

No. 732,959.

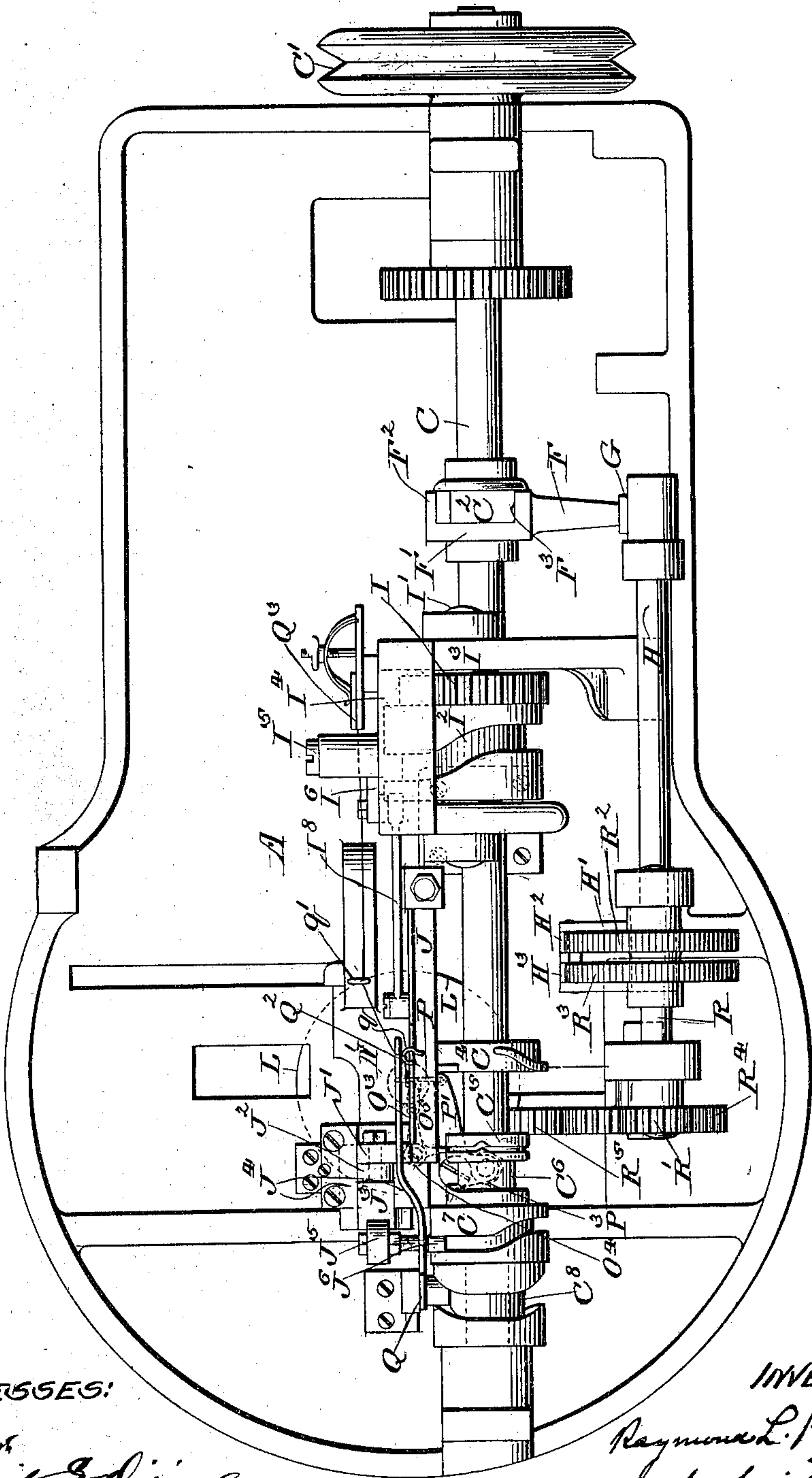
PATENTED JULY 7, 1903.

R. L. PLUMLEY.
OVERSEAM SEWING MACHINE.
APPLICATION FILED JAN. 25, 1902.

NO MODEL.

5 SHEETS—SHEET 2.

FIG. 2.



WITNESSES:

Howard
Robert J. Williams

INVENTOR:

