

No. 896,949.

PATENTED AUG. 25, 1908.

G. J. STEVENS.

ATTACHMENT FOR SEWING MACHINES FOR BLINDSTITCHING, SERGING,
OVERSEAMING, AND THE LIKE.

APPLICATION FILED DEC. 29, 1902.

2 SHEETS—SHEET 1.

Fig. 1.

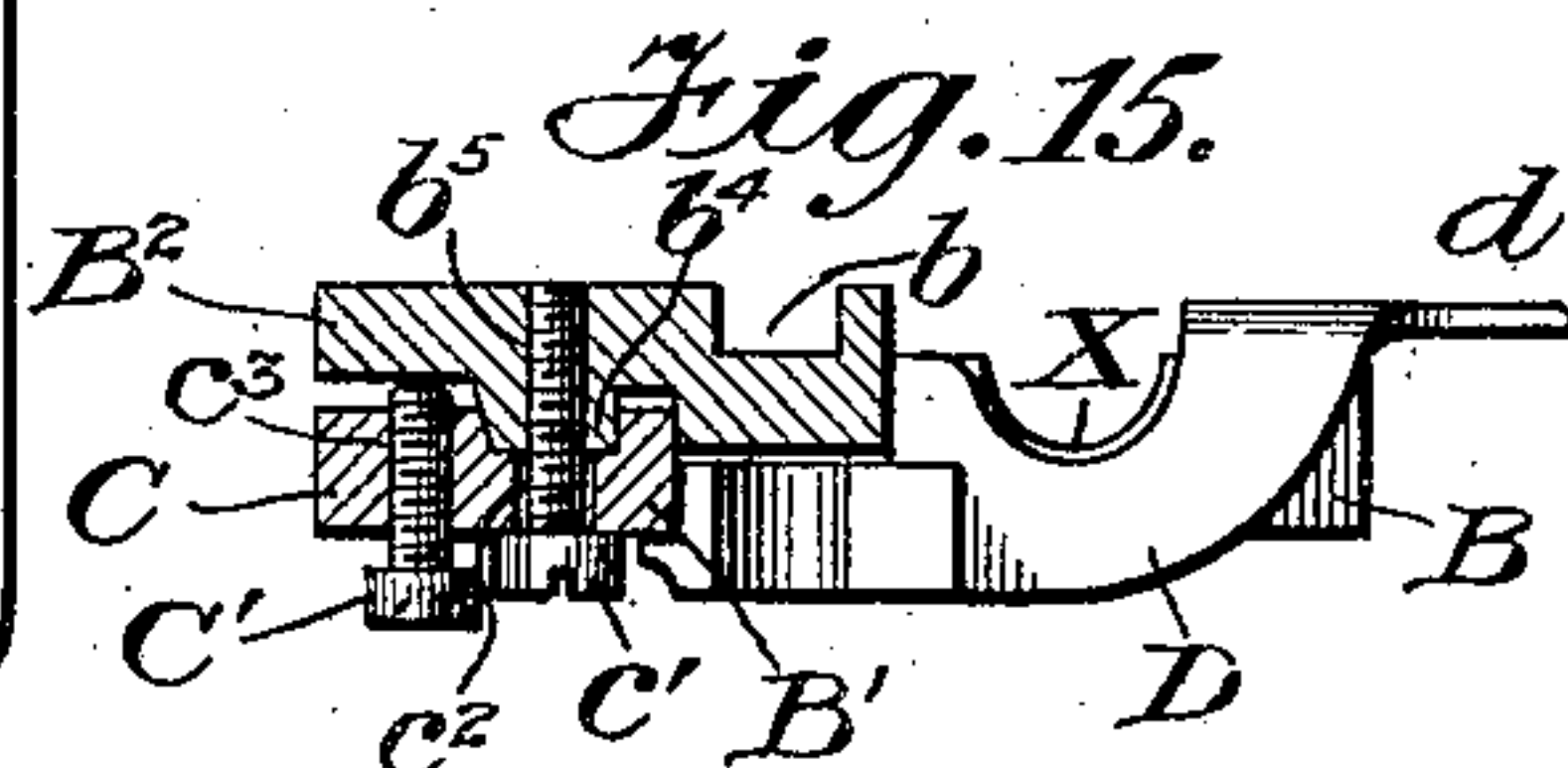
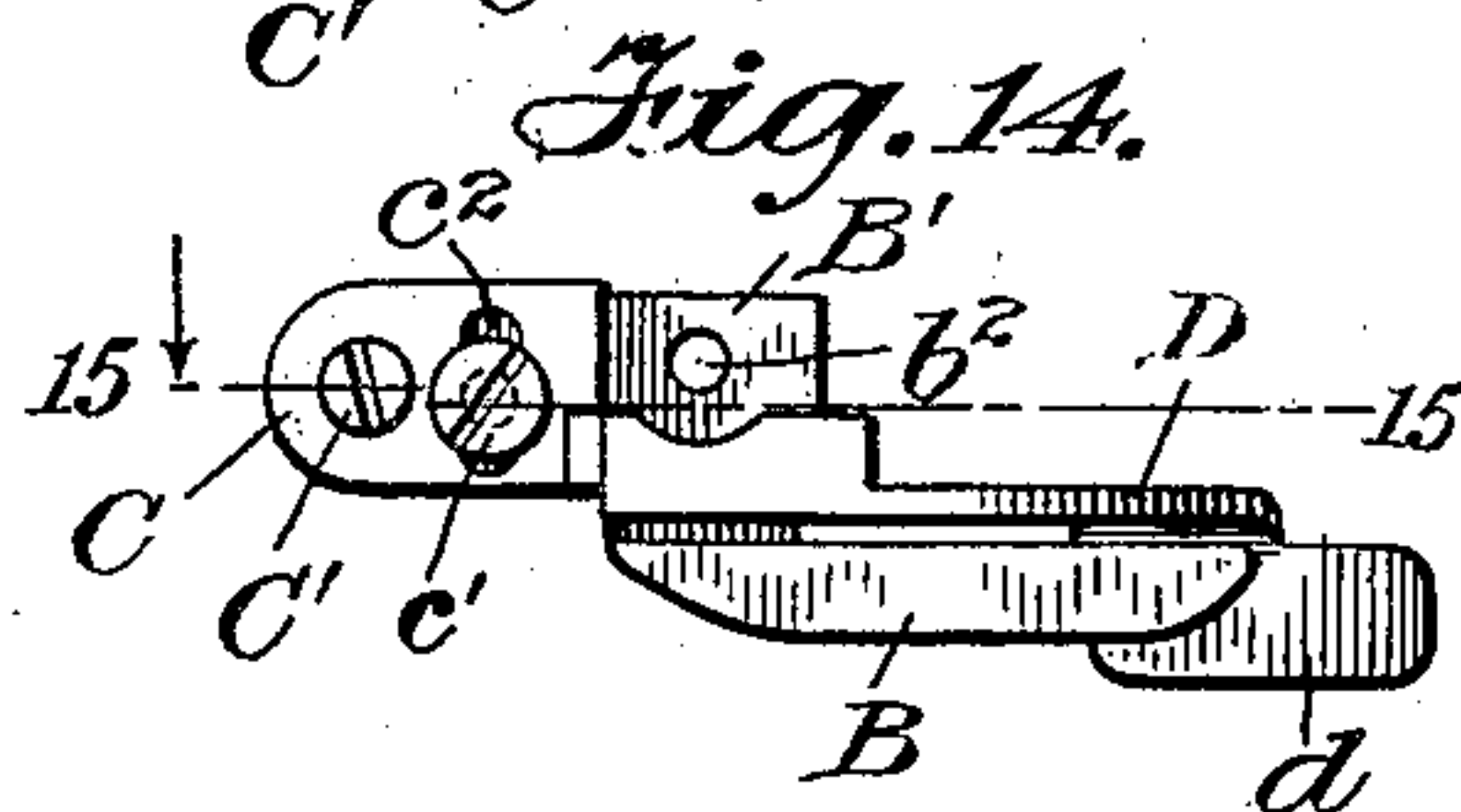
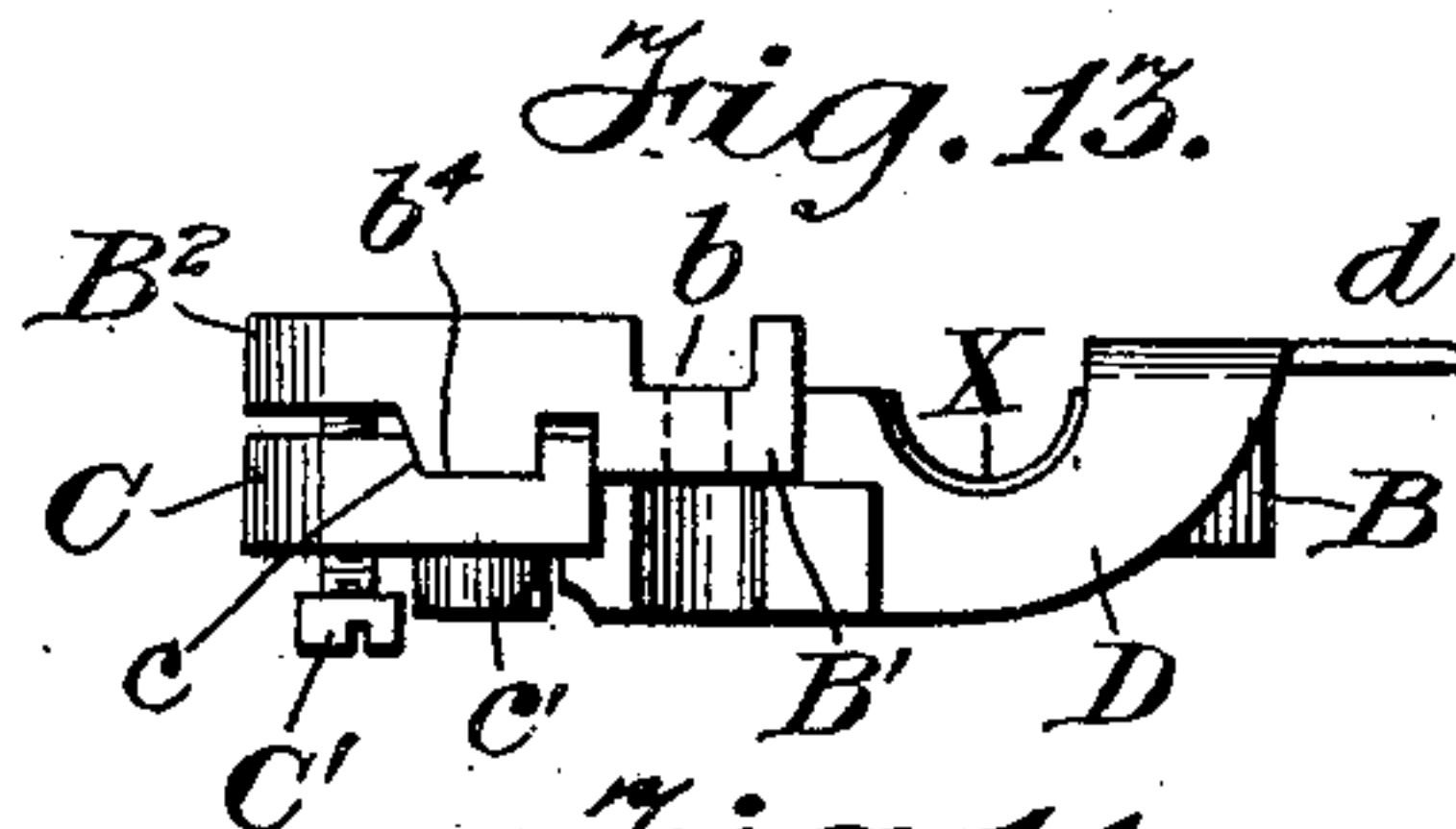
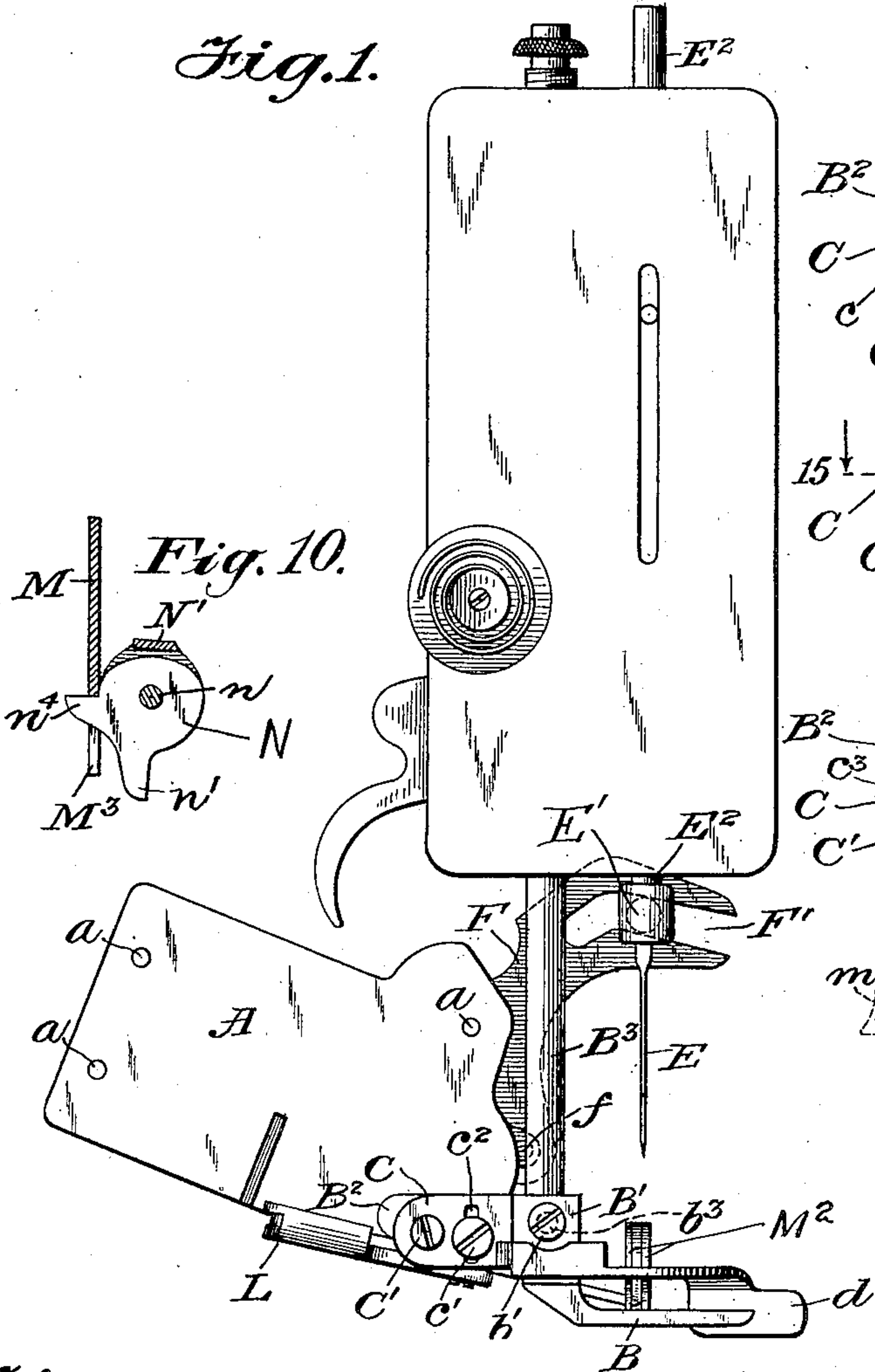


