

(Model.)

4 Sheets—Sheet 1.

S. BORTON & C. H. WILLCOX.
TRIMMER FOR SEWING MACHINES.

No. 255,578.

Patented Mar. 28, 1882.

Fig. 1.

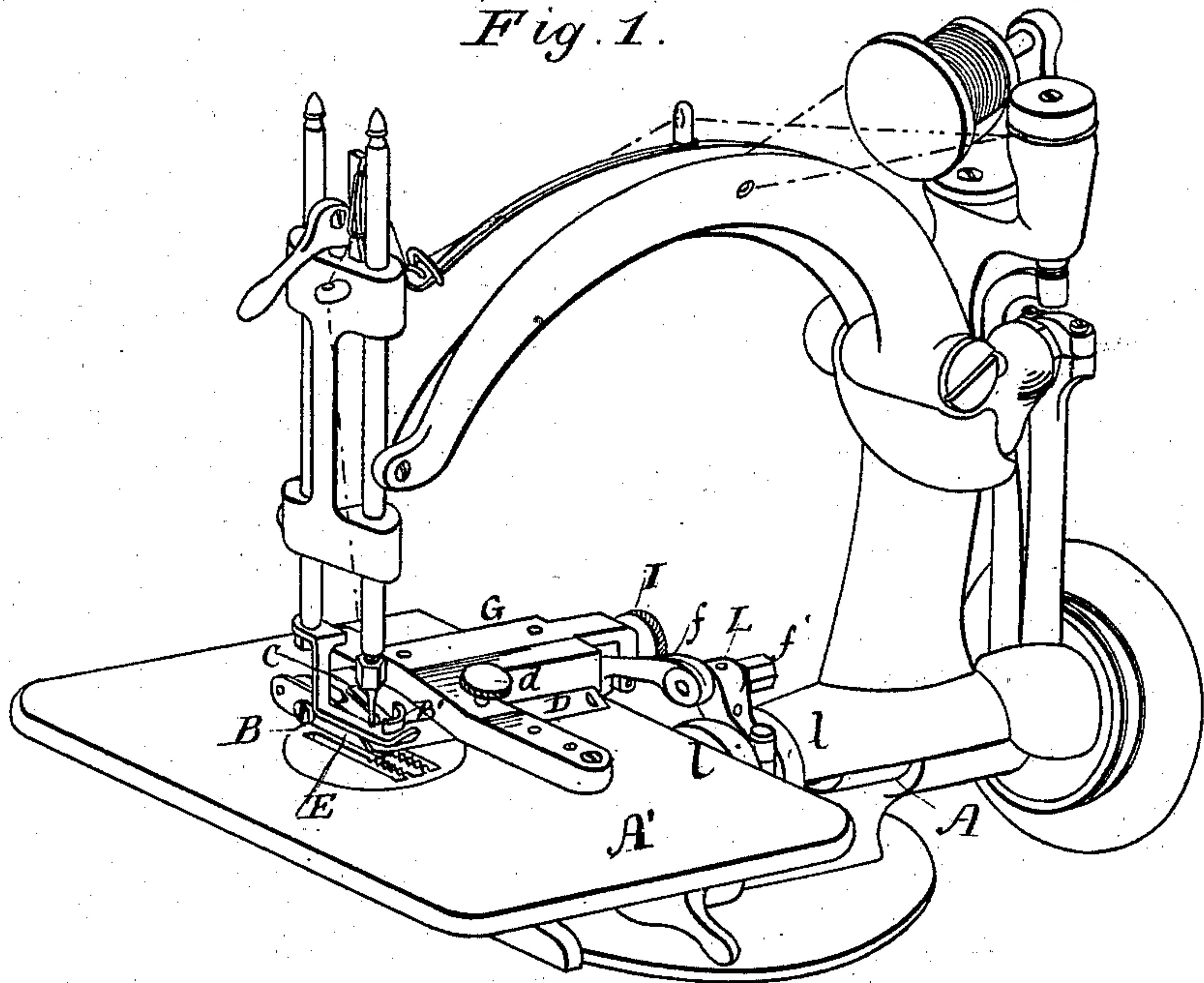


Fig. 6.

