

No. 678,908.

Patented July 23, 1901.

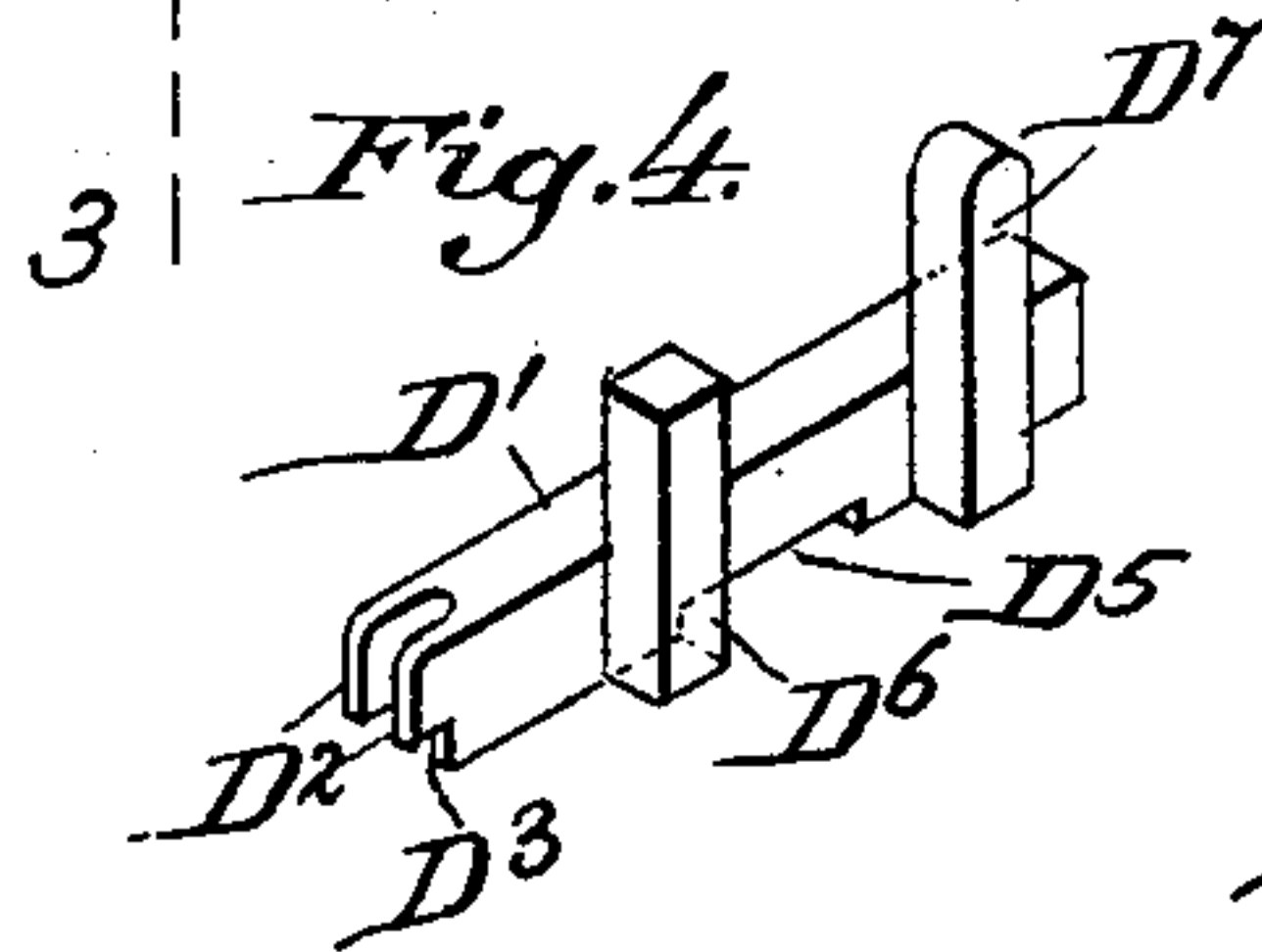
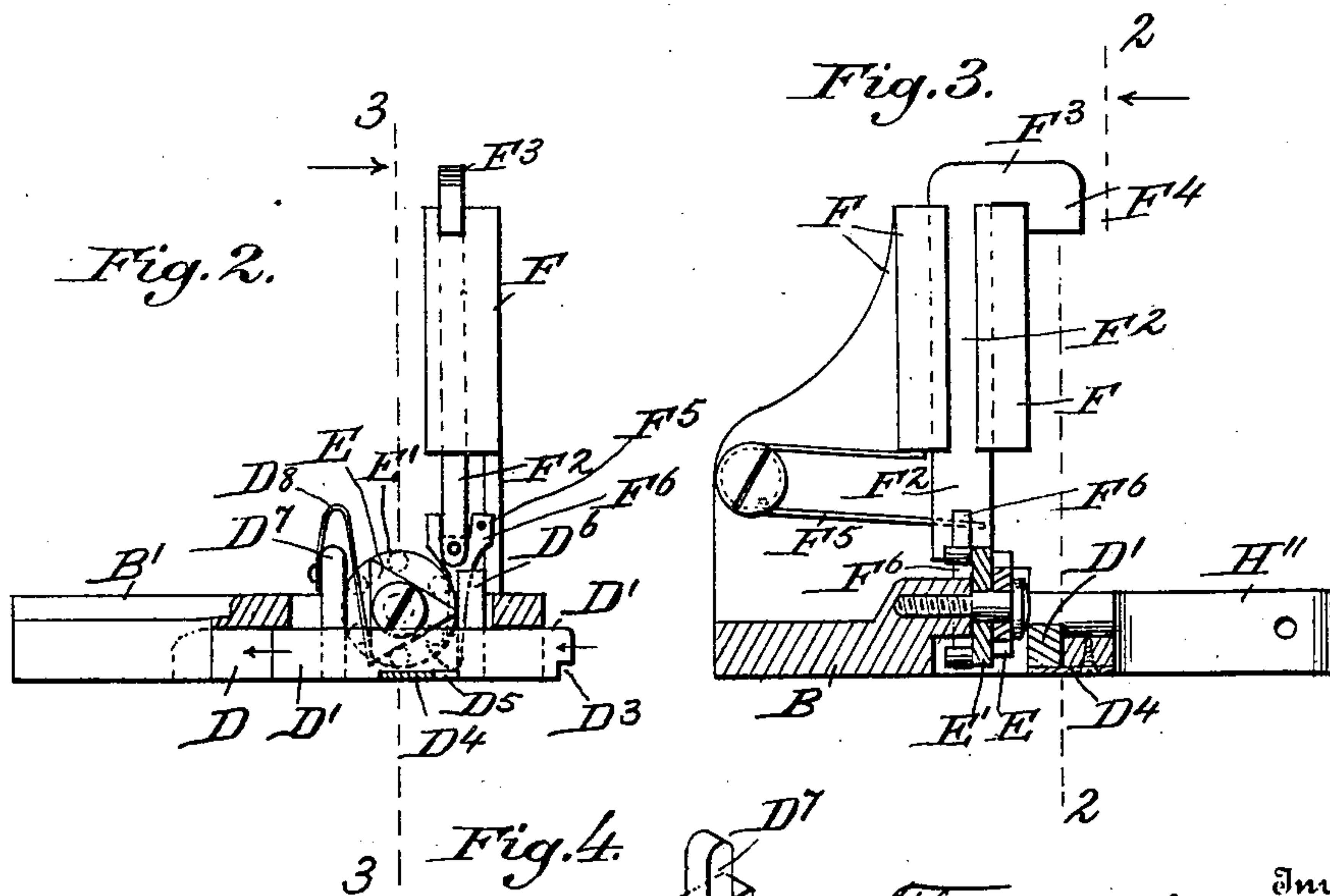
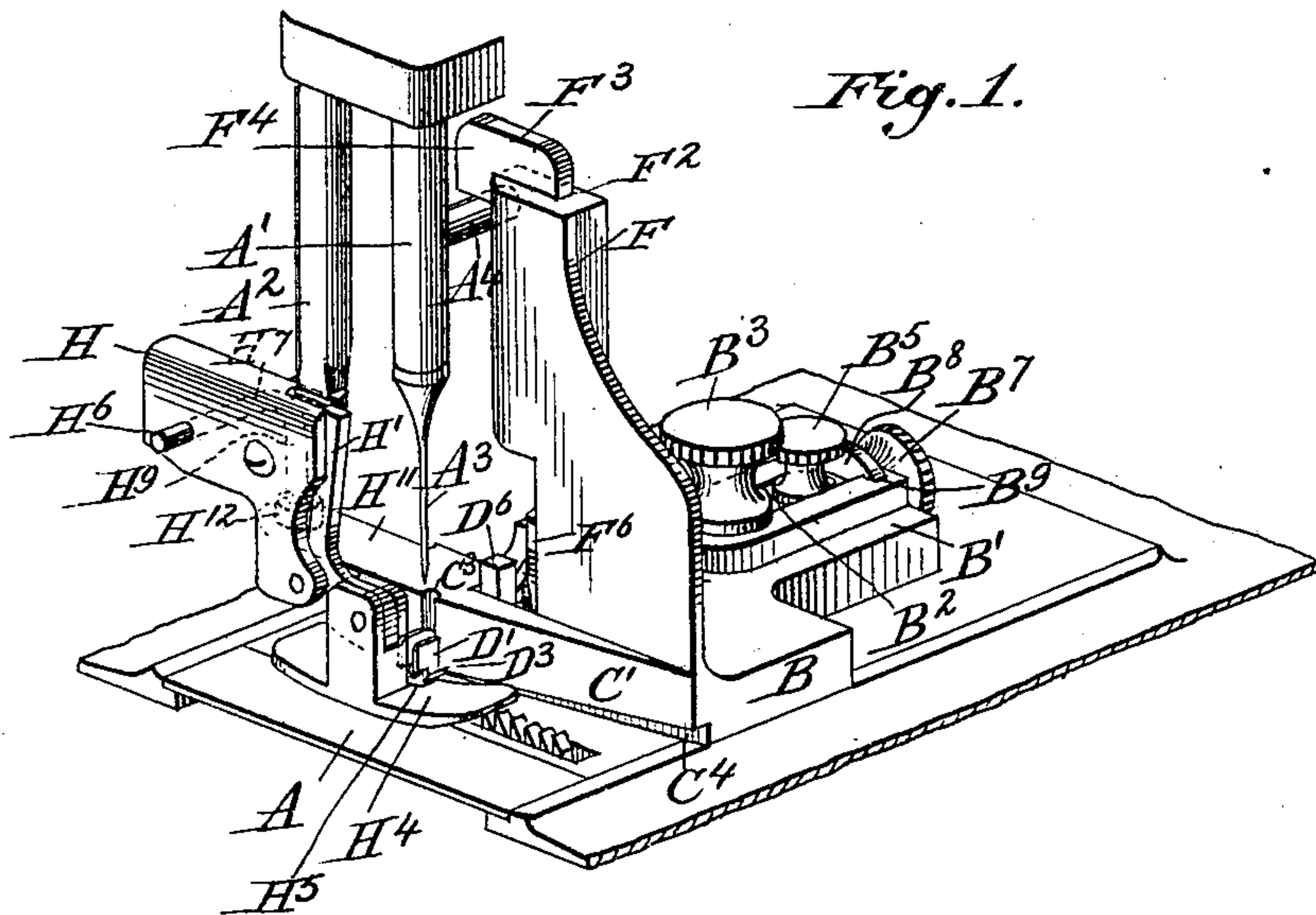
T. H. ROSS & E. DONALDSON.