Fig. 11.

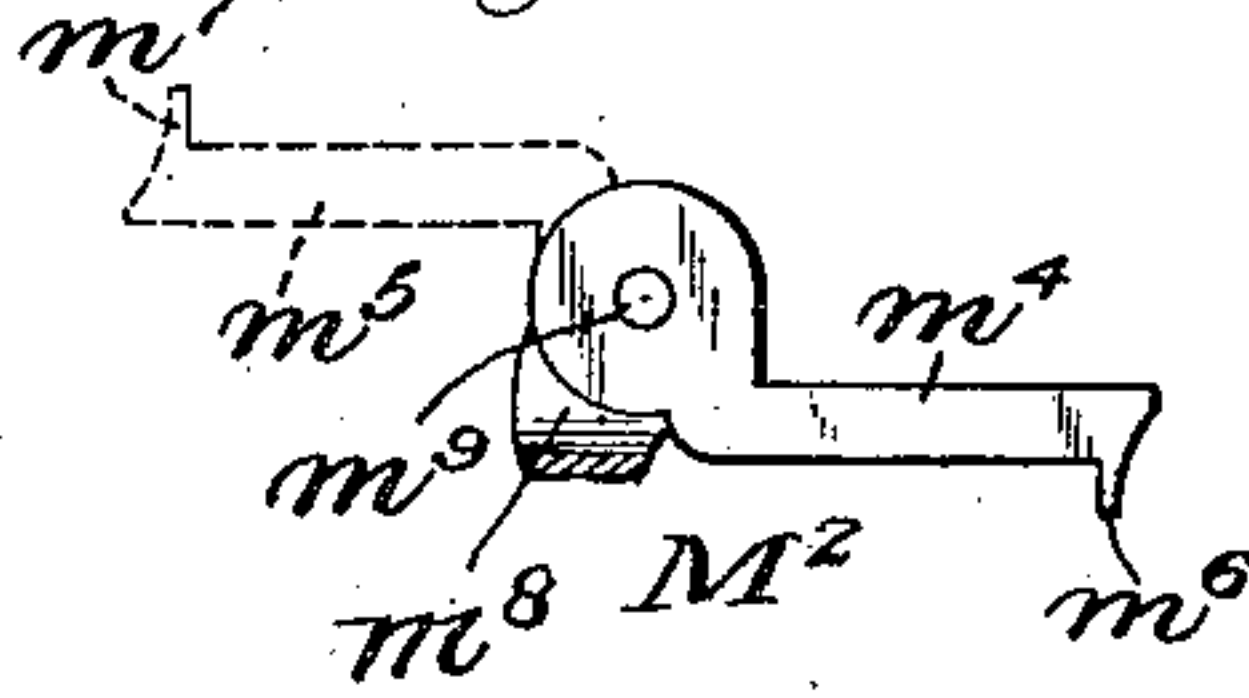


Fig. 16.

