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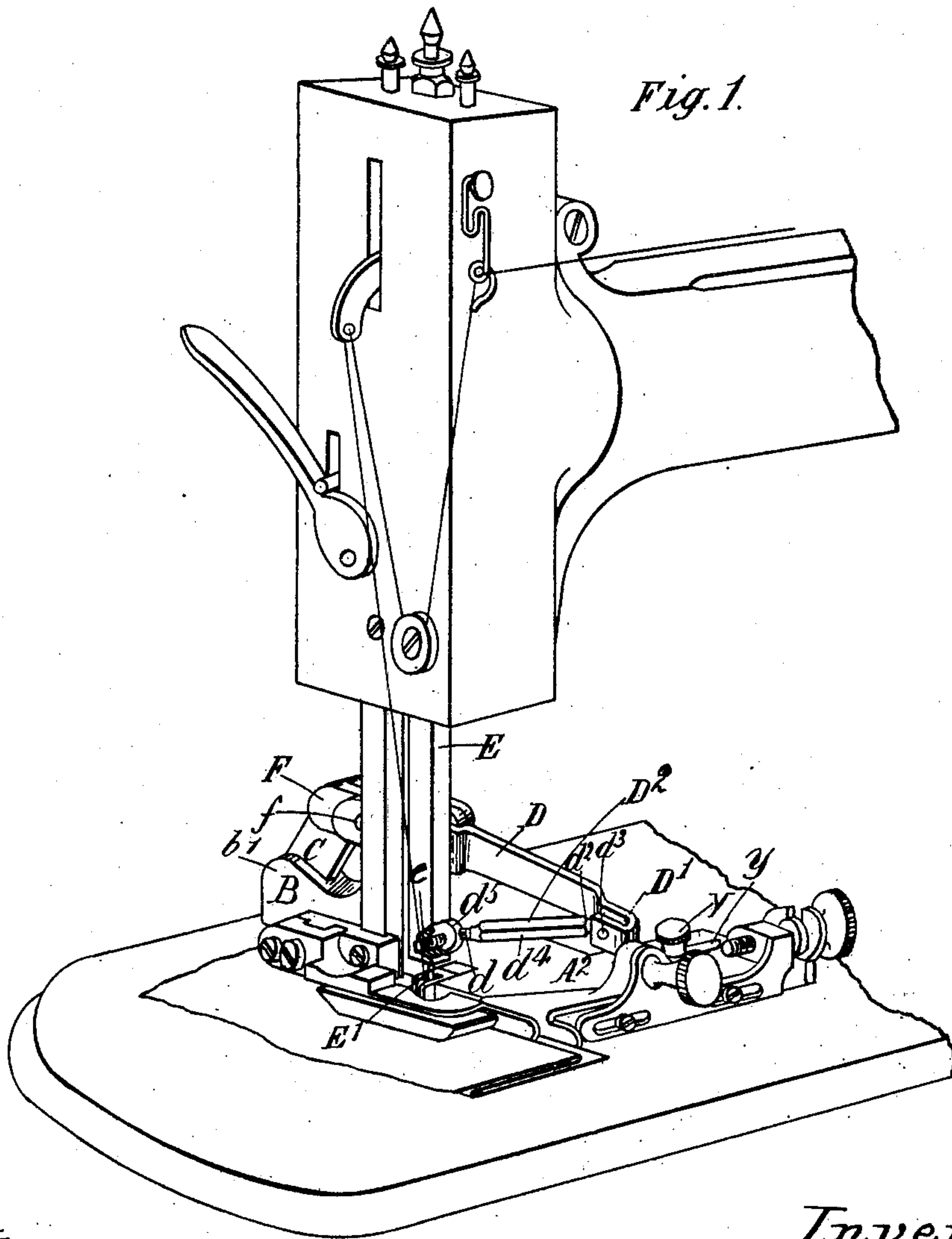
PATENTED AUG. 28, 1906.

G. J. STEVENS.

ATTACHMENT FOR SEWING MACHINES FOR FELLING, &c.

APPLICATION FILED MAR. 10, 1902.

4 SHEETS—SHEET 1.



Witnesses:—

Isabella Waldron
Adelaide Claire Gleason.

Inventor:—
George John Stevens
By *Richardson & Co.*
Attorneys.

