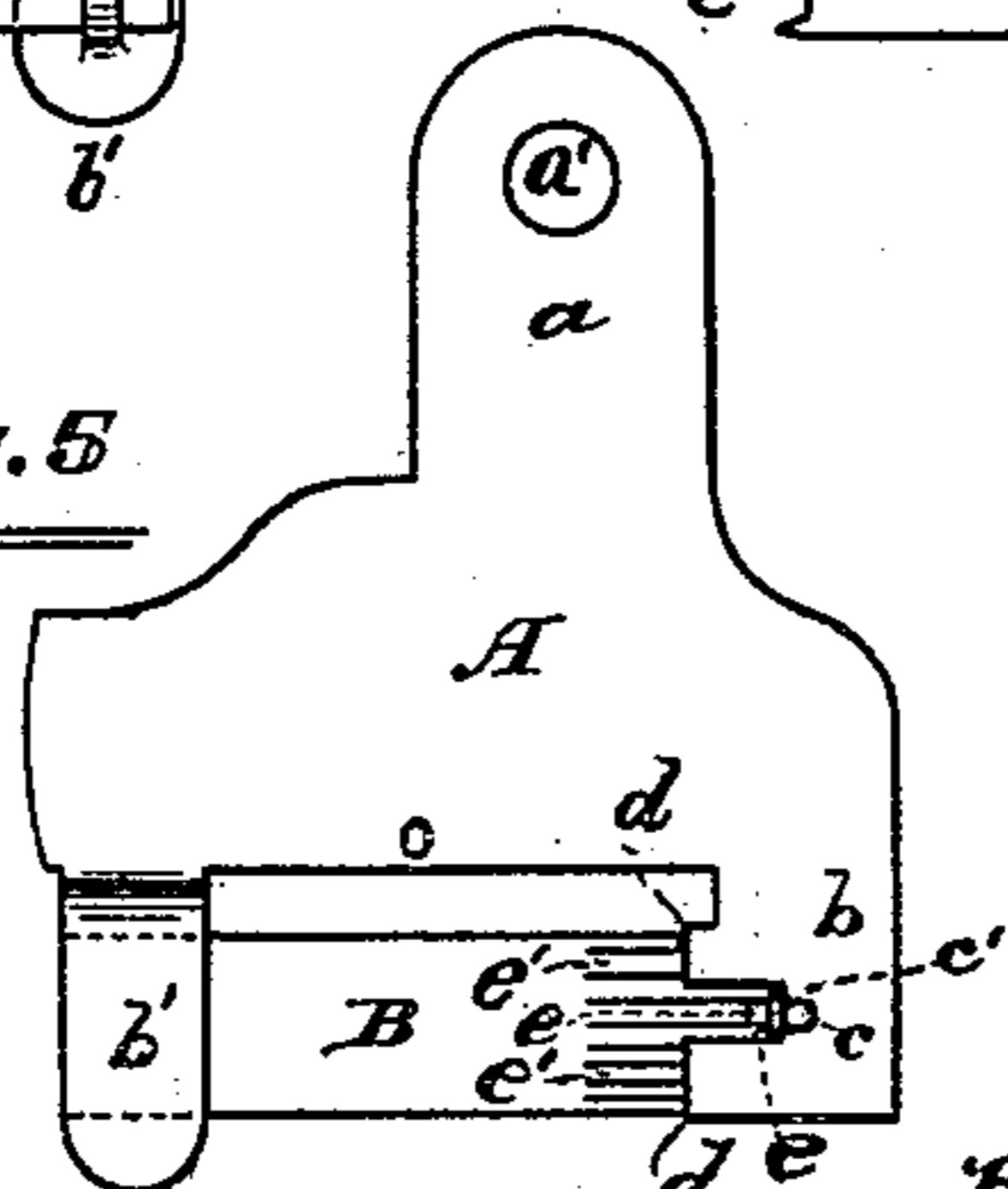


Fig. 5.



Attest:

W. L. Baker.

Chas. J. Bell

INVENTOR:

John M. Griest.

By F. F. Warner, his

Attorney.

(Model.)