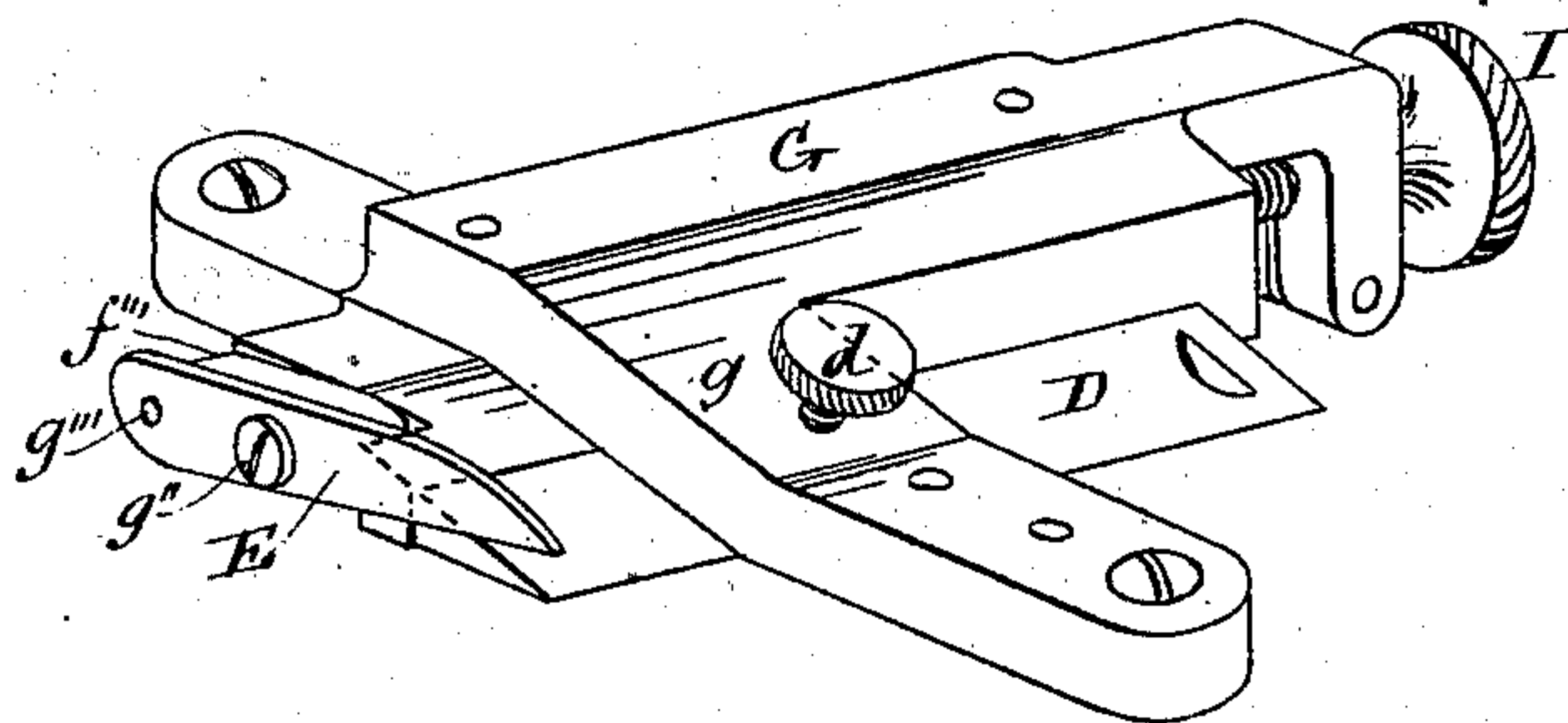


Fig. 6.^a

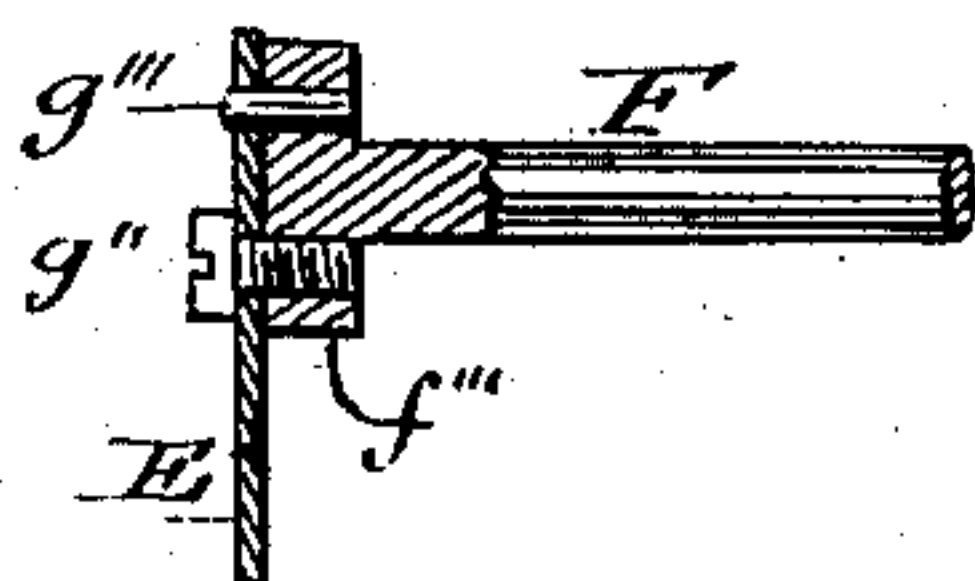
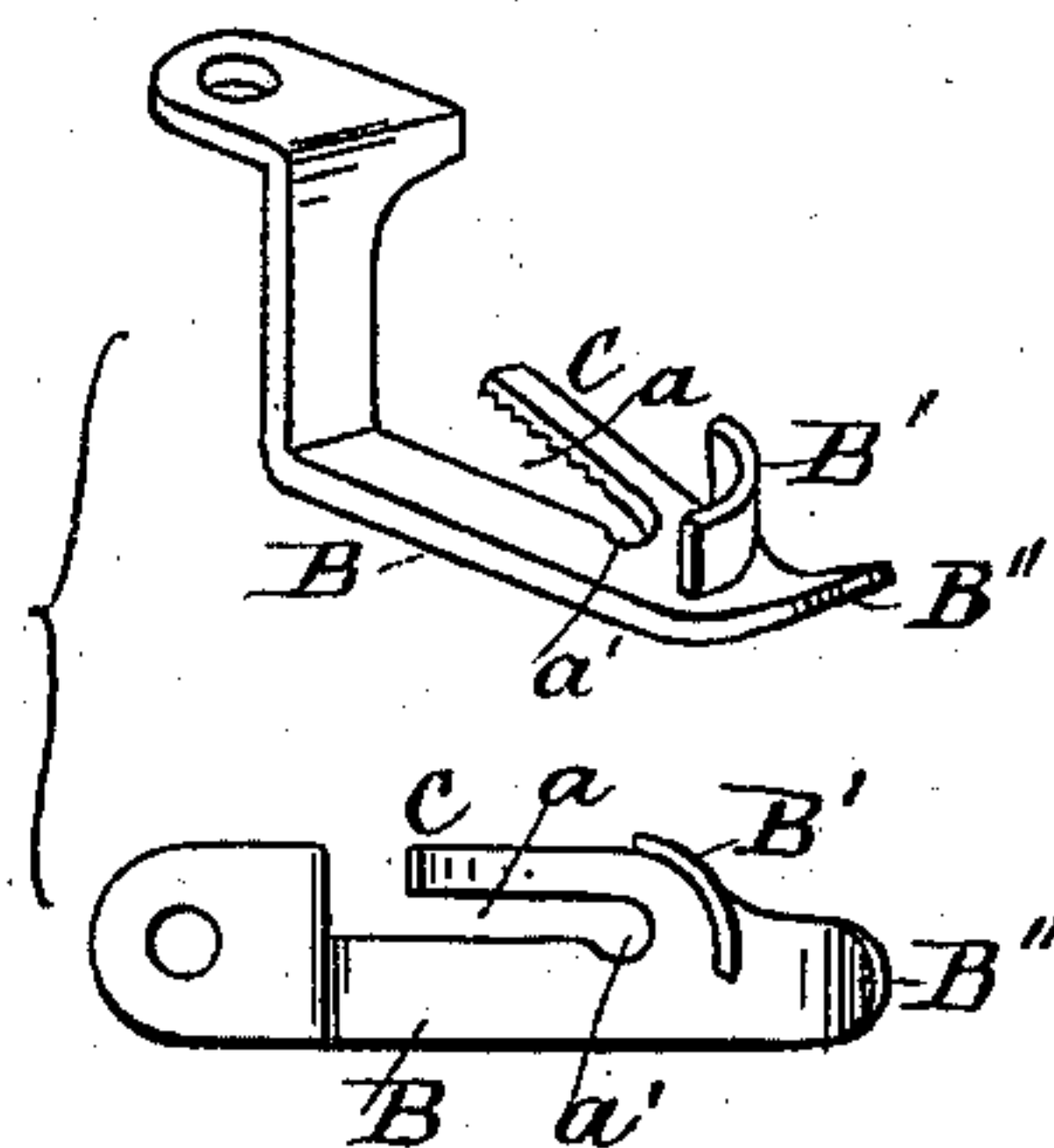


Fig. 7.



Witnesses.
E. E. Massow
Philip Maurer

Inventors:
Stockton Borton and
Charles Henry Willcox by
A. Pollock atty.

(Model.)

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Fig. 2.

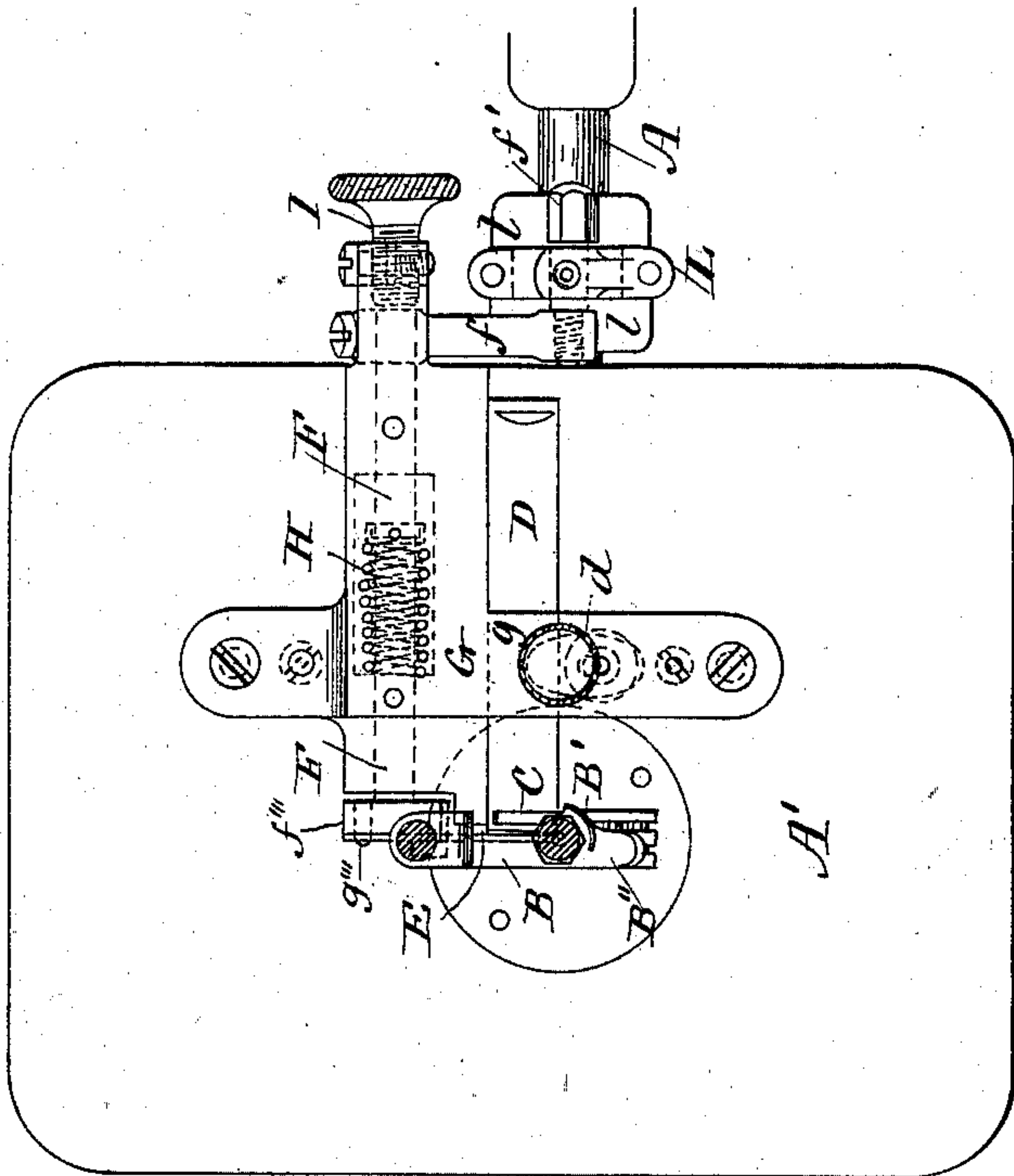
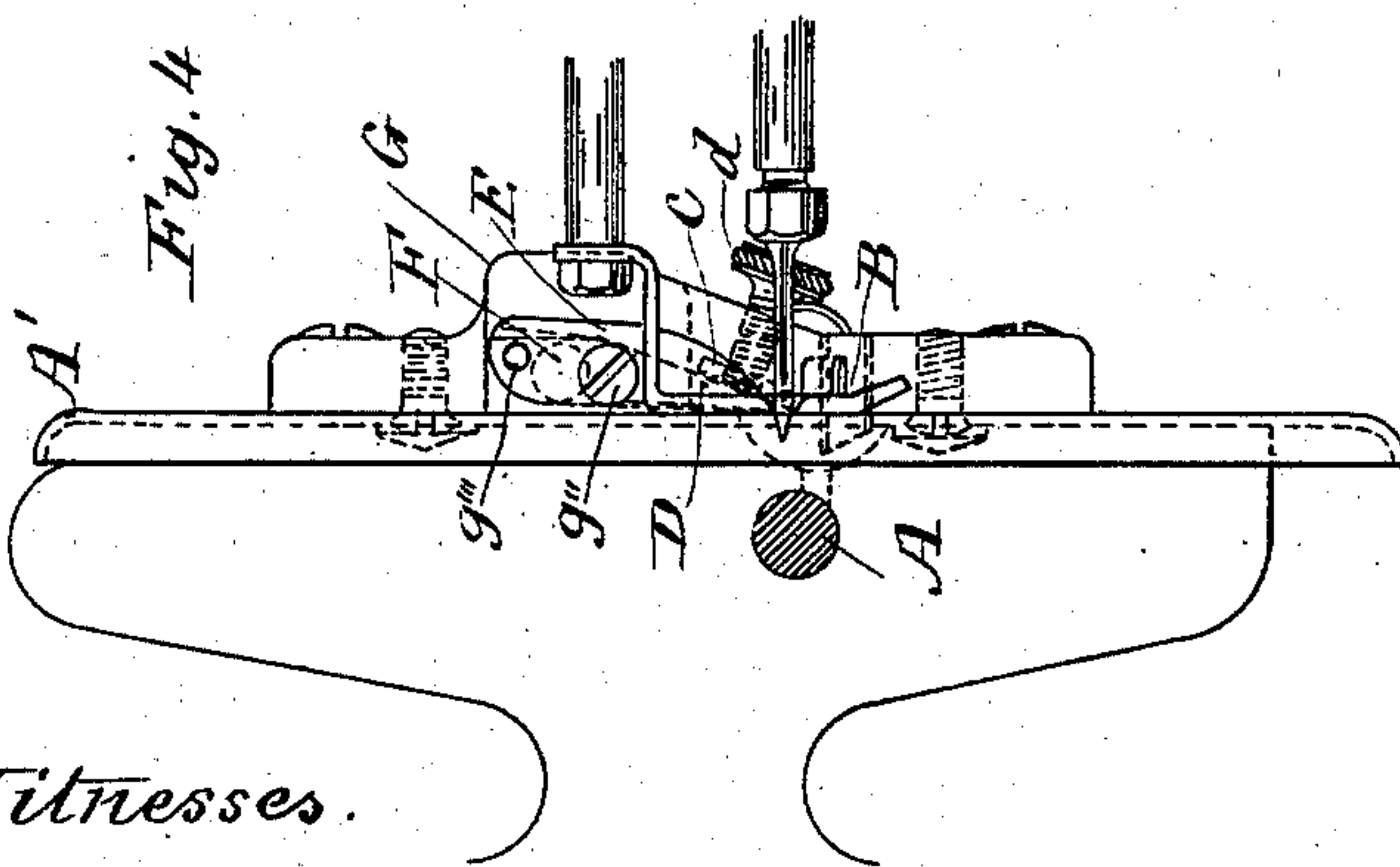