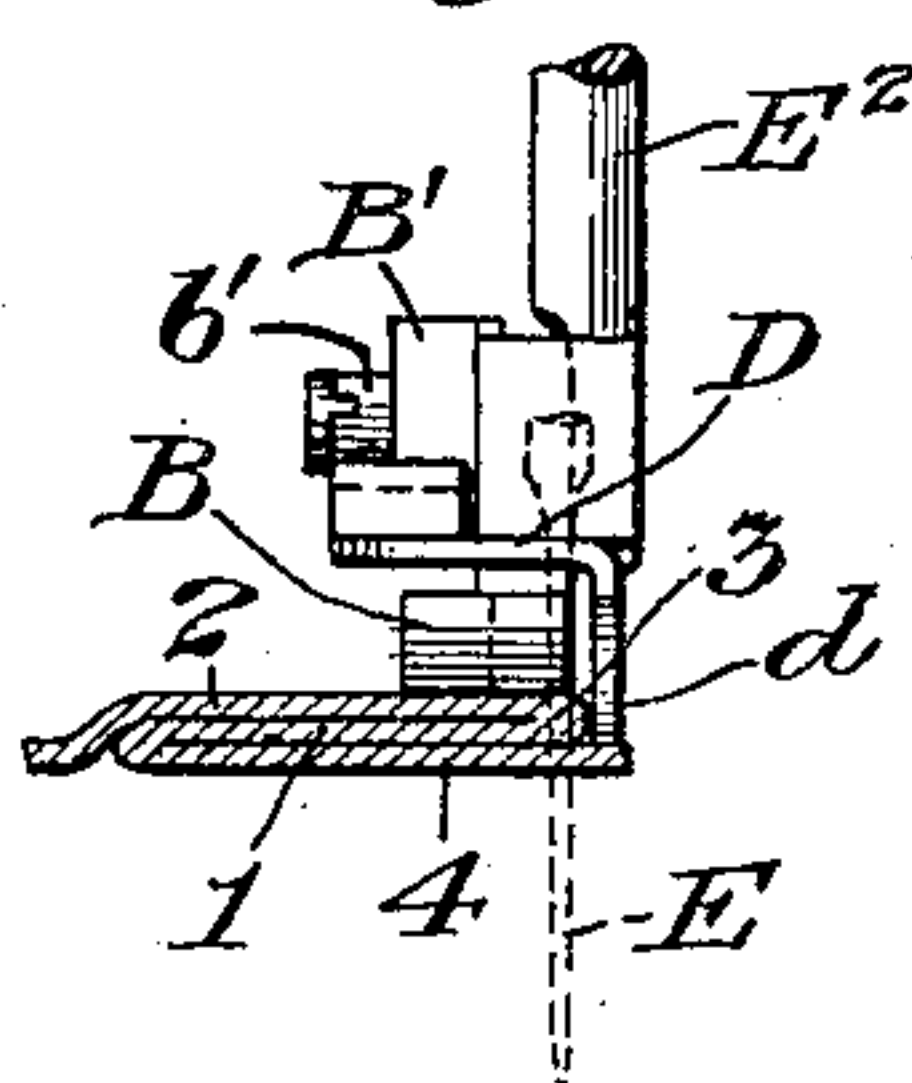
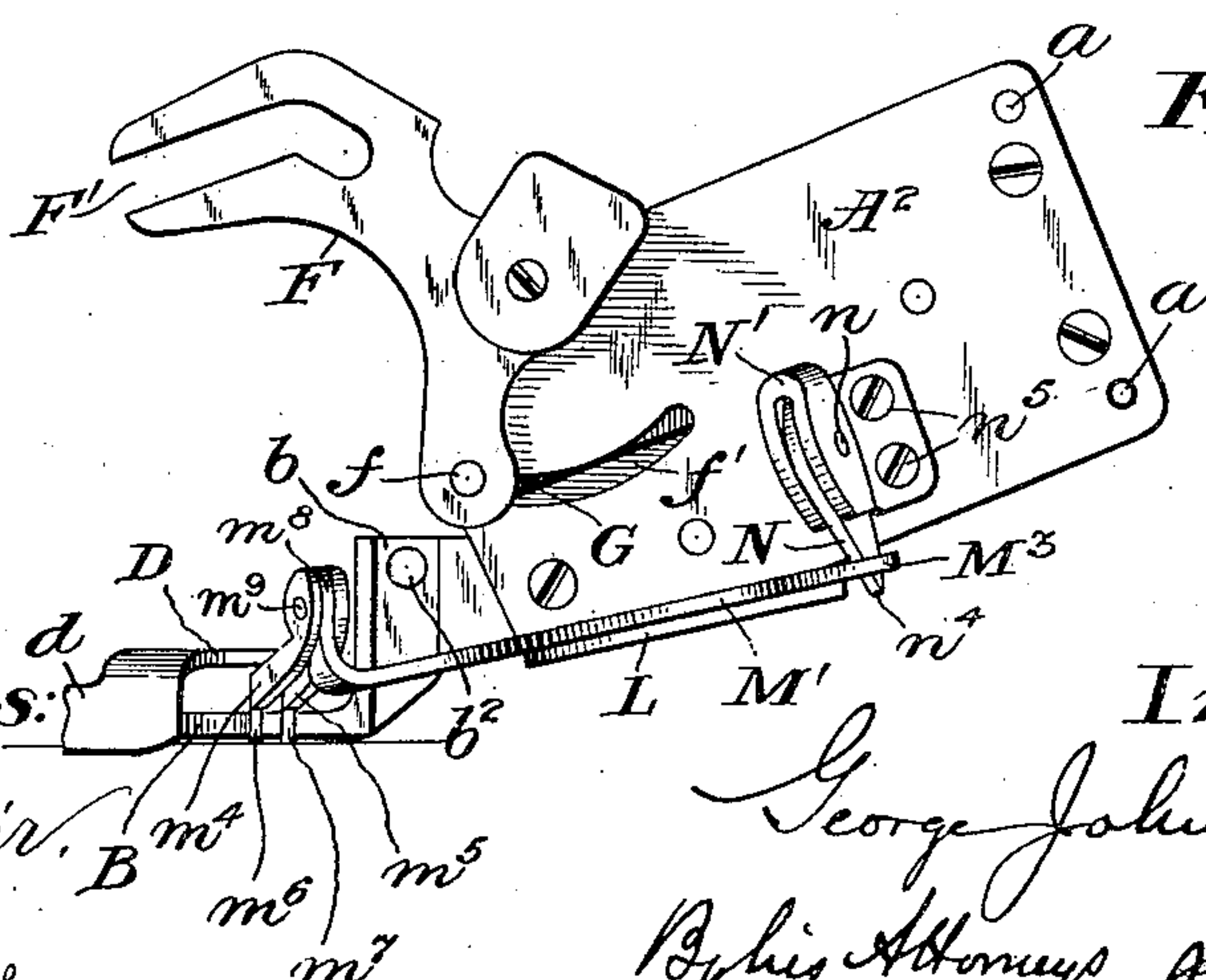


