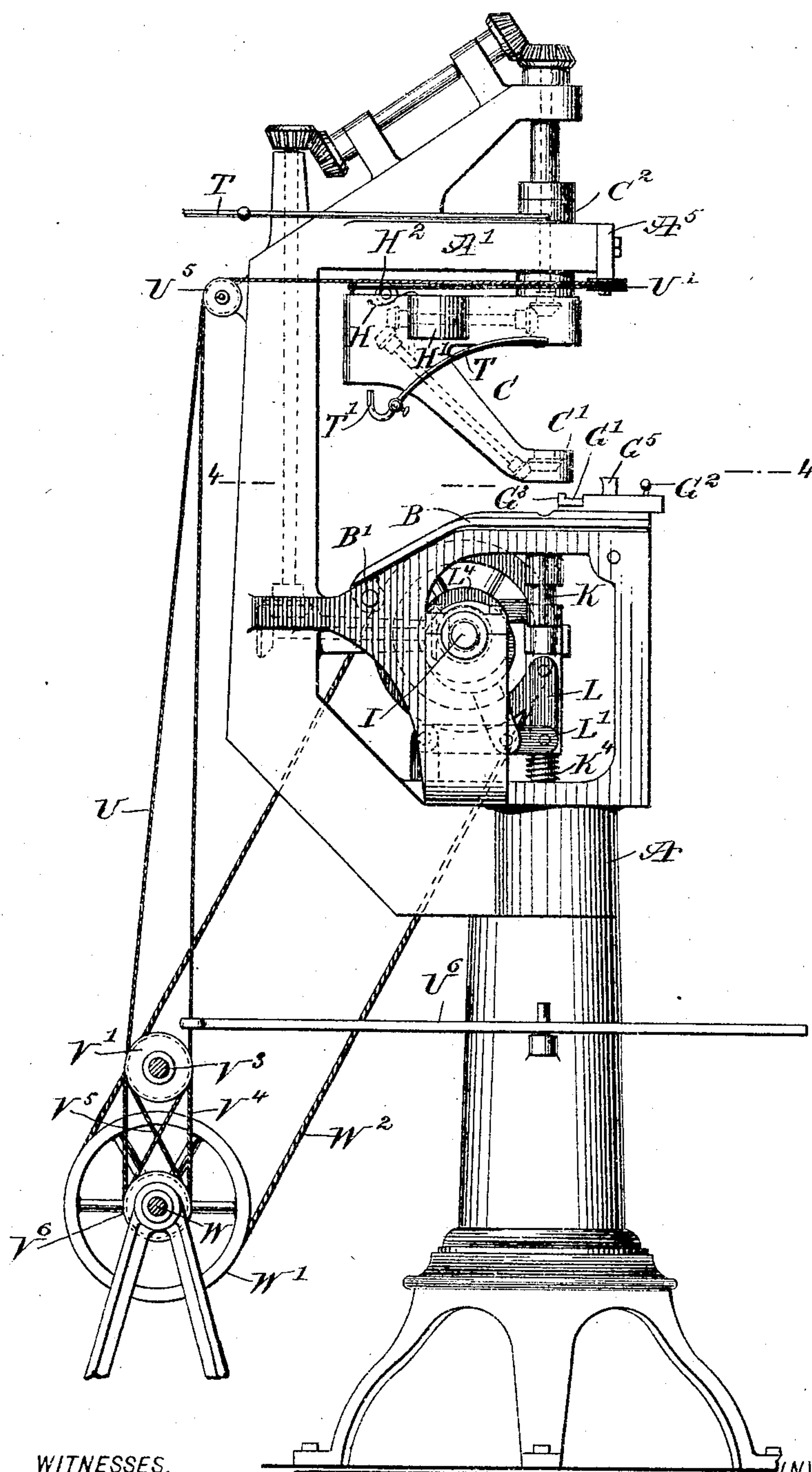


No. 796,866.

PATENTED AUG. 8, 1905.

J. A. RHOULT.
SHOE SEWING MACHINE.
APPLICATION FILED FEB. 4, 1904.

5 SHEETS—SHEET 1.



WITNESSES.