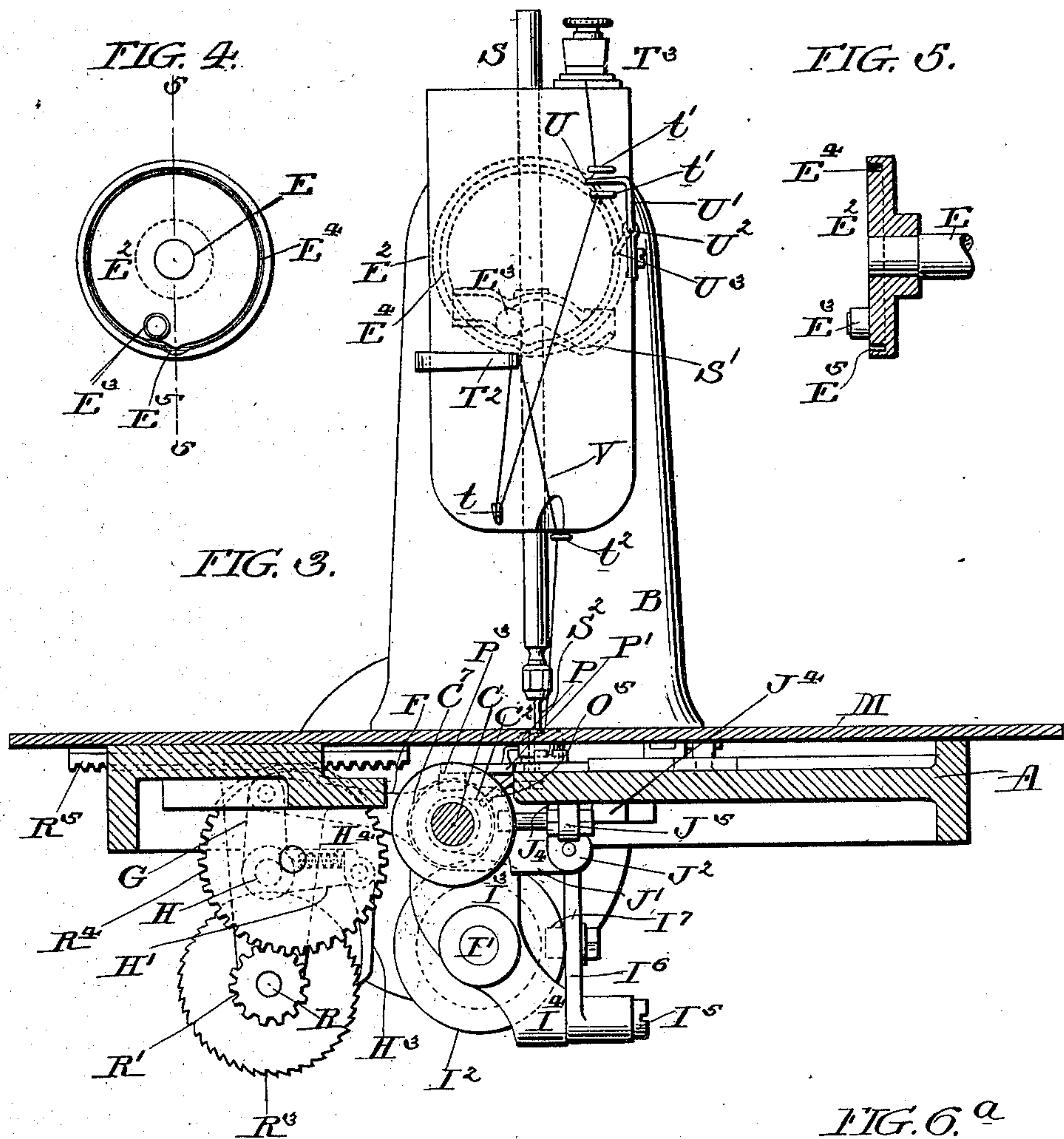
Raymond L. Plumley
by his atty.
Francis J. Chamberlain

R. L. PLUMLEY.
OVERSEAM SEWING MACHINE.

APPLICATION FILED JAN. 25, 1902.

NO MODEL.

5 SHEETS—SHEET 3.



WITNESSES:

W. H. H. H.
W. H. H. H.

INVENTOR:

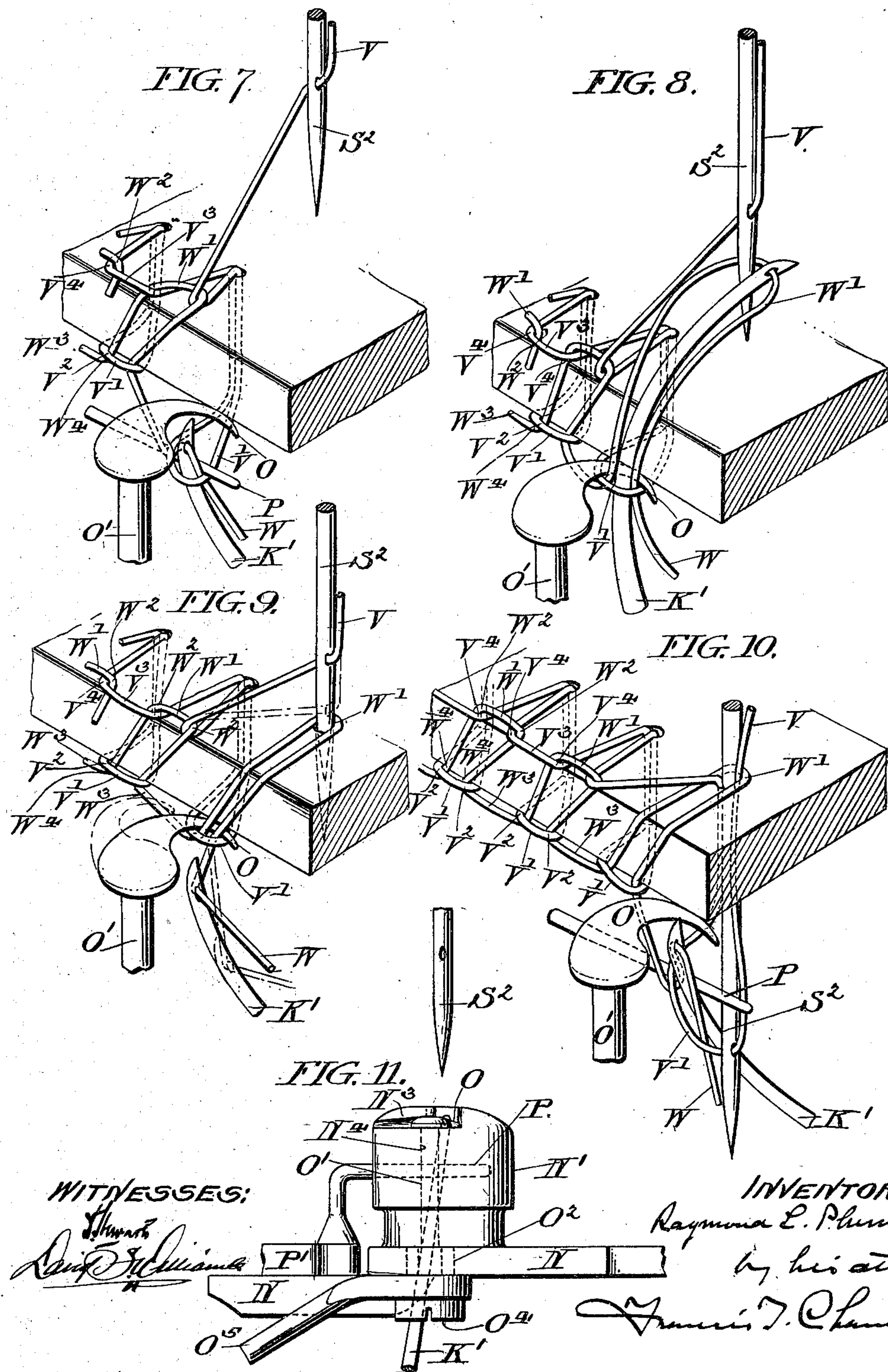
Raymond L. Plumley
by his atty
Francis J. Chambers