SEWING MACHINE ATTACHMENT FOR OVEREDGE STITCHING.

(Application filed Feb. 1, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

J. H. Schott  
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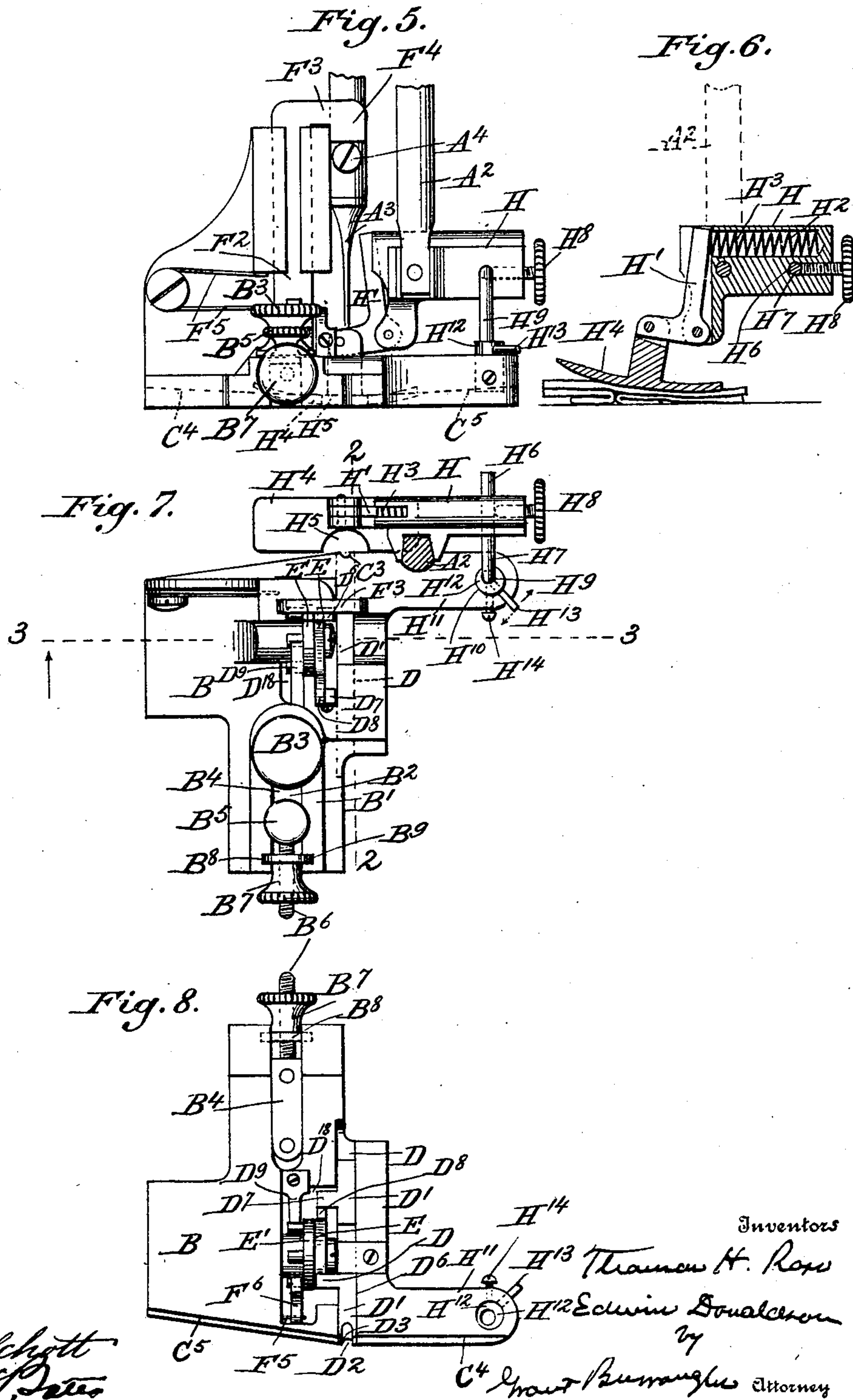
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3 Sheets—Sheet 2.