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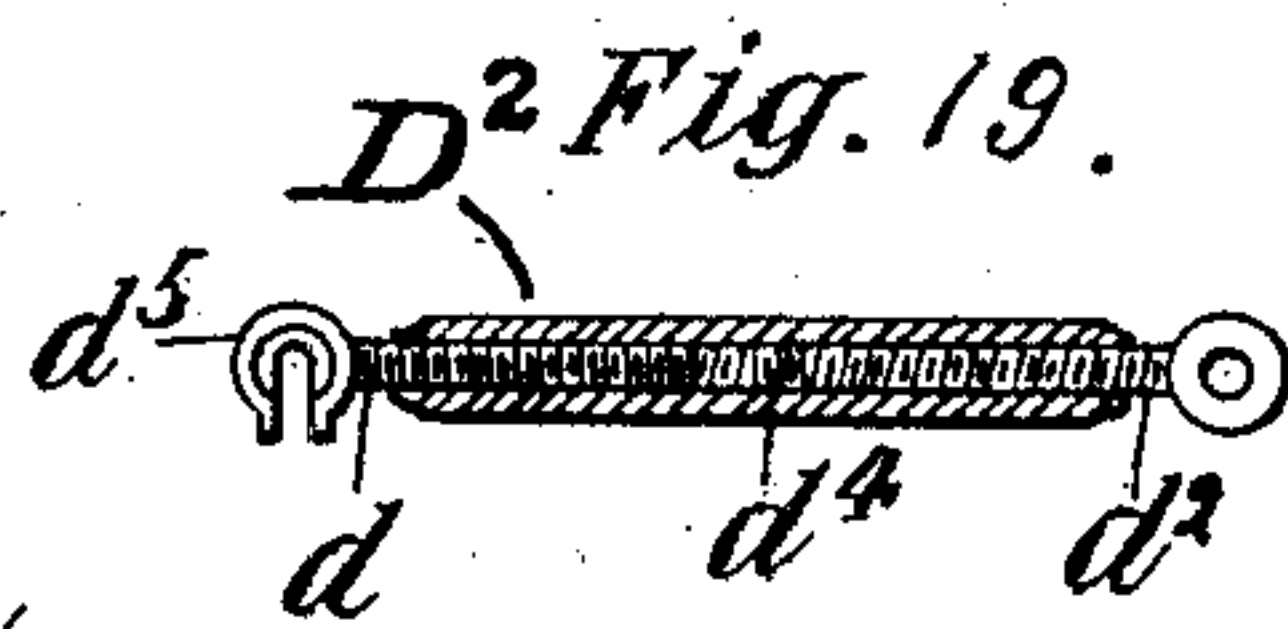
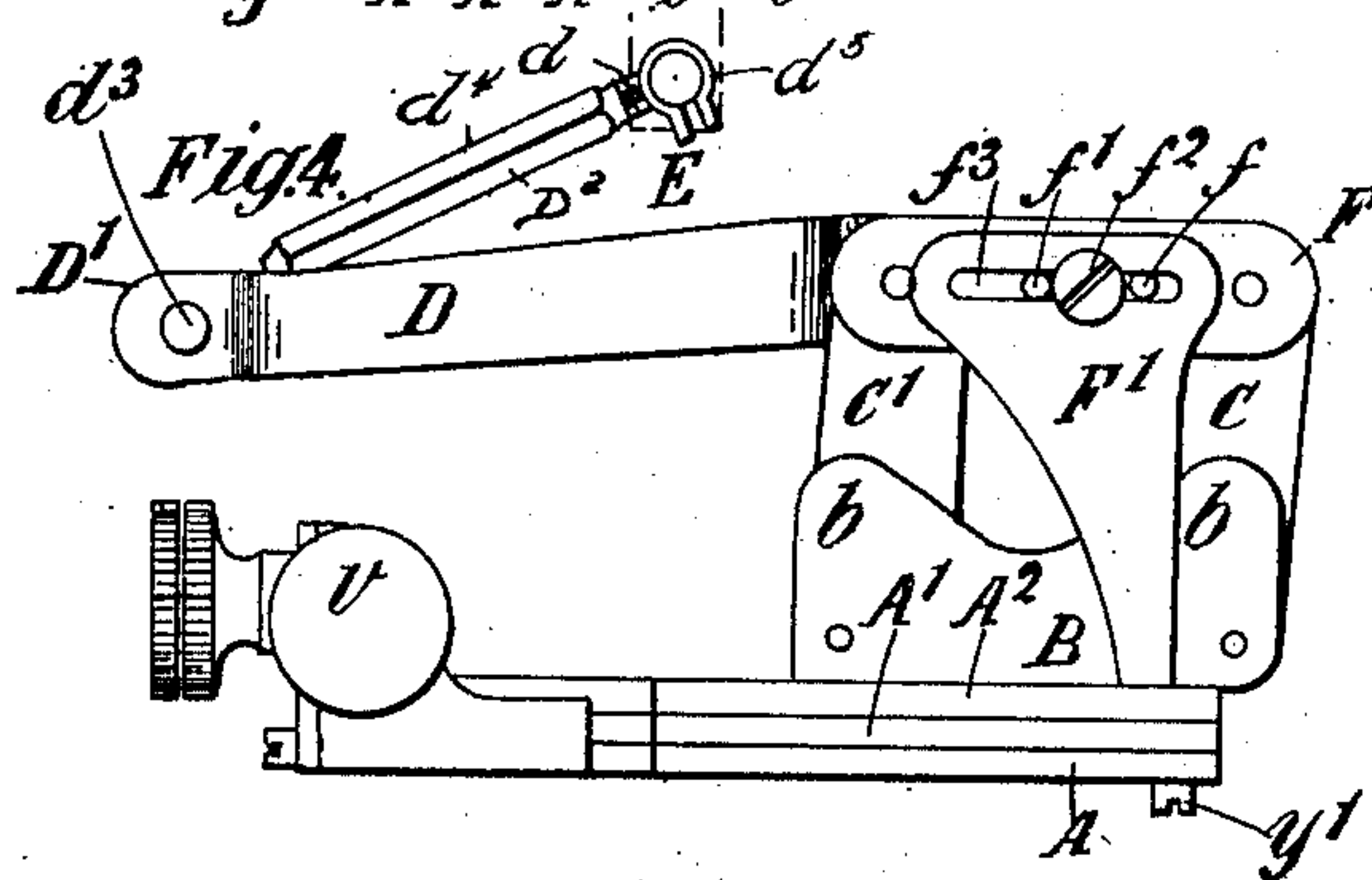