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NO MODEL.

5 SHEETS—SHEET 4.



WITNESSES:

Witnesses
Raymond E. Plumley
Francis T. Chambers

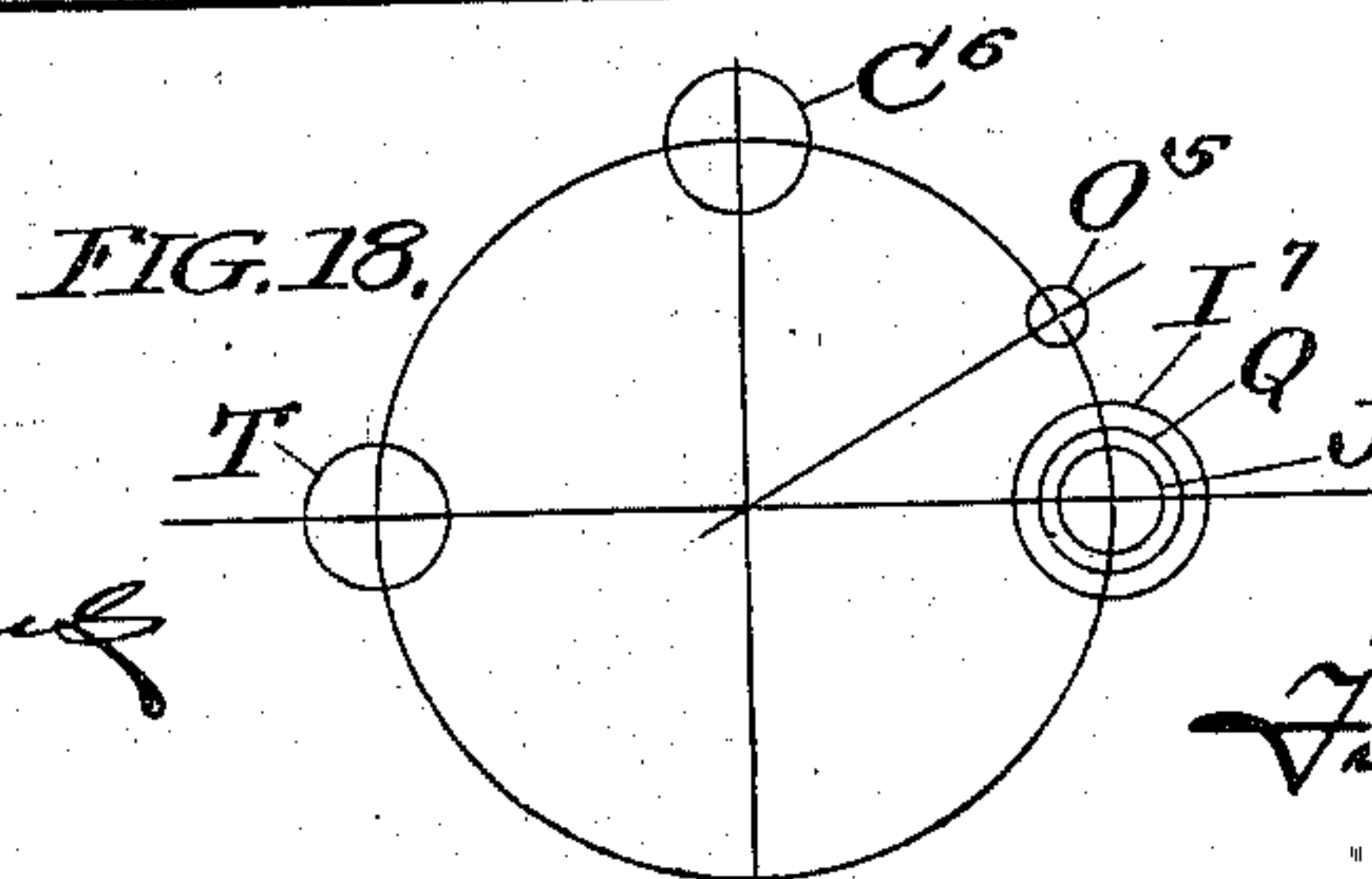
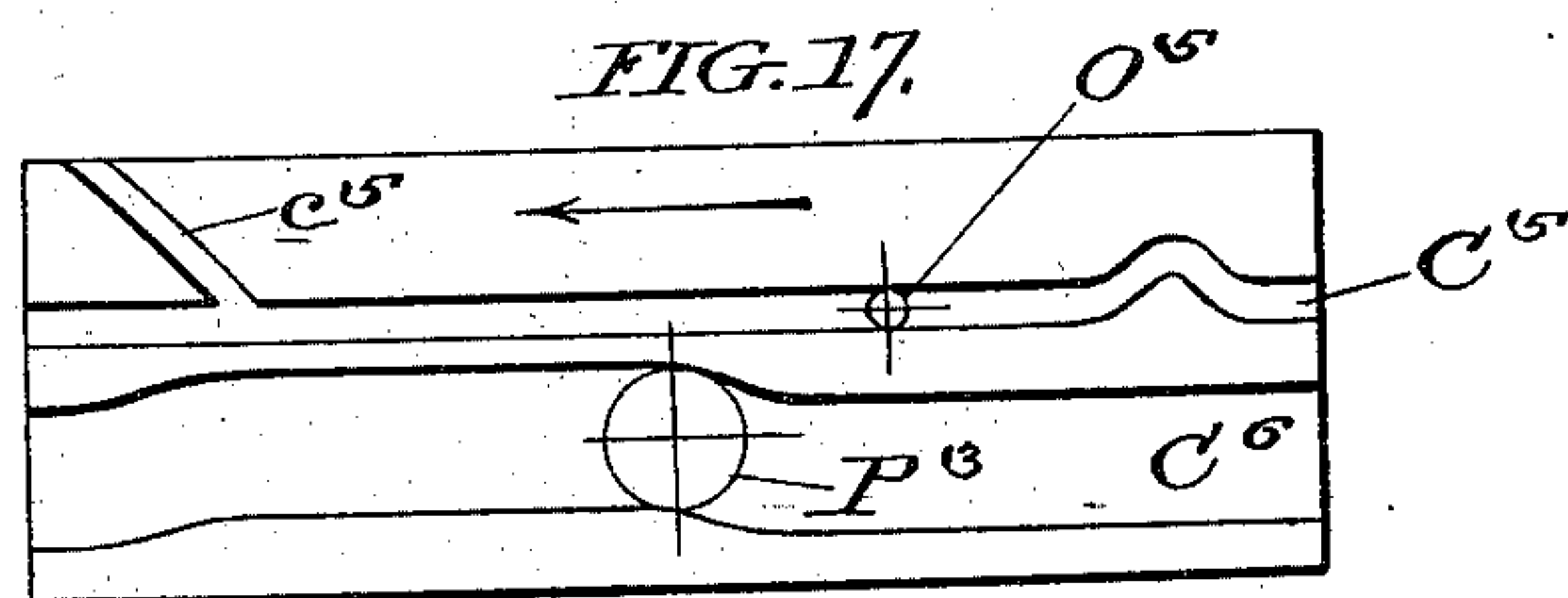
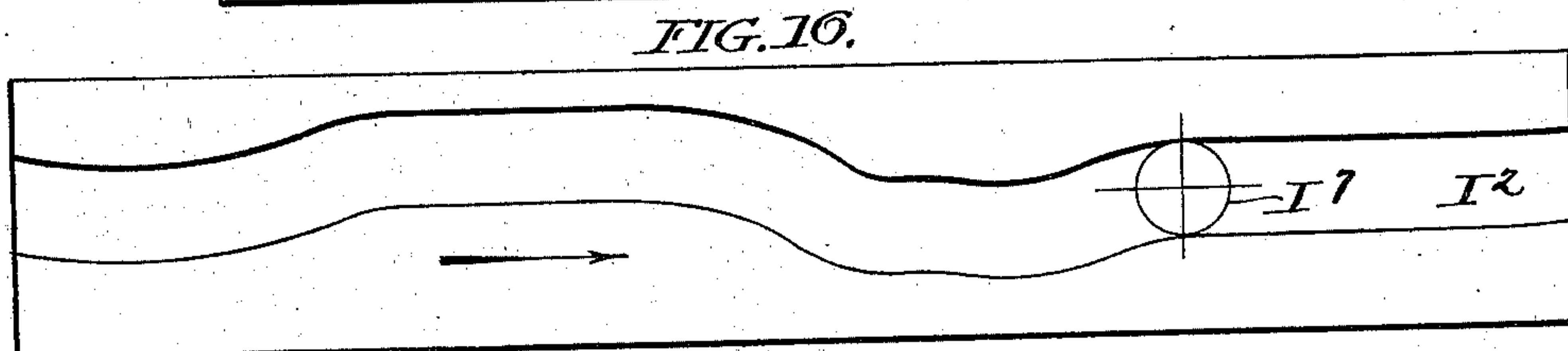
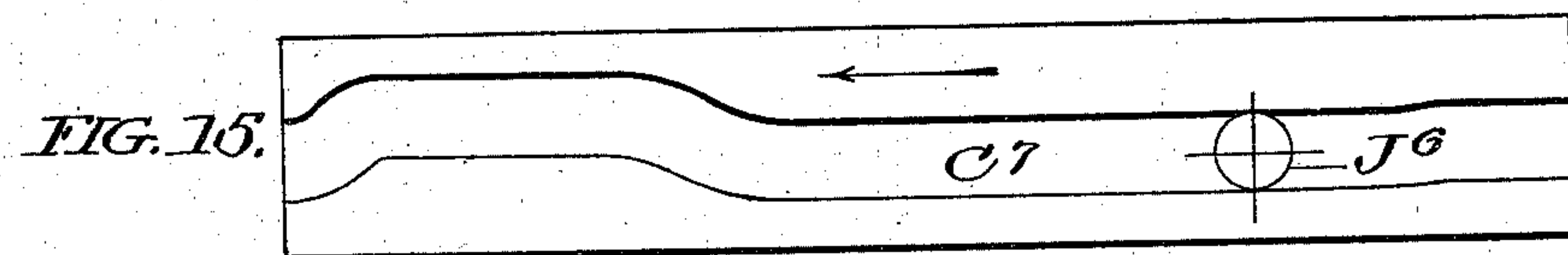