Witnesses

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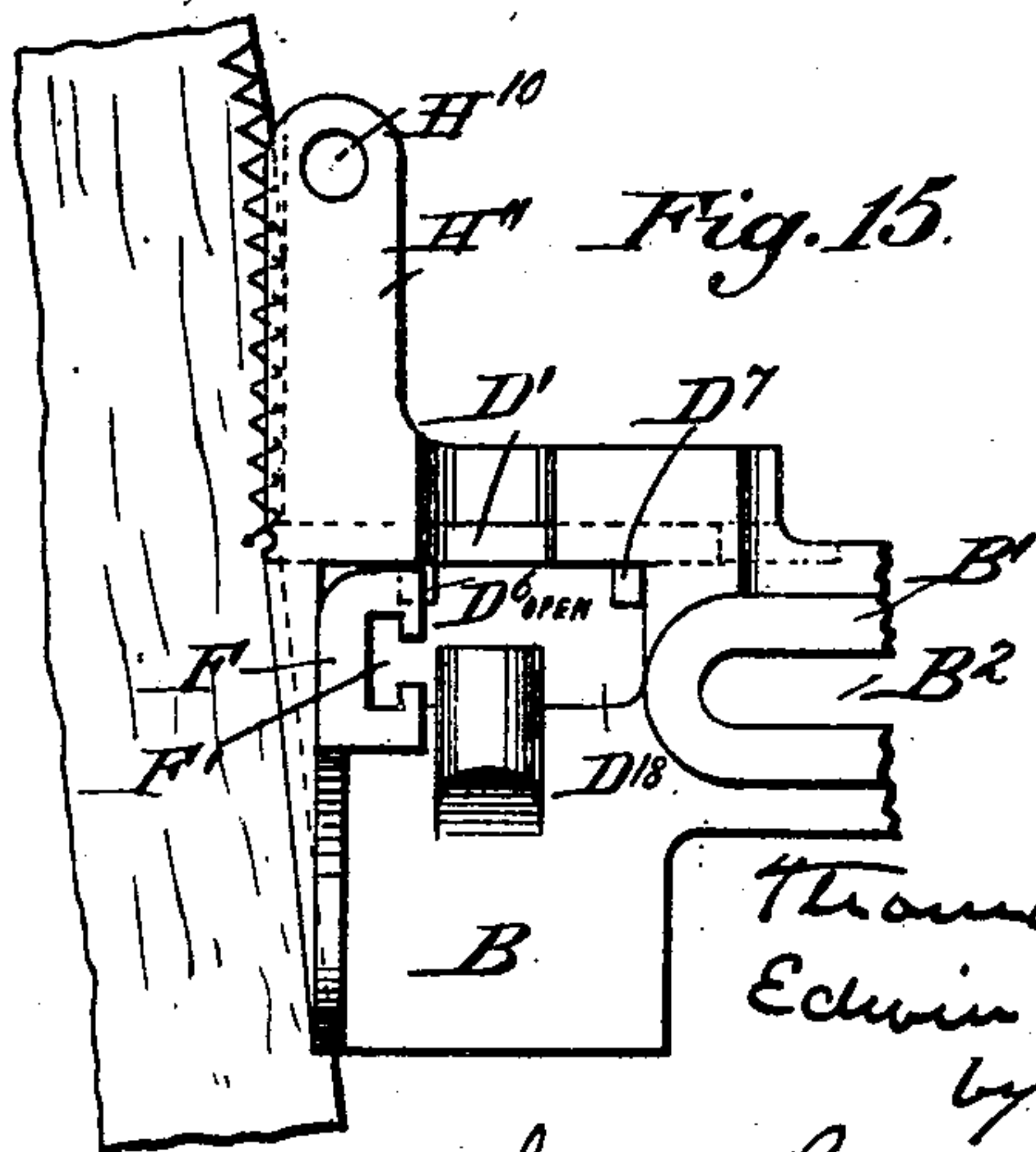
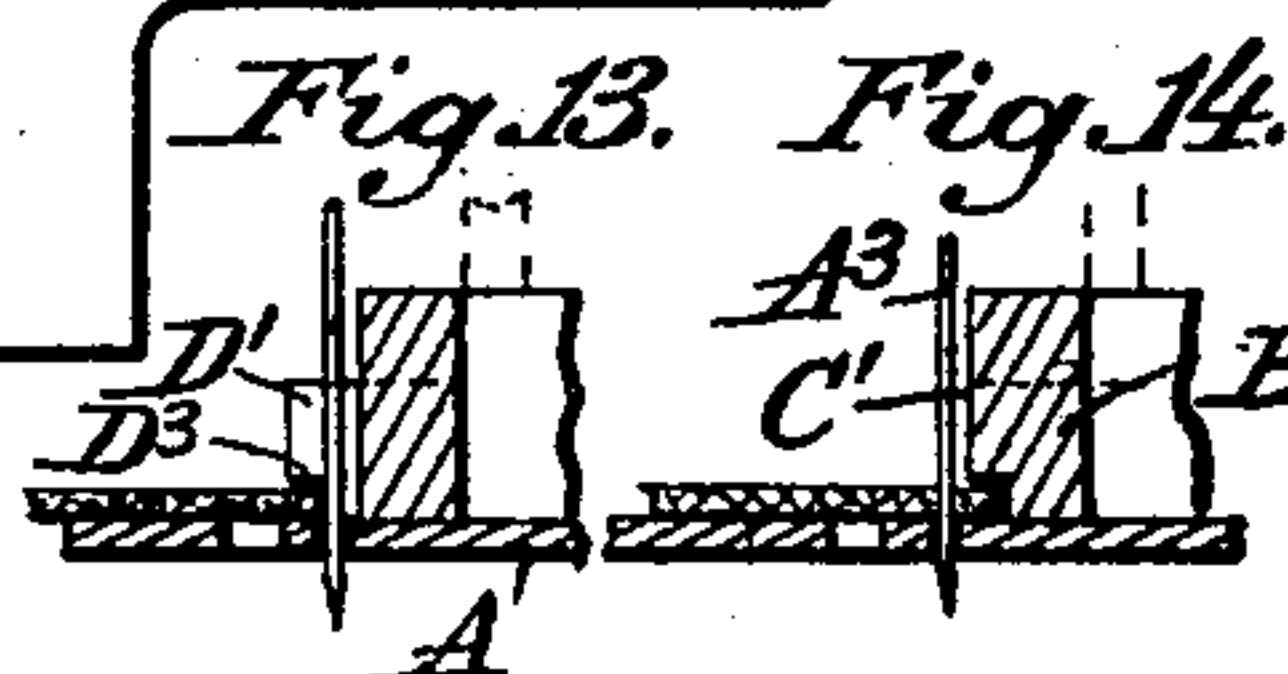