2 Sheets—Sheet 2.

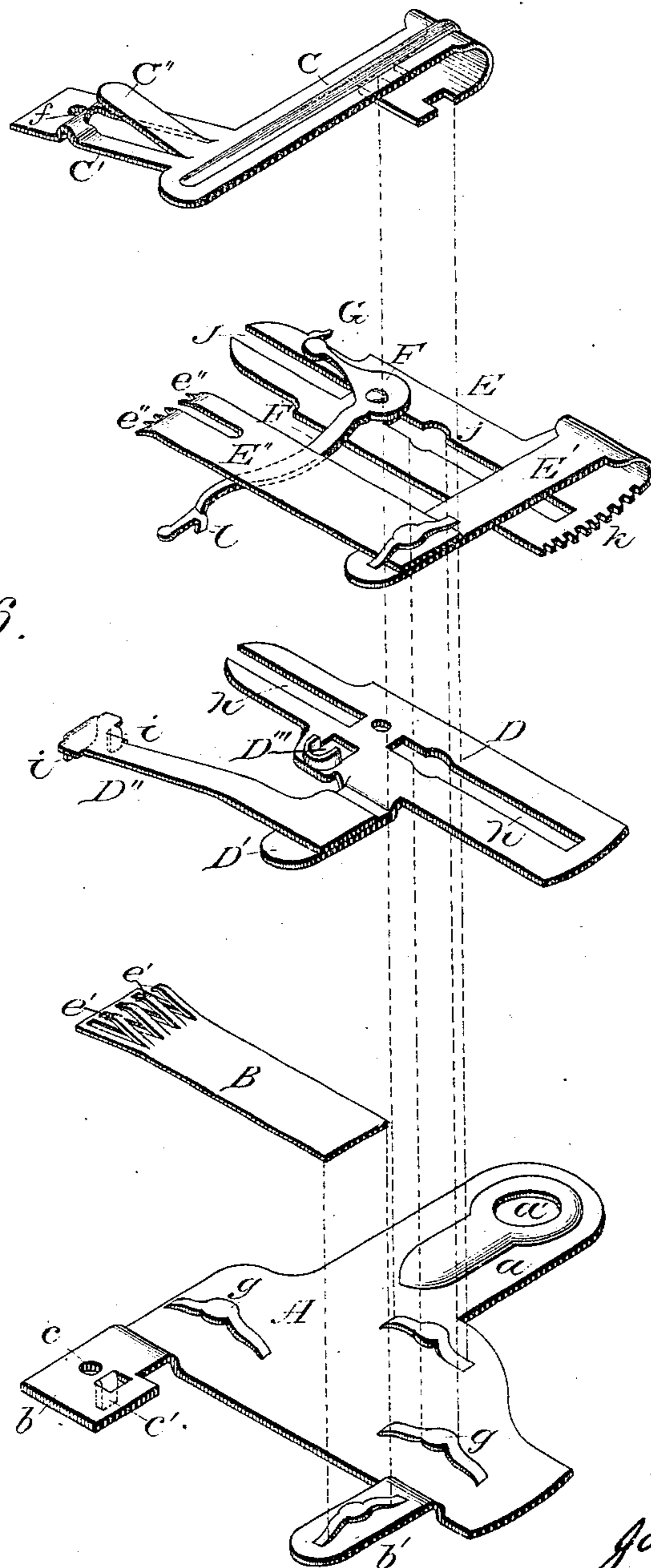
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Figure 6.



Witnesses:

W. M. Evans

J. F. F. Warner

Inventor:

John M. Griest.

*By F. F. Warner -
his atty.*

UNITED STATES PATENT OFFICE.

JOHN M. GRIEST, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
WALTER SCATES, OF SAME PLACE.

RUFFLING AND GATHERING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 246,126, dated August 23, 1881.

Application filed May 14, 1880. (Model.)

To all whom it may concern:

Be it known that I, JOHN M. GRIEST, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ruffling and Gathering Attachments for Sewing-Machines, of which the following, in connection with the accompanying drawings, is a specification.

In the drawings, Figure 1 is a top or plan view of a ruffling and gathering attachment embodying my invention; Fig. 2, an edge view of the same, also showing, partly in section and partly in elevation, portions of a sewing-machine which co-operate with the said attachment. Fig. 3 is a top or plan view of the attachment, the uppermost parts being removed or broken away. Fig. 4 is a top view of the adjustable plate, and the parts carried by it, detached from the other parts of the ruffler or gatherer. Fig. 5 is a top or plan view of the base-plate detached, and Fig. 6 is a perspective of the various parts detached or shown in detail.

Like letters of reference indicate like parts.

A represents the base-plate of the attachment, and *a* is an arm extending therefrom and having therein an opening, *a'*, to admit of attachment to the machine. Two arms, *b* and *b'*, also extend laterally from the opposite ends of the plate A, and these arms are set up or raised slightly higher than the main part of the base-plate. A needle-hole, *c*, is made in the arm *b*, and *c'* is a small post or rest extending downward from the arm *b* to the plane of the main part or body of the plate A.

