

No. 697.600.

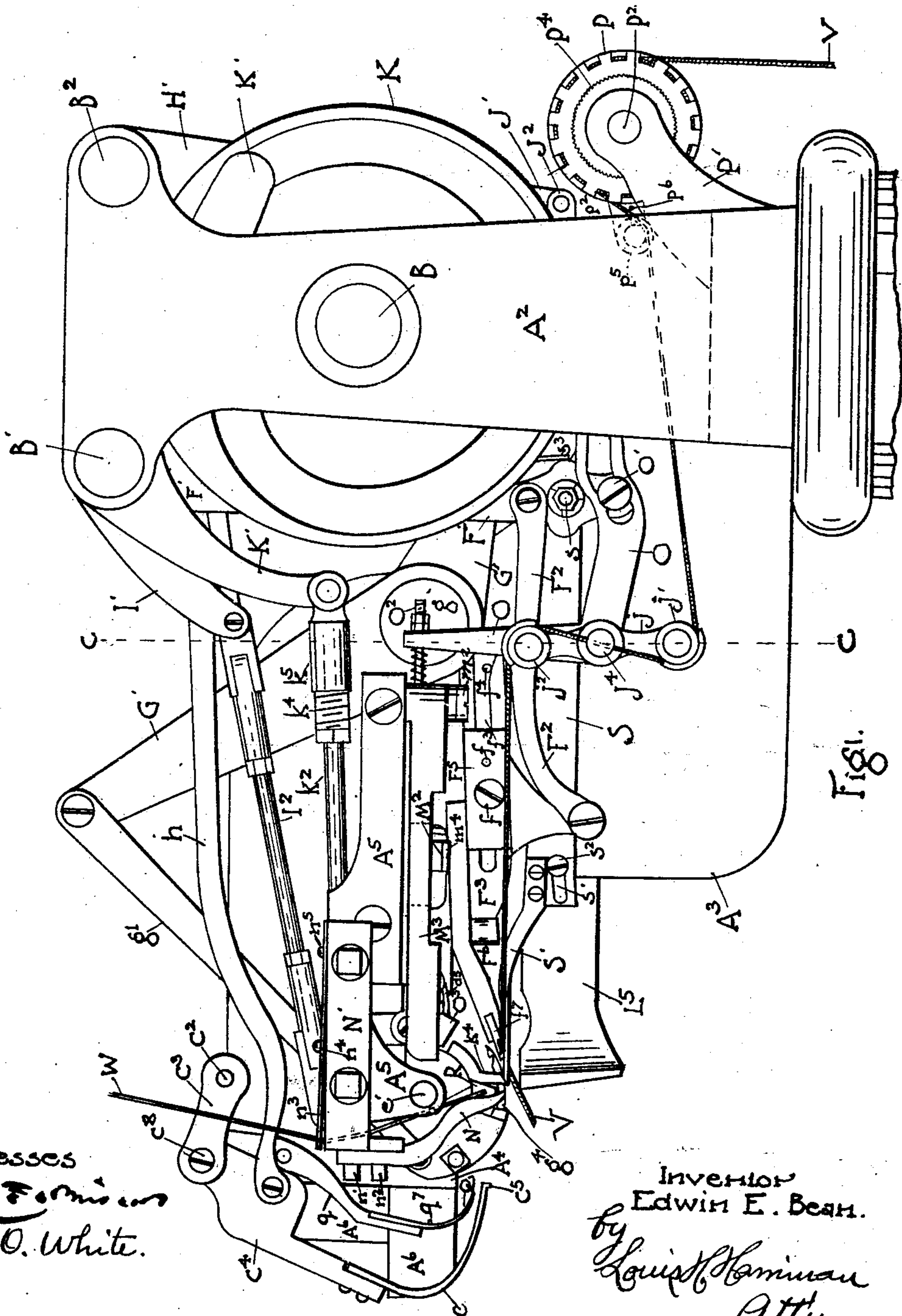
Patented Apr. 15, 1902.

E. E. BEAN.
SHOE SEWING MACHINE.

(Application filed Aug. 31, 1900.)

(No Model.)

7 Sheets—Sheet 1.



Witnesses
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No. 697,600.