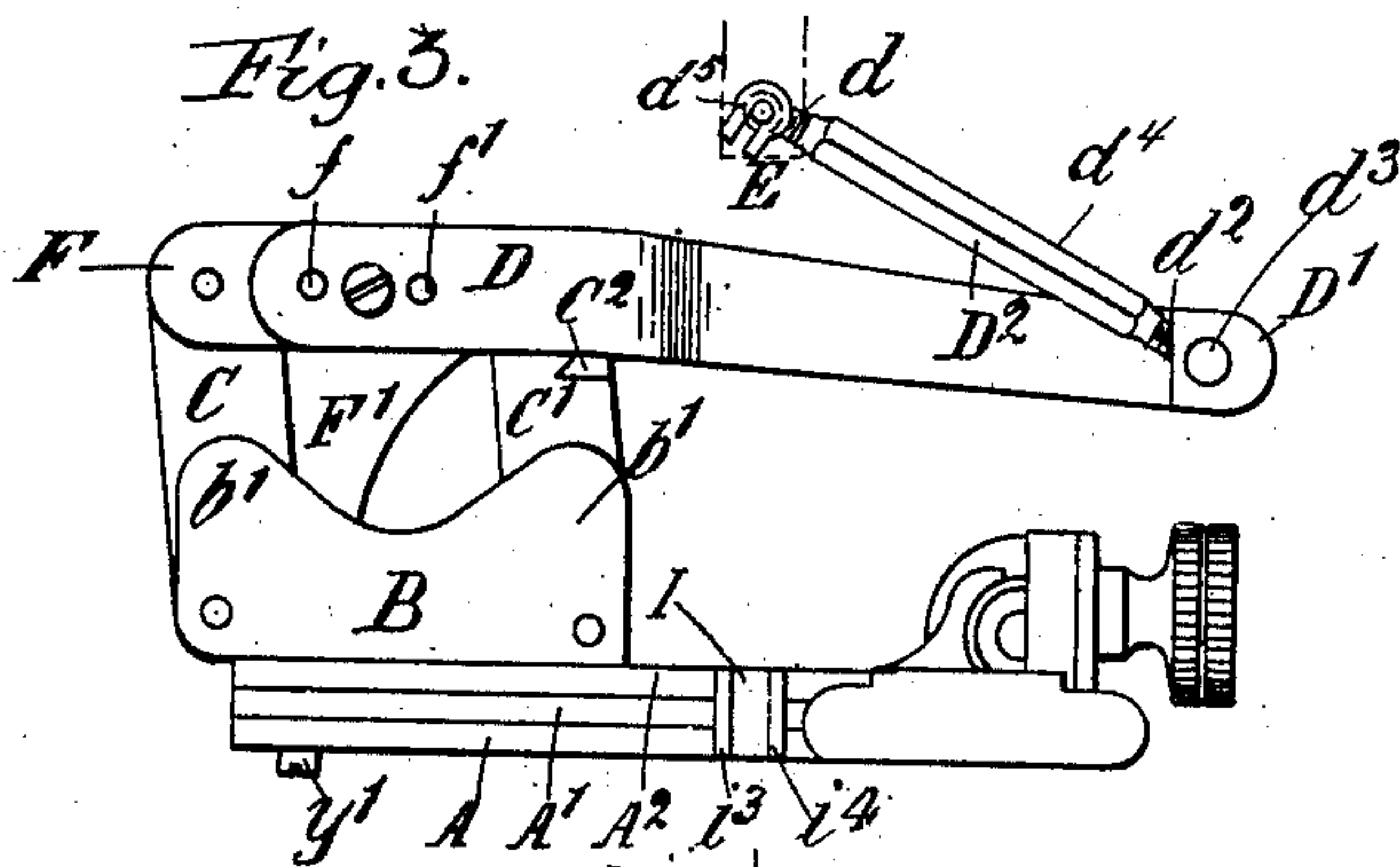
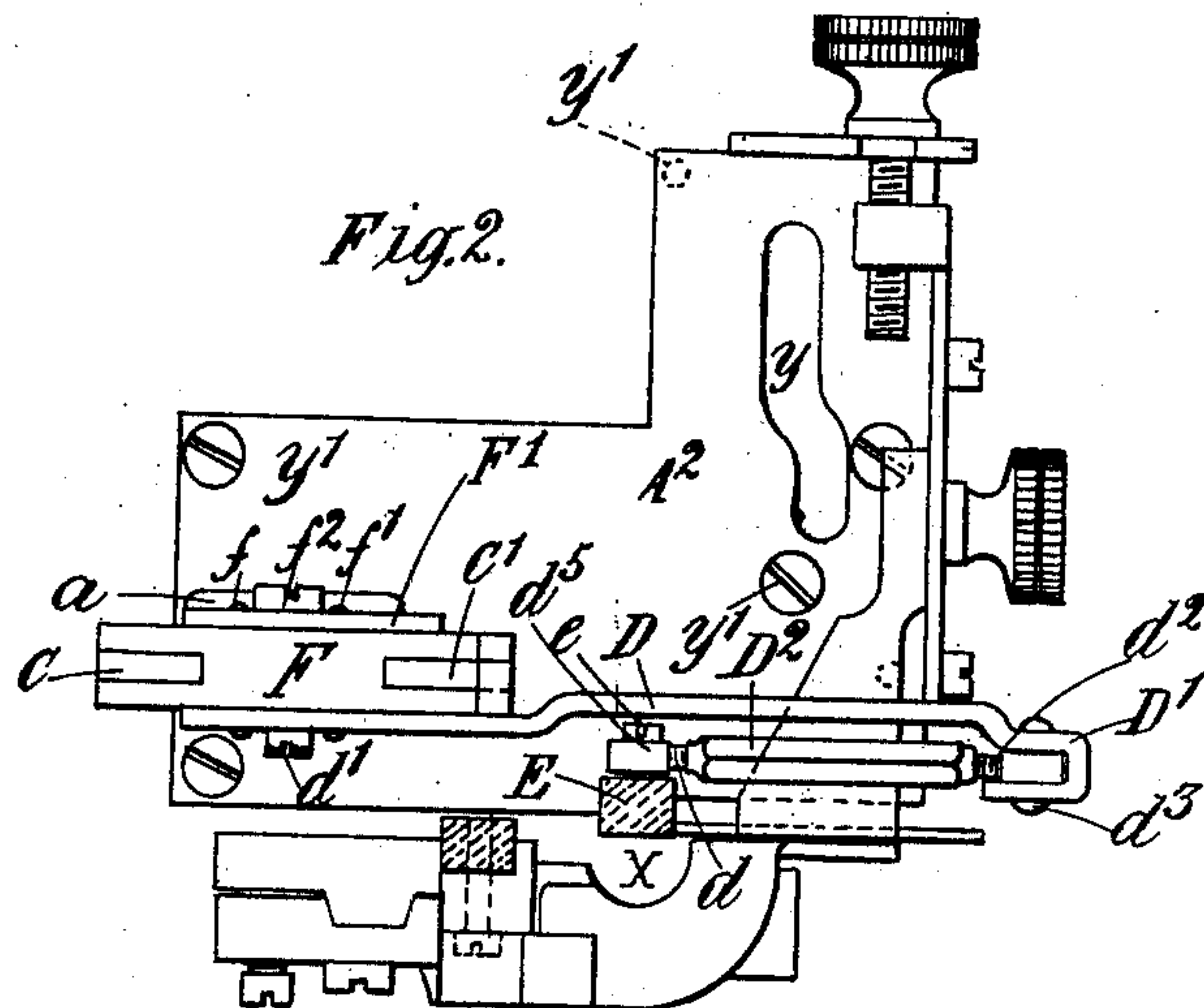
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4 SHEETS—SHEET 2.