B is a dividing-plate applied to the arm *b'* and extending to and lying upon the arm *b*. The plate B extends to the needle-hole. Small spring tongues or fingers *e' e'* are struck up from the plate B just behind its forward end, the free ends of the said tongues being toward the forward end of the said plate, and being slightly downturned by preference.

C is an arm applied to the plate A, and extending horizontally across and above it, and C' is an arm or presser extending forward from the free end of the arm C. C'' is a spring-tongue struck up from the arm C'. An opening, *f*, exists in the forward end of the arm C' for the passage of the needle, and *g g* are cen-

trally-enlarged bridges or lugs struck up from the plate A.

D is a sliding-plate, having slots *h h* therein to receive the lugs *g g*, whereby the plate D is held movably upon the plate A.

D' is an arm extending laterally from the plate D, and D'' is a forwardly-extending arm applied to the arm D'. The forward end of the arm D'' has two downwardly-projecting lugs, *i i*, adapted and arranged to engage the serrated feed-plate of the sewing-machine, so that the said feed, during the action of the machine, will actuate the attachment.

D''' is a slot in the plate D.

E is a plate arranged upon the plate D. The plate E has therein the slots *j j* to admit of its being passed underneath the enlargements of the bridges or lugs *g g*.

E' is a laterally-extending arm applied to and passing horizontally across and above the plate E, and E'' is a gathering-blade applied to the outer end of said arm E'. The forward or free end of the blade E'' is bent or turned down slightly, and has thereon the prongs or gathering-teeth *e'' e''* and a deep notch to admit of the blade being pushed past the needle, as is clearly indicated in Figs. 4 and 6. Serrations or segmentally-arranged cogs or teeth *k k* are made in the rear end of the plate E; and F is a bell-crank lever pivoted at its angle to the said plate. The rear end of the lever F has a small tooth or projection, *l*, thereon, to engage the serrations *k k*, and the said lever is flexible enough to admit of the part *l* being drawn from its engagement with the said serrations. The end of the lever F enters the slot D'''. By this means the plates D and E, when arranged together upon the plate A, will both be drawn back and forth or reciprocated together or simultaneously whenever the arm D'' engages the feed of the machine and the feed is in motion, and there will be no lost motion between the plates D and E. The plate E, however, may be adjusted with relation to the plate D by moving the lever F for that purpose, and this adjustment will have the result hereinafter referred to.

G is an index-finger on the plate E.

All the parts of the attachment should be arranged together as shown and described, and

the attachment is to be applied to the machine in the manner indicated in Fig. 2, the lugs *i i* being arranged to engage the serrated feed-plate *m* of the machine, and the presser-foot *n*, when raised, resting firmly on the spring-tongue *C''*. The presser-foot is not to be lowered upon the attachment.

H is the needle, and *I* is a gage-mark on the plate *A*.

I term the arm *C'* a "pressure-spring." It will be observed, on reference to Fig. 2, that the forward end of the pressure-spring lies on the arm *b* when the attachment is applied to the machine, and when the gathering-blade is withdrawn from the needle. It should also be understood that the presser-foot, by resting, when raised, on the spring-tongue *C''*, holds the pressure-spring down upon the arm *b* at the time referred to, but not so firmly as to prevent the pressure-spring from being raised therefrom in the manner hereinafter described.

The attachment is held in its place with sufficient firmness for use by means of a screw passing through the hole *a'*; but additional means may be employed, if deemed necessary, for holding the attachment properly in its place during use. In Fig. 2 I have represented the attachment as applied to a machine in which the feed moves the goods from the operator.

The operation of the attachment is as follows: After it has been applied to the machine in the manner described, the strip of cloth to be gathered should be placed between the gathering-blade *E''* and the dividing-plate *B*, and underneath the forward end of the pressure-spring *C'*, the gathering-blade being, for example, at the end of its back-stroke. The goods will then be pressed upon the part *b*. When the sewing-machine feed starts forward the ruffling-blade will move in the same direction, while engaging the goods, and consequently the formation of a gather or fold will then be begun, and the gather will be completed when the ruffling-blade reaches the point of contact with the pressure-spring with the goods, which point begins where the needle passes through the attachment. The tongues or fingers *e' e'* hold the goods slightly up from the plate *B*, and as the ruffling-blade advances the prongs or teeth *e'' e''*, by passing between the tongues *e' e'*, get a firm hold upon the goods, and thus form the gathers with certainty. The tongues *e' e'*, although yielding, lessen the friction or wear of the points of the prongs *e'' e''* upon the plate *B*. When the ruffling-blade reaches that part of the pressure-spring which holds or presses the goods down upon the part *b* the said blade passes underneath the pressure-spring, which yields, and the goods so folded or gathered are pushed or fed forward by the ruffling-blade during the remaining part of its forward stroke, which is a distance equal to that between each gather. The pressure-spring thus holds the goods in advance of the ruffling-blade while the latter is forming a gather. As the ruffling-blade retreats