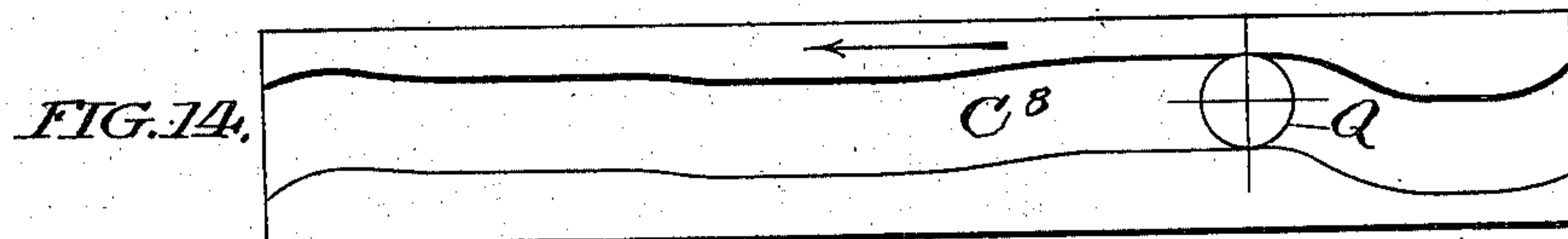
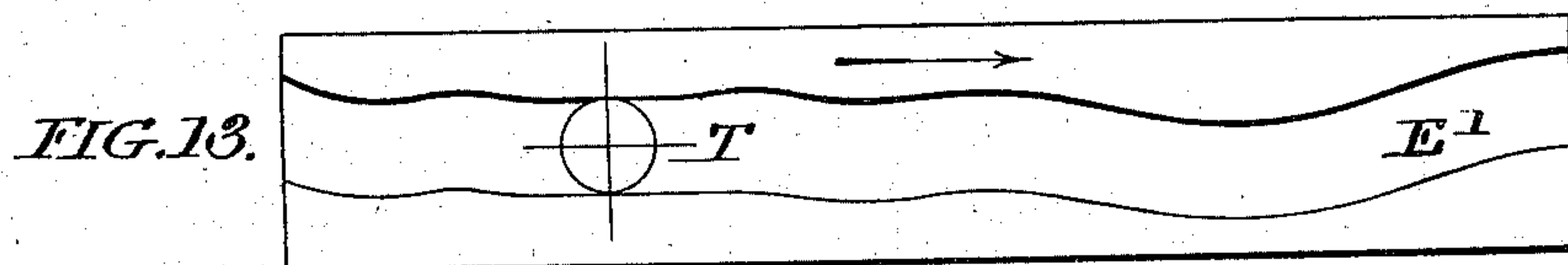
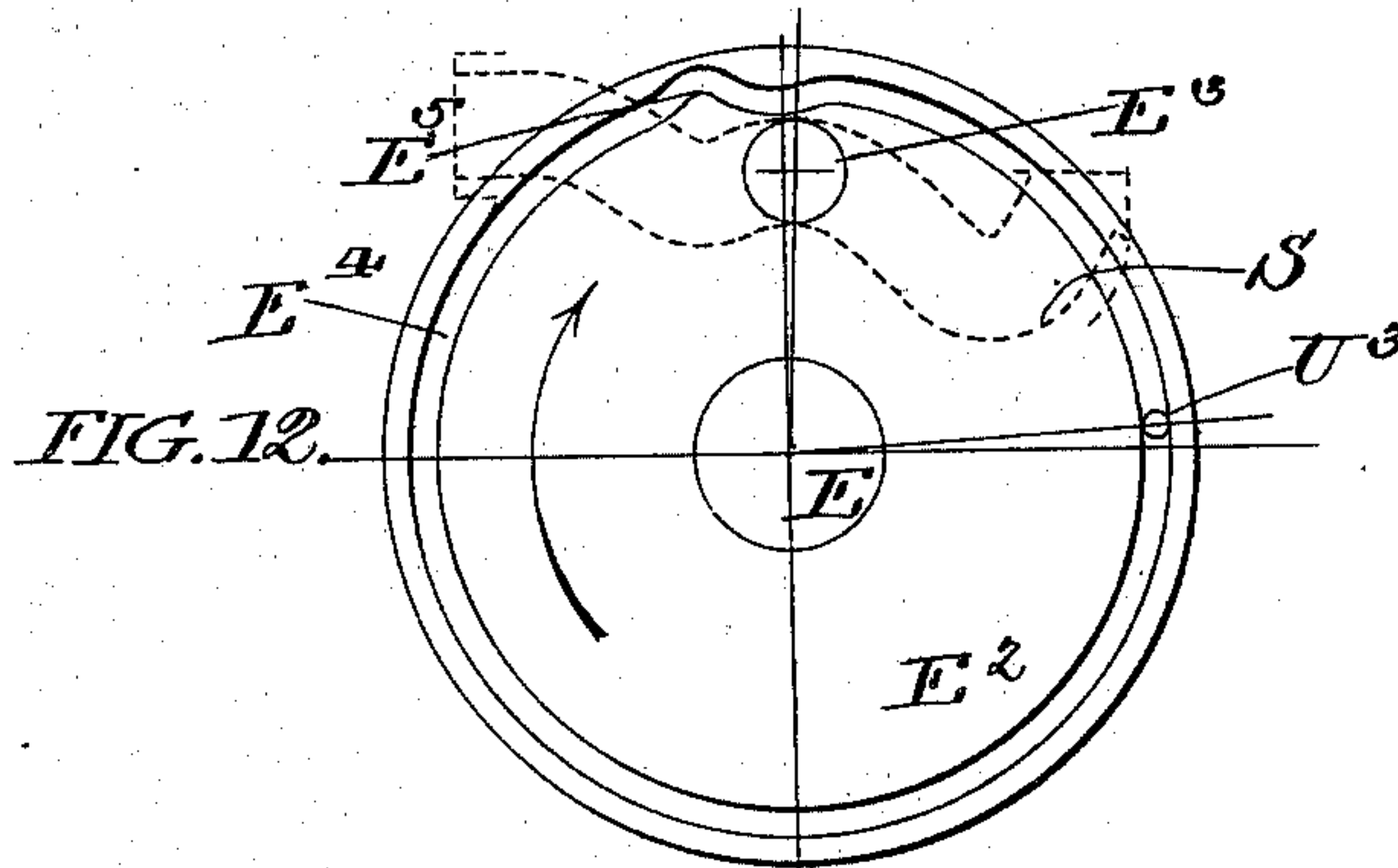
INVENTOR:

Raymond E. Plumley
by his atty
Francis T. Chambers

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NO MODEL.

5 SHEETS—SHEET 5.



WITNESSES:

Howard
James D. Williams

INVENTOR:

Raymond L. Plumley
by his atty.
James D. Chambers

UNITED STATES PATENT OFFICE.

RAYMOND L. PLUMLEY, OF WILMINGTON, DELAWARE, ASSIGNOR TO TRUMP BROTHERS MACHINE COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

OVERSEAM SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 732,959, dated July 7, 1903.

Application filed January 25, 1902. Serial No. 91,156. (No model.)

To all whom it may concern:

Be it known that I, RAYMOND L. PLUMLEY, a citizen of the United States of America, residing in Wilmington, in the county of New-castle, State of Delaware, have invented certain new and useful Improvements in Overseaming Sewing-Machines, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to what are known as "overseaming sewing-machines," principally used for stitching buttonholes; and it has for its object, primarily, to provide a mechanism which will form and correctly place a double purl.

A further object of my invention is to provide mechanism which is adapted by a simple and expeditious change for making an overseam with either a single or a double purl.

The leading novel feature of my invention consists in providing, in addition to the upper and lower needles of an overseaming-machine operating with respect to each other in a well-understood manner, a finger which engages and holds the lower purl in correct position during the process of its formation and until the strains upon the threads tending to shift the position of the purl are practically at an end, said finger of course having actuating mechanism by which it is withdrawn from the purl when it has performed its function and restored to operative position in proper time to engage the next succeeding portion of said purl.

Another important feature of my invention consists in so constructing the take-up mechanism acting upon the threads as to adapt the machine when the purl-controlling finger above mentioned is removed from operative position to form an overseam with a single purl and providing the machine in addition with an additional take-up mechanism which is thrown out of operation when the purl-controlling finger is not in use.

Other features of my invention will be best understood as described in connection with the drawings in which they are illustrated, and of which—

Figure 1 is a side elevation of an overseam-

ing-machine embodying my invention shown partly in central longitudinal section. Fig. 2 is a plan view of the said machine. Fig. 3 is a front view of the machine, partly in section, on the line 3 3 of Fig. 1. Fig. 4 is a front view of the supplemental take-up cam acting upon the upper thread. Fig. 5 is a cross-sectional view on the line 5 5 of Fig. 4. Fig. 6 is a detail view showing the purl-controlling finger and tension-regulating finger with the mechanism by which they are actuated. Fig. 6^a is a similar view showing a device for holding the purl-controlling finger out of operation. Figs. 7, 8, 9, and 10 are perspective views illustrating in consecutive sequence the operation of the needles and purl-controlling finger in the formation of the double purl. Fig. 11 is an elevation, on a larger scale, of the sewing-head, the needles, and the fingers coacting with the needles. Fig. 12 is a front elevation, on a larger scale, of the crank and cam-wheel shown in Fig. 4, the view also showing the construction of the cam attached to the upper needle-bar and in which the crank-pin of the disk operates. Fig. 13 is a projection of the upper take-up cam; Fig. 14, a projection of the bottom take-up cam; Fig. 15, a projection of the race-frame cam; Fig. 16, a projection of the cam directly acting upon the lower needle; Fig. 17, projections of the cam actuating the purl-controlling finger and the cam actuating the tension-regulating finger, and Fig. 18 is a diagram illustrating the relative position of the cam-rollers as mounted in the machine.

A indicates the bed-plate or table of the machine, which is of usual construction.

B and B' are the upwardly and forwardly extending hollow arms, upon which is supported the head B², in which moves the bar supporting the upper needle.