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FIG. 1

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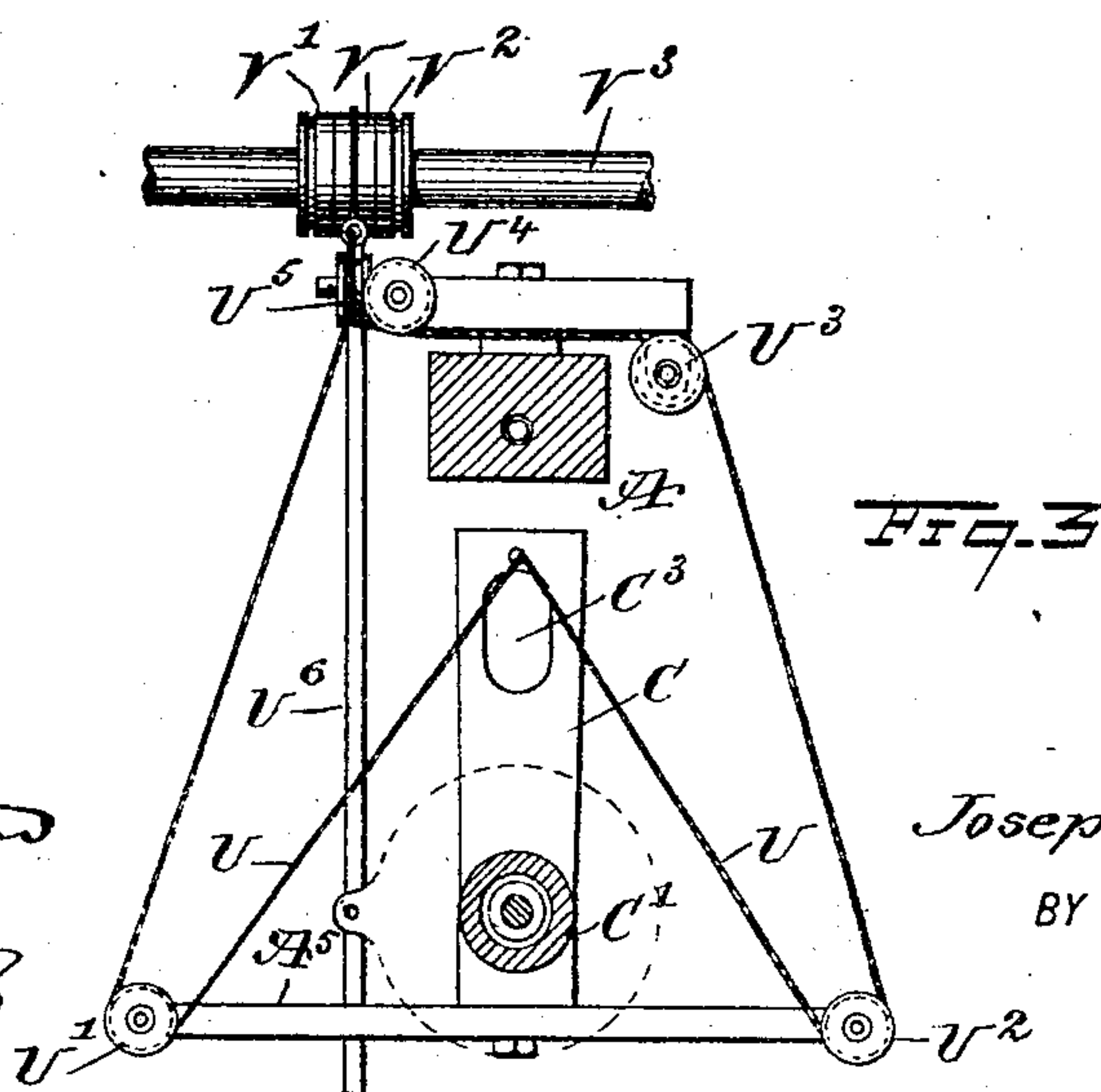
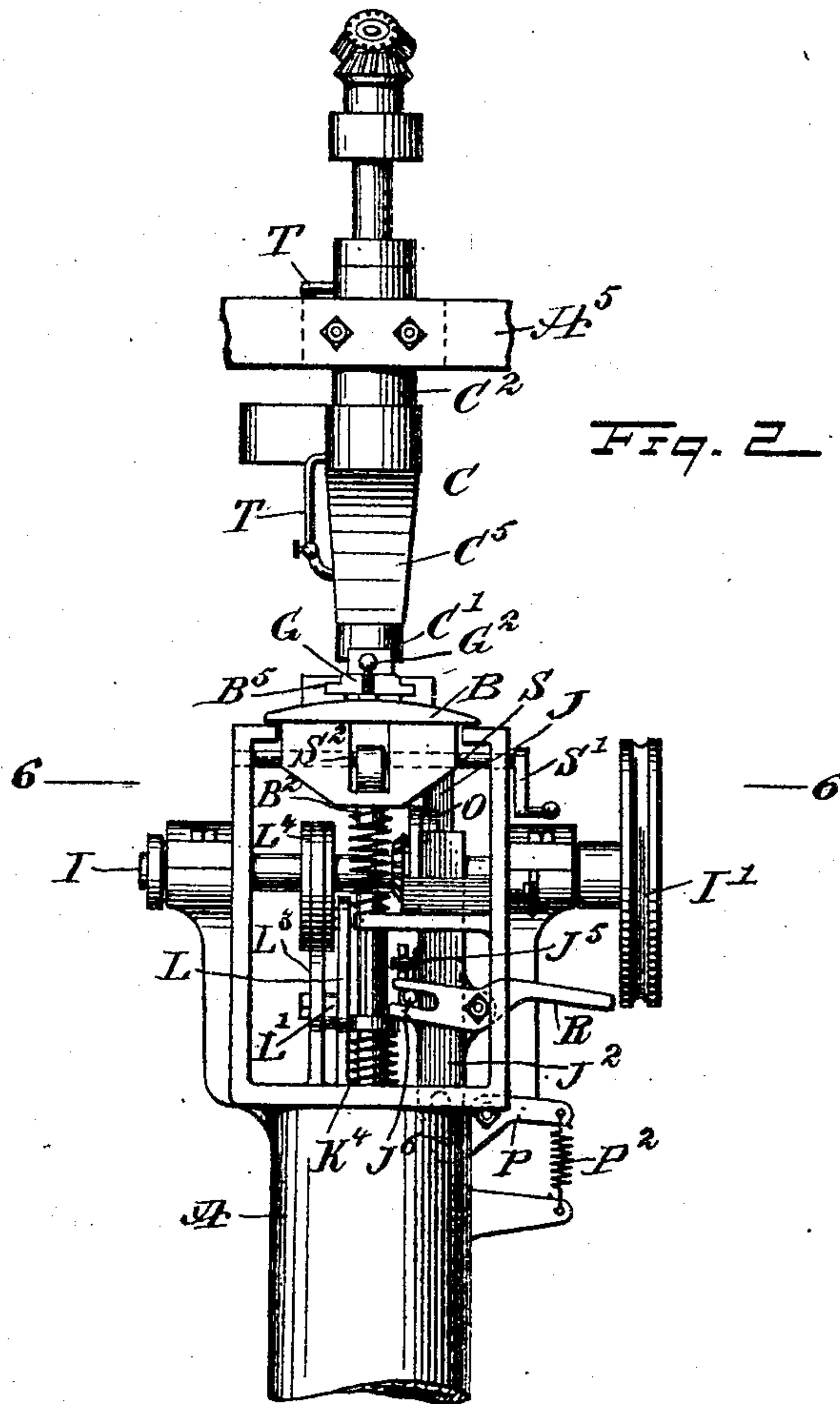
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APPLICATION FILED FEB. 4, 1904.

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5 SHEETS—SHEET 3.