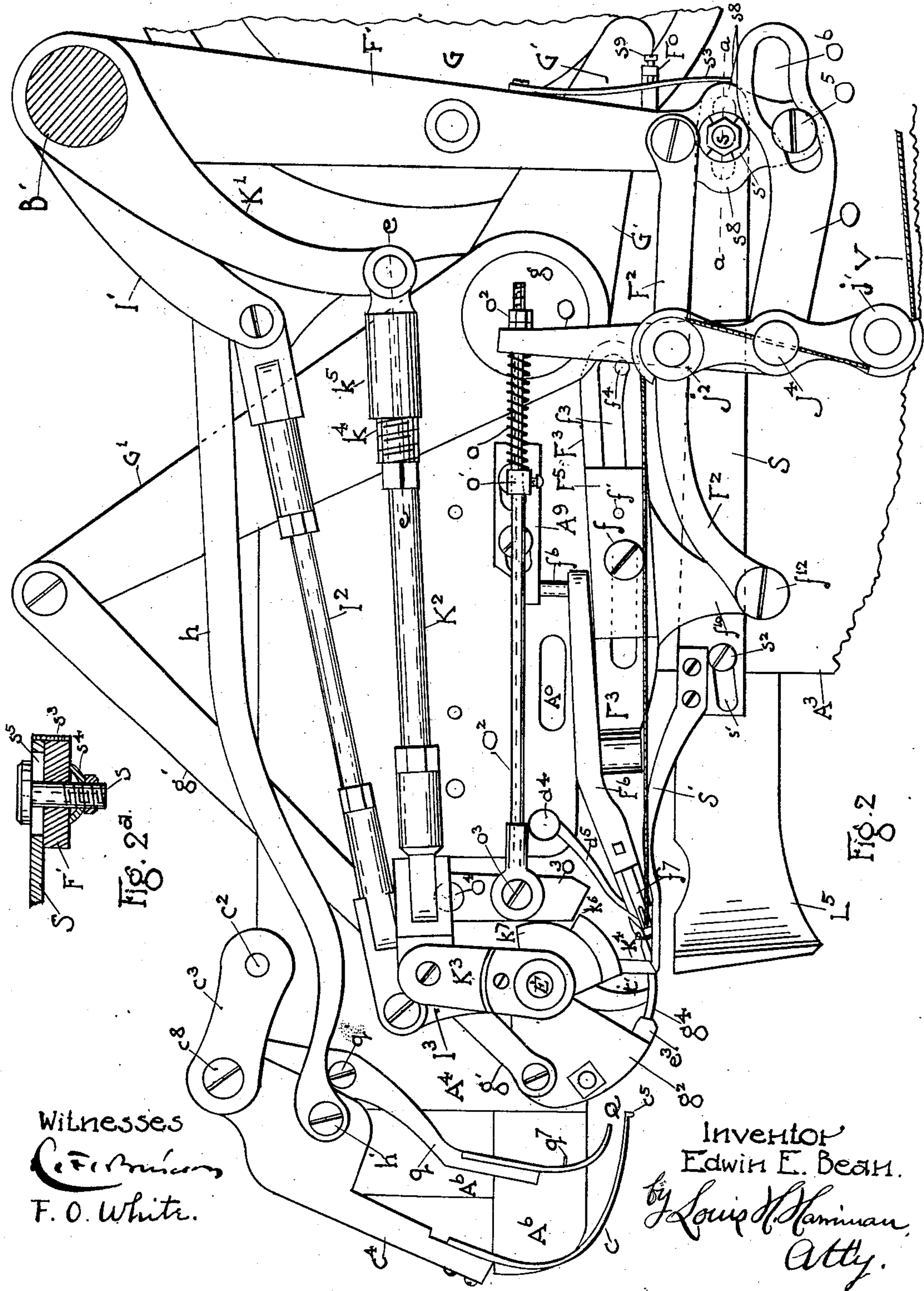
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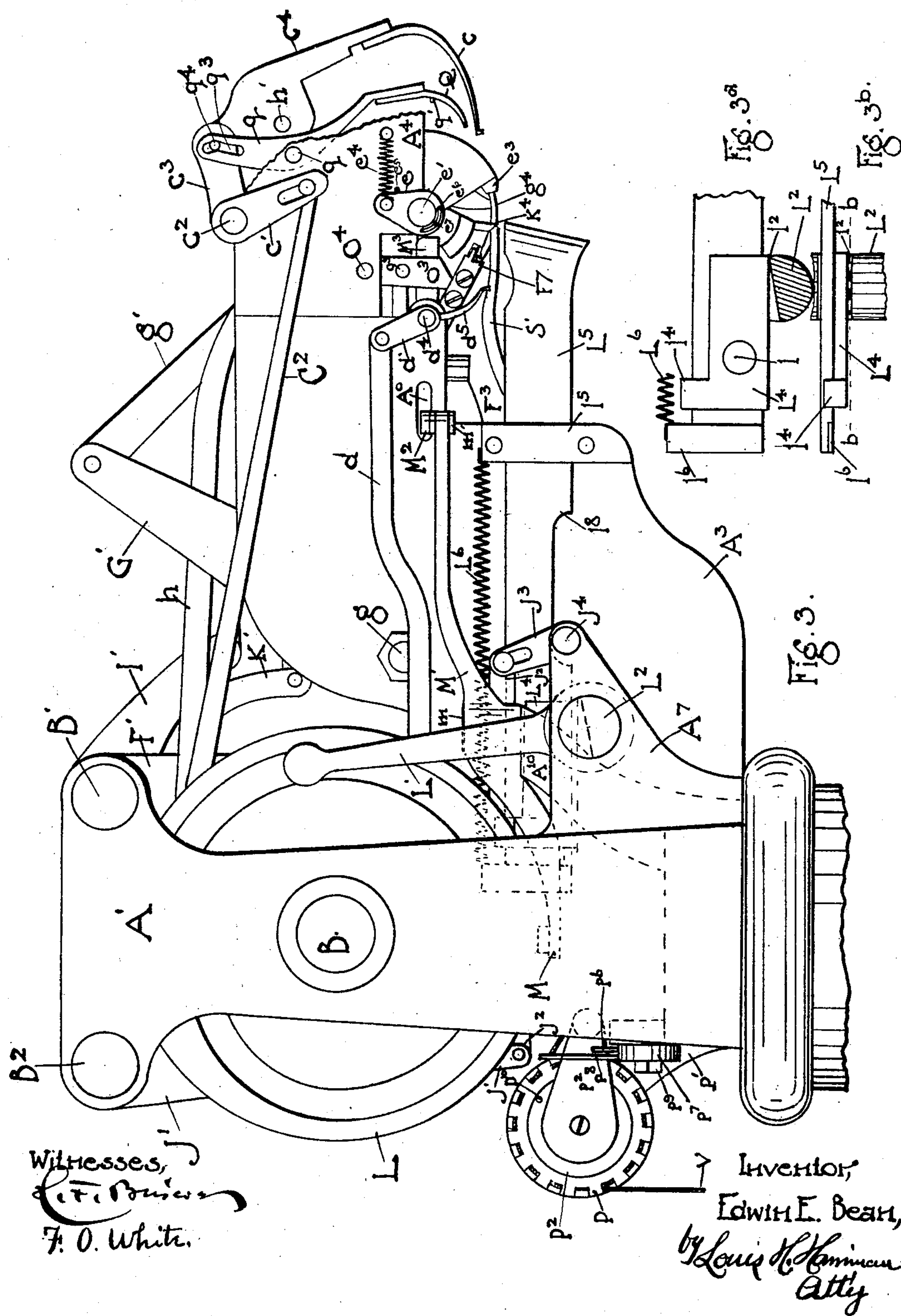
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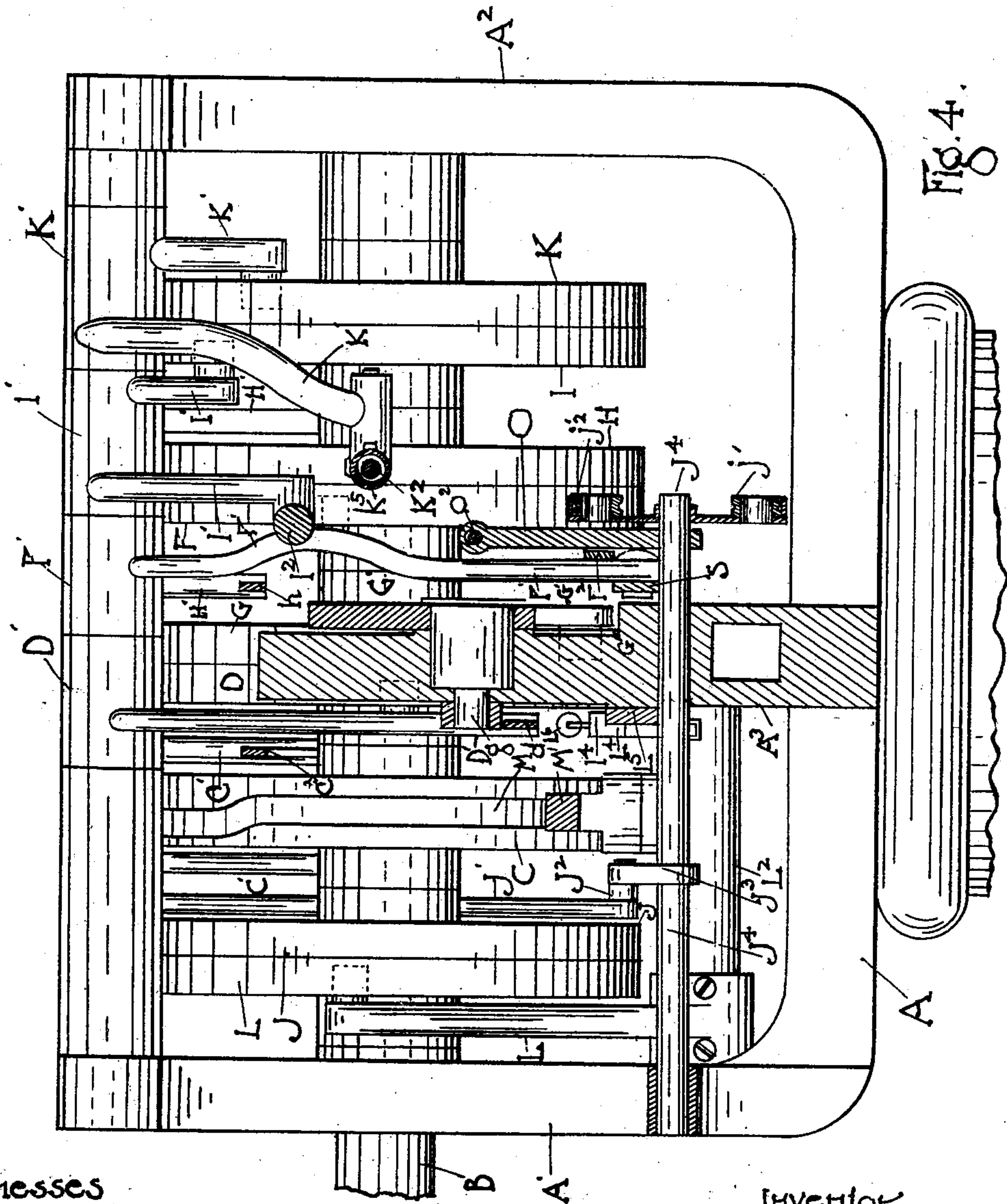
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(Application filed Aug. 31, 1900.)

(No Model.)