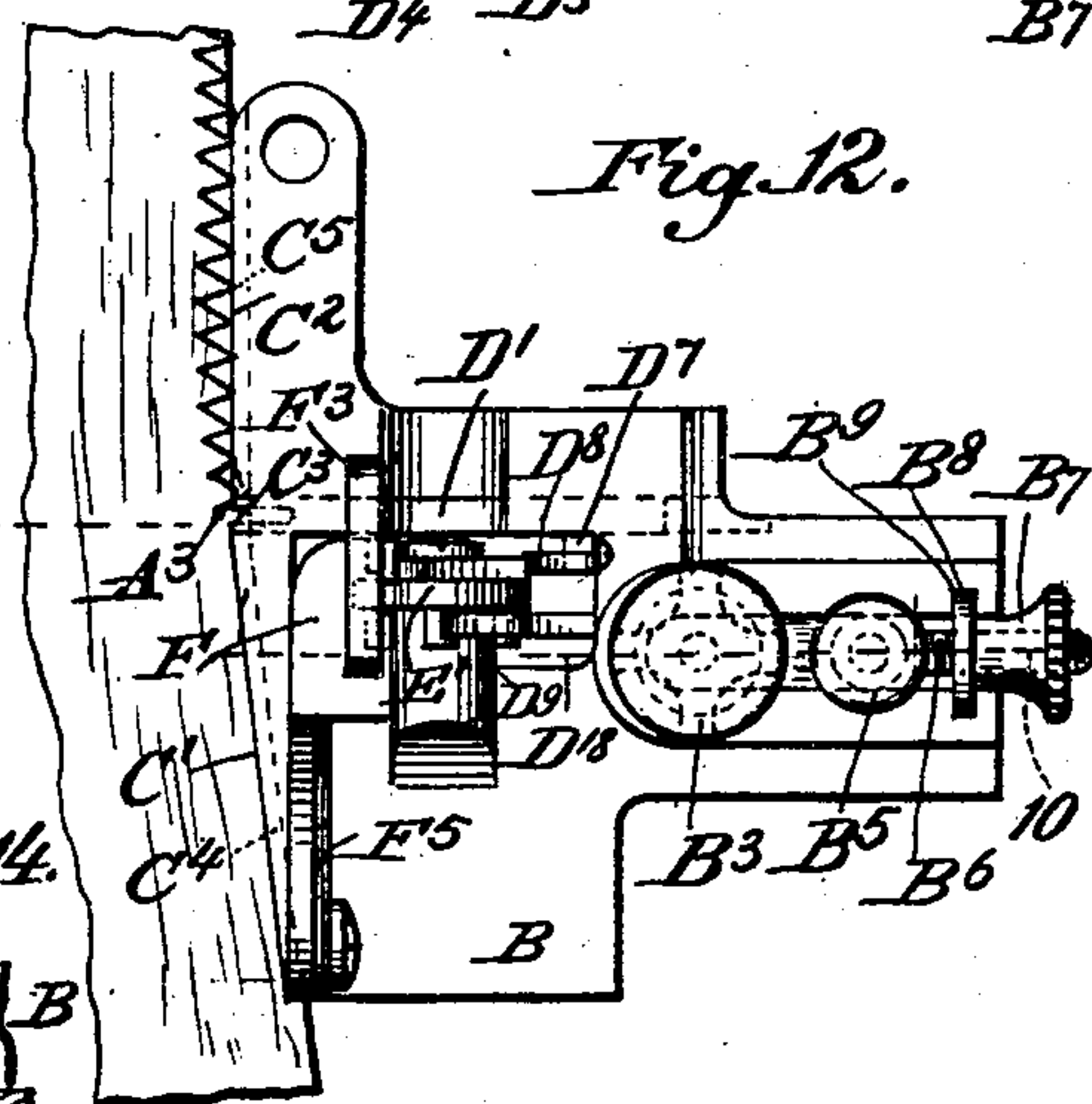
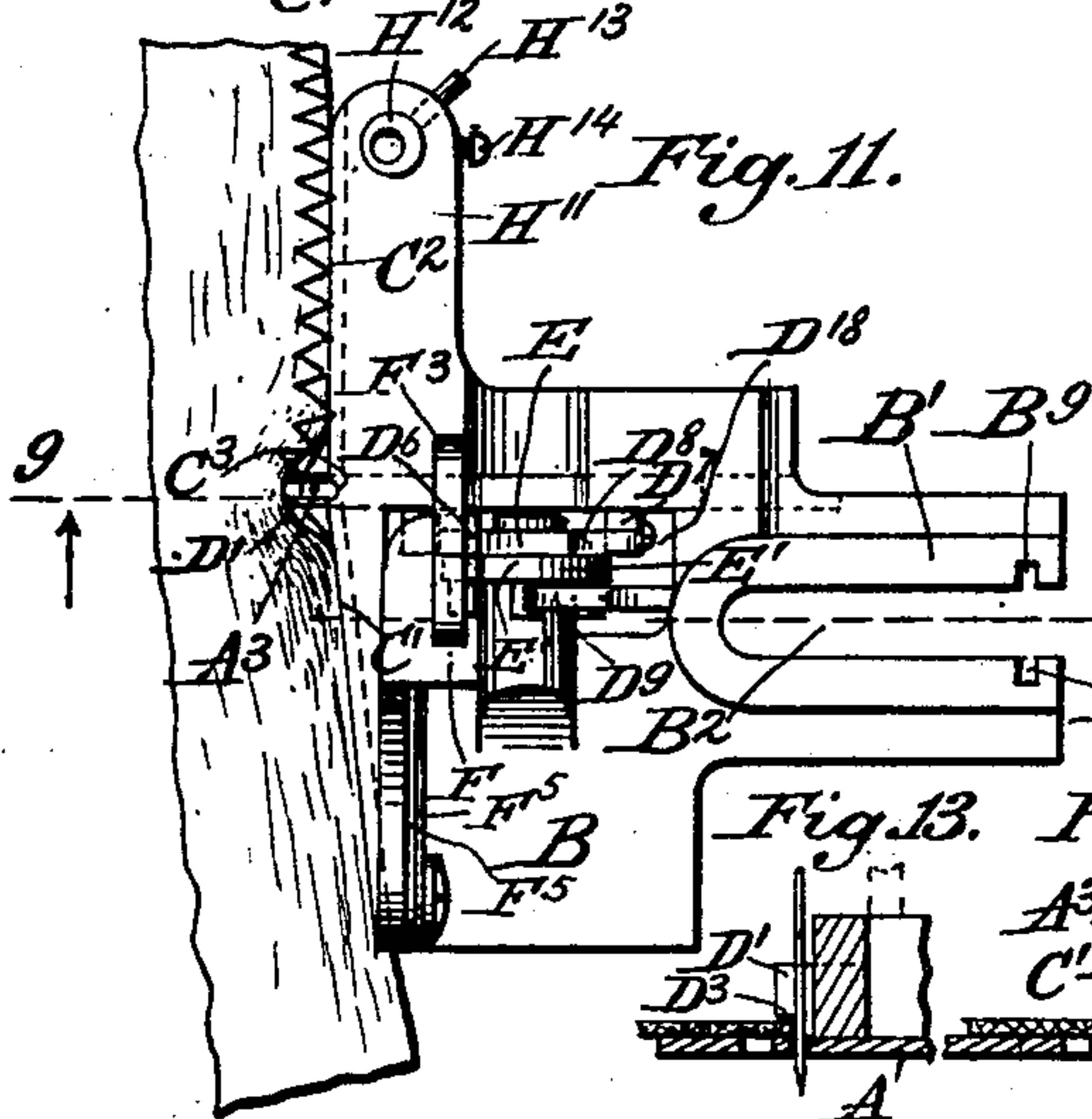
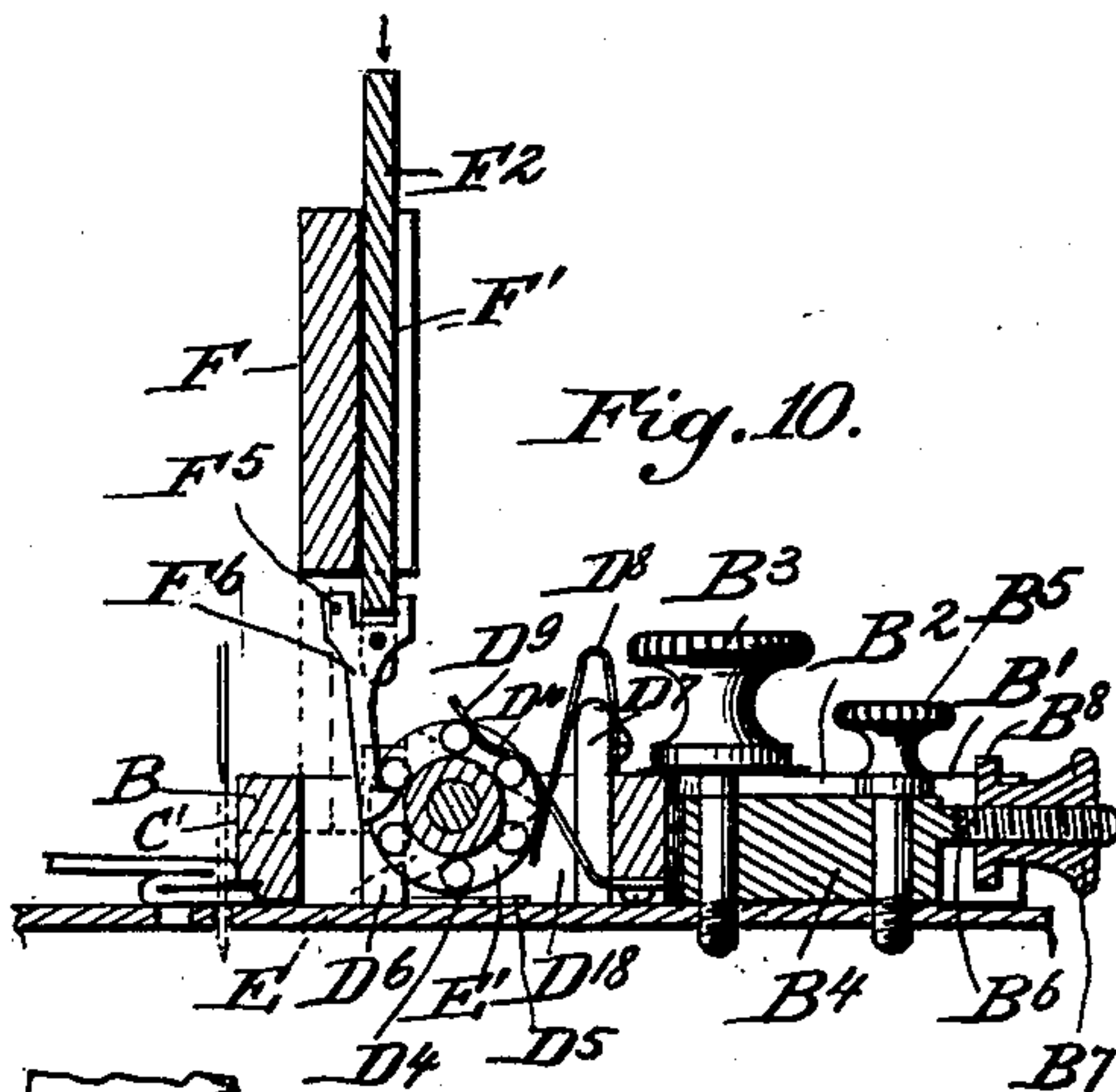
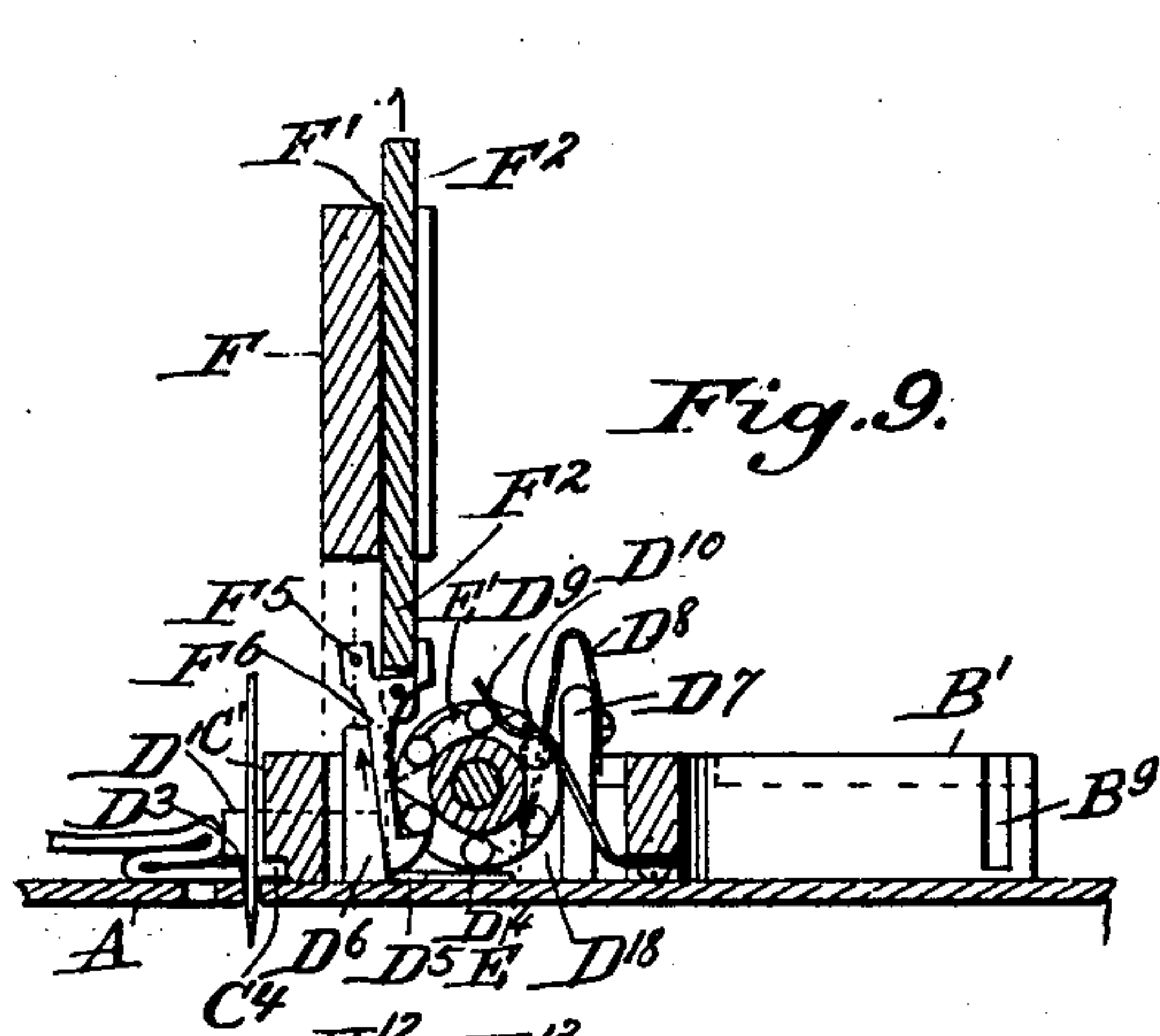
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3 Sheets—Sheet 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## SEWING-MACHINE ATTACHMENT FOR OVEREDGE-STITCHING.