Fig. 4

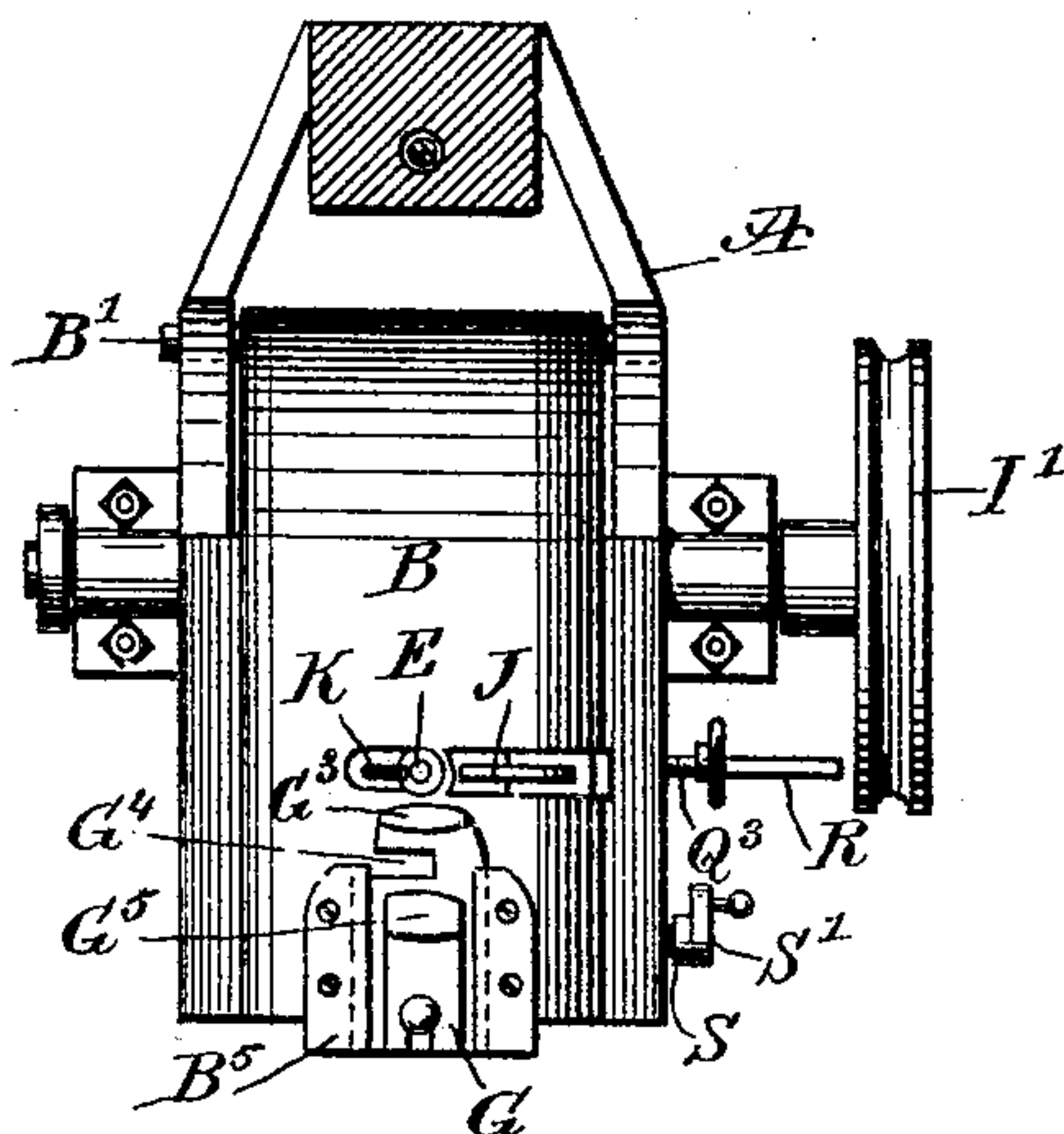


Fig. 5

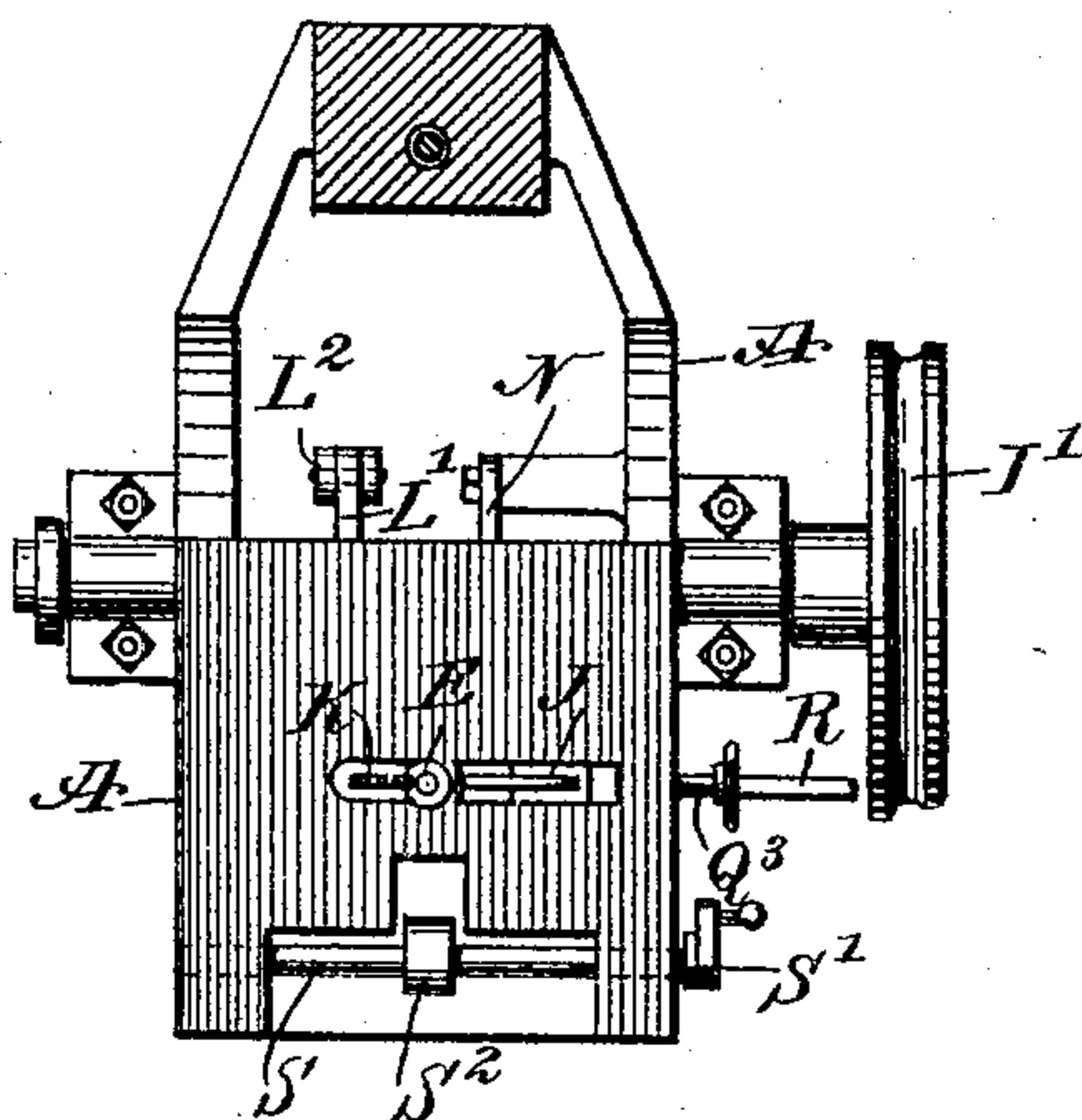
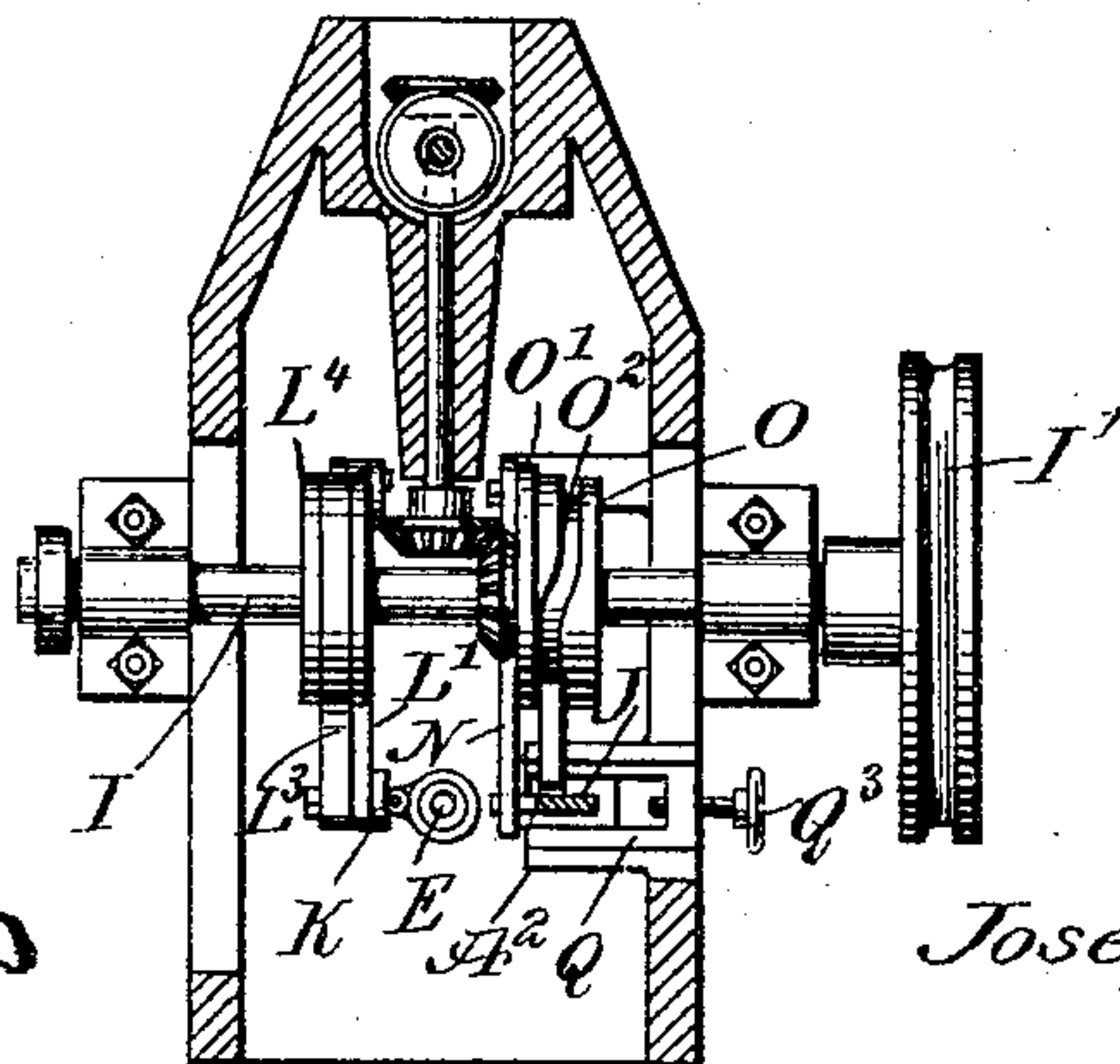