7 Sheets—Sheet 4.



Witnesses
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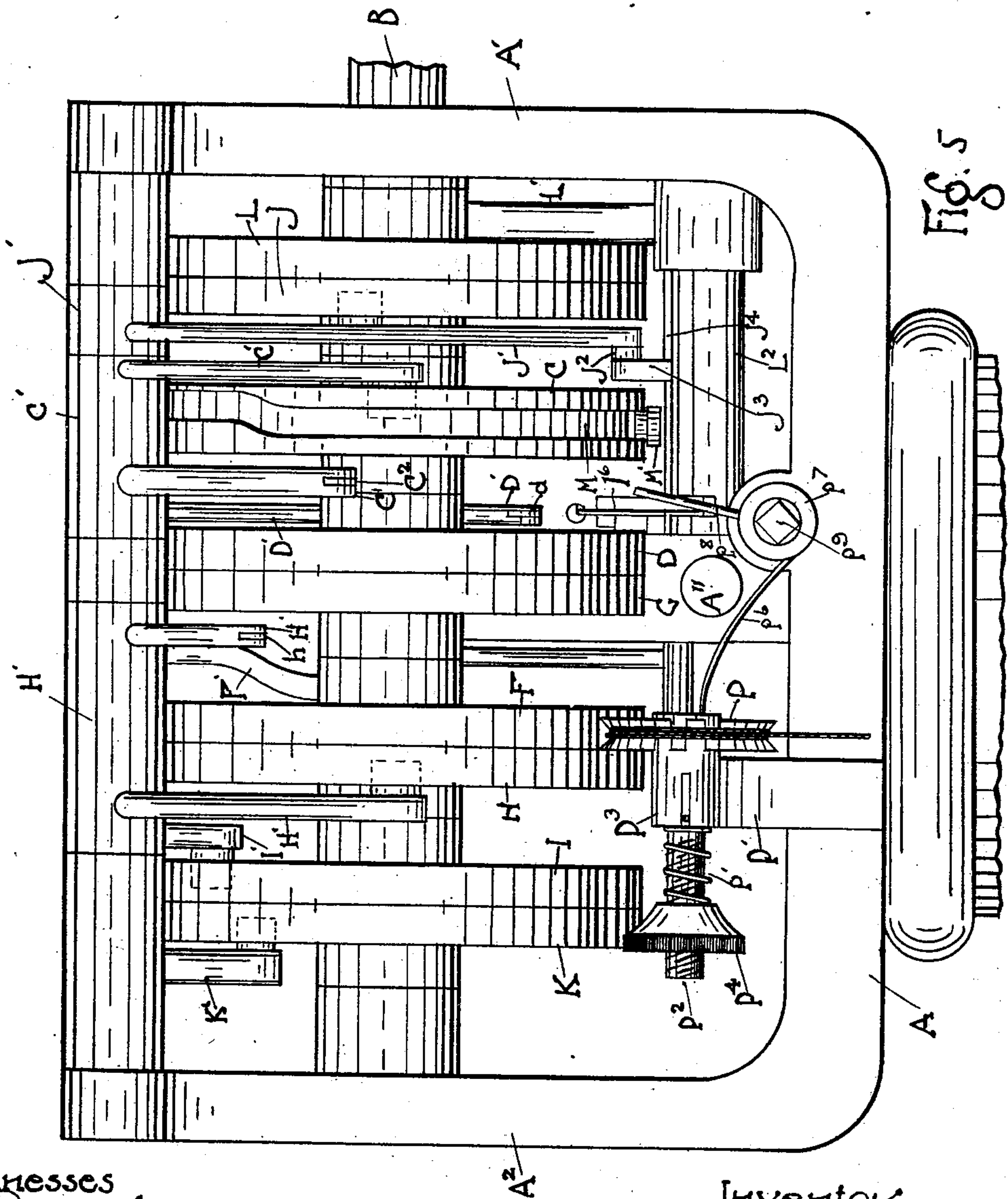
Patented Apr. 15, 1902.

E. E. BEAN.
SHOE SEWING MACHINE.

(Application filed Aug. 31, 1900.)

(No Model.)

7 Sheets—Sheet 5.



Witnesses
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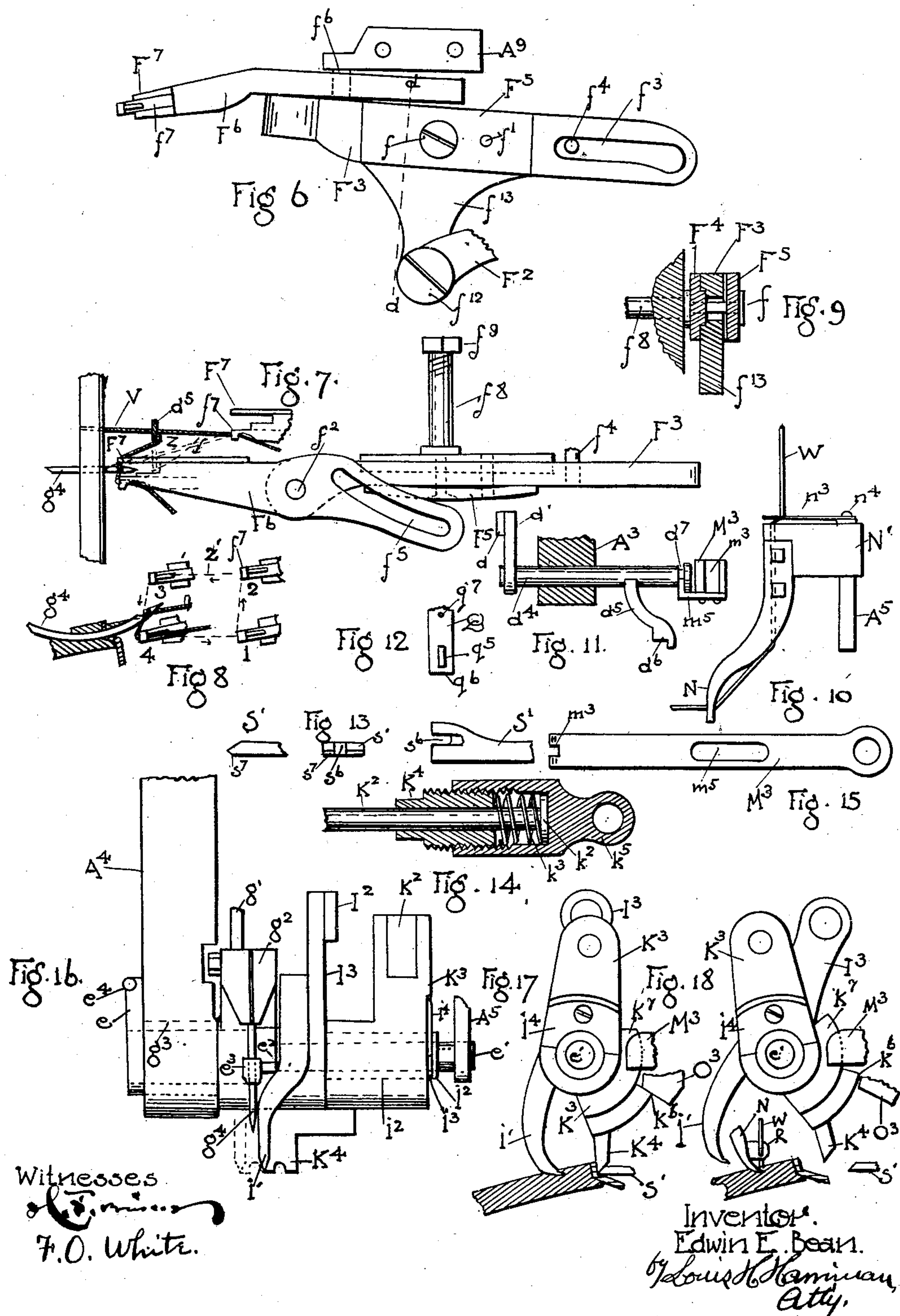
Patented Apr. 15, 1902.

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(Application filed Aug. 31, 1900.)

(No Model.)

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No. 697,600.

Patented Apr. 15, 1902.