Fig. 2



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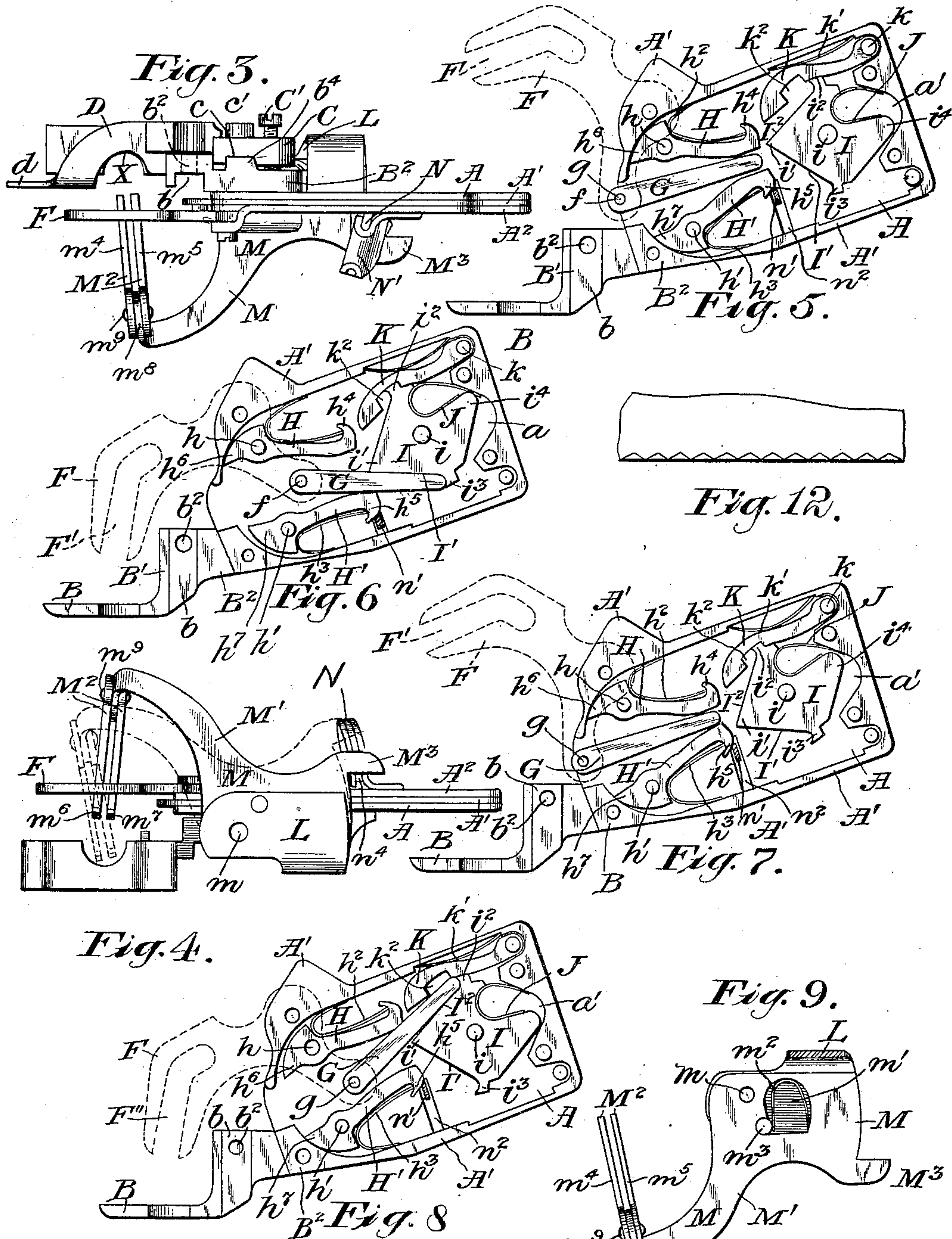
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J. B. McGirr.
H. M. Kuchel

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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 BLINDSTITCHING, SERGING, OVERSEAMING, AND THE LIKE.

No. 896,949.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed December 29, 1902. Serial No. 137,082.

To all whom it may concern:

Be it known that I, GEORGE JOHN STEVENS, of London, England, now temporarily residing in the city, county, and State of New York, have invented certain new and useful Improvements in Attachments for Sewing-Machines for Blindstitching, Serging, Overseaming, and the Like; and I do hereby declare the following to be a full, clear, and exact description of the same.