Fig. 6



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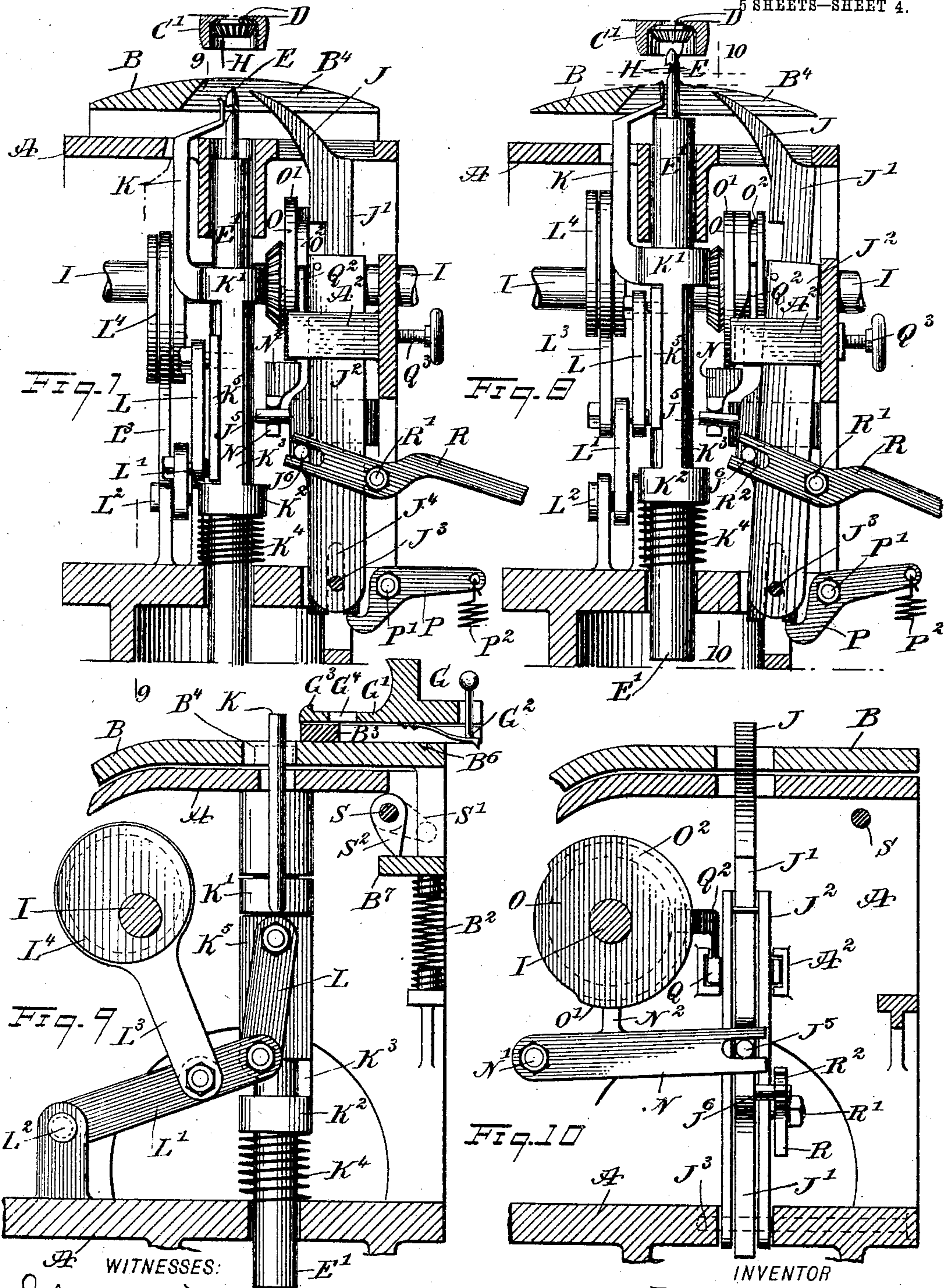
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APPLICATION FILED FEB. 4, 1904.

5 SHEETS—SHEET 4.



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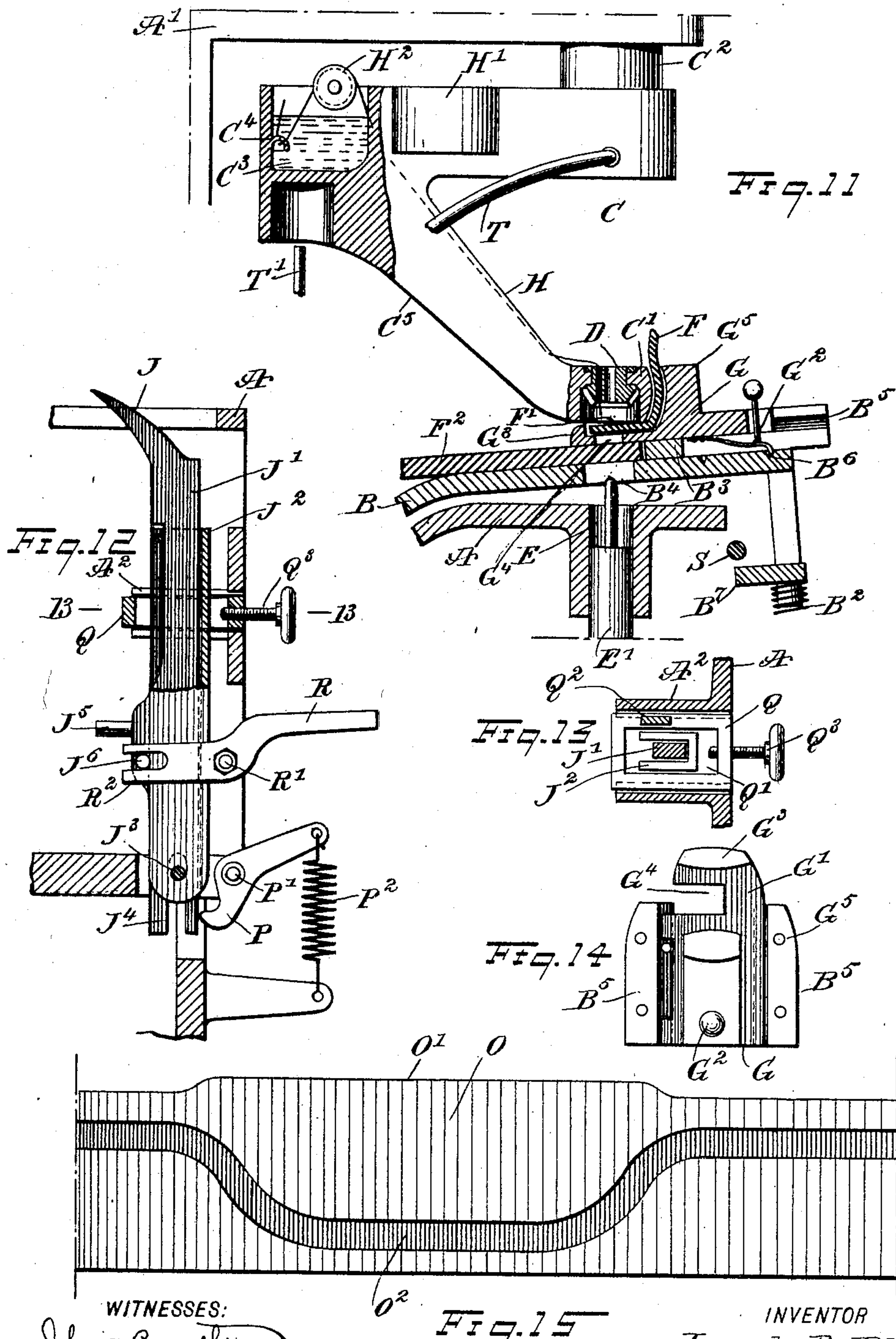
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5 SHEETS—SHEET 5.



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Fig. 15

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JOSEPH A. RHOULT, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HARRIS W. SPAULDING, OF HAVERHILL, MASSACHUSETTS.