the pressure-spring descends. The part of the stroke which occurs before the blade reaches the needle forms the gather and determines its size, and that part which occurs after the blade passes the needle will determine the length of the stitch or the space which will exist between the edges of the gathers respectively. If the gather should be too full, shorten the length of the stroke or throw of the blade by shortening the throw of the feed of the machine, as in shortening the stitch in ordinary sewing. If a longer stitch is desired, it will be necessary only to turn the free or rear end of the adjusting-lever *F* to the right, thereby causing the blade to pass a greater distance beyond the needle. The reverse results can be produced by setting the adjusting parts reversely. It will be perceived that if an adjustment be made to control the size or fullness of the gather, and the lever *F* be afterward moved to control the length of the stitch, the size or fullness of the gather will thereby be altered.

The whole stroke of the ruffling-blade being the same as the stroke of the feed of the machine, it follows that the latter must be adjusted to have a stroke equal to the sum of the length of the stitch and of the fullness of the gather; and hence, if the position of the lever *F* be changed, the relation between the length of the stitch and the fullness of the gather will also be changed, for the adjustment of the lever *F* will also adjust the gathering-blade with relation to the feed of the machine, the plate *E*, which carries that blade, having a sliding movement on the plate *D*, which carries the arm engaging the feed, and these plates being adjustably connected by means of the lever *F*. Therefore, to distribute the stroke of the ruffling-blade properly, so that a certain part shall occur before and the remaining part after the blade reaches the needle, for the purpose of thereby regulating both the length of the stitch and the fullness of the gather with facility after the stroke of the feed of the machine has been adjusted, I employ the index-finger *G* and the index-line *I* on the plates *E* and *A*, respectively. When the attachment is applied to the machine, turn the latter until the index-finger has moved its full distance from the operator. If the finger *G* does not then reach the line *I* it will indicate that the forward end of the ruffling-blade has not reached the needle, and consequently that no stitch will be formed; but if the finger *G* passes the line *I* it will indicate that a stitch will be made equal in length to the distance the finger has passed the line. If the length of stitch is thus found to be insufficient, move the lever *F* so as to throw the index *G* enough farther forward to produce a stitch of the length desired. If the fullness of the gather should then be not as desired, control the fullness by adjusting the feed of the machine for that purpose. In other words, whether the feed of the machine moves forward always from the same starting-point, but

varies its stopping-point, or always moves forward to the same stopping-point, but varies its starting-point according to the adjustments made for altering the length of the stitch in
 5 ordinary sewing, the sewing-machine feed should be adjusted, when used in connection with the attachment, to produce a stroke of the ruffling-blade equal, as nearly as may be, to the sum of that part of the stroke required to
 10 make a gather of the desired fullness, and of that part required to make a stitch of the desired length, and the position of the index G with relation to the line I, when the machine is turned as in sewing in the manner described,
 15 will indicate how nearly the desired result has been accomplished. If the result desired is not fully or satisfactorily accomplished in that manner, as may be determined by the index, then the stroke must either be distributed by
 20 means of the lever F or altered by varying the stroke of the feed of the machine, or by the adjustment or readjustment of either or both, until the results desired are attained.

To gather and sew the ruffle or gathered
 25 strip to a band, proceed as before, and place the band below the lower or dividing plate, the purpose of which is to protect the band from the action of the gathering-blade while the gathers are being formed.

30 To sew the gathered strip or ruffle between two bands, proceed as last directed, and place the second or upper strip above the gathering-blade and under the pressure-spring.

It will be perceived from the foregoing description, and from reference to the drawings,
 35 that the ruffling-blade during one stroke in the same direction performs the double-function of forming the ruffle and of feeding the goods, and lost motion is not a part of the means employed to regulate or adjust its stroke or determine its position with relation to the needle.

I use the presser-foot in its raised position, and employ an intermediate pressure-spring, because the action of the presser-foot spring,
 45 if the presser-foot rested upon the attachment, would ordinarily be too strong and prevent the ease of action which is desirable.

I do not here intend to be restricted in all respects to a ruffling and gathering attachment
 50 for sewing-machines, when adapted to be actuated by the feed of the machine, for it is obvious that some of the features of my invention may be employed in connection with such attachments not so worked.