SPECIFICATION forming part of Letters Patent No. 678,908, dated July 23, 1901.

Application filed February 1, 1901. Serial No. 45,626. (No model.)

*To all whom it may concern:*

Be it known that we, THOMAS H. ROSS, a subject of the King of Great Britain, and EDWIN DONALDSON, a citizen of the United States, both residents of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sewing-Machine Attachments for Overedge-Stitching, of which the following is a full, clear, and exact description, such as will enable those skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The invention relates to improvements in sewing-machine attachments of that class which are used for intermittently diverting the course of the fabric from its path of travel through the line of reciprocation of the needle for the purpose of forming overedge-stitches, and it more particularly relates to improvements in the attachment disclosed in the application for patent filed by us October 2, 1900, and which bears Serial No. 31,771.

The invention consists in the novel construction, combination, and arrangement of parts, such as will be hereinafter fully described, pointed out in the appended claims, and illustrated in the accompanying drawings.

In the drawings, in which similar reference characters designate corresponding parts, Figure 1 is a perspective view of an attachment embodying the invention. Fig. 2 is a sectional view on the line 2 2 of Fig. 3 and on the line 2 2 of Fig. 7. Fig. 3 is a similar view on the line 3 3 of Fig. 2 and also on the line 3 3 of Fig. 7. Fig. 4 is an enlarged detail perspective view showing the pusher-bar. Fig. 5 is a front elevation of the attachment. Fig. 6 is a detail sectional view showing the presser-foot. Fig. 7 is a top plan view of the attachment. Fig. 8 is a bottom plan view of the same without the presser-foot. Fig. 9 is a sectional view on the line 9 9 of Fig. 11. Fig. 10 is a similar view on the line 10 10 of Fig. 12. Fig. 11 is a plan view of the attachment without the presser-foot, showing the pusher-bar in an advanced position forcing the fabric out of the line of reciprocation of the needle. Fig.

12 is a similar view showing the pusher-bar retracted and the fabric in its original position. Figs. 13 and 14 are detail sectional views respectively showing the pusher-bar in advanced and retracted positions in making serging stitches. Fig. 15 is a plan view showing the attachment as it appears in making serging stitches.

Only so much of the sewing-machine is shown as is necessary to illustrate the operation of the attachment. The work-plate A, the needle-bar A', and the presser-foot bar A<sup>2</sup> may be of any construction suitable in the premises. In the needle-bar is secured the usual needle A<sup>3</sup> by the set-screw A<sup>4</sup>. On the lower end of the bar A<sup>2</sup> is attached the presser-foot, which will be hereinafter particularly described. On the work-plate A is secured the attachment adjacent to the presser-foot and needle-bars, and also in such a position that the work-face of the base B will be contiguous to the line of travel taken by the fabric being stitched.

Mechanism is provided for adjustably securing the attachment to the work-plate. The base B has an extension B', provided with a recess B<sup>2</sup>, through which the screw B<sup>3</sup> is adapted to pass and by clamping the base between its head and the work-plate serves to hold the attachment in place. The shank of the screw passes through an opening in the end of the guide-block B<sup>4</sup>, located in the recess B<sup>2</sup>. The shank of the screw fits snugly in the opening, so that the block will have as little play as possible relatively to the screw. A second screw B<sup>5</sup> passes through the guide-block and serves to clamp the latter to the work-plate. By means of the block and the two screws the attachment can be secured to the work-plate so that it can move only in a straight line.

Means for moving the attachment relatively to the guide-block are furnished. A screw-threaded rod B<sup>6</sup> extends from the guide-block and is engaged by the thumb-nut B<sup>7</sup>. The latter has a collar B<sup>8</sup>, journaled in the recess B<sup>9</sup> in the extension B'. By turning the thumb-nut when the screw B<sup>3</sup> is loose the attachment can be moved relatively to the guide-block in a straight line. A consider-



able turning of the thumb-nut, according to the pitch of the engaging screw-threads, will move the attachment but slightly. Consequently quite an accurate adjustment of the attachment relatively to the line of reciprocation of the needle can be secured. This is required to adapt the device to fabrics of different thicknesses.