SHOE-SEWING MACHINE.

No. 796,866.

Specification of Letters Patent.

Patented Aug. 8, 1905.

Application filed February 4, 1904. Serial No. 191,929.

To all whom it may concern:

Be it known that I, JOSEPH A. RHOULT, a citizen of the United States, and a resident of Haverhill, in the county of Essex and State of Massachusetts, have invented a new and Improved Shoe-Sewing Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved shoe-sewing machine more especially designed for sewing the outer sole onto the upper while both are in their natural positions, thus requiring no turning over of the shoe after being sewed.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement. Fig. 2 is a front elevation of the upper portion of the machine. Fig. 3 is a plan view of the shifting device for the horn, parts of the frame of the machine being shown in section. Fig. 4 is a sectional plan view of the improvement on the line 4 4 of Fig. 1. Fig. 5 is a similar view of the same, showing the work-table removed. Fig. 6 is a sectional plan view of the improvement on the line 6 6 in Fig. 2. Fig. 7 is an enlarged sectional front elevation of the improvement, showing the parts in position at the time the needle-bar is in a lowermost position. Fig. 8 is a similar view of the same, showing the parts in position at the time the needle-bar is in an uppermost position. Fig. 9 is a transverse section of the improvement on the line 9 9 in Fig. 7. Fig. 10 is a similar view of the same on the line 10 10 in Fig. 8. Fig. 11 is an enlarged transverse section of the improvement, showing the sole and upper in position on the work-table, horn, and guide. Fig. 12 is a sectional side elevation of the feed-bar and its operating mechanism. Fig. 13 is a sectional plan view of the same on the line 13 13 in Fig. 12. Fig. 14 is a plan view of the guide and its bearing on the feed-table, and Fig. 15 is an unrolled view of the cam for actuating the feed-bar and the presser-foot.

On a suitably-constructed main frame A is

pivoted at B' the rear end of a work-table B, pressed on at its free forward end by a spring B² in an upward direction toward the tip C' of a horn C, having its hub C² mounted to turn in a suitable bearing carried in an overhead arm A', forming part of the main frame A. Within the tip C' of the horn C is arranged a revolving looper D, which operates, in conjunction with a reciprocating hooked needle E, to form a stitch for sewing the edge or inwardly-turned flange F' of an upper F to an outer sole F² while the sole and upper are in their natural positions, (see Fig. 11)—that is, not turned over.

The sole F² rests with its under side on the top of the table B and abuts with its edge against an abutment B³, adjacent to an opening B⁴, formed in the table for the passage of the reciprocating needle E. Between the edge F' of the upper and the top of the outer sole F² is interposed the guide member G' of a folder or guide G, mounted to slide transversely in suitable guideways B⁵, formed on or secured to the top of the table B at the front end thereof, the said folder G being normally held in a rearmost position by a spring-catch G², engaging a notch B⁶ in the top of the table B, as plainly shown in the said Fig. 11. The rear end of the guide member G' is provided with an upwardly-turned flange G³, against which abuts the inner terminal of the edge F', the said flange G³ being located at the rear of a side opening G⁴, normally in vertical alignment with the opening B⁴ and likewise serving for the passage of the reciprocating needle E. The folder G is also provided on its top with an abutment member G⁵, having its rear face slightly curved for the outer side of the upper F to abut against immediately opposite the forward face of the tip C', which engages the inside of the upper and the top of the edge F', as plainly indicated in Fig. 11.

The guide member G' extends over the abutment B³ and the top of the sole F², and when the several parts are in the position shown in Fig. 11 and the needle E reciprocates and the looper D rotates then the needle passes up through the opening B⁴, through the sole F², the opening G⁴, and edge F' into the tip C' to engage the loop of a waxed sewing-thread H and to draw the loop down through the edge F', opening G⁴, sole F², and opening B⁴, after which the sole F² and the upper F are fed for-

ward, and the above-described operation is repeated to form the stitches for sewing the sole F^2 to the edge F' of the upper.

By having the folder G arranged as described the edge F' is properly turned inward the desired distance—that is, until its terminal abuts against the flange G^3 —and the proper form is given to the side of the upper F adjacent to the edge F' by the abutment member G' and the horn C , holding the upper between them, as plainly illustrated in Fig. 11.

By having the table B spring-pressed, as described, a twofold object is accomplished—that is, the table presses the sole F^2 , folder G , and flange F' upward for the flange to come in firm contact with the under side of the tip C' to insure proper sewing, and as the table is free to yield it readily accommodates itself to varying thicknesses in the sole F^2 and flange F' of the upper F .

The looper D is rotated by the usual gearing common in this class of machines from the driven shaft I of the machine, so that further description of this gearing is not deemed necessary.

The needle E is held on the usual needle-bar E' , reciprocated by suitable mechanism, hereinafter more fully described, from the said shaft I , which also by proper connections imparts the necessary motion to a feed-bar J and a cast-off K , both feed-bar and cast-off engaging the under side of the sole—the feed-bar for feeding the sole intermittently forward and the cast-off to hold the thread in the hook of the needle E when the latter is withdrawn from the sole F^2 . The cast-off K abuts against the under side of the sole by the pressure of a spring K^4 and remains in this position until it covers the descending hook of the needle and then descends with the latter.

The needle-bar E' is mounted to slide vertically in suitable bearings arranged in the main frame A , (see Figs. 7, 8, and 9,) and the said needle-bar is pivotally connected by a link L with the free end of a lever L' , fulcrumed at L^2 on the main frame A , and the said lever is pivotally connected with the eccentric-rod L^3 of an eccentric L^4 , held on the driven shaft I , so that when the machine is in operation the eccentric L^4 imparts an up-and-down swinging motion to the lever L' , which by the link L reciprocates the needle-bar E' and the needle E in an up-and-down direction.

The cast-off K is provided with a sleeve K' , mounted loosely on the needle-bar E' and connected by a bar K^3 with a second sleeve K^2 , likewise engaging the needle-bar E' . The sleeves K' and K^2 are spaced a suitable distance apart, and the lower sleeve K^2 is pressed on by the spring K^4 to normally hold the cast-off K in an uppermost position—that is, in engagement with the under side of the sole F^2 , as previously mentioned. On the needle-bar E' is secured a shifting plate K^5 intermediate the sleeves K' and K^2 , so that when the

needle-bar is moved downward a sufficient distance from its uppermost position then the lower end of the shifting plate K^5 moves in engagement with the sleeve K^2 , so as to carry the sleeve K^2 , and with it the cast-off K , in a downward direction to move the upper end of the cast-off out of engagement with the sole F^2 at the time the feed-bar J starts to work on the sole to feed the same forward.

When the needle-bar E' moves upward, then the cast-off K follows the upward movement of the needle-bar by the action of the spring K^4 , so as to engage the upper end of the cast-off with the under side of the sole before the needle-bar E' has completed its stroke, the needle-bar when finally reaching the end of its upward stroke standing in such a position that the upper end of the shifting plate K^5 is close to the sleeve K' .

By the arrangement described the cast-off K is held in engagement with the sole by the force of the spring K^4 independent of the needle-bar E' , employed for moving the cast-off out of the resting position, as above explained.

The feed-bar J has its shank J' mounted to slide up and down in a guide J^2 , fulcrumed at its lower end on a pivot J^3 , held on the main frame A , the said pivot being also engaged by an elongated slot J^4 , formed in the lower end of the shank J' of the feed-bar J .

The shank J' is provided with a sidewise-extending pin J^5 , engaged by the forked end of a lever N , fulcrumed at N' on the main frame and provided with an arm N^2 , (see Fig. 10,) abutting against the peripheral cam-face O' of a cam O (shown in detail in Figs. 10 and 15) and secured on the driven shaft I . The lower end of the shank J' is engaged by a catch P , fulcrumed at P' on the main frame and pressed on by a spring P^2 , so as to normally hold the shank J' and the feed-bar J in an uppermost position, and consequently the lever N , with its arm N^2 , in engagement with the peripheral cam-face O' of the cam O .