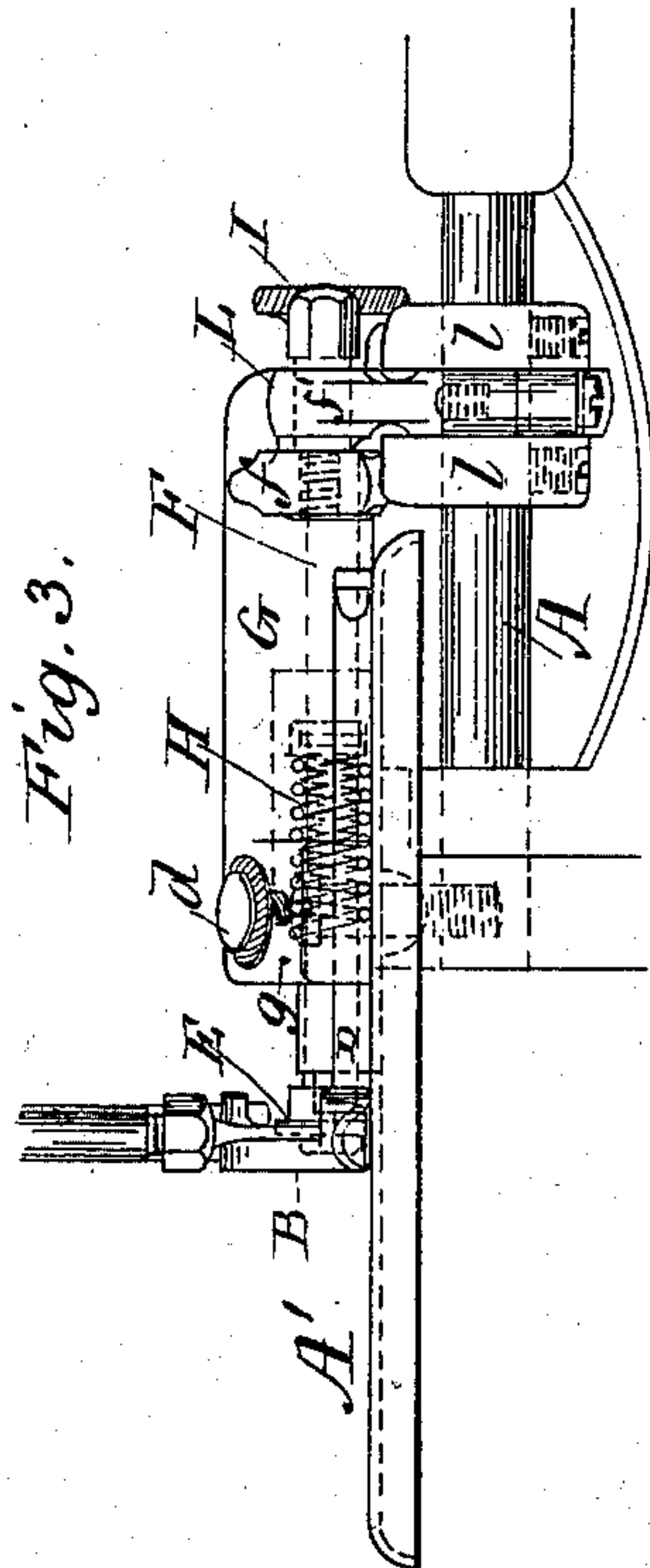
Fig. 4



Witnesses.

E. E. Masson
Philipillaur

Fig. 3.



Inventors:

Stockton Borton and
Charles Henry Willcox
by A. Pollock atty

(Model.)

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S. BORTON & C. H. WILLCOX.
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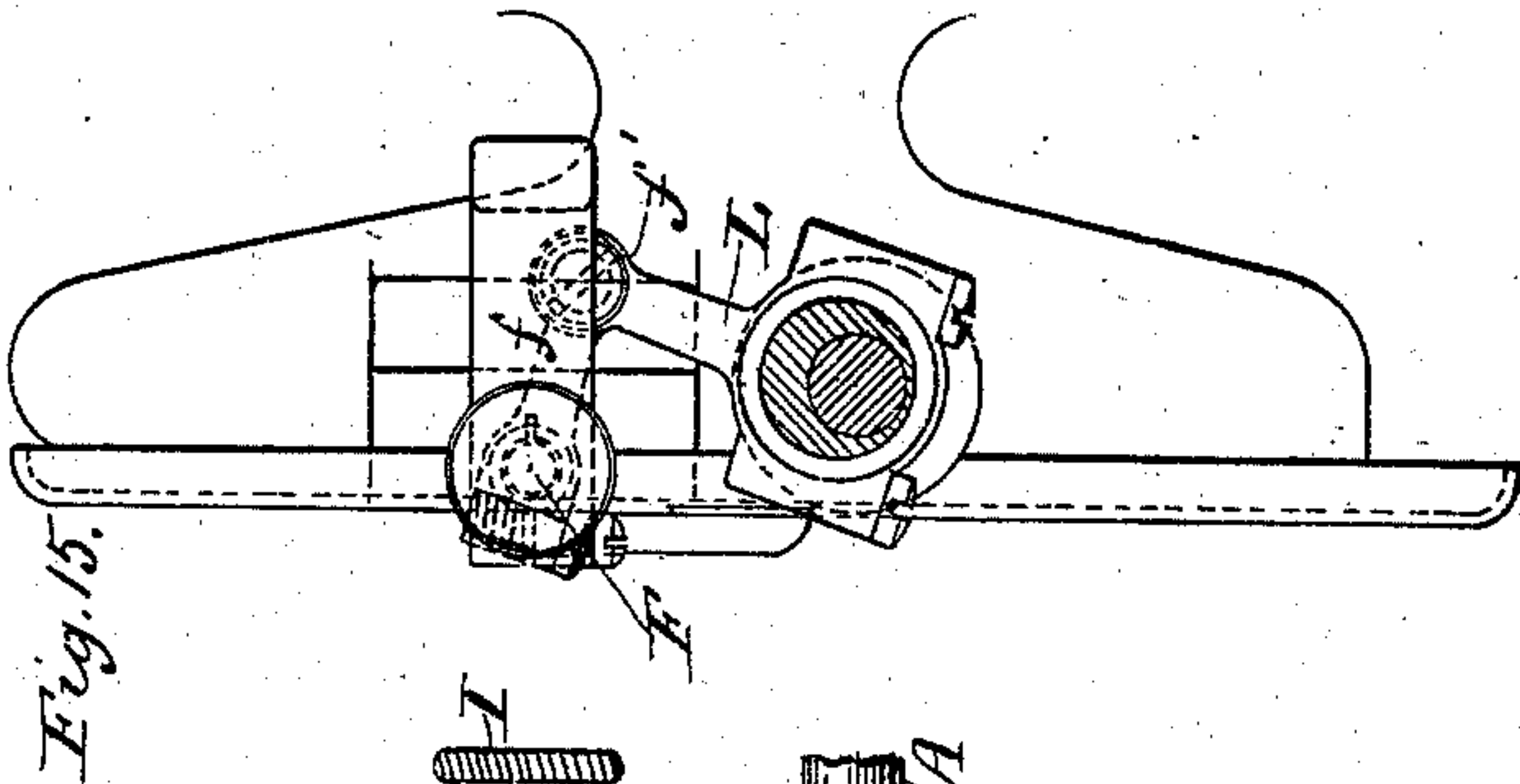


Fig. 15.