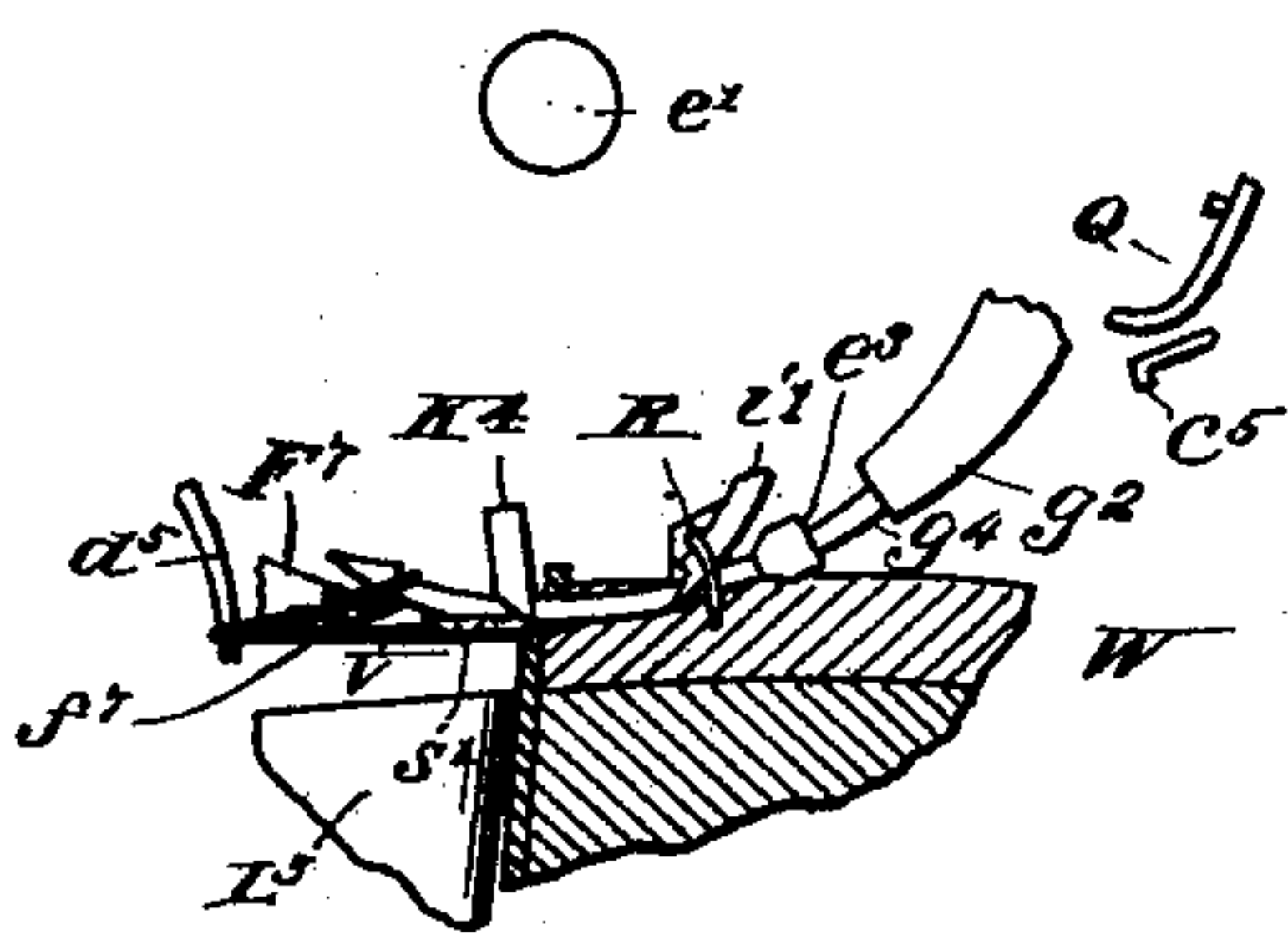
E. E. BEAN.
SHOE SEWING MACHINE.

(Application filed Aug. 31, 1900.)

(No Model.)

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Fig. 19.



Aug. 20.