When the shaft I is rotated, the cam-face O' imparts a swinging motion to the lever N , so that the latter imparts an up-and-down sliding motion to the feed-bar J in the guide J^2 . The latter receives a sidewise-swinging motion from the cam O , and for this purpose the following device is provided: In a bearing A^2 in the main frame A (see Figs. 7, 8, 10, 12, and 13) is mounted to move sidewise a slide Q , having a rectangular opening Q' , through which extends loosely the guide J^2 and the shank J' , contained in the guide. An arm Q^2 extends from the slide Q in a transverse direction and engages a peripheral cam-groove O^2 , formed on the cam O , so that when the latter rotates, as previously described, then a sidewise-sliding motion is given to the slide Q to move the latter intermittently in engagement at its right and left hand ends

with the guide J^2 to intermittently rock the latter. The distance the guide J^2 and with it the shank J' and feed-bar J are rocked side-wise controls the length of the stitch, and in order to enable the operator to vary the length of the stitches the right-hand end of the slide Q is provided with a set-screw Q^3 under the control of the operator and adapted to abut with its inner end against the guide J^2 , so as to vary the rocking movement of the guide J^2 , the shank J' , and the feed-bar J , while maintaining the uniform sliding movement given to the slide Q from the cam O . Thus by screwing the set-screw Q^3 outward the shoe-sole is fed a longer distance, and consequently a longer stitch is provided, and by screwing the screw Q^3 inward the side-wise throw of the feed-bar J is diminished, and consequently the feed of the sole, to shorten the stitch formed by the stitch-forming mechanism, consisting of the looper D and the reciprocating hooked needle E , as above explained.

It is understood that when the machine is in operation the feed-bar J receives an up-and-down and simultaneous sidewise-rocking motion, so that the feed-bar moves in engagement with the sole, feeds the same forward the desired distance, and then descends and returns to an inactive lowermost position during the time the needle ascends and draws the loop down through the work. After this is done the feed-bar J again engages the sole and pushes the same forward and leaves the sole when the needle-bar rises and passes through the sole to the edge F' of the upper to engage the loop for the next stitch.

When it is desired to throw the feed-bar J temporarily out of action, then the operator takes hold of a hand-lever R , fulcrumed at R' on the main frame and engaging with its forked end a pin J^6 , projecting transversely from the shank J' , as plainly indicated in Figs. 7, 8, and 10. By actuating the lever R the shank J' , and consequently the feed-bar J , is caused to slide downward in the guide J^2 against the tension of the spring-pressed catch P , which readily disengages the lower end of the shank J' for the time being. As long as the hand-lever R is held in this position then the feed-bar J does not engage the under side of the sole, as the downward movement of the shank J' causes a downward swinging of the lever N , so that the arm N^2 is out of engagement with the cam-face O' , and hence an up-and-down sliding motion is not given to the feed-bar J from the cam O . When the operator swings the lever R downward at its handle end, then the shank J' and feed-bar J are returned to their former position and the spring-catch P again engages the lower end of the shank J' and at the same time the arm N^2 is again moved in engagement with the cam-face O' of the cam O .

During the last period of the sewing it is

necessary to withdraw the folder G from between the edge F' and the sole F^2 , and in order to allow such withdrawal of the folder G it is necessary to swing the table B downward a short distance to bring the under side of the tip C' a distance above the top of the edge F' of the upper to permit the flange G^3 to pass under the edge F' on sliding the folder G outward into the position shown in Fig. 9.

In order to swing the table B downward the desired distance, the following device is provided: A longitudinally-extending shaft S , journaled in suitable bearings arranged in the sides of the main frame A , is provided at one end with a handle S' , adapted to be taken hold of by the operator for turning the said shaft, and on the latter is secured a cam-arm S^2 , adapted to engage a projection B^7 , forming part of the free end of the table B . When a rocking motion is given to the shaft S , the cam-arm S^2 acts on the projection B^7 to press the same downward, thus imparting a downward-swinging motion to the table B against the tension of the spring B^2 . When the table is in this lowermost position, it is locked in place by the cam-arm S^2 , (see Fig. 9.) and the operator can now conveniently manipulate the catch G^2 to disengage the same from the notch B^6 and to then push the folder G outwardly to disengage the same from the edge F' and the upper F , after which the shaft S is again turned by the operator to unlock and release the table B , so that the spring B^2 thereof swings the table in an upward direction until the top of the upper again engages the under side of the tip C' , and then the sewing is proceeded with without the use of the folder G , but for a short distance only—that is, about an inch—to complete the sewing operation.

The waxed thread H unwinds from a spool contained in a holder H' , formed on or secured to the horizontal arm of the horn C , as plainly shown in Figs. 1 and 11, and the thread passes from the spool through an eye in the horn into a receptacle C^3 , formed in the top of the horizontal member of the horn, at the rear end thereof, and containing wax or similar material held in a melted state by heat emanating from the flame of a gas-burner T' , held on a pipe T , extending through the hub C^2 of the horn, to connect with a suitable gas-supply. In order to keep the waxed thread immersed in the molten wax contained in the receptacle C^3 , I provide the inside thereof with a hook C^4 , (see Fig. 11,) under which passes the thread up through the wax to a pulley H^2 , from which the thread passes through the hollow arm C^5 of the horn to the looper D , as plainly indicated in Fig. 11.

By the arrangement described the sewing-thread is always kept in a proper condition to insure good sewing of the sole to the edge of the upper.

It is understood that according to the curvature of the sole and upper it is necessary for

the operator to swing the horn C sidewise to bring the tip C' always in proper relation to the upper and sole, and in order to enable the operator to swing the horn around to the desired position the following device is provided, actuated by the knees of the operator, to allow free use of the operator's hands for manipulating the work and the lever R or handle S' whenever it is necessary to do so: The ends of a belt or cord U (see Figs. 1 and 3) are secured to the rear end of the horizontal member of the horn C, and the runs of the cord then extend forwardly in oblique directions for one run to pass over a pulley U¹ and the other over a pulley U², both supported on a bracket A⁵, carried by the overhead arm A' of the main frame A. The run that passes over the pulley U² extends rearwardly and then passes around pulleys U³ and U⁴ to finally pass over a pulley U⁵, over which also passes the other run, and the cord or belt U then extends around an idler V, mounted to rotate loosely alongside pulleys V¹ and V², held on a counter-shaft V³ and driven by belts V⁴ and V⁵ in opposite directions from pulleys V⁶ on the main shaft W, connected by suitable mechanism with other machinery for imparting a rotary motion to the shaft W. On the latter is secured a pulley W', connected by a belt W² with a pulley I' on the shaft I to rotate the latter and for giving the desired motion to the needle-bar, the feed-bar, and the cast-off, as previously explained.

The belt V⁵ is a crossed belt, as indicated in Fig. 1, so that when the shaft W is rotated the pulley V¹ rotates in one direction, while the pulley V² rotates in an opposite direction, and when the belt or cord U is shifted by a shifter-lever U⁶ onto the pulley V¹ then the horn C is swung from the right to the left, and when the belt or cord U is moved onto the pulley V² then the horn is swung from the left to the right, thus enabling the operator to give the desired motion to the horn for the purpose above described. The shifter-lever U⁶ is fulcrumed on the main frame A and extends to the front of the machine, so that the operator can conveniently actuate the shifter-lever U⁶ with the knees to move the belt U from the idler V either onto the pulley V¹ or onto the pulley V² for the purpose above described.