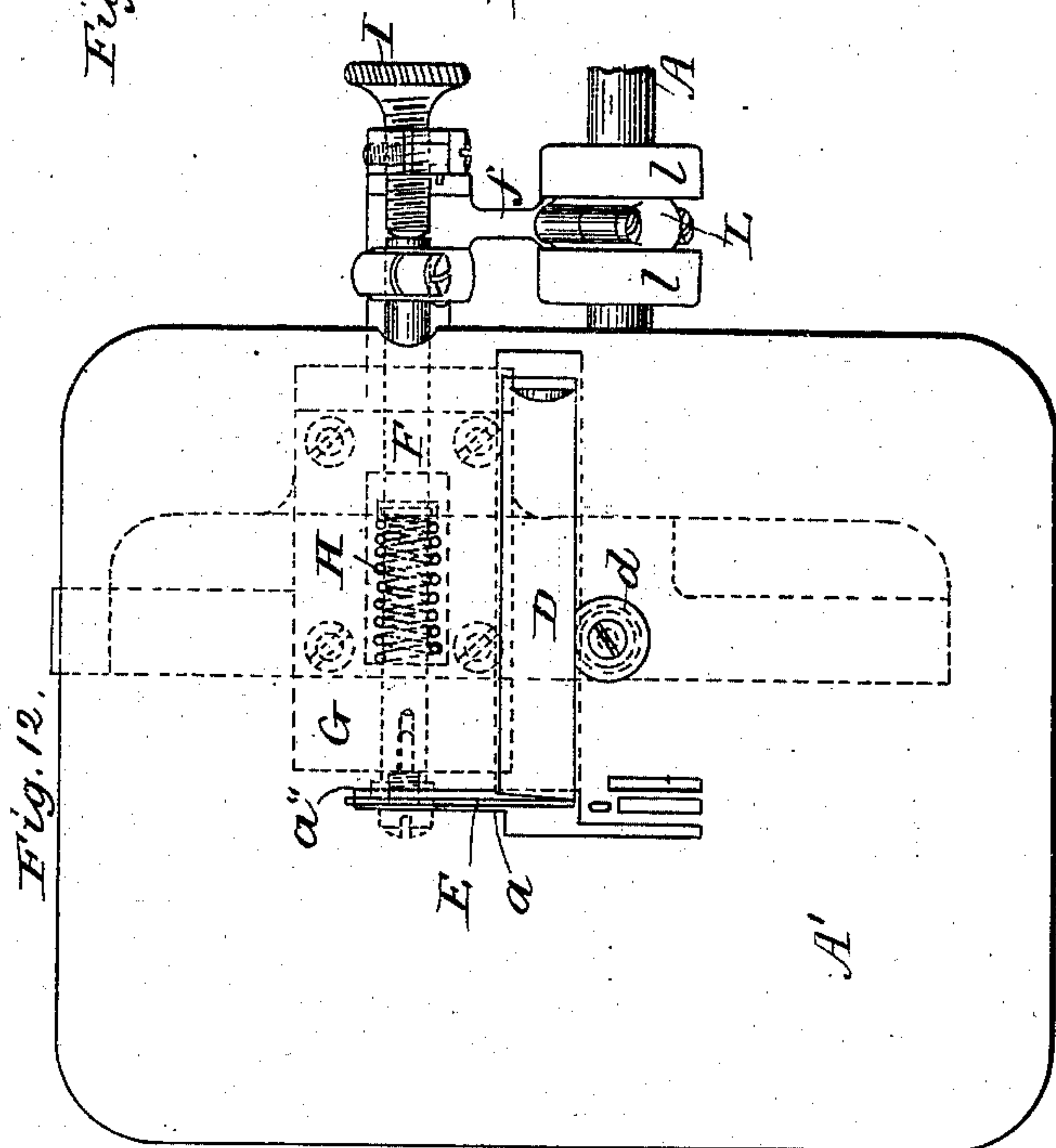


Fig. 12.

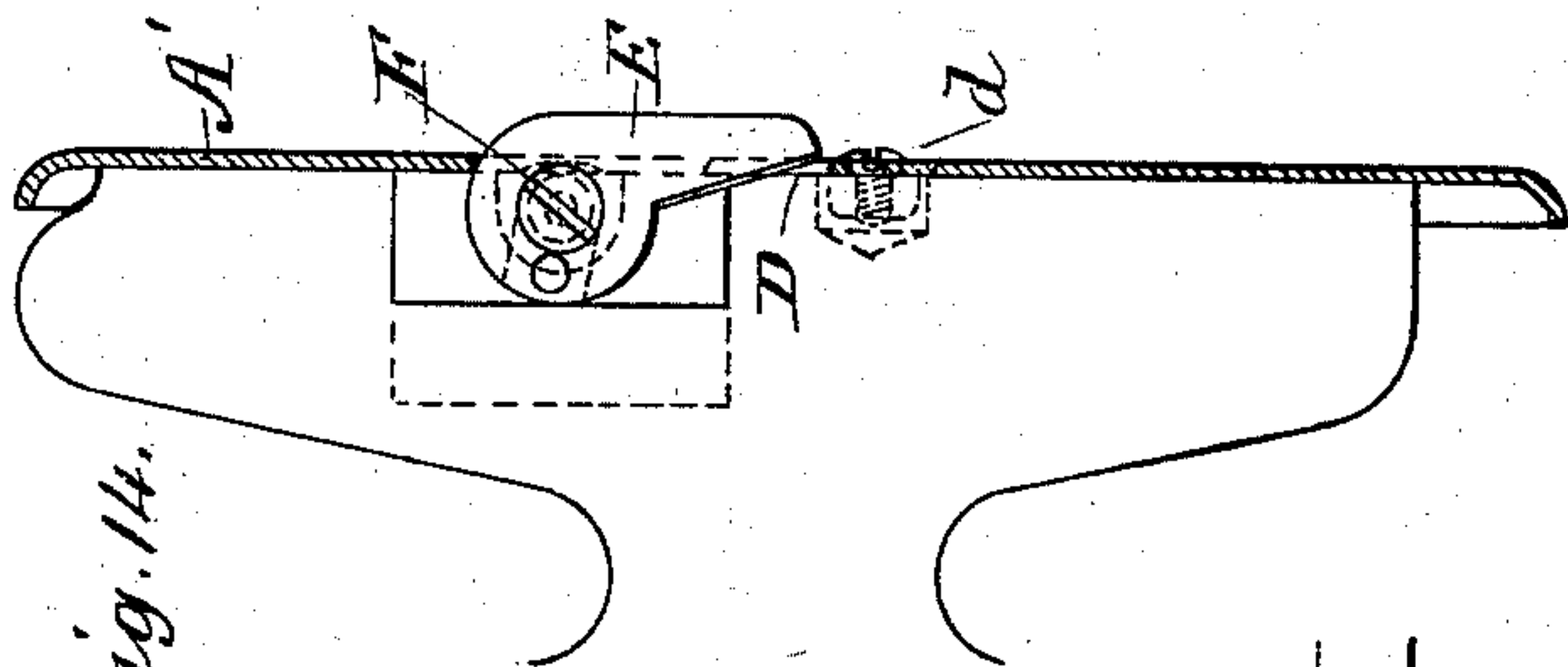


Fig. 14.

Fig. 11.

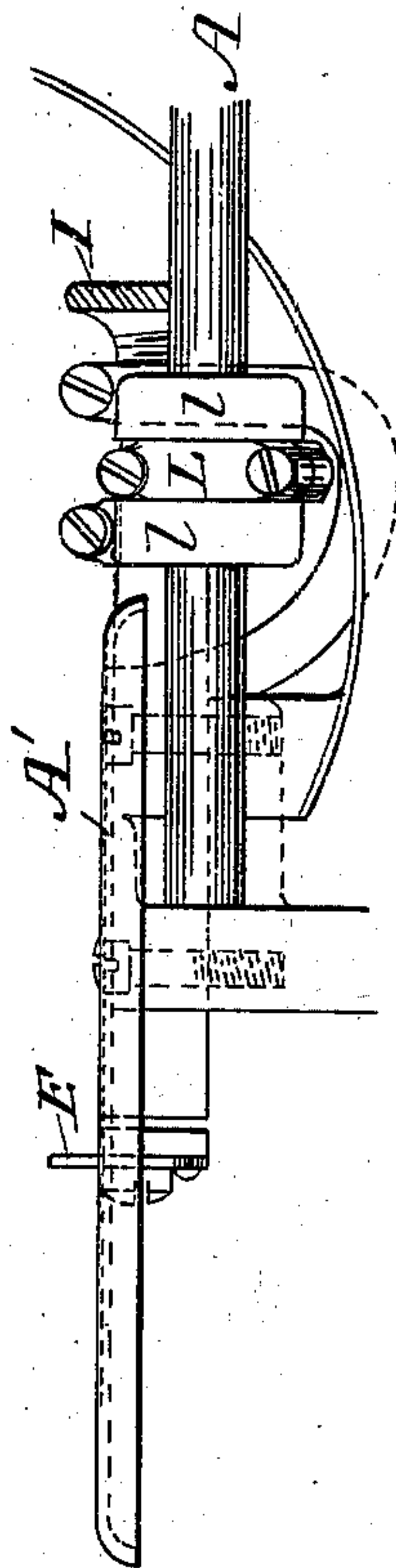
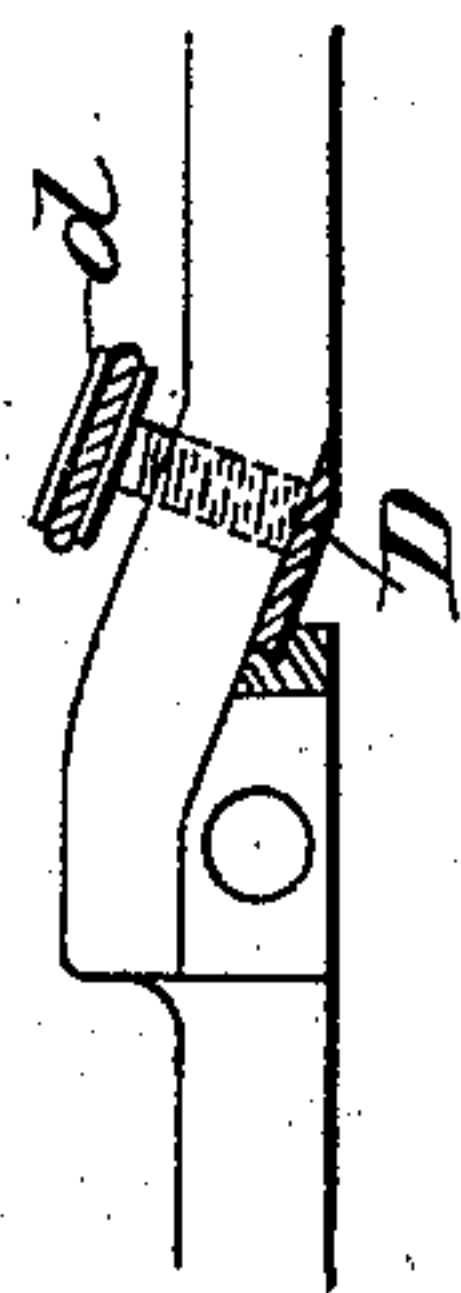


Fig. 13.

Fig. 10.

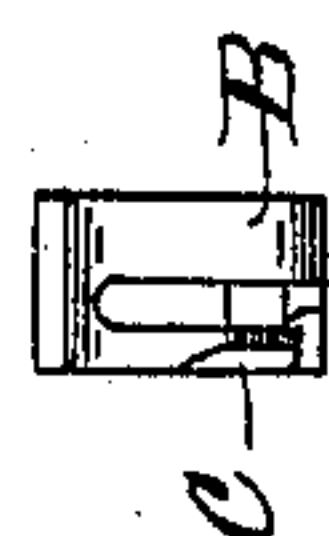


Fig. 8.