The object of my invention is to construct a simple, inexpensive and efficient attachment, and one, the motions of which shall be positive, avoiding the use of springs wherever possible; to provide means for attaching the device to the machine with which it is to be used in such manner as to leave the work-plate of the machine entirely clear for the work, and to permit of stitching being done in circular and irregular lines instead of a straight line only, as heretofore; also to provide means whereby the attachment may be thrown into and out of operative position as and when desired, so that plain stitching or blindstitching, serging, etc., may be done at will and without removing the attachment from the sewing machine, and to provide efficient means for properly guiding the cloth being stitched.

I accomplish the aforesaid object by the construction, arrangement and operation of parts hereinafter described, the particular features of novelty which constitute my invention being particularly pointed out in the claims appended to this specification.

Referring to the drawings, which form a part of this specification, and in which similar letters of reference refer to similar parts wherever they occur: Figure 1 is a side elevation of a portion of the head of a sewing machine, showing my invention applied thereto; Fig. 2 is a side elevation of the attachment looking at the opposite side to that shown in Fig. 1; Fig. 3 is a plan view; Fig. 4 is a plan view of the under side of the attachment, showing the pusher in its retracted position in full lines and in its extended position in dotted lines; Figs. 5, 6, 7 and 8 are side elevations of the attachment, the pusher and one of the side plates being removed, showing the interior thereof: Fig. 5 showing the parts in the positions they assume when the plunger has been retracted, and is ready at the next downstroke of the needle-bar to go forward

to extend the pusher; Fig. 6 showing the parts in the positions they assume when the plunger has made its forward stroke from the position shown in Fig. 5 and extended the pusher; Fig. 7 showing the parts in the positions they assume when the plunger has been withdrawn after extending the pusher, as shown in Fig. 6, and the pusher has been retracted by its spring; and Fig. 8 showing the parts in the positions they assume when the plunger makes its next forward stroke from the position shown in Fig. 7, to shift the alternator to the position shown in Fig. 5. In these views the arm of the elbow lever which is acted upon to work the pusher is shown in cross sections. Fig. 9 is a detail view of the pusher and its spring; Fig. 10 is a detail view of the elbow lever which extends the pusher; Fig. 11 is a detail view of the bifurcated end of the pusher; Fig. 12 is a plan view of a piece of cloth, showing the zigzag line of stitches produced by means of the action of the pusher; and, Figs. 13, 14 and 15 are respectively a plan view, a side elevation and central longitudinal sectional view on the line 15—15 of Fig. 14, of the presser foot and guide used with the attachment, and Fig. 16 is a front elevation of the presser foot and guide, showing a piece of cloth properly folded and placed under the foot in position to be stitched.

Heretofore, as far as I am aware, all attachments for blindstitching have been secured to the work plate of the machine, and, consequently, it has been possible to do only such work as could be fed and stitched in approximately a straight line. Moreover, it has been impossible to do plain stitching while such an attachment has been secured in position on the machine.

One of the objects of my invention, therefore, is to avoid these limitations, which I do by attaching my attachment to the presser-bar of the machine, thereby wholly removing it from the work plate, and greatly facilitating the handling of the work, and permitting of stitching in circular or irregular lines, instead of in an approximately straight line only as heretofore. I also, as hereinafter more fully explained, so construct my pusher that it may be thrown into and out of operation at will, thereby permitting plain stitching to be done without the removal of the attachment from the machine.

I construct the body of my attachment of three plates, A, A', A², the center of the middle plate A' being cut away, so that the three plates when secured together by screws, or
 5 rivets *a* (see Figs. 1 and 2) form a box-like structure, which contains most of the working parts.

Instead of the presser-foot usually employed, I construct a special foot B having
 10 an upwardly extending stem B', and a rearwardly projecting extension B², to which the body of the attachment, as above described, may be attached by screws or rivets, or, if preferred, this presser-foot and one of the
 15 side plates A or A² of the body may be formed integrally, the foot being formed out of the same sheet of metal and bent up into proper shape. The stem B' of the presser-foot B is provided with a vertical channel *b*,
 20 of a suitable shape to fit and receive the end of the presser bar B³, to which it is secured by a set screw *b'*, which passes through an aperture *b*² in the stem B' and engages in a screw threaded hole *b*³ in the presser-bar B³.

25 The rearwardly projecting extension B² is provided with a vertical rib *b*⁴ about midway of its length, and to this rib, *b*⁴, I attach a block C, having a vertical groove *c*, adapted to fit and engage with the vertical rib *b*⁴, the
 30 block C being secured to the extension B² by a set screw *c'*, which passes through a slot *c*² in the block C, and engages in a screw-threaded hole *b*⁵ in the vertical rib *b*⁴. This slot *c*² permits the block C to be adjusted
 35 vertically up and down, on the extension B². The block C carries a guide D, which may be formed integral with the said block or be secured thereto in any desired way. The guide D is preferably a plate which extends
 40 out from the block C over the presser-foot, around a recess X, which I form in the presser-foot in the side next to and opposite to the needle E, and terminates in a downwardly extending flange *d*, which passes
 45 down by the side of the presser-foot next to the needle E, from a point near the said needle at one end, to a point a little beyond the front end of the presser-foot at the other end. This flange *d*, serves as a guide for the
 50 cloth when stitching, and in order to make the flange *d* adjustable toward and away from the needle E, in order to be able to properly regulate the depth of the stitch and particularly in order to blindstitch materials
 55 of varying degrees of thickness, I provide a set screw C', which passes through a screw-threaded hole *c*³ in the rear end of the block C, and bears against the side of the extension B², opposite the needle. By tightening
 60 the set screw C', the rear end of the block C is forced away from the extension B², and the front end of the flange *d* is carried nearer to the needle E, while by turning the set screw C' in the other direction, the front end
 65 of the flange *d* is allowed to approach the

needle, and I find that with this construction I can obtain all the adjustability requisite to blindstitch any ordinary thickness of material.