C is the main driving-shaft of the machine, and C' the driving-pulley. This pulley is best connected with the shaft through clutch mechanism—such, for instance, as is described in the Letters Patent No. 573,969, of December 29, 1896, to Frederick and Plumley.

C² is a cam fastened to the shaft C and working against the faces F² and F³ of a yoke F', which connects through the rod F with a lever

G, (see Fig. 3), attached to a rock-shaft H, having secured to its other end one or more levers H', to the ends of which are pivotally connected ratchet-actuating pawls H² and H³, held in operative position by springs H⁴, as indicated in dotted lines in Fig. 3. The pawls H² and H³ act upon the ratchet-wheels R² and R³, which are secured on the short shaft R, to which shaft is also secured the gear-wheel R', which engages and drives the gear-wheel R⁴, which in turn engages the rack R⁵, secured on the bottom of the movable table M, by which the work is shifted in the process of sewing.

Returning to the main shaft C, C³ (best shown in Fig. 1) is a gear-wheel secured on said shaft, and in engagement with the gear-wheel I, secured on a shaft I', supported in a suitable bracket I³, said shaft having also secured to it a cam I², which, by means of a cam-roller I⁷, actuates the lever I⁶, pivoted at I⁵ on an extension I⁴ of the frame I³, as best shown in Figs. 1 and 3. The lever I⁶ through a rod I⁸ connects with the slide K, to which the lower needle K' is secured, said slide K moving in the curved raceway J⁷, formed in the race-frame, (indicated at J,) said race-frame being longitudinally movable on convenient guideways and having at its front end a lug J', through which it is connected with a slide J³ by means of a depending lug J² on said slide, J⁴ indicating the guideway for the slide J³, and J⁵ a projection from said slide to which is connected the cam-roller J⁶, moving in the race-frame cam shown at C⁷. It will thus be seen that, as in former machines, the motion imparted to the lower needle is derived from the two cams, (indicated at I² and C⁷.)

As in other machines of this class, the feed-table M is provided with a circular perforation, in which fits the revolving disk, (indicated at L,) said disk having a central opening L', through which the head projects, and being also provided with a segmental rack on its lower side, which at a proper time is engaged with and actuated by the cam, (indicated at C⁴,) said cam being secured, as shown, to the shaft C. The head to which I have referred is indicated at N', N indicating the supporting-frame, from which the head extends, N² (see Fig. 6^a) indicating the slot formed in the head through which the upper and lower needles work, N³ the recess formed at the top of the head for the purl-controlling finger, (indicated at O,) which finger is secured to the upper end of a shaft O', working in a bearing of the head, (indicated at N⁴.) To the lower end of the shaft O is attached the forked lever (indicated at O², Figs. 6 and 6^a) which is engaged by the end of the lever O³, pivoted at O⁴ and having an arm O⁵, which is engaged and actuated by the cam C⁵ on the shaft C.

O², Fig. 6^a, indicates a spring which is adapted to engage and hold the forked lever O² out of operative connection with the lever-arm

O³ when it is not desired to use the purl-controlling finger.

P is a finger adapted to be operated at proper times to extend through the slot N² and be retracted therefrom. It is actuated through a lever-arm P', pivoted at P² and having a cam-roller frame P³, engaged by the cam C⁶ on the shaft C. This is an old device, but is new in combination with the finger O in my present machine. C⁸ is another cam secured on the shaft C and acting through the cam-roller arm Q, pivoted at Q' on the lower take-up lever Q².

q and q' indicate thread-guides, and Q³ a tension device through which the lower thread (indicated at W) passes to the take-up lever and the lower needle.

Through the gear-wheel D, secured on the shaft C, and the train of gears, (indicated at D', D², and D³,) the shaft E is driven, said shaft having secured to it the cam (indicated at E') and the cam-disk (indicated at E²,) said cam-disk being also a crank-disk and having projecting from its front end the crank-pin E³. The cam-groove in the disk E² is, as shown, indicated at the point E⁵. (See Figs. 4 and 5.)

S indicates the vertically-reciprocating needle-bar, which is properly guided in the head B² and has secured to it a transversely-extending cam, (indicated at S',) which is engaged by the crank-pin E³.

S² indicates the upper end of needle, secured in the lower end of the bar S.

T indicates the cam-roller arm of a lever engaged with the cam E' and pivoted at T', this lever connecting with the upper take-up lever, (indicated at T²,) t and t² indicating thread-guides for the upper thread, (indicated at V,) and t' t' additional thread-guides secured close together and through which the thread passes on its way to the take-up lever T² from the tension device, (indicated at T³.)

U' is a bent lever-arm having a perforated end U, which extends between the thread-guides t' t', so as to hold the thread normally in the bent position indicated in Fig. 3. The lever U' is pivoted at U² and has attached to it a lever-arm U³, the end of which projects into the cam-path E⁴ of the disk E².

The operation of the machine in overseaming is well indicated in Figs. 7 to 10, inclusive, said figures indicating the character of the work effected. When the purl-controlling finger O is in operative relation to the machine and the supplemental tension-lever U' also in operation upon the upper thread, the upper needle S² passes downward through the goods, throwing off on the under side thereof a loop, such as is indicated at V', (see Fig. 10,) the finger P being preferably used and actuated to pass through this loop, as shown in this figure. The finger O is at this stage of the operation of the machine also in operative position, the lower needle K' is moved upward to pass through the loop V' and in front of the finger P, and the upper

needle S^2 is retracted, as shown in Fig. 7, drawing the loop V' up to a position regulated by its engagement by the finger P and needle K' . The said lower needle K' then passes upward in front of the edge of the goods and over the finger O , throwing off at the end of its stroke the loop W' , through which the upper needle S' passes on its next downward movement, the lower needle K' being retracted, as shown in Fig. 9, and the needles then again passing to the position and performing the functions indicated in Fig. 10. The purl-controlling finger O remains in its operative position until the parts are practically in the position indicated in Fig. 9, when it is retracted, as indicated in dotted lines, and immediately restored to operative position, as shown in Fig. 10, while the finger P , coming into operation, as indicated in Fig. 10, is retracted when the parts are between the positions indicated in Fig. 7 and Fig. 8.