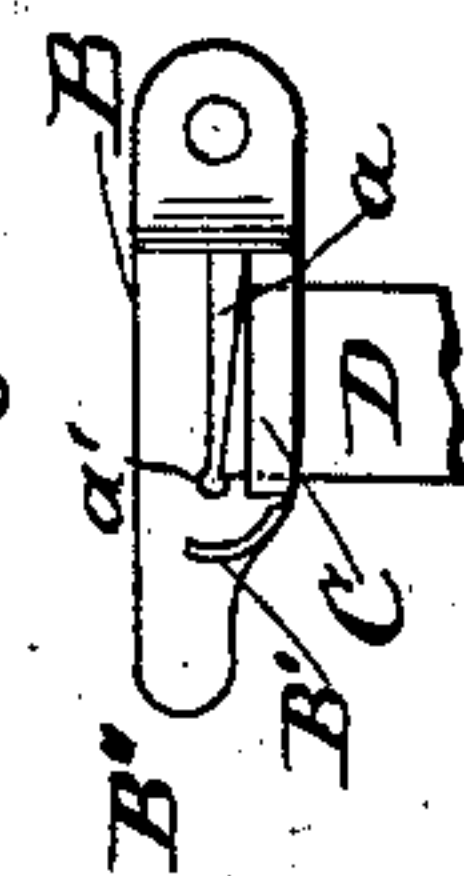


Fig. 9.



Witnesses:
E. E. Masson
Philipellaure

Inventors:
Stockton Borton and
Charles H. Willcox by
J. Pollok atty.

(Model.)

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Fig. 19.

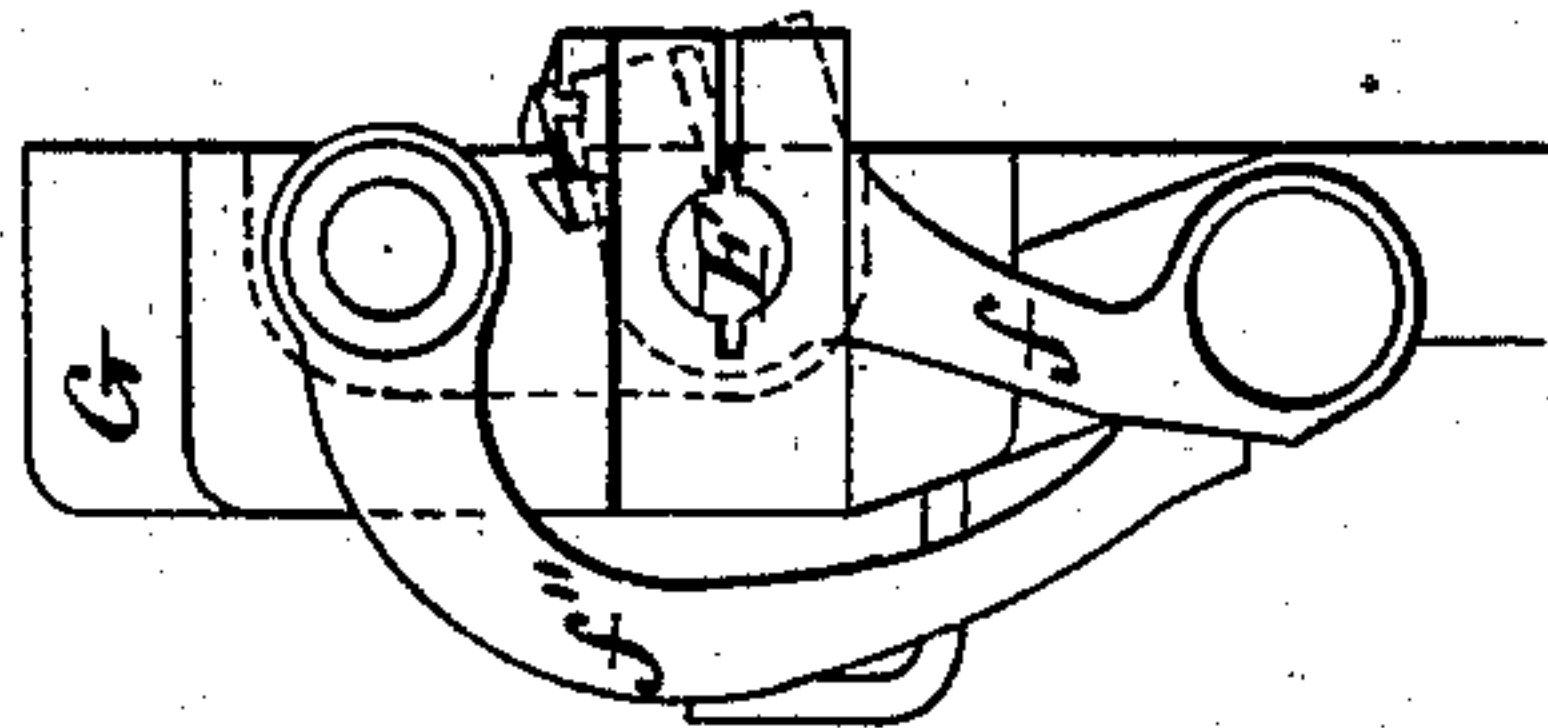


Fig. 17.

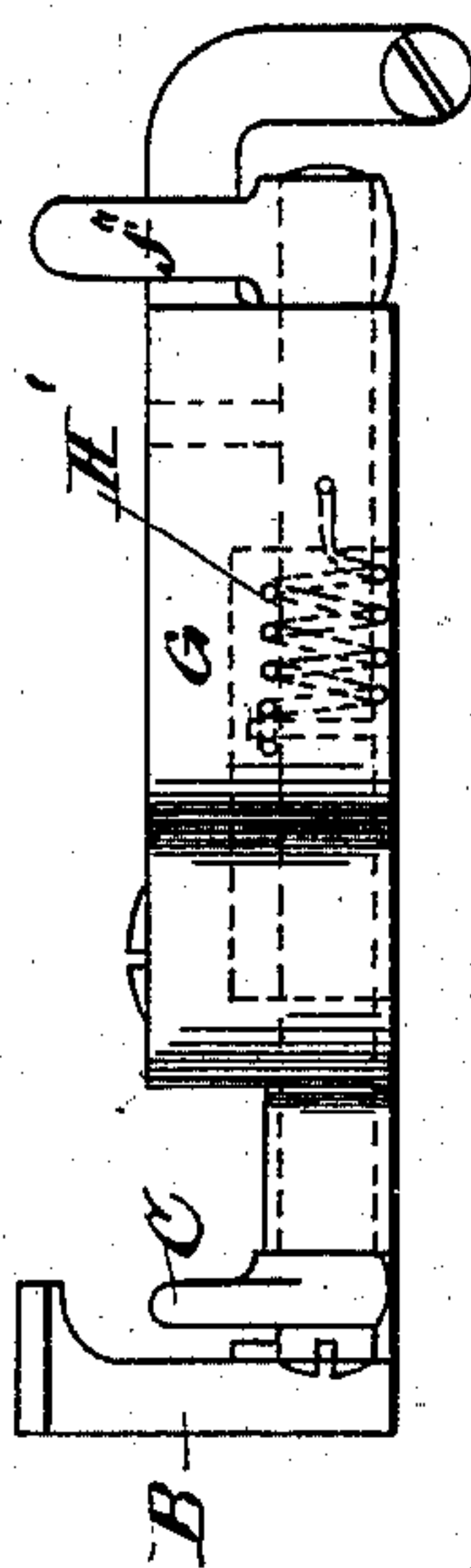


Fig. 16.