To the front and upper end of the body of the attachment I pivot an elbow lever F, the
 70 front arm of which is provided with a cam-way F', in which the set screw E', which secures the needle E to the needle-bar E², works as the said needle-bar makes its up
 75 and down strokes, the elbow lever F thereby imparting motion to the parts in the interior of the attachment as hereinafter explained. The other arm of the elbow lever F is provided with a pin *f* which extends into the interior of the body of the attachment through
 80 a curved slot *f'* formed in the plate A², and engages with an eye *g*, formed in one end of a reciprocating plunger G, these parts being so arranged that as the needle-bar makes its
 85 up and down strokes, the elbow lever F causes the plunger G to reciprocate backward and forward, in the interior of the attachment.

At the sides of the plunger G, I pivotally
 90 secure upon their pivot pins *h* *h'*, the regulating arms H H' having springs *h*² *h*³, which act constantly to press the fore ends of the said arms toward and against the plunger. The arms H H' are provided with hooks *h*⁴ *h*⁵
 95 on their free ends which serve to hold one end of their respective springs *h*² *h*³, the other ends of these springs having a bearing against the side walls of the middle plate A'. The arms H H' are also each provided with a tail
 100 piece, *h*⁶ *h*⁷, which act as stops, striking against the inner side wall of the middle plate A' and preventing the springs *h*² *h*³ from carrying the arms H H' too far inwardly, when the plunger G in its forward strokes is carried
 105 away from either of the said arms, as shown in Figs. 6 and 8. The hooked end *h*⁵ of the arm H', also engages with the elbow lever that operates the pusher, and assists the plunger G in working the said lever, as
 110 will be hereinafter more fully explained.

In the path of the plunger G, and in the end of the attachment opposite to the elbow lever F, I pivot on its pivot pin *i*, a four-
 115 armed, oscillating switch I, the arm *i*¹ of which projects outwardly into the path of the plunger G, and turns the said plunger alternately first to one and to the other side of the switch I. The switch I is provided with
 120 two projecting side arms, *i*² *i*³, which are acted upon by the plunger G alternately, in its forward movements, and with a rearwardly projecting fourth arm *i*⁴, which works within a curved way *a'*, formed in the rear
 125 end of the middle plate A'. The arm *i*⁴ acts as a stop, striking the side of the curved way *a'* when the switch I is carried in one direction by the plunger G, and also as a bearing for a spring J, the other end of which has a bearing against the side of the curved way
 130

5 a' , which constantly acts against the arm i^4 to turn the switch I toward the catch K, which I pivot at one side, and above the switch I, upon a pivot pin k . A small spring k' , both ends of which have a bearing against the side wall of the middle plate A' , bears against the side of the catch K, and constantly acts to press it toward and against the switch I. The catch K is provided with a recess k^2 in its free end, which is adapted to receive the arm i^2 of the switch I, and to hold the said switch until the catch K is released by the plunger G.

15 The lower edge of the plate A is formed with an extension piece L, which is bent around under the body of the attachment, so as to form a bearing for the pusher M, which is pivoted to the extension piece L, upon a pivot pin m . The pusher M may be of any desired shape or construction. I have shown it in the drawings as formed in two parts: A flat plate M' , and a bifurcated end piece M^2 , pivoted to the front end of the plate M' . A portion of the center of the pusher M is cut away, forming an opening m' , within which is a spring m^2 , one end of which has its bearing against a pin m^3 , secured to the extension piece L, the other end of the said spring having its bearing against the side wall of the opening m' , being so arranged that the said spring shall constantly act upon the pusher M to retract it from the presser-foot B, when the attachment is in use. The front end m^8 of the plate M' is bent upwardly to permit of the pivoting of the bifurcated end piece M^2 thereto on its pivot pin m^9 . By thus supporting the pusher pivotally it may be raised from its working position by simply turning the same on its pivot. The arms m^4 , m^5 of the end piece M^2 , have feet m^6 m^7 , which rest upon the work plate of the machine when the attachment is in use, the arms m^4 m^5 , passing one on either side of the needle E when the pusher M is extended.

45 The plate M' of the pusher is provided with a rearwardly projecting arm M^3 , which extends into the path of an elbow lever N, which is pivoted on a pivot pin n in a hood N' , which is secured to the side of the plate A^2 , by screws n^5 , as shown in Fig. 2. The arm n' of the elbow lever N, passes through slots as n^2 , formed in the plates A, A^2 , that in the plate A shows as n^2 , or in other words, extends entirely through the body of the attachment.

55 The arm n' of the elbow lever N is acted upon by the hooked end h^5 of the regulating arm H' , when the latter is depressed by the action of the plunger G, as hereinafter described, and the lever N is thereby turned upon its pivot pin, causing the other arm n^4 to act upon the arm M^3 of the pusher M, and turning the pusher upon its pivot-pin m so that the said pusher will be extended, that is to say, the bifurcated end piece M^2 will be

moved toward the presser-foot B, as shown in dotted lines in Fig. 4.

In carrying my invention into operation, the attachment is secured in position upon the presser-bar B^3 , by the set screw b' , as shown in Fig. 1, the set screw E' , which secures the needle E to the needle-bar E^2 , being introduced into the camway F' of the elbow-lever F, as this is being done. When the attachment is thus secured in position ready for work, the feet m^6 m^7 of the bifurcated end M^2 of the pusher M rest upon the work plate of the machine. Assuming then that the needle-bar E^2 is at the uppermost point of its stroke, and that the parts in the interior of the attachment are in the positions shown in Fig. 5, when the needle-bar E^2 makes its next down stroke, it will depress the elbow lever F, and the pin f , engaging in the eye g' , of the reciprocating plunger G, will cause the said plunger to move forward, being properly guided to make its stroke by the regulating arms H H' . As the plunger G comes forward, it strikes the arm i' of the switch I, and is deflected thereby, so that it will travel up the side I' , of the said switch, and striking the arm i^3 will turn the switch I upon its pivot pin i , as shown in Fig. 6. As the switch I is so turned, the catch K, actuated by its spring k' catches the arm i^2 , in the recess k^2 , and holds the switch I against further movement until the catch K is positively released by the plunger G at its next forward stroke.