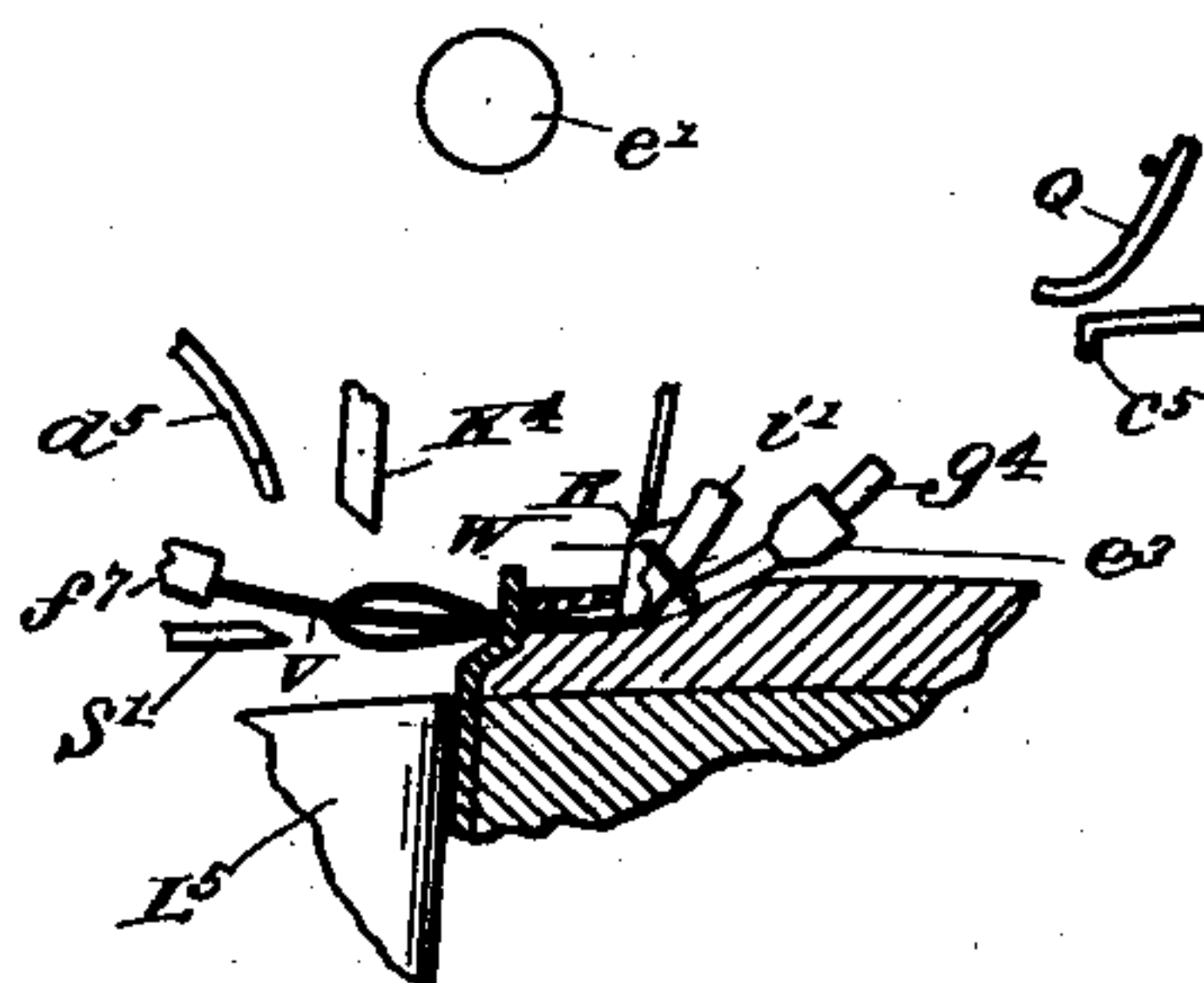


Fig. 21,

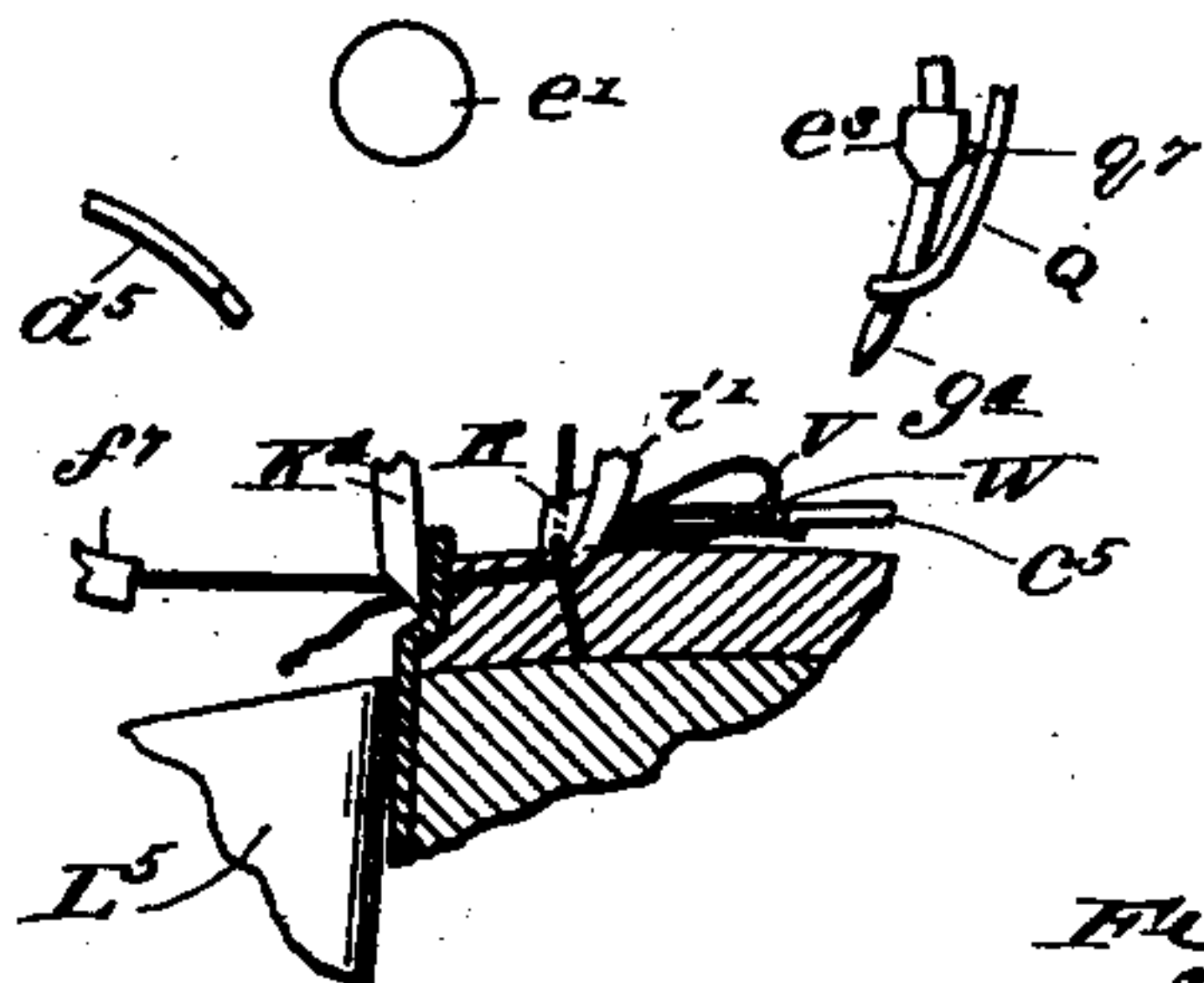


Fig. 22,

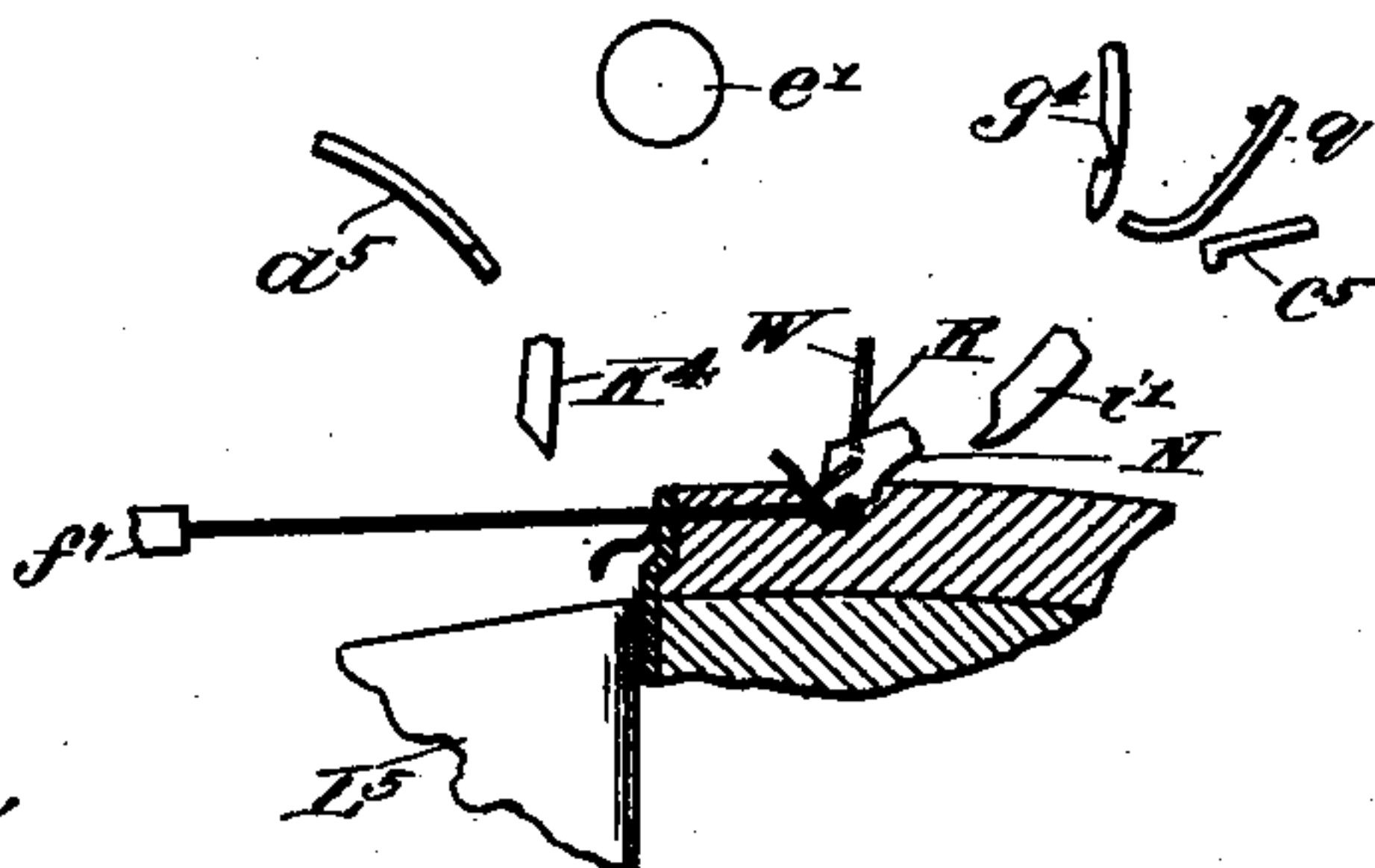
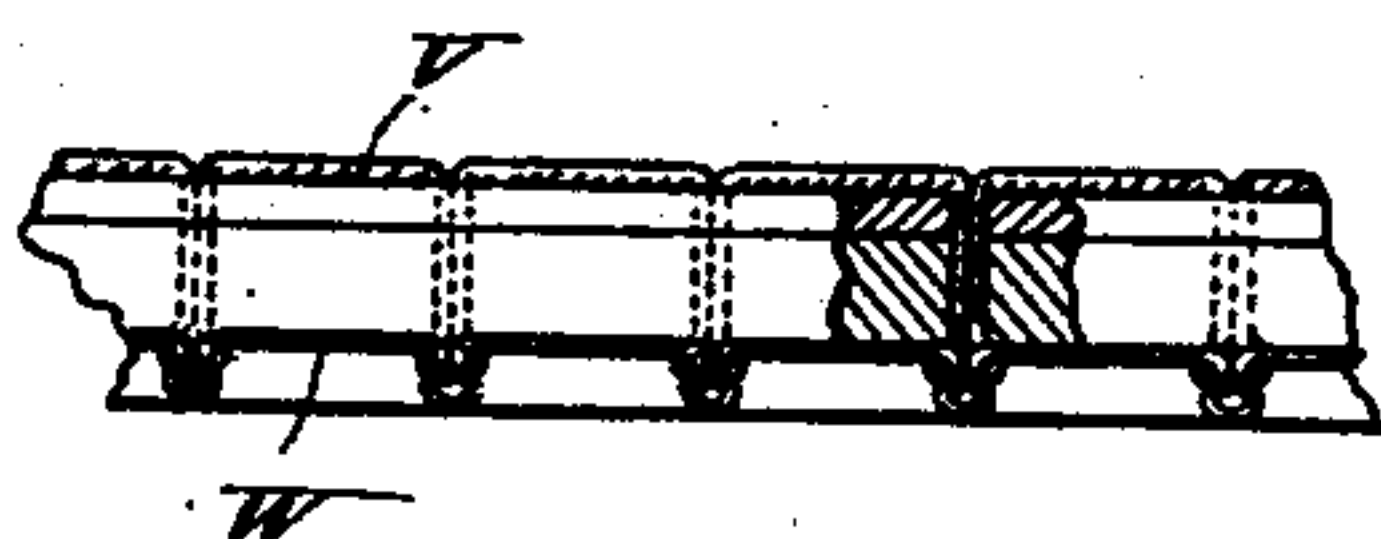


Fig. 23.



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UNITED STATES PATENT OFFICE.

EDWIN E. BEAN, OF WARNER, NEW HAMPSHIRE, ASSIGNOR TO THE LOOP-
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SACHUSETTS.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 697,600, dated April 15, 1902.

Application filed August 31, 1900. Serial No. 28,650. (No model.)

To all whom it may concern:

Be it known that I, EDWIN E. BEAN, a citizen of the United States, residing at Warner, in the county of Merrimack and State of New Hampshire, have invented certain new and useful Improvements in Shoe-Sewing Machines, of which the following is a specification.

This invention relates to certain improvements on the shoe-sewing machine described in my Patent No. 666,225, dated January 15, 1901.