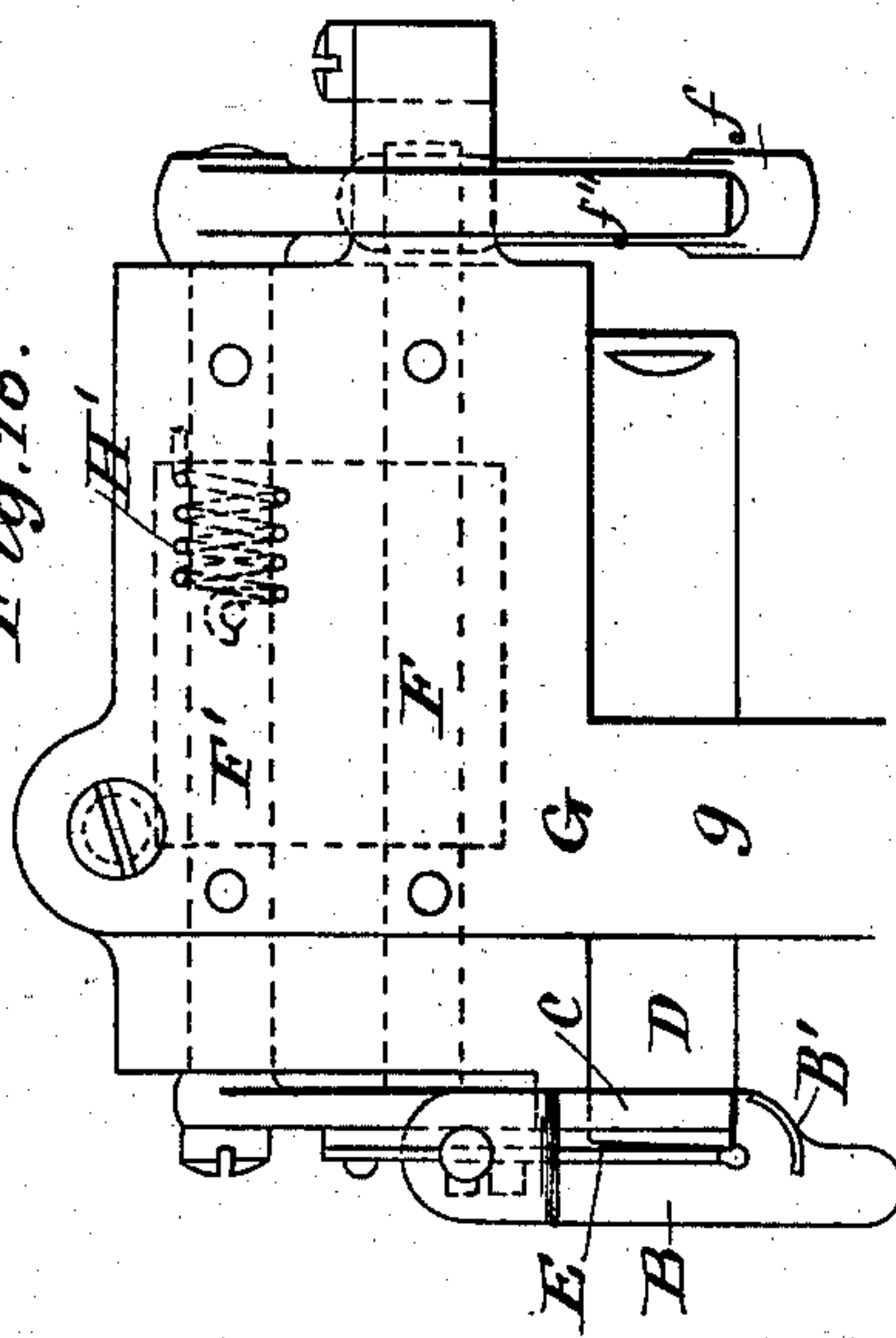
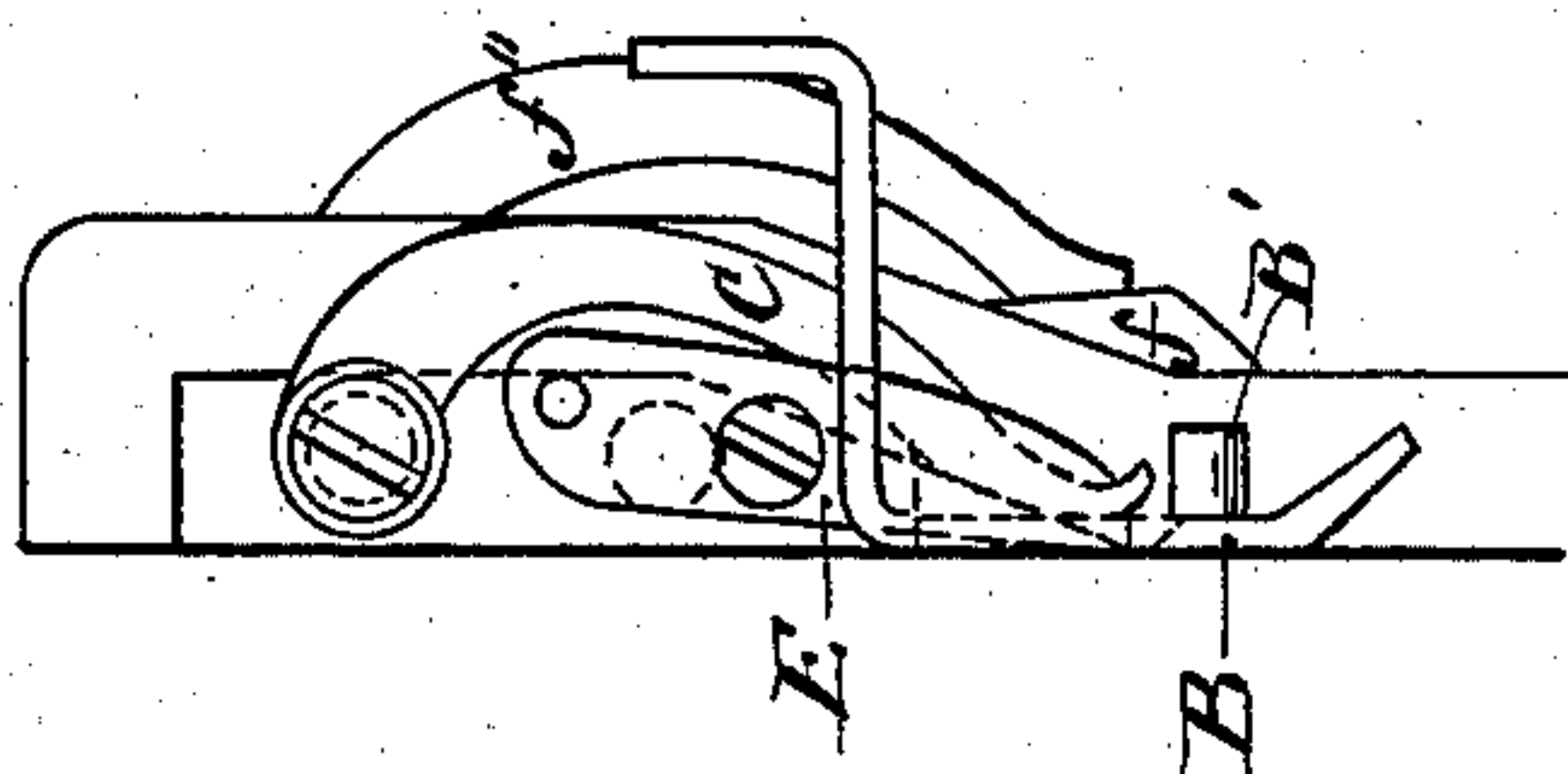


Fig. 18.



Witnesses:

E. E. Masson
Philip Mauro

Inventors:

Stockton Borton and
Charles Henry Willcox
by A. Pollock atty.

UNITED STATES PATENT OFFICE.

STOCKTON BORTON, OF PHILADELPHIA, PENNSYLVANIA, AND CHARLES H. WILLCOX, OF NEW YORK, N. Y., ASSIGNORS TO THE WILLCOX & GIBBS SEWING MACHINE COMPANY, OF NEW YORK, N. Y.

TRIMMER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 255,578, dated March 28, 1882.

Application filed October 14, 1880. (Model.)

To all whom it may concern:

Be it known that we, STOCKTON BORTON, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, and CHARLES H. WILLCOX, of New York, in the county and State of New York, have invented a new and useful Improvement in Trimmers for Sewing-Machines, which improvement is fully set forth in the following specification.

This invention has more particular reference to mechanism for trimming the edges of knit fabrics as they are sewed by a sewing-machine of otherwise ordinary or suitable construction in the manufacture of hosiery and similar goods. The sewing-machine may make the lock or other usual form of stitch, but the chain-stitch is, on account of its elasticity, better adapted to the uniting of knit fabrics, and the invention is shown herein as embodied in a chain-stitch machine, being that now well known as the "Willcox & Gibbs" machine.

In the manufacture of hosiery the plan pursued with the best quality of goods has been to knit the several pieces with selvage edges and then unite them by an overseam. This plan is, however, costly in time and labor. In order to avoid this expenditure the pieces have been cut from a sheet of knit material and sewed together on a sewing-machine, the edges being automatically trimmed as the material is advanced by the feed mechanism. To prevent the raveling of the cut edges, machines making a zigzag stitch have been employed; but the mechanism required for this purpose renders slow the action of the machine. It is found that with a short stitch and close trimming a straight-ahead seam can be made superior in appearance and equal in durability to that formed with zigzag stitching, and little, if any, inferior to the so-called regular-made goods with selvage edges, while the rapidity of operation of the sewing-machine is not interfered with as when zigzag stitching is employed. For the trimming of the edges, shears with one stationary and one vibratory cutter or blade have been commonly used, and, being best adapted to the purpose, are used also in the present invention.

This improvement is mainly intended to make

a neat substantial seam, as closely trimmed as may be desired, in an efficient manner, with machines making a straight-ahead seam, although it is obvious that the devices employed, or some of them, could be used with machines making a zigzag stitch or in connection with other means for uniting the material. To insure the proper dividing of the fabric it is clamped on both sides of the stationary cutting-edge during the operation of the shears. One portion of the fabric is or may be held between the presser-foot and cloth or throat plate of the machine. For the other portion, which in hosiery work would be the strip to be trimmed off, a holding finger or device is used, the material being clamped between it and a suitable bearing-surface. This bearing-surface can be formed by the cloth or throat plate; but it is preferably the surface of the stationary cutter, and is so shown herein. By having the cutting-edge in the same plane as the bearing-surface referred to, as is the case when said surface is that of the stationary cutter, the material can be clamped by means of the holding finger or device closer to the cutting-edge and a narrower strip be held so as to be trimmed off from the main portion than would otherwise be possible or practicable.

The holding finger or device is made integral with or is attached to the presser-foot, or it may be made independent thereof.

Heretofore in sewing-machine trimmers for hosiery work a finger has been employed on the presser-foot to prevent the goods from curling over and interfering with the operation of the cutters; but it is not intended nor adapted to clamp the work like the holding-finger in this invention. The object of the holding finger or device being to retain the fabric in position against the action of the vibratory cutting-blade, which tends to push the fabric away from its fulcrum, the desired effect can be obtained with sufficient pressure by means of smooth clamping-surfaces; but in practice better results are had by means of less pressure and the use of a rough surface or teeth on the holding finger or device, which teeth during the operating of cutting take into the fabric and hold it stationary, but do not interfere

with its advancement by the feed-surface. To enable this feed to take place properly the pressure of the holding device is automatically released at intervals.

5 In case the holding-finger is a part of the presser-foot, the pressure will be relieved when the foot is lifted by the feed-surface of the ordinary four-motion feed in its ascent. With an independent device the rise and fall of the
10 finger at the desired times are effected by appropriate means, deriving motion from some rotary or vibratory part of the machine or of the shearing mechanism. Knit goods when cut have a great tendency to curl at the edges, and
15 this tendency, except with a very narrow margin or a wider presser-foot than is desirable, is apt to cause the edges to turn over the presser-foot and be caught by the needle. To avoid this difficulty a raised projection around
20 the front of the needle is employed.

One of the cutters or cutting-blades of the shears is made capable of a movement substantially at right angles to the line of cutting, and is connected with a spring arranged to
25 retain its cutting-edge in close contact with that of the other cutter. The movement referred to is not such as the blades of ordinary shears or scissors have upon their fulcrum, but a true line-movement, so that the cutting-
30 edges are always pressed together with approximately the same force.

In order to still further improve the cutting-action for knit goods, one of the cutting-edges is made oblique to the line of cutting, and the
35 cutter with which the spring is connected is at each operation of the shears moved in one direction by the action of the cutting-edges against each other in closing, and is returned by the spring when they open. As herein
40 shown, the oblique cutting-edge is formed on the stationary cutter, and the spring acts upon the vibratory cutter or blade, which is attached to a rock-shaft operated from the main shaft or from any rotary or vibratory or reciprocating part of the machine, through connections
45 which permit a slight endwise movement to said shaft.