Witnesses:
Isabella Waldron,
Adelaide Claire Gleason.

Inventor:
George John Stevens,
By *Richard B. Stevens*
Attorneys.

No. 829,442.

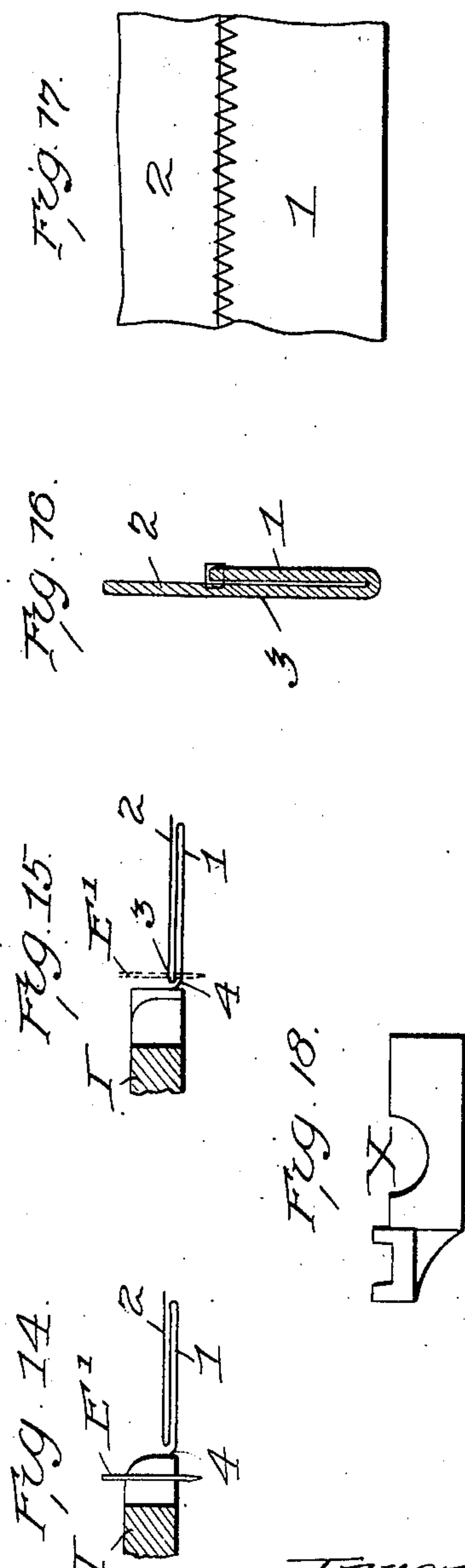
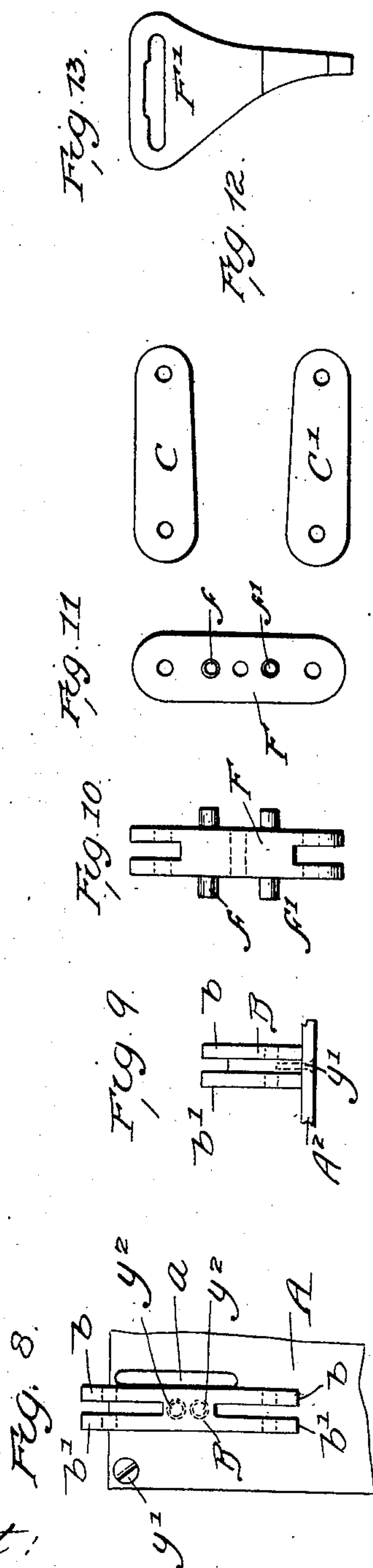
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G. J. STEVENS.

ATTACHMENT FOR SEWING MACHINES FOR FELLING, &c.

APPLICATION FILED MAR. 10, 1902.

4 SHEETS—SHEET 4.



Attest:
O. S. Middleton
A. L. Rogers.

Inventor
George John Stevens.

by *Richard Co*
Atty

UNITED STATES PATENT OFFICE.

GEORGE JOHN STEVENS, OF LONDON, ENGLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AMERICAN ATTACHMENT COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

ATTACHMENT FOR SEWING-MACHINES FOR FELLING, &c.

No 829,442.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed March 10, 1902. Serial No. 97,584.

To all whom it may concern:

Be it known that I, GEORGE JOHN STEVENS, a subject of the King of Great Britain and Ireland, and a resident of 25 East Lake road, Loughborough Junction, London, S.W., England, have invented a certain new and useful improvement in attachments for sewing-machines for felling, (or blindstitching,) serging, (or overcasting,) stoating, (or overseaming,) and fancy and ornamental stitching and the like, of which I do hereby declare the following to be a full, clear, and exact description.