My invention consists of an automatic device for locking the clamp or presser-foot which engages the edge of the sole and resists the thrust of the needle, said clamp permitting me to dispense with the awl shown in the original application above referred to, and yet enabling the needle to penetrate a very thick "between substance" without difficulty. I have found in practice that the principal reason why a very thick between substance cannot be penetrated by the needle alone in the prior machines which are now in general use is because the shoe is not positively held against slipping down and a firm support to resist the thrust of the needle is not provided substantially in line with its path. As the needle forces its way through the between substance it has a strong tendency to press down the shoe, and as this force is largely resisted by the operator the result is that the needle passes out of the work too high or is sprung outwardly or partially straightened. This soon causes the needle to get out of shape and become broken. When the support is below the path of the needle, the shoe is often slightly tipped in the hands of the operator with the same results, and as a general rule the back-rest, which engages the shoe below the sole, has been relied upon to support the shoe and resist the thrust of the needle.

My improvements further consist in an improved form of looper for placing the thread in the eye of the needle and in a presser-finger which presses the upper into its proper place when sewing around the shank of a shoe, so that there will be no possibility of the needle passing through the upper at any points other than the proper ones.

My improvements further consist in several other particulars hereinafter to be referred to.

For a more complete understanding of my invention reference is made to the accompanying drawings, in which—

Figure 1 is a side elevation of the right-hand side of the machine. Fig. 2 is an enlarged side elevation of the right-hand side of the machine, showing the principal working parts thereof, a number of the parts being removed, so as to show certain parts not shown in Fig. 1. Fig. 2^a is a cross-section on the line *a a* of Fig. 2. Fig. 3 is a side elevation of the left-hand side of the machine. Figs. 3^a and 3^b are detailed views of the back-rest lock, Fig. 3^a being a cross-section on the line *b b* of Fig. 3^b. Fig. 4 is a cross-section on the line *c c* of Fig. 1, showing the positions of the cams and levers which operate the various parts as viewed from the front. Fig. 5 is a rear elevation of the machine. Fig. 6 is a side elevation of the looper in detail. Fig. 7 is a plan view thereof, showing the extreme lateral positions of the looper. Fig. 8 is a view showing the several vertical positions of the end of the looper. Fig. 9 is a cross-section on the line *d d* of Fig. 7. Fig. 10 is a front view of the channel-guide, showing the tension for the locking-thread. Fig. 11 is a detailed view of the measuring-finger. Fig. 12 is a front view of the cast-off. Fig. 13 shows a side, end, and top view of the lasting-finger. Fig. 14 is a detailed sectional view on the line *e e* of Fig. 2. Fig. 15 is a top view of the feed-lever. Fig. 16 is a front view of the several parts carried by the needle-shaft. Figs. 17 and 18 show the two positions of the feed spur and clamp. Figs. 19, 20, 21, and 22 show several of the positions assumed by the parts during the operation of taking the stitch. Fig. 23 is a view of the stitch after it is completed.

The frame of the machine consists of a horizontal base-piece A, from the outer ends of which two supports A' and A² project upwardly and carry the main driving-shaft B, which rotates in bearings in the said supports. The cams L, J, C, D, G, F, H, I, and K are mounted on and secured to said shaft B and have grooves cut into their faces of the proper conformation to transmit the de-

sired motion to the several devices to which they are connected. The cam C is provided with a cam-groove M on its periphery in addition to the groove in its face. Two shafts B' B² are secured to the uprights A' A² above, parallel with, and equidistant from shaft B, the shaft B' serving as a fulcrum for levers D', F', I', and K', and B² for levers H', C', and J'.

The mid-plate A³, which is secured to the base-piece A, is provided with a bracket A⁴ at its front end and radiators A⁶. The mid-plate is provided with a passage (see Fig. 4) which is connected to suitable passages in the bracket and radiators, an aperture A¹¹ being provided in the mid-plate, (see Fig. 5,) to which a steam-pipe may be connected, so that all parts may be kept hot.

The bell-crank lever G', which is operated by cam G, is fulcrumed to the mid-plate A³ by stud g, which is secured therein. The needle-segment g², which carries the curved needle g¹, having the hook on its side of shortest curvature, is secured to a short hollow sleeve g³, which projects from the left side thereof and is journaled in the lower end of the bracket-piece A⁴. (See dotted lines in Fig. 16.) The needle is oscillated by the cam G through the medium of lever G' and connecting-rod g'.

The needle-guide segment e² is secured to the shaft e' next the needle-segment, the larger end of said shaft being journaled in the bracket A⁴ inside the hollow sleeve g³ and the small end being journaled in the bracket-piece A⁵, which is secured to the mid-plate A³. The larger end of the shaft e' extends through the bracket A⁴ and has an arm e secured thereto, the hub of which is larger than the outside diameter of the sleeve g³ and serves as a guard to keep the needle-segment from sliding to the left on the shaft e'. A spring e⁴ is secured at one end to the outer end of the arm e and at its opposite end to the bracket A⁴ and at all times tends to throw the arm forward and throw the needle-guide e³, which is secured to the segment e², toward the point of the needle. A stop-pin e⁵ in bracket A⁴ is adapted to engage arm e and limit the forward movement of the guide, and a stop-pin e⁷ is secured to the sleeve g³ and extends through the slot e⁶ in arm e and serves to limit the movement of the needle-guide toward the point of the needle at all times, but permits it to engage the sole of the shoe in all positions of the latter while being sewed.

The feed-spur i' is secured to the side of segment I³ which is nearest to the needle-guide segment, and from its opposite side a hollow sleeve i² projects, which is journaled on the small end of the shaft e', the combined length of the segment I³ and its sleeve i² being equal to the distance between the needle-guide segment e² and the bracket A⁵ minus the length of the longest stitch required. The feed-spur segment I³ may therefore oscillate and slide

laterally on the shaft e'. The feed-spur i' has swinging and lateral movements on shaft e', its swinging movements being communicated to it from the cam I through the lever I', connecting-rod I², and segment I³, the connecting-rod I² being provided with universal joints to accommodate the compound movements of the segment I³.

The feed-clamp K⁴ is firmly secured to the segment K³, and the latter is journaled on the sleeve i² and is prevented from sliding laterally on the sleeve i² by a tongue i⁴, which is secured to the segment K³ and engages an annular groove i³ in the annular sleeve i².

The feed-clamp segment K³ is connected with the lever K' by the universally-jointed connecting-rod K², and the cam K is so formed as to give the clamp K⁴ two swinging forward-and-back movements during the process of taking the stitch, one of which is simultaneous with the forward-and-back swinging movement of the feed-spur, so that they move simultaneously toward and from each other on opposite sides of the between substance and clamp the material between them as they approach each other and release it as they recede. The other forward-and-back movement of the clamp takes place while the needle draws in the needle-loop. The lateral movements of the spur and clamp are simultaneous, both being operated by the lever M', which engages the groove M in the cam C, said lever swinging on the vertical pivot m, the latter being supported on bracket A¹⁰. The front end of the lever M' is pivoted to the link M² by a screw m', said link passing through an aperture A⁰ in the mid-plate. The opposite end of link M² is pivoted to a lever M³ by a screw m⁴, which is secured in the slot m⁵ of lever M³, said lever M³ being pivoted at its rear end on the screw m², which is secured in the bracket A⁵. (See Figs. 1, 3, and 15.) The forward end of lever M³ is provided with a vertical notch m³, (see Figs. 11 and 15,) which engages a tongue k⁷ on the segment K³. When the lever M' is swung on its pivot, the lever M³ will be caused to swing on its pivot m² and cause both segments K³ and I³ to slide on the shaft e'. The length of this lateral movement, and therefore the length of the stitch, will be adjusted by varying the position of the screw m⁴ in the slot m⁵, as will be obvious. The lower end of the clamp K⁴ is forked or cloven, (see Fig. 16,) so that the needle may pass directly between the forks of the clamp while it is holding the upper against the shoulder of the sole.

The rear end of the connecting-rod K² is provided with a flange k², which is located in a cup k⁵, the rear end of which is pivoted to the lever K'. The front end of the cup is provided with a screw-plug k⁴, through which the rod K² passes, and a spring k³ is interposed between said plug k⁴ and flange k². When the lever K' is thrown back to draw the clamp K⁴ against the upper and force the latter against the shoulder of the sole, the force

with which the clamp will engage the upper will be determined by the spring k^3 , which may be suitably adjusted by the plug k^4 . It will be obvious that the thickness of the between substance will vary in different portions of the parts to be sewed on account of the interposition of the counter and toe-cap and on account of the fact that some qualities of stock are more compressible than others.