55 The gathering-blade, being adapted to pass the needle and being moved by the feed of the machine, holds the fold in position for receiving the needle, for while the feed-dog is being lowered, which occurs at the end of its forward stroke, the blade is not retracted and does not begin its retreat until the needle enters the goods. The only exception to this mode of operation, so far as I am aware, would occur
 60 if the attachment should be applied to a Davis machine, or upon a machine having a feed like the Davis. The Singer, Wheeler & Wilson

No. 8, New Home, White, and American are examples of machines in connection with which the blade will hold the folds as now described, and all of which have four-motion feed-dogs. 70
 As the plate B rests on the arm *b*, the blade E'' is wholly separated from the action of the feed of the machine.

It will be perceived from the foregoing description, and from reference to the drawings, 75
 that the attachment is so adapted for engagement with the feed of the machine that the movements of the reciprocating parts of the attachment are positive in both directions, and that no springs are employed either to produce 80
 or aid such movements.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a ruffling and gather- 85
 ing attachment for sewing-machines, of a reciprocating ruffling-blade adapted to move from a point in front of the needle to a point behind the same, to make the ruffle or gather and to feed the goods forward, and a plate or part for 90
 supporting the working end of the said blade above or away from the action of the feed of the machine, for the purposes set forth.

2. A ruffling or gathering attachment for sewing-machines in which are combined a re- 95
 ciprocating driving-plate adapted to engage the reciprocating feed-plate of the sewing-machine, and to be operated positively in both directions, a ruffling or gathering blade, and mechanism for moving said blade from a point 100
 in front of the needle to a point behind the same, for forming the ruffle or gather and feeding the goods forward, substantially as described.

3. The combination, in a ruffling or gathering attachment for sewing-machines, of the press- 105
 er-spring C', a ruffling or gathering blade, and mechanism for moving the said blade from a point in front of the needle to a point behind the same, for forming the ruffles or gathers and feeding the goods forward, substantially as de- 110
 scribed.

4. A ruffling and gathering attachment for sewing-machines wherein are combined a re-
 ciprocating driving-plate, a ruffling-blade, and a reciprocating plate carrying the said blade, 115
 the latter plate being connected to the driving-plate adjustably and without lost motion by means of adjusting devices for varying the length of the stitch, substantially as specified.

5. The combination, in a ruffling or gathering 120
 attachment for sewing-machines, of the presser-spring C', adapted and arranged to allow its free end or toe to press the completed fold rearward of and in a line extending laterally across the path of the needle, a ruffling or gathering 125
 blade, and mechanism for moving the said blade from a point in front of the needle to a point behind the same, for forming the ruffles or gathers and feeding the goods forward, substantially as described. 130

6. The combination, in a ruffling and gathering attachment for sewing-machines, of the base-

plate A, having thereon the arm C, the presser-spring C', applied to the said arm and having its forward end resting on the said plate, the plate D, adapted, substantially as described, to be reciprocated in both directions by the feed of the machine, the plate E, having thereon the arm E', and adjustably applied to the plate D, and the gathering-blade E'', applied to the arm E', the said spring C' being adapted to exert a constant working-pressure during the stroke of the said blade in both directions, substantially as and for the purposes specified.

7. A ruffling or gathering attachment for sewing-machines in which are combined, substantially as specified, the base-plate A, adapted to separate the goods from the feed of the machine, the presser-spring C', for relieving the attachment of the action of the presser-foot spring, a ruffling or gathering blade, and mechanism for moving the said blade from a point in front of the needle to a point behind the same, substantially as and for the purposes specified.

8. The combination, in a ruffling or gathering attachment for sewing-machines, of the sliding adjustable plate E, the ruffling-blade carried on the said plate, in connection with adjusting devices and mechanism for moving the said

blade from a point in front of the needle to a point behind the same, for gathering the goods and feeding them to be stitched, all during the same stroke of the said blade, the index-finger G, also carried on said plate, and a base-plate having thereon the gage-marks I, for determining the length of the stitch during the stroke of the said blade behind the needle, substantially as set forth.

9. The combination, in a ruffling and gathering attachment for sewing-machines, of the presser-spring C', formed with the spring-tongue C'', the base-plate provided with the cam or part b, the ruffling-blade, and the reciprocating plate E, substantially as and for the purposes specified.

10. The combination, in a ruffling or gathering attachment for sewing-machines, of a reciprocating driving-plate adapted to be positively engaged and driven by the feed of the machine, the arm C, and the spring C', applied to said arm, the ruffling-blade, the base-plate, and the reciprocating and adjusting devices, substantially as and for the purposes specified.

JOHN M. GRIEST.

Witnesses:

F. F. WARNER,
W. S. BAKER.