My invention relates to attachments for sewing-machines and to that class of attachments that are adapted to fell, (or blindstitch,) serge, (or overcast,) stoat, (or overseam,) and to do fancy and ornamental stitching and the like, the object of this invention being to simplify and improve the construction and operation of such attachments; to make the action positive; to secure a simple, direct, and positive attachment of the operating-lever to the needle-bar of the machine in order to obtain a direct action from the needle-bar and to insure a smooth, even, and positive motion of the operating parts of the attachment; to make the operating parts of the attachment adjustable, so that the attachment may be used with different machines; to so construct and arrange the pusher and its operating-levers and to so time their movements that the pusher will be retracted within the attachment when the feed of the machine is at work feeding the cloth forward, and so that the pusher will be extended only when and while it is doing its work, so that injurious vibrations may be avoided and better work be performed.

In the accompanying drawings, which illustrate my invention and in which corresponding letters of reference refer to similar parts wherever they occur, Figure 1 is a perspective view showing the attachment secured in position upon the base-plate of a sewing-machine with work under the presser-foot in position for blindstitching or felling. Fig. 2 is a plan view of the attachment and presser-foot with guide. Fig. 3 is a side elevation of the attachment looking from the side next to the needle-bar. Fig. 4 is a side elevation from the opposite side of Fig. 3, and looking toward the needle-bar. Fig. 5 is a

plan view of the operating parts in the interior of the attachment, the top plate, cantaliver, motion-links, &c., being removed, showing the parts in the positions they are caused to assume when the pusher is extended and the lower part of the butterfly locked. Fig. 6 is a similar view to Fig. 5, showing the parts in the positions taken when the pusher is fully retracted. Fig. 7 is a similar view to Fig. 5, showing the parts in the positions taken just after the pusher has been extended and a stitch made and the pusher and upper part of the butterfly have been retracted. Figs. 8 and 9 are detail views of the post or standard carrying the motion-links and the cantaliver and its link. Figs. 10 and 11 are detail views of the cross-plate to which the upper ends of the motion-links are pivoted. Figs. 12 and 13 are detail views of the motion-links and of the downwardly-depending lever, respectively. Figs. 14 and 15 are detail views showing the manner in which the cloth is folded for felling or blindstitching and the way it is fed to the needle, Fig. 14 showing the pusher in its extended position and Fig. 15 showing the pusher in its retracted position. Fig. 16 is a sectional view, and Fig. 17 a plan view, of a piece of cloth, showing a felled or blindstitched hem and the stitching of same. Fig. 18 is a detail view of a plain presser-foot which may be used when both guides are carried by the attachment. Fig. 19 is a detail longitudinal sectional view of the cantaliver-link, showing clearly the two end pieces in engagement with the assembling-sleeve.

In my invention the attachment consists of a base-plate A, upon which are superposed two additional plates A' A², (the center of the middle plate A' being cut away, as shown in the drawings,) the three plates together forming a closed box or case, which contains most of the operating parts. The plates A A' A² are secured together by screws y' or in any other desired manner. At the back side of the attachment—that is to say, the side opposite to the operator when sitting at the machine and next to the back of the machine—I secure to the top plate A² of the attachment, by the screws y² or in any other desired manner, a bifurcated post or standard B, having jaws b b', between which I pivot the lower ends of two upright links (which

I hereinafter call the "motion-links") C C', to the top ends of which is pivoted a cross-piece F, which carries an arm D. The two ends of the cross-piece F are slotted to receive the upper ends of the motion-links C C', which are pivoted therein, and the said cross-piece F is provided with two pins $f f'$, which extend entirely through the cross-plate F and to a short distance beyond either side of the same, forming bearing-pins for the arm D and the lever F', which are secured to the cross-piece F, respectively, by set-screws d' and f^2 , the arm F' having an elongated slot f^3 in its upper end to permit of the adjustment of the arm F' on the cross-piece F, as hereinafter more fully explained. The arm D is turned or bent around at its free end, forming a hooked end, in which hook D' is pivoted a link D² upon a pivot-pin d^3 . The link D² may be formed in one piece, in which case a different link will be required for each different model of sewing-machine, whether differing in the height of the stroke of the needle-bar or of the arm of the machine, or in order to secure a very considerable range of adjustability may, as I prefer and have shown in the drawings, be constructed in three parts—viz., two end pieces $d d^2$ and a screw-threaded assembling-sleeve d^4 , in which case the shanks of the end pieces $d d^2$ and the sleeve d^4 are provided, respectively, with right and left handed screw-threads, so that as the sleeve is turned the one way or the other the end pieces $d d^2$ will be drawn toward or away from each other, thereby decreasing or increasing the length of the link as may be necessary in order to adjust it for work with the needle-bar of the machine it is to be used with. The end piece d^2 has an eye through which the pivot-pin d^3 passes, thereby pivotally securing the link D² to the arm D. The end piece d is formed with a hook d^5 , which is adapted to pass back of and to receive the head of the set-screw e , that fastens the needle E' to the needle-bar E, and to be pivotally secured to the needle-bar E thereby. The arm D is bent inwardly a short distance from the hooked end D' to a point a little beyond the end of the link D², so that the link may work up and down freely without striking the arm D or interfering with its reciprocating motion. I also form a small notch or nick C² in the upper end of the motion-link C', (see Fig. 3,) so that the arm D will not interfere with this motion-link in its working. The hook d^5 of the link D² is recessed somewhat, so that the head of the set-screw e upon the needle-bar may pass into the said recess and be held therein, these parts being so arranged that as the needle-bar E moves up and down the set-screw e causes the hooked end d of the link D² to be raised and lowered with the needle-bar E, imparting a lateral reciprocating movement to the arm D and the cross-piece F and to the

two motion-links C C', pivoted thereto. To the upper ends of these motion-links C C', as before stated, I pivotally secure the cross-piece F. To this cross-piece F upon the side opposite the arm D is adjustably secured, by means of the set-screw f^2 and pins $f f'$, a downwardly-projecting arm F', the lower end of which passes through a slot a , formed in the top plate A² of the attachment, down into the box-like interior of the attachment, and there engages in an eye g , formed in one end of the horizontal reciprocating lever or plunger G, the free end of which is arranged to strike the one side or the other alternately of the four-armed pivoted lever H, (which I hereinafter call a "butterfly,") turning the same upon its pivot-pin H³, thereby imparting a reciprocating movement to the pusher I, as is hereinafter more fully explained.