Although the clamp K^4 is in somewhat different positions when different stitches are taken, the feed-spur always being brought to the same position, the upper will always be engaged with substantially the same force. This force, however, should not be excessive, as it would pinch the between substance too much and drive the feed-spur into the channel to too great an extent. The tension of the spring k^3 is therefore not made sufficient to resist the thrust of the needle as it passes through the between substance to form a hole therethrough, so that if this spring k^3 were not reinforced the needle would force the clamp back, loosening the grip of the spur and the clamp on the shoe, so that the shoe would no longer be supported and would slip down. To resist this thrust and prevent the grip on the shoe being loosened, I have provided a supplementary device for locking the clamp K^4 after it has reached its proper position, so that the clamp will be firmly held in any operative position which it may assume, will form a perfectly solid resistance to the thrust of the needle, and will clamp the between substance so firmly that the shoe cannot slip down. This locking device consists, essentially, of a latch O^3 , which is pivoted at its upper end on the pin O^4 and is provided with an inclined face at its lower end. An inclined shoulder k^5 is also provided on the clamp-segment K^3 . A bell-crank lever O is pivoted on the take-up shaft J^4 and is provided with a cam-slot O^6 at its rear end. This cam-slot is engaged by a pin O^5 , which is secured in the lower end of the lever M' , which operates the looper, as hereinafter set forth. A rod O^2 is pivoted to the latch O^3 at its forward end and its rear end passes to the upper end of the bell-crank lever O . A spring o is located on said rod O^2 between the bell-crank lever and a suitable stop o' , and check-nuts o^2 are located on the rear part of the rod O^2 and engage the rear side of the lever O . When the lever F' is swung forward, the horizontal portion of the lever O will be lifted and the vertical portion thrown forward, so that the latch O^3 will be swung forward, causing its lower end to engage the shoulder k^5 . The force with which the latch is thrown against the shoulder will be determined by the tension of the spring o , which needs only to be very light.

In operation the clamp K^4 is first brought against the upper with a force equal to the tension of the spring k^3 , and as soon as it has reached its proper position the latch will be

thrown forward, so that the lower inclined end thereof comes tightly into contact with the shoulder k^5 , as shown in Fig. 17. When the needle advances to penetrate the stock, it will be obvious that substantially the whole force which is necessary to resist the thrust of the needle is taken up by the latch O^3 , and as the pivot O^4 of the latch is placed so that it comes substantially in line with the line of force acting on the end of the latch no strain will be thrown on the spring o and the clamp will be held so that the spring k^3 cannot be further compressed. A perfectly solid resistance is thus provided to oppose the thrust of the needle, which is substantially in line with the path thereof, the two prongs of the clamp K^4 engaging the upper on each side of the needle and at the same level as the point where the needle passes through the work. There is therefore no tendency to shift the shoe in the hands of the operator or possibility of the clamp's being thrown back by the pressure of the needle and separating the clamp and spur, so that the shoe may slip down and cause the needle to bend outside its proper arc and pass through the between substance in a direction other than that desired. The pivot of the latch is so located with respect to the center on which the clamp is swung and to the shoulder k^5 that the latter moves away from the pivot as it is advanced, and the engaging end of the latch is inclined with respect to a radius drawn thereto from the center of the pivot. The engaging surfaces of the shoulder and latch may therefore come into solid engagement within a range of positions which is amply sufficient for the purpose. The clamp will therefore be locked in whatever position it may assume, so that it is immaterial whether the between substance be thick or thin.

The usual and most desirable way of fitting the sole of a turn or welt shoe preparatory to machine-sewing is to cut a rabbet in the edge thereof, leaving a vertical shoulder, against which the clamp presses the upper, and a horizontally-projecting flange, directly above which the needle emerges. In lasting a shoe it is difficult to draw the upper tightly against the last at the shank of the shoe so that it will fit the last closely and will be drawn down tight on this flange of the sole even after the upper has been pressed in by the clamp K^4 . In sewing this portion of the shoe it is necessary to tip the last so that the portion of the upper next the edge of the sole is nearly horizontal. For this reason there has been great difficulty experienced in causing the needle to pass out through the upper at the proper point, it often happening that the needle passes out through the upper below the point at which it should, thus badly injuring the shoe. To prevent this occurrence and to provide a means for forcing the upper down on the flange of the sole and holding it in its proper position to receive the point of the needle, I have provided what I term a "presser-

finger," which engages the upper directly below the end of the clamp K^4 . The mechanism which comprises this portion of my invention consists of a slide S , which is connected at its rear end to the lever F' by a bolt s . The forward end of the slide is provided with a slightly-inclined slot s' , through which a screw s^2 passes and is secured in the mid-plate A^3 . The bolt s is provided with an enlarged head on its inner side and passes through an elongated slot s^5 . (Shown in dotted lines in Fig. 2 and in section in Fig. 2^a.) A spring-washer s^4 of any suitable form is provided between the nut on the outer end of the bolt s and the lever F' , through which the bolt passes. The lever F' is provided with enlargements s^8 on the front and rear sides thereof directly opposite the end of the slot through which the bolt s passes. A spring s^3 is secured to the rear side of lever F' and rests at its lower end on the rear enlargement s^8 . An angular bracket F^0 is secured to or cast with the lever F' and is provided with an adjusting-screw s^9 , which engages the rear side of the spring s^3 at an intermediate portion thereof, so as to reinforce the spring and give it the desired tension. The bottom portion of the spring s^3 is of sufficient width to extend beyond the edge of the lever F' and engage the end of the slide S in certain positions of the latter. (See Fig. 2^a.) The nut on the bolt s is tightened, so as to give the desired frictional connection between the lever F' and the slide S . The front of the slide S is provided with a forwardly-extending finger S' , which is curved upwardly at the intermediate portion to permit the last to be swung upwardly while sewing the shoe, and the forward end thereof is provided with a notch s^6 , which is directly in line with the path of the needle and of sufficient width to permit the needle to pass therein. (See Fig. 13.) The front edge of the finger is made comparatively sharp, and the inclined surface on the upper side thereof corresponds, substantially, to the inclined surface at the bottom of clamp K^4 , so that when the finger is pressed forward these two surfaces will come into close engagement. The particular form of the end of this finger is not wholly essential; but it is preferably made inclined on both upper and under sides, so that they meet in a comparatively sharp edge, as shown in Fig. 13, although it may be made inclined on the upper side only with almost equal advantage. The looper F^6 is also operated by the lever F' , so that it will be observed that the latch O^3 and the presser-finger S' will both be advanced at the same time the looper is advanced to thread the needle and after the clamp K^4 has come into engagement and fed along the shoe. When the lever F' begins its forward movement, the slide S will be in its rear position opposite to that shown in Fig. 2 and will then be carried forward by the frictional engagement of the head of the bolt s and the side of the lever F' therewith, and

as the slide is moved forward it will be lowered slightly on account of the inclination of the slot s' , the inclined upper surface at the end of the finger engaging the inclined lower end of the clamp and the under side of the finger pressing the upper down on the flange of the sole and holding the same in its proper position. (See Fig. 17.) After the end of the finger has been forced into contact with the upper and has pressed it into place the finger can no longer be advanced, and therefore the bolt s will slide in the slot s^5 until the end of the slide engages the spring s^3 . When the slide and spring come into contact, as shown in Fig. 2^a, the spring will be forced rearwardly by the slide, so that the force with which the end of the finger presses the upper against the sole will be determined by the tension of the spring s^3 plus the force of the frictional engagement between the slide and lever F' . This tension is sufficient to press down the upper into place and hold it while the needle is passing therethrough. It will be observed that this presser-finger is of no particular advantage, except when sewing those portions of the shoe in which the angle between the bottom and side of the last closely approaches one hundred and eighty degrees and therefore holds the upper nearly in line with the direction of movement of the point of the needle as it passes through the upper, as in the shank of the shoe. In sewing these portions of the shoe it is, however, of great importance, and the danger of the needle passing through the upper at points other than that which it is intended to pass is wholly avoided.

The looper is constructed and operates substantially the same as shown and described in the prior application above referred to, with the single exception now to be referred to.

In my prior machine, above referred to, considerable difficulty was experienced in causing the looper at all times to place the thread in the needle-hook, as it was necessary to have the thread-measuring finger draw the thread away from the shoe, so that the thread was drawn in a diagonal direction by the looper as it was laid in the needle-hook. I therefore provide the inner side of the swinging lever F^6 , which carries the thread-guide f^7 , with a forwardly-projecting finger F^7 , (see Figs. 3 and 7,) which is nearly as far toward the front as the end of the thread-guide f^7 .