The work-face of the base has, as shown in the drawings, preferably two surfaces  $C'$  and  $C^2$ , respectively relatively inclined to each other and meeting at the recess  $C^3$  in the line of reciprocation of the needle. The face  $C'$ , being the face on the feeding-in side of the attachment, is inclined relatively to the direction in which the fabric is moved by the feed mechanism across the work-plate. The object in having the face  $C'$  thus inclined is to insure the proper presentation of the fabric to the needle on the return of the latter to normal position after displacement by the pusher-bar. We have found that where the face  $C'$  on the feeding-in side of the attachment is straight or parallel with the direction of the line of the feed and the machine operated at a high rate of speed all fabrics will not invariably spring back quickly enough nor far enough after they have been released by the pusher-bar to insure such hold by the stitch as is sometimes desirable. By pulling the edge of the fabric into a new direction as it passes the end of the aforesaid inclined surface of the work-face on its way to the needle the material is subjected to such tension as to cause it more readily and quickly to resume its normal position, and thus throw its edge back past the line of reciprocation of the needle after release by the pusher-bar. In the lower edges of the surfaces  $C'$  and  $C^2$  are the grooves  $C^4$  and  $C^5$ , respectively. These grooves preferably gradually increase in depth as they leave the recess  $C^3$ . Their purpose is to enable the operator to see the outer edge of the lower fold of the fabric to a better advantage as it is fed into the attachment, and thereby be more certain that a proper presentation of the folds is made to the needle. Also, they insure a slight projection of the edge of the lower fold beyond the other folds, so that the engagement of the threads in the outside stitch will be within the fabric to a slight extent instead of outside it, as would occur if no such provision were made. As the feeding-in groove  $C^4$  is preferably deeper at its outer end, the fabric will readily enter the same, and as it decreases in depth toward its inner end the fabric will be gradually compressed as it approaches the needle, and thereby a compact stitch will be secured. As the feeding-out groove  $C^5$  gradually increases in depth toward its outer end, the fabric will readily pass from the attachment. The grooves also particularly adapt the attachment to serging. In the under side of the base B is the guide-

way D, leading to the recess  $C^3$  and also to the meeting place of the surfaces  $C'$  and  $C^2$ . In this guideway is mounted the pusher-bar  $D'$ , so that it can be intermittently projected into the path of travel of the fabric and into the line of reciprocation of the needle. At its forward end the pusher-bar is bifurcated, as at  $D^2$ , to register with the needle when the latter descends when the pusher-bar is in an advanced position. It is also recessed, as at  $D^3$ , to register with the grooves  $C^4$  and  $C^5$  when it is in a retracted position. It is held in place and its movement is limited by the plate  $D^4$  engaging with the recess  $D^5$  in its under side. Projecting from the sides of the pusher-bar are the extensions  $D^6$  and  $D^7$ , respectively, which extend upwardly through the recess  $D^8$  in the base. The pusher-bar is reciprocated by the three-sided cam E, rotatably mounted between the extensions  $D^6$  and  $D^7$ . The cam is mounted on the end of the trundle-wheel  $E'$  and turns with the latter. The trundle-wheel has six spokes, one for each angle and each side of the cam, so that by intermittently turning the same one-sixth of a rotation the angles and sides are alternately and successively brought to bear on the forward extension  $D^6$  and on the spring  $D^8$ , secured to the rear extension  $D^7$ , so as to reciprocate the pusher-bar back and forth. The spring  $D^8$ , interposed between the cam and the extension  $D^7$ , serves to take up any lost motion and also to prevent noise when the attachment is run at a high rate of speed. To prevent the trundle-wheel from overrunning, a spring  $D^9$ , secured to the base, bears on the spokes. This spring not only acts as a brake, but it also serves to turn the wheel slightly by its cam-face  $D^{10}$  bearing on a spoke after the wheel has been turned to a certain point.

Mechanism is provided for conveying motion from the needle-bar to the trundle-wheel to rotate the latter. On the base B is mounted the standard F, and in the face of the latter is the vertical guideway  $F'$ , in which moves the slide-bar  $F^2$ , from the upper end of which projects the arm  $F^3$ . The latter has a downward extension  $F^4$ , which can be cut to accommodate the attachment to machines of different makes. The slide-bar is normally depressed by the spring  $F^5$ , secured to the standard. It is reciprocated vertically and against the action of the spring by the set-screw  $A^4$ , carried by the needle-bar engaging with the extension  $F^4$  as the machine is operated. To the lower end of the slide-bar is pivoted the pawl  $F^6$ , the lower end of which is normally pressed toward the trundle-wheel by the spring  $F^5$ , which also tends to press the slide-bar downward. The formation of the lower end of the pawl is such that on its upward movement it will engage with one of the spokes of the trundle-wheel and on its downward movement will disengage. The



upper end of the pawl is bifurcated and fits over the lower end of the slide-bar. The members of the bifurcation by striking against the slide-bar limit the movement of the pawl about its pivotal point. By the reciprocation of the pawl the trundle-wheel is given one-sixth of a complete rotation at each upward movement, so that an angle and a side of the cam are successively brought to bear on the forward extension D<sup>6</sup> and the spring D<sup>8</sup> and the pusher-bar thereby reciprocated. The movement of the slide-bar is limited by the arm F<sup>3</sup> striking the upper end of the standard and the upper end of the pawl striking the lower end of the guideway.

In attachments of this kind much trouble is experienced in working seamed fabrics, for when one of the latter is folded where the seam occurs it is quite difficult to pass it beneath the ordinary presser-foot. To overcome this difficulty, a special presser-foot is provided. To the lower end of the rod A<sup>2</sup> is attached the casing H, and the latter has pivoted to an end the bell-crank H'. In the upper part of the casing is the chamber H<sup>2</sup>, and located therein is the spring H<sup>3</sup>, bearing on the upper end of the bell-crank and normally pressing it outwardly. To the lower end of the bell-crank is pivoted the shoe H<sup>4</sup>. The pivotal connection between the bell-crank and the shoe is such that the latter can be rocked only to a limited extent. The shoe has considerable length and is recessed at H<sup>5</sup> to receive the fabric and the end of the pusher-bar. When the seamed part of the fabric approaches the shoe, owing to the latter's length and longitudinal curvature it passes beneath the forward end and rocks the shoe to a limited extent. As it moves beneath the shoe the latter not only rocks to accommodate it, but also moves upwardly against the action of the spring H<sup>3</sup>, pressing on the bell-crank. In this way the fabric is not only pressed evenly against the feed-dog, but the seamed portion is passed along without interference.

Means are provided for connecting the presser-foot with the attachment, so that their proper relative adjustments can be secured. Transversely through the casing H an opening extends, and in the same is placed the horizontal arm H<sup>6</sup> of the angular rod H<sup>7</sup>. This arm is held in place in the casing by the set-screw H<sup>8</sup>. The vertical arm H<sup>9</sup> enters the vertical opening H<sup>10</sup> of the extension H<sup>11</sup> of the base. As the distance between the needle and presser-foot bars varies in different machines and even in machines of the same make and pattern, means are provided for accommodating the attachment to such variations. In the opening H<sup>10</sup> and around the vertical arm H<sup>9</sup> is the eccentric-sleeve H<sup>12</sup>, provided with an arm H<sup>13</sup> for turning the same. By rotating the sleeve more or less the presser-foot can be moved relatively to the attach-

ment, so that it can be attached to the presser-foot bar after the attachment has been secured in the proper position relatively to the needle-bar. A set-screw H<sup>14</sup> is provided for securing the sleeve in place.