While the plunger G has been making the forward stroke above described, and as it travels up the side I' of the switch, it depresses the hooked end h^5 of the regulating arm H' , and the hooked end h^5 of the arm H' in turn acts upon the arm n' of the elbow-lever N, turning the said lever upon its pivot pin n , thereby causing the other arm n^4 of the said lever N to act upon the arm M^3 of the pusher M, and turning the latter upon its pivot pin m , extends the bifurcated end M^2 of the pusher, the arms m^4 m^5 of the part M^2 passing one on either side of the needle E, as the latter makes its down stroke, and pushes the edge of the cloth being stitched just outside of the path of the needle, so that a stitch is formed outside of the cloth. The parts G, H, H' , I and K are then in the positions shown in Fig. 6. On the following up stroke of the needle-bar, the pusher G is withdrawn by the elbow-lever F to the position shown in Fig. 7, and the moment the free end of the said pusher leaves the side I' of the switch, the spring m^2 acts upon the pusher M, retracting it to the position shown in full lines in Fig. 4. At the next down stroke of the needle-bar, the lever F moves the plunger G forward again, and this time, owing to the position of the switch I, the plunger strikes the other side of the arm i' , and is deflected thereby, so that it travels up the side I^2 of the switch, and first striking the catch K, lifts it from engagement

with the arm i^2 ; then as it moves still further forward, it strikes the arm i^2 , and turns the switch I into the position shown in Fig. 8, in which position it is held by the spring J until it is again moved at the next forward stroke of the plunger G. The last described stroke of the plunger may be called a silent stroke, as during this stroke the pusher M is not moved.

It should be observed that by my construction, the movements of the pusher M are so timed that the said pusher is never extended while the feed of the machine is feeding the work forward. In some attachments of this class, the pusher remains extended during one entire up and down stroke of the needle-bar, and remains retracted during the next up and down stroke, alternately, so that the pusher is extended at every other stitch, and while the feed of the machine is feeding the work. In the case just described, the feed pushes the material against and forces it around and past the pusher while it is extended, causing irregularity in work, objectionable vibrations, and materially increasing the work of the machine. In my invention, the spring m^2 retracts the pusher M before the feed of the machine commences to work, and the pusher is never extended during the feeding.

The cycle of operations above described are repeated at every alternate down stroke of the needle-bar, the pusher being extended at one down stroke and retracted at the next down stroke. The retraction being effected by the spring before the feed commences to work.

The cloth to be stitched is folded as shown in Fig. 16. A hem 1 is first folded up and then the body of the material 2 is carried back over the hem 1, leaving a fold 3, with a single layer of cloth 4 underneath the fold 3, and projecting beyond the said fold to a distance approximately equal to the thickness of the material being stitched. The cloth thus folded is then placed in position under the presser-foot B, the fold 3 resting against the side of the flange d of the guide D, the single layer 4 of the cloth being under the said flange d , and is stitched in this position. When the pusher is retracted, the needle E passes down through the cloth in the fold 3, entering and passing out of the same side of the cloth, and passes down through the single layer of the cloth 4, this stitch being made in the cloth; at the next stitch the pusher M pushes the edge of the cloth clear of the path of the needle, which makes a stitch on the outside of the cloth. This operation being alternately repeated as the stitching progresses, a zigzag line of stitches is produced on one side only of the cloth, as shown in Fig. 12 the single layer is securely joined to the fold, and a true blindstitching is produced.

I claim as my invention:—

1. In combination, the work plate, the needle a pusher to act in conjunction with the needle, a plate having a recess opposite the pusher to receive the cloth, means for operating the pusher, said pusher being supported to be thrown into and out of operative position, said pusher with the plate and operating means being arranged above the work plate to leave the same clear, substantially as described.

2. In combination with a pusher, means for operating the same comprising a reciprocating oscillating plunger, a switch controlling the said plunger and regulating arms between which the plunger moves to be controlled thereby, said regulating arms being yielding under the pressure from the plunger, substantially as described.

3. In combination with a pusher, means for operating the same comprising a reciprocating oscillatory plunger, a yielding regulating arm on each side of the plunger, a stop associated with each of said arms to limit the movement thereof in one direction and a switch for controlling the movement of the plunger, substantially as described.

4. In combination with a pusher, means for operating the same comprising a reciprocating oscillatory plunger, a regulating arm on each side of the plunger, a switch for controlling the plunger and catch means for controlling the switch, said catch means being in turn controlled by the plunger, substantially as described.

5. In combination, a pusher, a reciprocating oscillatory plunger, a switch for controlling the plunger, and a regulating arm for the plunger, said regulating arm serving to operate the pusher, substantially as described.

6. In combination, a pusher, a reciprocating oscillatory plunger, a regulating arm on each side of the plunger, each of which is arranged to yield, a switch for controlling the plunger, the said pusher being arranged to be operated by one of the regulating arms, substantially as described.

7. In combination with a pusher, a reciprocating oscillatory plunger, a regulating arm pivoted on each side of the said plunger and arranged to yield by pressure from the plunger, and catch means for controlling the switch, the said pusher being operated by one of the regulating arms, substantially as described.

8. In combination with a horizontally moving pusher having a bifurcated end, a reciprocating oscillatory plunger reciprocating substantially horizontally, a switch, said plunger and switch moving on horizontal axes, means for operating the plunger and means intermediate the plunger and pusher for operating the latter, substantially as described.

9. In combination with a presser foot, a pusher, operating means for the pusher supported by the presser foot or bar and a guide for the work supported by the presser bar, substantially as described.

10. In combination with a pusher having a bifurcated end, a reciprocating oscillating plunger reciprocating substantially horizontally, a pivoted oscillating switch, said switch and plunger turning about horizontal axes and means controlled by the combined action of the plunger and switch for operating the pusher, substantially as described.

11. In a sewing machine attachment, the combination with a pusher, a plate carrying said pusher and arranged to swing in a horizontal plane, of a plunger operatively connected with said pusher and arranged to reciprocate in a vertical plane, and means for reciprocating said plunger.

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

GEORGE JOHN STEVENS.

Witnesses:

H. M. KUEHNE,
OTTO MUNK.