The operation is as follows: When the folder G is in a withdrawn position, as illustrated in Figs. 1 and 9, then the upper can be readily passed over the tip C' for the latter to extend inside of the upper, and then the folder G is moved rearward, so as to cause the abutment member G⁵ to press the side of the upper against the front of the tip C', and at the same time limit the inward movement of the edge F' by the terminal thereof abutting against the flange G³ of the guide member G', and then the sole is placed in position on the table B and pushed under the guide member G'

until the edge thereof abuts against the abutment B³. The machine is now started, so that the needle E and the looper D form the stitch, as previously described, and proper intermittent feeding of the sole and upper takes place by the action of the feed-bar J, and the cast-off K operates in the usual manner with the needle E to hold the thread in the hook of the needle at the time the hook leaves the sole on its descent.

It is understood that the opening G⁴ in the guide member G' is sufficiently large for the thread to draw the edge F' firmly in engagement with the sole F² to securely unite the edge F' and the sole, and when the edge and the sole F² have been sewed together all around within a distance of, say, one inch or so then the operator temporarily stops the machine, turns the shaft S, so as to swing the table B downward, and then withdraws or pulls the folder G forward to move the guide member G' and its flange G³ out from under the edge F' and the sole F², (see Fig. 9,) and then the table B is again unlocked by turning the handle S' in the reverse direction, so that the spring B² causes the table B to swing upward until the edge F' again abuts against the under side of the tip C' and the said edge lies in firm contact with the top of the sole F². The machine is now again started for completing the sewing to the beginning part thereof, but without the use of the folder G, as above explained.

It is understood that the withdrawal of the folder G is necessary, as otherwise the sewing could not be completed, owing to the side edge of the folder abutting against the beginning stitch of the sewing.

After the sewing is completed the machine is stopped and the table B is again swung downward and temporarily locked in the lowest position by the cam-arm S² to allow of conveniently removing the finished shoe from the horn and over the table B, and then another upper and sole are treated by repeating the operation, as above described.

By the use of the machine above set forth and illustrated in the drawings an outer sole is readily sewed to an upper while both are in the natural position, and hence turning the shoe after the sewing is accomplished and as heretofore practiced in machine-sewed shoes is entirely dispensed with, and an exceedingly strong and durable sewing can be had.

In practice I prefer to form the uppers complete, according to a predetermined upper-pattern, worked over a last, and then sewing the upper and sole together, as described.

The method of forming the upper and fastening the upper and sole together is more fully set forth in an application for Letters Patent of the United States, Serial No. 191,928, filed by me under even date herewith.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A shoe-sewing machine provided with a horn having a tip for engaging the top of the upper edge and the inside of the upper, a folder extending between the sole and the upper edge and engaging the outside of the upper, opposite the horn-tip, and stitch-forming mechanism, as set forth.

2. A shoe-sewing machine provided with a horn having a tip containing a looper and adapted to engage the top of the upper edge and the inside of the upper, a removable folder extending between the sole and the upper edge and engaging the outside of the upper, opposite the horn-tip, and a reciprocating needle for drawing the loop through the upper edge and sole, as set forth.

3. A shoe-sewing machine provided with a horn having a tip for engaging the top of the upper edge and the inside of the upper, a folder interposed between the upper edge and the sole, for guiding the upper edge, a spring-pressed table for the sole, to press the latter, the folder and the upper edge toward the horn-tip, and stitch-forming mechanism, as set forth.

4. A shoe-sewing machine provided with a horn having a tip for engaging the top of the upper edge and the inside of the upper, a folder interposed between the upper edge and the sole, for guiding the upper edge, a spring-pressed table for the sole, to press the latter, the folder and the upper edge toward the horn-tip, a looper in the horn-tip, and a reciprocating hooked needle for drawing the loop through the upper edge and sole, as set forth.

5. A shoe-sewing machine provided with a horn having a tip for engaging the top of the upper edge and the inside of the upper, a folder interposed between the upper edge and the sole, for guiding the upper edge, a spring-pressed table for the sole, to press the latter, the folder and the upper edge toward the horn-tip, the said folder being removably held on the said table, and stitch-forming mechanism, as set forth.

6. A shoe-sewing machine provided with a horn having a tip for engaging the top of the upper edge and the inside of the upper, a folder interposed between the upper edge and the sole, for guiding the upper edge, a spring-pressed table for the sole, to press the latter, the folder and the upper edge toward the horn-tip, the table having a fixed abutment for the edge of the sole to abut against and the table having a guideway for the folder to slide in, and stitch-forming mechanism, as set forth.

7. A shoe-sewing machine provided with a horn having a tip for engaging the top of the upper edge and the inside of the upper, a folder interposed between the upper edge and the sole, for guiding the upper edge, a spring-pressed table for the sole, to press the latter, the folder and the upper edge toward the horn-tip, the table having a fixed abutment for the edge of the sole to abut against and the table

having a guideway for the folder to slide in, a looper in the said horn-tip, and a reciprocating hooked needle having movement through the table and folder and adapted to draw the loop through the upper edge and the sole, as set forth.

8. A shoe-sewing machine provided with a horn having a tip for engaging the top of the upper edge, a looper in the tip, a table upon which the sole rests, said table having an opening therein and an abutment adjacent to said opening for the edge of the sole to abut against, a folder on the table for guiding the upper edge, said folder being provided with an opening for the passage of a needle, and a reciprocating needle for drawing the loop through the upper edge and sole, as set forth.

9. A shoe-sewing machine provided with a hinged table, pressed on by a spring and having an opening for the passage of the needle, a folder mounted to slide on the said table and having an apertured guide member for engaging the upper edge and an abutment member for engaging the outside of the upper, and an abutment in the top of the table, for the edge of the sole to abut against, as set forth.

10. A shoe-sewing machine provided with a hinged table, pressed on by a spring and having an opening for the passage of the needle, a folder mounted to slide on the said table and having an apertured guide member for engaging the upper edge and an abutment member for engaging the outside of the upper, an abutment in the top of the table, for the edge of the sole to abut against, and a horn mounted to swing and having a tip for extending inside of the upper, to engage the top of the upper edge and the inside of the upper, opposite the said abutment member of the folder, as set forth.

11. A shoe-sewing machine provided with a hinged table, pressed on by a spring and having an opening for the passage of the needle, a folder mounted to slide on the said table and having an apertured guide member for engaging the upper edge and an abutment member for engaging the outside of the upper, an abutment in the top of the table, for the edge of the sole to abut against, a horn mounted to swing and having a tip for extending inside of the upper, to engage the top of the upper edge and the inside of the upper, opposite the said abutment member of the folder, and stitch-forming mechanism including a looper in the horn-tip and a hooked needle adapted to pass through the said table and the said guide member, to draw the loop through the upper edge and sole, as set forth.

12. A shoe-sewing machine provided with a hinged table, pressed on by a spring and having an opening for the passage of the needle, a folder mounted to slide on the said table and having an apertured guide member for engaging the upper edge and an abutment mem-

ber for engaging the outside of the upper, an abutment in the top of the table, for the edge of the sole to abut against, a horn mounted to swing and having a tip for extending inside of the upper, to engage the top of the upper edge and the inside of the upper, opposite the said abutment member of the folder, stitch-forming mechanism, a feed-bar for engaging the sole at one side of the needle for the stitch-forming mechanism, and a presser-foot for engaging the sole at the other side of the needle, as set forth.

13. A shoe-sewing machine provided with a horn having a tip for engaging the top of the upper edge and the inside of the upper, a folder interposed between the upper edge and the sole, for guiding the upper edge, a spring-pressed table for the sole, to press the latter, the folder and the upper edge toward the horn-tip, stitch-forming mechanism, including a cast-off for the hook-needle, and a feed-bar for engaging the under side of the sole, to feed the latter intermittently forward, as set forth.

14. A shoe-sewing machine, provided with a reciprocating needle-bar, mechanism for reciprocating the needle-bar, a cast-off mounted to slide on the needle-bar, a spring coiled on the needle-bar and normally holding the cast-off in an operative position, and a fixed member carried by the needle-bar for engaging the cast-off during a part of the stroke of the needle-bar to move the cast-off into an inoperative position, as set forth.