In a slot J, formed in the side of the attachment next to the needle E' and in line therewith, is a reciprocating U-shaped pusher I, the end i of which, opposite to the needle, passes into the interior of the attachment and engages with one arm h of the butterfly H, a recess i^2 being formed in the end i of the pusher, into which the arm h of the butterfly H passes and works. A U-shaped spring K is arranged within the attachment, one end k of the spring K being secured to the attachment and the other end k' to the pusher I, and constantly acts upon the pusher I to draw it away from the needle E' into the slot J in the side of the attachment. The end i of the pusher is elongated, forming a tailpiece which works in the slot J', formed in the plates A A' A², this construction preventing any side or vertical displacement of the pusher while doing its work. The jaws $i^3 i^4$ of the pusher I pass one on either side of the needle E' when the pusher is extended and the needle and needle-bar of the sewing-machine make their downstroke.

Two spring-actuated catches L L' are pivotally secured in the attachment to the base-plate A thereof at one of their ends at either side of the reciprocating lever or plunger G, their free ends l being provided with hooks l' , and so arranged that they will alternately engage with the projecting arms $h' h^2 h^4$, formed upon the sides of the butterfly H, locking the lower part H² of the butterfly H in the two positions it is caused to assume by the action of the reciprocating lever or plunger G and also locking the pusher I in its retracted position, as hereinafter more fully explained. The hooked ends l' of the catches L L' are provided with recesses l^2 for receiving the projecting arms $h' h^2 h^4$ upon the sides of the butterfly H and preventing too great a movement of the butterfly in either direction. The pivoted lever or butterfly H, I form in two parts H' H², superposed the one upon the other and both pivoted to the base-plate A upon the same pivot-pin H³.

The lower part or half H^2 of the butterfly H is provided with two projecting side arms h' h^4 for engagement with the spring-actuated catches $L L'$, and which are acted upon by the reciprocating lever or plunger G in its forward movements, and with a third arm h^5 , that projects forwardly into the path of the reciprocating lever or plunger G and causes the forward or free end of the plunger G to be turned alternately toward the right-hand and then toward the left-hand side of the attachment, so that the plunger G will act first upon one side and then upon the other side of the butterfly H. The upper part or half H' of the butterfly H is also provided with two projecting side arms h^2 h^3 , which are also acted upon by the reciprocating plunger or lever G in its forward movements, and one of which, h^2 , is adapted to engage with one of the spring-actuated catches L' , so as to retain the pusher I in a locked position within the attachment until the proper time when it is to be extended to do its work, the other side arm h^3 being cut away somewhat, as clearly shown in Figs. 5 and 7, so that it will not be held by the spring-actuated catch L upon the other side of the attachment, but may slip past the catch L as the pusher I is retracted by the U-shaped spring K after it (the pusher I) has done its work and the horizontal reciprocating lever or plunger G has completed its stroke and is being withdrawn. The upper part or half H' of the butterfly H is also provided with a third arm h , as hereinbefore stated, which works in a recess i^2 , formed in the end i of the pusher I, and which reciprocates the pusher I in and out of the slot J in the side of the attachment as the butterfly H is turned from side to side on its pivot-pin H^3 by the reciprocating lever or plunger G.

The presser-foot is recessed at X to receive the pusher when it advances.

The attachment is secured to the base-plate of a sewing-machine by the usual set-screw Y, which passes through a slot y , formed in the attachment. In order that I may secure a more firm hold of the attachment on the machine and to allow for any inequalities in the base-plate of the machine, I allow two of the screws y' , which secure the plates A A' A² of the attachment together, to project a short distance below the lower surface of the base-plate A, the attachment resting on these two screws y' and the diagonally opposite corners of the attachment. I find that by this mode I can securely fasten the attachment on the machine, the spring of the metal in the attachment aiding me in so doing. The screws y' may be adjusted to any height by simply turning them in or out with any ordinary screw-driver.

In operating my improved attachment it is secured in position on the base-plate of the sewing-machine by the set-screw Y and set-screw e on the needle-bar E being loosened

and the hook d^5 on the link D^2 being passed behind the screw e , which is then tightened, the head of the set-screw e passing into the recess in the hook d^5 , as hereinbefore described. It should be understood that these parts should be so arranged and adjusted that the hook d^5 may work freely on the set-screw e as the needle-bar E moves up and down, while still being held securely in position. This result, however, is readily secured. As the needle-bar E moves upward and downward the link D^2 imparts a reciprocating motion to the arm D and motion-links C C', the cross-piece F, and the downwardly-projecting arm F', the latter of which in turn imparts a reciprocating horizontal movement to the horizontal lever or plunger G within the attachment, the free end of the plunger G working alternately first upon one side and then the other side of the butterfly H, which in turn imparts a reciprocating in-and-out motion to the pusher I.

In Fig. 5 I have shown the interior operating parts in the positions they assume when the plunger G strikes the right-hand-side arms h^2 h^4 of the butterfly H and turns both parts H' H^2 of the butterfly on the pivot-pin H^3 toward the left-hand side of the attachment, thereby fully extending the pusher, the arm h' of the lower half H^2 being locked in this position by the left-hand catch L. The next forward stroke of the plunger G may be called the "silent" stroke, for the pusher is neither extended or retracted, this stroke being for the purpose of putting the parts in position so that at the following forward stroke of the plunger G the pusher may be again extended. It will be observed that the lower half H^2 of the butterfly is alternately locked by the catches L L'—by the catch L when the pusher is extended, by the catch L' when the pusher is retracted. The upper part H' of the butterfly is locked by the engagement of its arm h^2 in the recess l^2 of the catch L' when the pusher is retracted; but as its arm h^3 is somewhat cut away, so that it will not engage with nor be held by the left-hand catch L when the pusher is extended, the moment that the plunger G has completed its forward stroke and the pusher is extended (the parts being in the positions shown in Fig. 5) and the plunger G is withdrawn from engagement with the butterfly, the pusher is retracted by the action of the spring K, the arm h^3 slipping past the catch L as the part H' of the butterfly is turned on its pivot-pin H^3 by the spring. When this is done, the parts have taken the positions shown in Fig. 7, and it is now necessary, as above stated, to release the lower part H^2 from the catch L and turn it toward the right-hand side of the attachment, which is accomplished in what I have termed as the "silent" stroke, in which as the plunger G comes forward it is turned to the left side of