The stationary cutter or shear blade consists of a bar or plate, on the end of which the cutting-edge is formed. This bar or plate is adjustably secured in position, so as to be readily removed for sharpening or other purpose, and to be set in contact with the other cutter as may be required. The cutting-edge slightly
55 oblique to the line of cutting can be easily formed on this plate or bar. The latter also, being of suitable length, the fabric, or a portion thereof, can be clamped between its surface and the holding finger or device. The adjustment before referred to takes place lengthwise of the bar, substantially at right angles to the line of cutting.

The rock-shaft to which the vibratory cutter or blade is attached is placed below the
65 line of the cutting-edge of the stationary cutter, preferably a slight distance above the

cloth-plate, the surface of the stationary cutter being on an incline, so that one of the several portions—usually the trimmed-off strip—is or may be fed over the shaft. There are special advantages in this disposition; but, if desired, the said shaft may be placed under the cloth-plate and the stationary cutter set in flush with the latter. In this case the main portion of goods would be diverted slightly
75 to one side by the vibratory blade. The cloth-plate would, however, be left clear, which would be an advantage in some instances.

The regulation of the closeness of the cutting or trimming to the line of stitching can, 80 it is obvious, be effected by adjusting the frame-work with the two blades or cutters in any ordinary or suitable way nearer to or farther from the needle; but it is an improvement to make the frame-work stationary and adjust 85 the blades. The vibratory blade or cutter being held in contact with the other by a spring, it would, unless checked, follow the movements of the stationary cutter at right angles to the line of cutting, and by adjusting the 90 stationary cutter the shears would cut more or less closely to the line of the stitching. In order, however, to diminish the wear upon the cutters by confining their pressure against each other as much as may be to that portion by which the cutting is to be done 95 (which will be a greater or less distance, according to the length of the feed) an adjustable back stop is arranged, so that the rock-shaft carrying the vibratory cutter bears 100 against it during a portion of its vibration, but is moved out of contact with it when the cutting takes place. The back stop is shown herein as a thumb or set screw; but other adjusting devices may be used—a cam, for example. By using a screw or similar device 105 the vibratory blade can be adjusted with precision to the position required. The stationary cutter can then be adjusted into contact therewith, the vibratory blade being set at its 110 highest point or at the point where it is desired that the cutting should begin. The adjustment of the shears is in this invention usually effected in this way. There are also particular constructions and combinations of 115 parts, hereinafter set forth, which form part of the invention.

In order that the invention and the manner of carrying the same into effect may be fully understood, the same will now be described in 120 connection with the accompanying drawings, which form a part of this specification.

Figure 1 is a perspective view of a sewing-machine embodying a trimmer constructed in accordance with this invention. Figs. 2, 3, 4, 125 and 5 are respectively a plan, side elevation, and views from opposite ends of the trimmer and connected parts of the sewing-machine shown in Fig. 1. Fig. 6 is a perspective view of the trimmer with the presser-foot and holding-finger removed; Fig. 6^a, a detailed view in horizontal section, showing the means for 130

attaching the vibratory cutter to the rock-shaft; and Fig. 7 represents in perspective and plan views the presser-foot with attached holding-finger. Figs. 8, 9, and 10 are respectively a plan, side elevation, and rear elevation of the presser-foot, with holding-finger attached at the rear, and showing a part of the stationary cutter in position. Fig. 11 is a sectional elevation, showing another form of stationary cutter or blade from that shown in figures before mentioned, and also the manner of holding the blade in position. Figs. 12 and 13 are respectively a plan and side elevation, and Figs. 14 and 15 views from opposite ends of an arrangement of cutters with the rock-shaft operating the vibrating cutter below the cloth-plate. Figs. 16, 17, 18, and 19 are similar views, showing a holding finger or device with intermittent pressure and independent of the presser-foot.

The machine represented is one which makes a chain-stitch by means of an eye pointed needle and looper, and has a four-motion feed under the cloth-plate, being the well-known Willcox & Gibbs machine. In Fig. 1 the automatic tension in common use in these machines is represented.

The same letters indicate like parts where they occur on all the figures.

A is the main or looper shaft; A', the cloth-plate; B, the presser-foot; B', upright projection on the presser-foot; C, the holding finger or device; D, the stationary cutter or blade; E, the vibratory cutter or blade; F, a rock-shaft; G, the supporting-frame; H, a spring; I, an adjustable back stop to rock-shaft; L, a link for conveying motion from an eccentric on the main or looper shaft to the rock-shaft.

The frame G is secured in position on the cloth-plate as in Figs. 1 and 6 and 16 to 19, or below it, as in Figs. 12 to 15, and in bearings on said frame the rock-shaft is supported so as to vibrate freely and to be capable of an endwise movement. The spring H is shown as a spiral spring surrounding the shaft. It is inclosed in the frame, and is arranged to bear at one end against a stationary part of the frame and at the other against a pin or collar on the rock-shaft, so as to hold the shaft against its back stop, I.

From the rock-shaft, at or near the rear or right-hand end thereof, projects an arm, *f*, with which is jointed one end of the link L by means of the pin *f'*. This pin has a bearing somewhat longer than the thickness of the link, so as to allow it an endwise movement independent of the latter. The other end of the link encircles an eccentric on the main shaft of the machine, and is held in position by two collars, *l*, on said shaft.

The back stop, I, is shown as a thumb or set screw, this being the device best adapted to the purpose. By turning this screw in one direction the rock-shaft is advanced against the pressure of its spring H; by turning it in the

other direction it is moved back by the spring. The connection with the main shaft does not interfere with these motions, owing to the long bearing of the pin *f'*.

The rock shaft F is back of the presser-foot and looper-shaft, and extends from a point close to the presser-foot over the edge of the cloth-plate, and the vibratory cutter or blade E is held flatwise against the end of said shaft next to the presser-foot.

As shown, the end of the shaft is provided with an enlargement, *f'''*, to the face of which the vibratory cutter or blade is secured, being held by a screw, *g''*, and prevented from turning on said screw by a steady-pin, *g'''*. The said cutter or blade E is vibrated with the rock-shaft by means of the eccentric on the main shaft, and is adjustable by the back stop and spring. When the rock-shaft is placed below the cloth-plate the latter is slotted for the passage of the vibratory blade as shown at *a''*, Fig. 12.

The stationary blade or cutter D is supported by the cloth-plate parallel with the rock-shaft F, and guided so as to be capable of an endwise movement at, or approximately at, right angles to the line of cutting of the shears, and it is held by means of a screw, *d*, in the position to which it is adjusted.

The screw *d* acts as a clamping device, and the blade or cutter D may be removed from its fixed guides by loosening, without removing, said device.

The two shear cutters or blades and the mechanism for operating the vibratory cutter or blade are combined and arranged as shown, so that in operation the two cutting-edges do not entirely separate, but cross each other at all times; and it is impossible for the work to pass without every thread between the trimmed-off strip and the body of the goods being severed.

In order that the two cutters or blades may be placed near the needle to trim close to the seam, the presser-foot is cut away as shown at *a*, Figs. 7 and 8, upon one side of the needle-hole, which is represented by *a'*, so as not to interfere with the adjustment to within the desired distance of the needle.

In Figs. 1 to 6 and 16 to 19 the stationary cutter is shown as formed of a triangular bar, which rests upon the cloth-plate and passes under an arm, *g*, of the frame G, the arm *g* being suitably recessed on the under side and provided with a threaded opening to receive the holding-screw. The upper surface of the cutter thus constitutes an inclined plane, which, if extended, passes over the rock-shaft. The cutting-edge is formed by beveling the end of the bar, and, being in the plane of the upper surface of said bar, the line thereof would of course, if extended, pass over the rock-shaft. The portion of the supporting-frame nearest the needle is made to form a continuation of the upper surface of the stationary cutter, so that the severed portion can

be readily carried over the shaft. The triangular form of blade is preferred when the rock-shaft F is above the cloth-plate; but a flat, or substantially-flat, bar could be supported with its upper surface in an inclined position, as shown in Fig. 11, in which one edge works in a slot in the frame G and the other, being beveled, rests upon the cloth-plate.

The bar or plate with inclined surface acts to divert the trimmed-off strip upward to facilitate the passage over the rock-shaft.

In Figs. 12 to 15 the stationary cutter is formed of a flat bar and slides in a groove in the cloth-plate. This form of cutter is best adapted for use in connection with a vibratory cutter operated by a rock-shaft below the cloth-plate. In any case the bearing for the rock-shaft which carries the vibratory blade may be placed close to the latter and the necessity avoided of an overhanging or projecting end for the passage under it of the severed portion of the goods. In all the figures the edge of the stationary cutter is slightly oblique to the edge of the vibrating cutter, or, in other words, as the latter is arranged to vibrate in planes parallel to the feed movement, to the line of stitching. At each closing of the shears, therefore, the vibratory blade or cutter is forced sidewise, carrying with it the rock-shaft, removing the latter for a time from contact with its back stop and compressing the spring H. As the shears open the spring acts and forces the rock-shaft again into contact with its back stop, upon which it bears until the cutting-edges again come into contact with each other. The back stop being adjustable, it follows that the cutting-edges may be allowed to make contact for a regulated portion of their length corresponding to the length of stitch, and thus confine the cutting and consequent wear of the edges to that portion.

The holding finger or device C has its under surface roughened or provided with teeth, as indicated. It is shown in Figs. 1 to 5 and 7 to 10 as attached to or formed in one piece with the presser-foot. It is arranged and conformed to the upper surface of the cutter D, so as to press thereon when the presser-foot is down and the feed-surface is below the plate. It is at this time that the shearing action takes place, and the fabric, being clamped by the cloth-plate and presser-foot on one side of the line of cutting and on the other by the holding-finger and lower blade or stationary cutter, is effectually prevented from being pushed away from the rock-shaft or fulcrum of the shears and from being drawn between the blades or cutters without being severed.

Owing to the construction of the lower blade with a plane or flat upper surface and the cutting-edge formed on its end, it is practicable to clamp the material by means of the holding finger or device close to the cutting-edge, and a very narrow strip can therefore be trimmed. With the usual thin blade projecting above

the cloth-plate it would be impossible to clamp the material so close to the cutting-edge or to turn off so narrow a seam. When the feed-surface rises it lifts the presser-foot and relieves the pressure on that portion of the fabric which rests upon the stationary cutter.