The thread-finger d^5 is secured to the shaft d^4 and operated by the cam D through the medium of the lever D' , connecting-rod d , and crank-arm d' . The right-hand side of the shaft d^4 is provided with an annular groove d^7 , and the front end of the feed-lever M^3 is provided with a bracket m^5 , which engages said groove d^7 , as shown in Fig. 11. The shaft d^4 is journaled in mid-plate A^3 and is adapted to slide back and forth therein. When the take-up is thrown back so as to take up the thread and set the stitch about the locking-

loop and while the thread-guide f^7 is in its rearmost position, as shown in Fig. 22, the feed-spur and feed-clamp are thrown out of engagement with the work and moved to the right by the lever M^3 , so as to engage the shoe at a more advanced point. As they are moved to the right the shaft d^4 is also moved to the right, so that the end of the thread-finger d^5 is carried to the right of the thread leading from the stitch which has just been formed to the guide f^7 , as shown in dotted lines in Fig. 7. The thread-finger is then thrown down, so that its end is at the right of the thread, and its shoulder d^6 engages the upper side thereof and draws it down, so that it is held in a notch formed in the lower end thereof. When the lever M^3 is thrown to the left to feed along the shoe, the shaft d^4 will also be moved to the left, and the thread-finger will be carried to the position shown in full lines in Fig. 7. The looper then advances, following the dotted line Z, (shown in Fig. 7,) in the direction of the arrow, and as it advances the thread will be carried into the notch in the end of the finger F^7 , so that the portion of the thread which runs from the end of the guide f^7 to the notch in the end of finger F^7 will be held nearly at right angles to the path of the needle. As the lever F^6 is swung down guide f^7 passes on one side of the needle and finger F^7 on the other, as indicated in Fig. 7, so that the thread will be laid securely in the needle-hook and all possibility of the needle not being properly threaded is avoided. After the thread has been laid in the needle-hook the needle retreats and draws the loop through the work. At the same time the thread-measuring finger is swung upward and the take-up advanced, so that slack thread is provided on each side of the needle, as explained in the previous patent above referred to.

The rear side of the cast-off Q is provided with an inwardly-projecting pin q^7 . (See Figs. 1, 2, 3, and 12.) In operation after the needle has advanced and the thread been placed therein, as shown in Fig. 19, and the loop drawn through the work (shown in Fig. 20) and the needle drawn back to its fullest extent the cast-off is swung forward, so that the aperture q^5 therein coincides with the path of the needle. The needle is then advanced through the aperture q^5 in the cast-off and casts off the needle-loop. As the needle-guide is constantly drawn forward by the spring e^4 and held close to the hook of the needle it would prevent the loop being cast off if means were not provided to hold it away from the hook of the needle during the cast-off operation. As the needle is advancing to pass through the cast-off the pin q^7 on the cast-off will engage the under side of the needle-guide and hold it away from the needle-loop, as shown in Fig. 21, so that it will not interfere with the operation of casting off the loop.

It is desirable that the locking-thread W be placed under a slight degree of tension, and

to provide this tension I employ the means shown in Figs. 1 and 10, which consists of a flat spring n^3 , which is secured to the arm N^7 by screw n^5 . The end of said spring is provided with an aperture which is slightly out of line with the aperture in the channel-guide N, through which the thread W passes, and the end of said spring is normally held slightly above the arm N^7 . When the thread is drawn through the holes, there is a slight tendency to draw down the spring, which places the thread under a certain amount of tension. This tension may be increased by tightening the screw n^4 .

The operation of the machine is the same in every other particular as that disclosed in the prior patent above referred to, the locking-loop being drawn through the needle-loop and the needle-loop drawn about the locking-loop, as therein disclosed. A detailed description thereof is therefore deemed unnecessary.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is as follows:

1. A shoe-sewing machine comprising an oscillating needle, means for advancing the same through the work, an arm which is adapted to engage one side of the between substance and positively hold it against movement in one direction, a presser-foot, means for yieldingly forcing said foot against the opposite side of the between substance in opposition to the needle as it passes there-through, a shoulder on said presser-foot having a face which moves in a predetermined path, a pivoted latch having a face which is adapted to engage the face of said shoulder, the pivot of said latch being so arranged that the path described by the face of the latter as it is swung on its pivot intersects the path of the face on the shoulder at nearly right angles, the surface of one of said faces being inclined at an acute angle to the path of any point therein so that as the face of the latch crosses the path of the face of the shoulder, the arc described by a given point in the face of the latch will intersect the face of the shoulder in whatever position the latter may assume while in engagement with the work, and means for swinging the face of said latch into engagement with the face of the shoulder after the foot has been brought into engagement with the work and before the needle passes therethrough, thereby positively locking said foot in whatever position it may assume while in engagement therewith.

2. A shoe-sewing machine comprising an oscillating needle, means for advancing the same through the work, an arm, means for positively forcing the same rearwardly into engagement with the sole of the shoe, a presser-foot, means, acting through a spring, for forcing said presser-foot forwardly so that it will force the upper against the edge of the sole, a shoulder on said presser-foot a pivoted latch having its pivot so arranged that said shoulder moves away therefrom when

said presser-foot moves forwardly, an engaging surface on said latch which is adapted to engage said shoulder in various positions of the latter and lock said presser-foot against backward movement, a lever, a rod which connects said latch and lever, a spring through which said lever must act to move said latch forwardly into engagement with said shoulder, and means for oscillating said lever so that the engaging surface of said latch will be brought into engagement with said shoulder after the presser-foot has been brought into engagement with, and before the needle passes through, the work.

3. A shoe-sewing machine comprising a hooked needle, means for advancing the same through the sole and upper in turn, means for placing the thread in the needle-hook while the needle is in its advanced position and for causing it to draw back a loop of thread through the work, a presser-foot having a forked end, means for causing the same to press the upper against the edge of the sole on each side of the path of the needle, a presser-finger, means for causing the same to press the upper against the edge of the sole below the path of the needle and in advance of the passage of the needle through the upper, and means for throwing said foot out of engagement with the upper while the needle is drawing back its loop.

4. A shoe-sewing machine comprising a hooked needle, means for advancing the same through the sole and upper in turn, means for placing the thread in the needle-hook while the needle is in its advanced position and for causing it to draw back a loop of thread through the work, a presser-foot, means for causing the same to press the upper against the sole at each side of the path of the needle, a presser-finger, means for causing the same to press the upper against the edge of the sole below the path of the needle and in advance of its passage through the upper, and means for moving said presser-foot out of engagement with the upper while the needle is drawing back its loop.

5. A shoe-sewing machine comprising a needle, a presser-foot having two arms at its lower end between which the needle may pass, means for causing said arms to press the upper against the sole at each side of the path of the needle, a finger, means for advancing

the same so that it will engage the upper directly below the ends of said arms, means for advancing the needle so that it will pass through the work and between said arms, and its point will emerge inside the angle included by the foot and finger, means for causing the needle to draw back a loop of thread through the work and for moving said foot and finger out of engagement with the upper while the needle is drawing back its loop.

6. A shoe-sewing machine comprising a needle, means for oscillating the same, and for causing it to draw a loop of thread through the work, a presser-foot having two arms at its lower end, inclined surfaces at the ends of said arms, means for causing said arms to press the upper against the edge of the sole at each side of the path of the needle, a presser-finger having an inclined surface at its end and on the upper side thereof, means for advancing said finger and for causing said inclined surfaces to come into engagement, and the under side of the finger to hold the upper against the flange of the sole in advance of the passage of the needle there-through and means for separating said foot and finger while the needle is drawing in its loop.

7. A shoe-sewing machine comprising a needle, means for advancing the same through the work and causing it to draw back a loop of thread as it recedes, a presser-foot, and a presser-finger, each being bifurcated for the passage of the needle, means acting through springs for causing said foot and finger to press the upper against the shoulder of the sole on each side of the path of the needle, and against the flange of the sole below the path of the needle, respectively, in advance of the passage of the needle through the work, and means for withdrawing said foot and finger from the work while the needle is drawing back its loop, and for separating them so that the strand of thread leading from the preceding stitch may be drawn between them and against the upper.

In testimony whereof I have affixed my signature in presence of two witnesses.

EDWIN E. BEAN.

Witnesses:

LOUIS H. HARRIMAN,
D. B. JEFFERSON.