The operation of the device is as follows: After the attachment has been secured and adjusted the operator folds the fabric to suit the desired stitch—for example, it is folded for blind-stitching, as shown in Figs. 9 to 12, inclusive. When folded properly, the edge of the lower fold should project beyond the upper folds, so that when the fabric is fed to the attachment the said edge enters the groove C<sup>4</sup> in the work-face. As the operator can always see the edge of the lower fold until it enters the groove, he will know that up to that point at least the fabric will be folded properly. The relative positions of the folds will also be preserved as the fabric passes the pusher-bar, owing to the recess D<sup>3</sup> in the latter. When the pusher-bar is in a retracted position, the recess will register with the groove, and when it is in an advanced position the edge of the fold engages with the recess, and thereby the relative positions of the folds are preserved. As the direction of its path of travel is changed as it approaches the pusher-bar, the fabric will be pulled and pressed against the inner terminal of the inclined surface C' of the work-face of the base. This angular tension of the material at the point referred to causes it to spring back underneath the needle when released from the compression of the pusher-bar on the retraction of the latter. Furthermore, the grooves in the surfaces of the work-face particularly adapt the attachment to serging. Such an application is shown in Figs. 13, 14, and 15 of the drawings. It is obvious that the device can be adapted to the making of stitches of other patterns.

While we have shown in that example of our attachment illustrated by the drawings a work-face having two relatively-inclined surfaces, it should be understood that one of said surfaces which extends beyond the needle is not essential to the above-described operation of our device and does not necessarily participate in the formation of the stitch and seam and that the value of the inclination of the surface against which the fabric is pushed on its way to the needle does not depend upon its relation to the surface of the work-face beyond the needle, but upon the relation of that inclination to the direction of the movement of the fabric caused by the feed and the retraction of the pusher-bar.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a sewing-machine attachment, a base provided with a work-face formed of two relatively-inclined surfaces, a pusher-bar mounted in said base and adapted to be projected



through said work-face at the place of meeting of said surfaces, and means for reciprocating said pusher-bar.

2. In a sewing-machine attachment, a base provided with a work-face formed of two relatively-inclined surfaces and having grooves at the lower edges of said surfaces, a pusher-bar mounted in said base and adapted to be projected through said work-face at the meeting-place of said surfaces, and means for reciprocating said pusher-bar.

3. In a sewing-machine attachment, a base provided with a work-face formed of two relatively-inclined surfaces and having grooves at the lower edges of said surfaces, a pusher-bar mounted in said base and adapted to be projected through said work-face at the meeting-place of said surfaces and having a recess adapted to register with said grooves, and means for reciprocating said pusher-bar.

4. In a sewing-machine attachment, the combination of a presser-foot provided with means for attaching the same to a bar and having an opening through the same, the base of an attachment provided with a bearing, an eccentric sleeve journaled in said bearing, means for turning said sleeve, a rod having one end inserted in the opening in the presser-foot and the other end in said sleeve, and means for securing said rod in place.

5. In a sewing-machine attachment, the combination of a presser-foot provided with means for attaching it to a bar and having an opening through the same, the base of an attachment provided with a bearing, an eccentric sleeve journaled in said bearing, an arm carried by said sleeve for turning the same, a set-screw passing through said base and impinging on said sleeve for securing the latter in its adjustment, a rod having one end inserted in the opening in the presser-foot and the other end in said sleeve, and means for securing said rod in place.

6. In a sewing-machine attachment, a base provided with a guideway, a pusher-bar movable back and forth in said guideway, a shoe carried adjacent to said base and provided with a recess adapted to register with said pusher-bar when the latter is projected beyond said base, a casing provided with means for securing it to a bar, a bell-crank pivoted to said casing and at the end of one of its arms pivotally connected with said shoe, and a spring in said casing bearing on the free end of the other arm of said bell-crank.

7. In a sewing-machine attachment, a pusher-bar movable back and forth, extensions carried by said pusher-bar, a cam mounted between said extensions adapted to bear on one of said extensions, a spring secured to the other of said extensions and interposed between the latter and said cam, and means for rotating said cam.

8. In a sewing-machine attachment, a guide-block, a clamping-screw passing through said guide-block for securing the same to a work-

plate, a base provided with a recess adapted to register with said guide-block, a rod connected with said guide-block, a thumb-nut journaled in said base and engaging with said rod, and a clamping-screw passing through said base and said guide-block for securing the same to the work-plate.

9. In a sewing-machine attachment, a movable pusher-bar, a cam engaging with said pusher-bar to reciprocate the same, a trundle-wheel for rotating said cam, a slide-bar, a pawl adapted to engage with said trundle-wheel pivoted to said slide-bar with its connected end bifurcated and registering with the slide-bar to limit the movement of said pawl, and means for reciprocating said slide-bar.

10. In a sewing-machine attachment a base provided with a work-face the surface of which on the feeding-in side of the attachment is inclined relatively to the direction of the feed of the goods and having a groove at the lower edge of said surface, a pusher-bar mounted in said base and adapted to be projected through said work-face near the termination of said inclined grooved surface, and means for reciprocating said pusher-bar, substantially as and for the purposes described.

11. In a sewing-machine attachment, a base provided with a work-face, the surface of which on the feeding-in side of the attachment is inclined relatively to the direction of the feed of the goods and is provided with a groove, a pusher-bar mounted in said base, and adapted to be projected through said work-face near the termination of said grooved inclined surface and having a recess adapted to register with said groove and means for reciprocating said pusher-bar, substantially as and for the purposes described.

12. In a sewing-machine attachment a base provided with a work-face the surface of which in the feeding-in side of the attachment is inclined relatively to the direction of the feed of the goods, a guideway in said base, a pusher-bar movable in said guideway, a standard mounted on said base and provided with a guideway and a slide-bar movable in the guideway of the standard, and adapted to be reciprocated by the needle-bar and mechanism for conveying motion from said slide-bar to said pusher-bar to reciprocate the latter through said work-face near the termination of said inclined face thereof, substantially as and for the purposes described.

13. In a sewing-machine the combination of a stitching mechanism, a feeding mechanism, a presser-foot, and an attachment having a base provided with a work-face the surface of which in the feeding-in side of the attachment is inclined relatively to the direction of the feed of the goods, a guideway in said base, a pusher-bar movable in said guideway, a standard mounted on said base, and provided with a guideway, a slide-bar mov-



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and mechanism for conveying motion from  
said slide-bar to said pusher-bar to recipro-  
5 cate the latter through said work-face near  
the termination of said inclined face thereof,  
substantially as and for the purposes de-  
scribed.

In testimony whereof we hereunto affix our  
signatures in the presence of two witnesses. 10

THOMAS H. ROSS.  
EDWIN DONALDSON.

Witnesses:

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