The holding-finger is separated from the body of the presser-foot so as to leave a sufficient space within which the vibratory blade may operate and be adjusted sidewise. In Figs. 1 to 5 and in Fig. 7 it is shown attached to and projected backward from the front of the presser-foot. In Figs. 8 to 10 it projects forward from the back of the foot. In Figs. 16 to 19 the holding device is independent of the presser-foot. It is formed by a bar or finger, C, attached to a rock-shaft, F', supported in bearings, and has an arm, f'', projecting over the arm f of the rock-shaft F'. Connected with the rock-shaft F' is a spring, H', tending to turn it in the direction to hold the finger C in contact with the stationary cutter. A spiral torsion-spring surrounding the rock-shaft and connected at one end with it and at the other end with the frame is shown, but a flat or other suitable form of spring, if properly disposed, could be used instead. The end of the arm f'' is so disposed with respect to the arm f that as the latter is lifted by the link L and the eccentric on the main shaft of the machine it comes into contact with said arm f'' and vibrates the rock-bar F', relieving the pressure of the holding-finger. As the arm f'' descends the spring forces down the holding-finger and the pressure of the latter on the goods is restored. In these figures the spring H, the adjustable back-stop I, and other parts shown in the other figures are not represented.

The upright curved projection B' is placed in front of the needle and prevents the goods from curling or being turned over the presser-foot so as to be pierced by the needle. For convenience it is placed on the presser-foot, as shown in several figures.

The toe B'' on the presser-foot, formed by cutting away the latter in front, also assists in flattening the goods or taking out the curl, the curled portion of the goods as it passes through the machine coming in contact with the inclined surface at the base of the toe or with the curved upright B'.

In order to operate the machine the thicknesses of fabric to be united and trimmed are placed under the presser-foot, (the trimming-blades or cutters being properly adjusted and the machine threaded,) the machine is started, and the goods as they are fed forward are severed by the cutters.

It is obvious that various modifications may be made in the details without departing from the spirit of this invention. The different arrangements described may be of special utility under different conditions. In using the form with the rock-shaft above the cloth-plate neither of the severed portions of the goods is turned aside, but they both continue in the

samedirection, following the cutting-edges, one portion passing over the rock-shaft and the other under the vibratory blade or cutter. With the shaft under the plate one portion will be slightly turned aside. The trimmer with rock-shaft above the cloth-plate may be readily arranged, if desired, to admit of trimming off or severing a border or strip of any width that can be accommodated under the stationary arm or goose-neck of the machine.

Having thus fully explained the said invention and the manner of carrying the same into effect, what we claim is—

1. In a sewing-machine trimmer, the combination, with the cutting-shears, of means, as indicated for clamping and thus holding stationary the fabric on opposite sides of the line of cutting during the operation of the shears, substantially as described.

2. In combination with the presser-foot, feed, and stitch-forming mechanism of a sewing-machine of ordinary or suitable construction, a stationary cutter, a vibratory cutter, and a holding finger or device, said presser-foot and holding finger or device being arranged to clamp the fabric during the cutting operation, the one upon the stationary cutter and the other upon a surface on the opposite side of the line of cutting, substantially as described.

3. In combination with automatic shears, a holding finger or device roughened or provided with teeth and operating substantially as described.

4. In combination with a sewing-machine, a trimming attachment comprising a movable cutter, a stationary cutter formed of a bar or plate arranged substantially at right angles to the plane of movement of said movable cutter and adjustable independently thereof, and mechanism for operating said movable cutter so that the edges of the two cutters do not entirely separate but cross each other at all times in operation, substantially as described.

5. In a sewing-machine trimmer, the combination, with a stationary cutter formed of a bar or plate and a vibratory cutter, of a holding finger or device arranged to clamp the material to be sewed and trimmed between itself and said plate or bar, substantially as described.

6. In combination with the cloth-plate, presser-foot, feed, and stitch-forming mechanism of a sewing-machine, a vibratory cutter, a stationary cutter formed of a plate or bar, and a holding finger or device arranged above said plate or bar, and connected with means for relieving its pressure intermittently, substantially as described.

7. The combination, with the eye-pointed needle and other elements of a sewing-machine, and a trimming attachment for trimming goods as sewed by said machines, of a presser-foot and an upright projection or shield in front of the needle's path, substantially as described.

8. A presser-foot cut away at the front to form a toe, and provided with an upright pro-

jection in front of the needle-hole, substantially as described.

9. A presser-foot having a portion cut away close to the needle-hole on one side, and provided with an upright projection in front of the needle hole, substantially as described.

10. In a shearing device, the combination, with a stationary cutter or blade and a vibratory cutter or blade, arranged to operate in connection with each other, and one being capable in operation of a line-movement substantially at right angles to the cutting-edges, of a spring arranged to act upon the blade capable of the aforesaid movement and press said edges into contact with each other, substantially as described.

11. The combination of a rock-shaft capable in operation of endwise movement, a spring connected with said shaft, a vibratory cutter or blade attached to said shaft, and a bar or plate having a cutting-edge and capable of adjustment, substantially as described.

12. A pair of shear-blades or cutters having cutting-edges slightly oblique to each other, and one of said cutters or blades being capable in operation of a line-movement approximately at right angles to the cutting-edges, in combination with a spring arranged to act upon the blade capable of the aforesaid movement and hold said cutting-edges in contact, substantially as described.

13. The combination of a rock-shaft capable of endwise movement, cutter or shear-blade attached to said shaft, stationary cutter or blade with oblique cutting-edge, and spring arranged to force said shaft and cutter attached thereto in the direction to maintain the cutting-edges of the two cutters in contact with each other, substantially as described.

14. The combination, with a cutter or blade stationary during its operation but capable of adjustment, of a vibratory cutter or blade, rock-shaft carrying said cutter, spring, and adjustable back stop for said shaft.

15. The combination, with a stationary and a vibratory cutter or blade having cutting-edges slightly oblique to each other, of a rock-shaft carrying said vibratory blade or cutter, a spring, and an adjustable back stop for said shaft, substantially as described.

16. The combination of the rock-shaft, spring, adjustable back stop, vibratory cutter or blade, bar, or plate, with cutting-edge at one end, and means for securing said bar or plate in position and for permitting its adjustment at, or approximately at, right angles to the cutting-edge.

17. The combination, with the stitch-forming and feed mechanism of a sewing machine of ordinary or suitable construction, of a rock-shaft connected with and operated by a suitable moving part of said machine, a vibratory cutter or blade attached to said shaft, means for adjusting the position of the said shaft and cutter nearer to or farther from the needle-hole of the sewing machine, and a second cut-

ter or blade stationary during its operation and also adjustable, substantially as described.

18. In a sewing-machine trimmer, a rock-shaft, and vibratory cutter or blade attached to and carried by said shaft, combined with a stationary cutter or blade, as described, said shaft being arranged below the line of the cutting-edge of the stationary cutter or blade, so that in operation the severed portion of the goods may pass over said shaft.

19. In a sewing-machine trimmer, a cutter or blade formed of a plate or bar with the cutting-edge at the end thereof, in combination with a rock-shaft arranged below the plane of the upper surface of said bar or plate, so that said surface if extended would pass over said shaft, and a vibratory cutter or blade attached to said rock-shaft, substantially as described.

20. An automatic trimmer for operation in connection with a sewing-machine of ordinary or suitable construction, comprising the following elements: a stationary bar or plate with oblique cutting-edge at the end thereof, means for adjusting said bar or plate, a finger or device for holding stationary the work, or a portion thereof, while cutting, a vibratory blade or cutter, a rock-shaft, spring, and adjustable back stop, substantially as described.

21. The combination, with a sewing-machine and a shearing attachment, of adjusting mechanism, as described, comprising a thumb or set screw adapted to regulate mechanically—that is, by its own proper motion—the position of the cutting device forming part of said attachment relative to the stitching devices of the sewing-machine, substantially as described.

22. In a sewing-machine trimmer, a flat cutter bar or plate held between fixed guides in or on the cloth-plate, and a clamping device arranged to bear against said bar or plate, so that the latter can be withdrawn by loosening without removing said clamping device, substantially as described.

23. In a sewing-machine with trimming attachment, the flat blade held against the end of the rock-shaft by a screw and prevented from turning on said screw by a suitable projection, such as a steady-pin, substantially as described.

24. In a sewing-machine with trimming attachment, the rock-shaft carrying the vibratory cutter, and supported, as described, on

the cloth-plate, so that the trimmed-off strip will pass over the shaft, substantially as described.

25. In a sewing-machine with trimming attachment, the combination, with the rock-shaft supported in bearings on the cloth-plate and cutter attached to said shaft, of an inclined plate located in front of the rock-shaft, substantially as described.

26. The combination, with a sewing-machine having a looper-shaft below the cloth-plate, of a rock-shaft supported back of the presser-foot and looper-shaft and extending from a point close to the presser-foot over the edge of the cloth-plate, a cutter secured to the end of said rock-shaft adjacent to the presser-foot, so as to project toward the needle of the sewing-machine, substantially at right angles to said shaft, and an operating-arm attached to the overhanging end of the rock-shaft aforesaid and connected with an eccentric on the looper-shaft, as set forth.

27. In a sewing-machine with trimming attachment, the combination, with the presser-foot, finger, and vibratory cutter working between said foot and finger, of an elongated bar or plate adjustably supported in guides on the cloth-plate and projecting under the said finger, so as to co-operate with said vibratory cutter to trim the fabric as it is sewed, substantially as described.

28. The combination, with the cloth-plate, presser-foot, and looper-shaft of the sewing-machine, of the frame carried by said cloth-plate, the rock-shaft supported in bearings in said frame and extending from a point close to the presser-foot beyond the edge of the cloth-plate, an eccentric on the looper-shaft, connections between the projecting end of the rock-shaft and said eccentric, a vibratory cutter attached to the opposite end of the rock-shaft, and an elongated bar or plate supported parallel with said cloth-plate and adapted to co-operate with said vibratory cutter, substantially as described.

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

STOCKTON BORTON.
CHAS. H. WILLCOX.

Witnesses:

C. J. HEDRICK,
PHILIP MAURO.