the attachment by the arm h^5 and first strikes the catch L, releasing the part H^2 therefrom, then coming farther forward the plunger G strikes the arm h' and turns the part H^2 on the pivot-pin H^3 toward the right-hand side of the attachment, as shown in Fig. 6, in which position both the arms h^2 h^4 of the upper and lower parts H' H^2 will be locked by the catch L'. At the next forward stroke of the plunger G (the butterfly and pusher being in the positions shown in Fig. 6) it will be turned toward the right-hand side of the attachment by the arm h^5 of the part H^2 and first striking the catch L' releases the arms h^2 h^4 therefrom. Then coming farther forward the plunger G strikes the arms h^2 h^4 and turns both parts H' H^2 on the pivot-pin H^3 toward the left side of the attachment, thereby extending the pusher I by means of the arm h working in the slot i^2 in the side of the pusher. The parts are then in the positions shown in Fig. 5, the arm h^3 of the lower half H^2 of the butterfly being locked by the catch L. This cycle of operations is repeated as the needle-bar makes its up and down strokes, the pusher being extended at each alternate stroke of the needle-bar. It will be obvious that the position of the two parts of the butterfly may be reversed, if desired—that is to say, what I have described as the “upper” part of the butterfly may be used as the lower part of the butterfly and that the lower part of the butterfly may be used as the upper part and without departing from the spirit of my invention.

In operating my attachment for blind-stitching the cloth is folded, as shown in Figs. 15 and 16—that is to say, a hem 1 is folded up—and then the cloth 2 is folded back over the hem 1 and the material is fed to the needle with the fold 3 uppermost and the single layer 4 underneath. The single layer should preferably project a little beyond the fold 3. If then at the first downstroke of the needle-bar E the pusher I is retracted into the slot J, the needle in coming down will pass through the center of the cloth at the fold 3 and through the single layer 4 and pass down and form a stitch with the shuttle-thread. As the needle-bar E makes its next downstroke the pusher is extended and the cloth is pushed by the pusher I away from the needle, as shown in Fig. 14, and as the needle comes down in its downstroke it misses the cloth and makes a stitch with the shuttle-thread upon the outside of the cloth. This method of stitching produces a zigzag line of stitches, as is clearly shown in Fig. 17, and, as shown in Fig. 16, firmly uniting the single layer 4 to the fold 3 and overcasting the raw edge of the single layer 4, preventing raveling, while as the thread passes only part way through the thickness of the cloth in the fold 3 no stitches are visible upon the face of the cloth and a true blindstitching is produced.

When serging, the cloth is fed flat and a line of zigzag stitches is produced along the edge of the cloth, thereby overcasting it and preventing raveling. When stoating or overseaming, the two pieces of cloth are laid one above the other, the edges being brought in line with each other, and the cloth is fed flat, a line of zigzag stitches along the edges being produced. When stitched, the two pieces of cloth will be found securely sewn together and need only be straightened out and pressed to have the appearance of a single piece of cloth. The attachment will, too, by suitably regulating the tensions and length of stitches, do a large variety of fancy and ornamental stitchings, suitable for blouses and waists, as well as cording, plaiting, &c.

By simply removing a reciprocating arm and using one the free end of which is constructed in a plane higher from or nearer to the base-plate of the sewing-machine than the one removed I am able to adjust the attachment for use with machines of different kinds, having needle-bars of different lengths of stroke and with high or low arms, and I may also in this way change the timing of the pusher as necessary or desired. This change of arms D is most easily effected, as it is only necessary to take out the set-screw d' and remove the one arm D and link from the pins ff' and cross-piece F and replace it by another arm D and link, which is constructed of the desired height, which may be secured in place upon the said cross-piece by the pins ff' and the set-screw d' . I find, however, in practice that a single reciprocating arm will fit and work well upon a number of different machines. It will be understood that the pusher is fully extended at the moment when the link D^2 is in a horizontal position. By raising the plane of this horizontal position, which may be done by using a higher reciprocating arm, as above explained, the pusher will be extended more quickly, while by lowering the plane of the horizontal position, by using a lower reciprocating arm, the pusher will be extended at a later point of the stroke of the needle-bar. It is always advisable to have the plane of the said horizontal position as high as possible, always providing, however, that the stroke of the needle-bar will admit of a proper length of the link D^2 to give a sufficient stroke to operate the mechanism of the attachment. For low-arm machines the end of the reciprocating arm should be comparatively low, and for high-arm machines the end of the reciprocating arm should be comparatively high. It will be obvious that by timing the action of the pusher properly, as is done by my invention, the pusher is extended only when and while doing its work, and it is immediately retracted the moment its work is done, so that the feeding of the cloth will not be interfered with, as the pusher is never ex-

tended when the feed of the machine is at work. My construction also produces an attachment that works evenly and easily, doing away with all unnecessary vibration and producing regular and even stitching. In order to further adjust and regulate the stroke of the plunger G, I have formed the downwardly-depending arm F' with an elongated slot f^3 in its upper part. The arm F' is secured to the cross-plate F by a set-screw f^2 , the bearing-pins $f f'$ passing into the slot f^3 . The arm F' may therefore be adjusted on the cross-piece F by loosening the set-screw f^2 and moving the arm F' the one way or the other on the bearing-pins $f f'$, when it may be secured in the desired position by the tightening of the set-screw f^2 . In this manner the arm F' may be adjusted, so that it will give the plunger G, the butterfly H, and the pusher I just the proper motion to do the work properly.