15. A shoe-sewing machine, provided with a reciprocating needle-bar, means for reciprocating the needle-bar, a cast-off provided with spaced and connected sleeves slidably mounted on the needle-bar, a spring coiled about the needle-bar below the lowermost sleeve of the cast-off and normally holding the cast-off in an uppermost position, and a plate on the needle-bar for engaging the lowermost sleeve of the cast-off during a part of the stroke of the needle-bar to move the cast-off downward against the action of the said spring, as set forth.

16. In a shoe-sewing machine, an apertured table for supporting a sole, a folder on the table, a horn above the table and having a tip for engaging the top of the upper edge and the inside of the upper, a looper in the tip, a reciprocating needle-bar, a sliding and loosely-pivoted feed-bar, means engaging the feed-bar for yieldingly holding it in an operative position, means for imparting a vertically-reciprocating movement to the feed-bar, means for imparting a sidewise-rocking movement to said feed-bar, and means whereby the feed-bar may be moved into an inoperative position without disconnecting it from the means which imparts sidewise-rocking movement to it, as set forth.

17. In a shoe-sewing machine, an apertured table for supporting a sole, a folder on the

table, a horn above the table and having a tip for engaging the top of the upper edge and the inside of the upper, a looper in the tip, a reciprocating needle-bar, a sliding and loosely-pivoted feed-bar, means engaging the lower end of the feed-bar for yieldingly holding the same in an uppermost position, mechanism for imparting vertically-reciprocating movement to the feed-bar, mechanism for imparting sidewise-rocking movement to said feed-bar, and means for moving the feed-bars downward into an inoperative position and without disconnecting it from the mechanism which imparts the sidewise movement to it, as set forth.

18. In a shoe-sewing machine, an apertured table for supporting a sole, a folder on the table, a horn above the table and having a tip for engaging the top of the upper edge and the inside of the upper held in the folder, a looper in the tip, a reciprocating needle below the table, and a feed-bar also below the table and having vertically-reciprocating and sidewise-rocking movement, as set forth.

19. In a shoe-sewing machine, an apertured table for supporting a sole, a folder on the table, a horn above the table and having a tip for engaging the top of the upper edge and the inside of the upper, a looper in the tip, a reciprocating needle-bar, a feed-bar having sidewise-rocking and vertically-reciprocating motion, means for varying the sidewise movement of the feed-bar, and means for moving the feed-bar out of active position, as set forth.

20. In a shoe-sewing machine, an apertured table for supporting a sole, a folder on the table, a horn above the table and having a tip for engaging the top of the upper edge and the inside of the upper, a looper in the tip, a reciprocating needle-bar, a sliding and loosely-pivoted feed-bar, means for normally holding the feed-bar in an uppermost position, mechanism for imparting sidewise-rocking and vertically-reciprocating motion to said feed-bar, means for varying the rocking movement of the feed-bar, and means for moving the feed-bar out of active position without disconnecting it from the rocking actuating means, as set forth.

21. A shoe-sewing machine provided with a horn, a hinged work-table, a spring pressing the work-table toward the said horn, a movable folder on the work-table, and manually-controlled means for swinging the table from the said horn, as set forth.

22. A shoe-sewing machine provided with a horn, a hinged work-table, a spring pressing the work-table toward the said horn, a movable folder on the work-table, and manually-controlled means for swinging the table from the said horn, the said means comprising a rock-shaft and a cam-arm thereon, adapted to engage the said table, as set forth.

23. A shoe-sewing machine provided with a horn mounted to swing, a driven shaft, and

manually-controlled means connecting the said shaft with the said horn, to impart a desired swinging motion to the horn, as set forth.

24. A shoe-sewing machine provided with a horn mounted to swing, a driven shaft, a gearing connecting the said shaft with the said horn, to swing the latter to the right or left, and a shifting device for the said gearing, controlled by the operator's knees, as set forth.

25. A shoe-sewing machine provided with means for folding the marginal portion of an upper and having a guide member for the folded edge of the upper, and an abutment member for engagement with the outside of the upper, as set forth.

26. A shoe-sewing machine provided with means for folding the marginal portion of an upper and having a guide member for the edge of the upper, and an abutment member for engagement with the outside of the upper, the said guide member having an upturned flange for contact with the edge of the upper, as set forth.

27. A shoe-sewing machine, comprising a yieldingly-mounted and apertured table, a horn mounted to swing above the table and provided with a tip for engaging the inturned edge of the upper, a looper in the tip of the horn, a folder on the table for engaging the upper edge and the inside of the upper, a reciprocating needle-bar below the table, a cast-off for the needle, said cast-off being controlled by the movement of the needle-bar, and a feed-bar having sidewise and vertically-reciprocating motion, as set forth.

28. A shoe-sewing machine, comprising a yieldingly-mounted and apertured table, a swinging horn above the table and provided with a tip for engaging the inturned edge of the upper, a looper in tip of the horn, a folder on the table and provided with an apertured member upon which the inturned edge of the upper rests and with a shoulder against which the said inturned edge abuts, a reciprocating needle-bar below the table, a cast-off for the needle, said cast-off being controlled by the needle-bar, a feed-bar having sidewise-rocking and vertically-reciprocating motion, and means for operating the horn, the needle-bar, and feed-bar from a common shaft, as set forth.

29. In a shoe-sewing machine, the combination with a horn having a tip for engaging the inturned edge of the upper, a looper in the tip, and a reciprocating needle-bar, of a swinging support, means for imparting sidewise-rocking movement to said support, a feed-bar mounted to slide in the support and to move therewith, and means for imparting vertically-reciprocating movement to said feed-bar, as set forth.

30. In a shoe-sewing machine, the combination with a horn having a tip for engaging the inturned edge of an upper, a looper in

the tip and a reciprocating needle-bar, of a swinging support, means for imparting sidewise rocking movement to the support, means for regulating the throw of the said support, a feed-bar mounted to slide in the support and to move therewith, and means for imparting vertically-reciprocating movement to the feed-bar, as set forth.

31. In a shoe-sewing machine, the combination with a horn having a tip for engaging the inturned edge of an upper, a looper in the tip, and a reciprocating needle-bar, of a swinging support, means for imparting sidewise-rocking movement to the support, a sliding feed-bar mounted in the support, means for imparting vertically-reciprocating movement to the feed-bar, and means for moving the feed-bar into an inoperative position, as set forth.

32. In a shoe-sewing machine, the combination with a horn having a tip for engaging the inturned edge of an upper, a looper in the tip, and a reciprocating needle-bar, of a pivoted guide, means for imparting sidewise-rocking movement to the guide, a feed-bar mounted to slide in the guide and having a slot therein through which loosely passes the pivot of the guide, and means for imparting vertically-reciprocating movement to the said feed-bar, as set forth.

33. In a shoe-sewing machine, the combination with a horn having a tip for engaging the inturned edge of an upper, a looper in the tip, and a reciprocating needle-bar, of a pivoted guide, a feed-bar mounted to slide in the guide and having a slot therein through which the pivot of the guide loosely passes, a slide through which the guide passes, means for imparting a sidewise-sliding motion to the slide and thereby rock the guide, and means for imparting vertically-reciprocating movement to the feed-bar, as set forth.

34. In a shoe-sewing machine, the combination with a horn having a tip for engaging the inturned edge of an upper, a looper in the tip, and a reciprocating needle-bar, of a pivoted guide, a feed-bar mounted to slide in the guide and having a slot therein through which loosely passes the pivot of the guide, a slide through which the guide passes, a set-screw passing through the slide and engaging the guide, means for operating the slide and thereby the guide, a spring-pressed catch engaging the lower end of the feed-bar, means for imparting vertically-reciprocating movement to the feed-bar, and a lever for moving the feed-bar downward against the action of the spring-catch, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH A. RHOULT.

Witnesses:

GEORGE M. BUNKER,
WILLIAM A. JACKSON.