In adjusting my attachment upon the bed-plate of the machine I place the attachment upon the bed-plate in such a manner that the pusher when extended will push the material to be sewn clear of the needle, and in practice I have found that it will be sufficient if the extreme outer edges of the jaws $i^3 i^4$ are in line with the outermost point of the circumference of the needle when the pusher is extended, and in some cases it is sufficient if the outer edges of the jaws $i^3 i^4$ are in line with the eye of the needle. When the attachment has been placed in this position upon the machine, it may be secured thereon by tightening the set-screw Y, which engages with the usual screw-threaded hole formed in the bed-plate of the machine.

It will be observed that in case the spring K should by any means become broken that the attachment will continue to work nevertheless, as the plunger G will in its forward movements strike the arms $h' h^2 h^3 h^4$ as it operates first on the one side and then the other of the butterfly H, turning the butterfly upon its pivot-pin H^3 , and consequently extending and retracting the pusher. I would call attention to the fact that in attachments as usually heretofore constructed the pusher remains extended at each alternate revolution of the machine, so that the cloth has very little time to resume its normal position after the pusher is retracted and before the next stitch.

In my invention the pusher is retracted the moment it has completed its work, and the cloth has a much longer time in which to resume its normal position, and moreover it is assisted to do so by the action of the feed of the machine, which straightens it out, as my pusher is never extended while the feed is working, as has been the case in attachments heretofore.

Having now fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is—

1. In combination, a needle-bar, an arm arranged to have longitudinal reciprocating movement, a link connecting the said arm with the needle-bar, links supporting the horizontal arm and a depending arm connected with the horizontal arm with means for pushing the cloth away from the needle operated by the movement of the depending arm, substantially as described.

2. In combination, a needle-bar, a pusher to engage the fabric, a longitudinally-reciprocating arm, a link connecting the same with the needle-bar, means for moving the pusher outwardly connected with the longitudinally-movable arm and means for retracting the pusher as the said means retract and during the feed of the cloth, substantially as described.

3. In combination, the pusher, a needle-bar, a longitudinally-movable arm, a link connecting the same with the needle-bar, pivoted links supporting the longitudinally-movable arm, a cross-piece carried by the links and means connecting the cross-piece with the pusher, substantially as described.

4. In combination in a sewing-machine attachment, a link connected with the needle-bar, an arm connected with the link, a pusher, connections between the said arm and the pusher to operate the same and means for retracting the pusher so that it will be retracted during the feeding of the cloth, substantially as described.

5. In a sewing-machine attachment, a reciprocating pusher, a lever system operating the pusher, a reciprocating arm, a link connected therewith and permanently engaging with and operated by the needle-bar of the sewing-machine operating the lever system and extending the pusher at each alternate downstroke of the needle-bar, and independent means for retracting the pusher within the attachment when it has completed its work so that the feed of the cloth takes place when the pusher is retracted.

6. In a sewing-machine attachment, a pusher, a plunger, a reciprocating arm, a link connecting the same with the needle-bar, a lever having two members, one member of which engages with the pusher and imparts a reciprocatory movement thereto, the other member of which extends into the path of the plunger and deflects the same at each stroke of the needle-bar alternately to one side or the other of the said two-part lever, and means for communicating reciprocatory motion to the plunger from the reciprocating arm.

7. In a sewing-machine attachment, a pusher, an oscillating lever for reciprocating the same, a reciprocating plunger for operating the oscillating lever, a reciprocating arm, pivoted links supporting said arm, a cross-

piece carried by the links, an arm depending therefrom and connected with the plunger and a link connecting the reciprocating arm with the needle-bar, substantially as described.

8. In a sewing-machine attachment, a pusher, a reciprocating arm, a link connecting the same with the needle-bar, a two-part lever which imparts a reciprocatory movement to the pusher, means for operating the two-part lever from the reciprocating arm, catches for locking the pusher and two-part lever in position, the said two-part lever having one of its side arms cut away somewhat so as to permit it to slip past the catch when the pusher has completed its work, and independent means for retracting the pusher.

9. In combination, a pusher, a two-part lever, one member of which engages the pusher and imparts a reciprocating movement thereto, a reciprocating plunger acting first on one side and then on the other of the two-part lever, spring-catch means controlling the movement of the pusher and two-part lever, a reciprocating arm, a link connecting the same with the needle-bar and means for operating the plunger from the reciprocating arm, substantially as described.

10. In combination, a pusher, a two-part lever, one member of which engages the pusher and imparts a reciprocating movement thereto, a reciprocating plunger acting first on one side and then on the other of the two-part lever, spring-catch means controlling the movement of the pusher and two-part lever, a reciprocating arm, a link connecting the same with the needle-bar and means for operating the plunger from the reciprocating arm and means for retracting the pusher as soon as it has completed its work to allow the cloth to feed without obstruction by the pusher, substantially as described.

11. In combination, a reciprocating arm, a link connecting the same with the needle-bar, a pusher, a two-part lever having its two parts superimposed and means for operating the two-part lever from the reciprocating arm, the said two-part lever being connected with the pusher to operate the same, substantially as described.

12. In combination, a reciprocating arm, a link connecting the same with the needle-bar, a two-part lever, a pusher connected with one part of said lever, a plunger connected with the reciprocating arm, one part of said two-part lever having an arm for deflecting the plunger from side to side and catch means for controlling the movements of the two-part lever and pusher, substantially as described.

13. In combination with a needle-bar, a pusher to act on the edge of the cloth and connections between the pusher and the needle-bar including an arm and a link connecting the same with the needle-bar, said connections operating to advance the pusher to force the edge of the cloth away from the needle as the needle-bar descends and said pusher being retracted as the needle-bar ascends, substantially as described.

14. In combination with a needle-bar, a pusher to act on the edge of the cloth, an arm and link connected with the needle-bar, means operated by the arm for forcing the pusher out and the cloth away from the needle as the needle-bar descends and a spring for forcing the pusher in as the needle-bar rises, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GEORGE JOHN STEVENS.

Witnesses:

WALTER J. SKERTEN,
W. M. HARRIS.