In addition to the loops heretofore referred to—namely, those indicated at V' and W' —the upper thread is by its engagement with the lower thread at the points V^4 V^4 drawn into another loop, (indicated at V^3), the inter-engaged portions of this loop with the lower thread (indicated at W^2) and forming what is known as the "upper purl" of the overseam; also, in addition to the loops W' the engagement of the upper thread with the lower thread at the points V' and W^4 draws the said lower thread into loops W^3 , the said interengagement forming the lower purl of the overseam. The operation of the purl-controlling finger O is primarily, through its engagement with the loop W^3 , to prevent this loop where it engages the loop V' from being drawn upward beyond the lower edges of the goods. By preference and as shown the finger also engages and holds the loop V' , and it will be readily understood that, by preventing the lower purl from being drawn up in front of the seam, the finger O also acts to hold and regulate the position of the upper purl, and it will also be obvious that the finger P , acting as above described and affording during the time of its operation a positive stop for the taking up of the loop V' , coacts with the finger O in the accurate disposition of the lower purl, of which this loop is a component member. When in operative position, the pointed end of the finger O extends across the slot N^2 in the head N' and lies close to the lower edge of the goods, and it remains in this position until the lower needle has passed through the loop of the upper thread (see Fig. 10) and has moved upward past the edge of the goods to deliver its thread-loop to the upper needle and has returned to the position shown in Fig. 9, leaving the stitch formation around the pointed end of the finger, thus directly holding the lower purl substantially in the position on the lower edge of the goods it is intended to occupy in the finished goods until the strains

which would tend to displace said purl are practically at an end and indirectly holding the upper purl in correct position. Having accomplished these functions, the finger moves out of the stitch formation to the position indicated in dotted lines in Fig. 9, allowing the take-up levers T^2 and U' to complete the tension on the threads. The functions of the auxiliary take-up lever U' are, in the first place, by moving outward, so as to relax the thread between the guides $t' t'$, to supply enough thread to retard the action of the regular upper take-up lever T^2 on the thread, which would otherwise tend to draw the lower purl above the lower edge and the upper purl back from the upper edge, and, in the second place, said take-up U' acts in moving in between the guides $t' t'$ to draw off enough thread to allow the upper purl to be drawn and formed along the upper edge of the goods, and its said movement is timed so that it finishes in unison with the movement of the take-up lever T^2 and immediately after the finger O has moved out of the stitch formation, as shown in dotted lines in Fig. 9.

Where it is desired to use my machine for making single-purl overseams, I move the finger O backward out of operative position and out of engagement with the lever O^3 . This can be readily effected by providing a little cam-groove c^5 , merging into the cam C^5 , as shown in Fig. 17, and through which the arm O^5 of the lever O^3 is moved to disconnect O^3 from forked lever O^2 . O^2 now being disconnected from O^3 , it is held in its disconnected or inoperative position by engagement with spring o^2 . The operation of throwing the purl-controlling finger O into or out of operative position by means of connecting or disconnecting levers O^2 and O^3 is performed manually. The purl-controlling finger being thus out of operation, I also disengage the upper thread from the lever-arm U' , leaving it under the sole control of the cam E' and its connected mechanism. The disengagement of the finger and the change in the take-up devices thus effect results in the practicable elimination of the loop V^3 , which is drawn back practically to the needle-holes of the upper needle, disappearing as a purl on the edge of the goods.

It will of course be obvious that where my machine is to be used only for making overseams with a double purl, it is not necessary that a supplemental take-up cam and mechanism should be provided, as the cam E' could be given the proper shape to regulate the take-up for the double purl.

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

1. In an overseaming sewing-machine the combination of the needles S^2 and K' having mechanism for actuating them as described with a finger adapted when in operative position to engage and hold down the loop formed by the lower thread on the under side

and close to the edge of the goods and mechanism for moving said finger to and from its said operative position whereby said finger is held in operative position until the engaged portion of the said loop thrown off by the lower needle is drawn practically to its permanent position on the fabric and then moved to disengage said loop and returned to operative position to engage the succeeding loop.

2. In an overseaming sewing-machine the combination of the needles S^2 and K' having mechanism for actuating them as described with a finger adapted when in operative position to engage and hold down the loop formed by the lower thread on the underside of the goods and to pass over the loop formed by the upper thread on the said under side of the goods said finger engaging and holding said loops close to the edge of the goods and mechanism for moving said finger to and from its said operative position, whereby said finger is held in operative position until the engaged portion of the said loops thrown off by the needles are drawn practically to their permanent positions on the fabric and then moved to disengage said loops and returned to operative position to engage the succeeding loops.

3. In an overseaming sewing-machine the combination of the needles S^2 and K' having mechanism for actuating them as described with an oscillating finger adapted when in operative position to engage and hold down the loop formed by the lower thread on the under side and close to the edge of the goods, and mechanism for moving said finger to and from its said operative position whereby said finger is held in operative position until the engaged portion of the said loop thrown off by the lower needle is drawn practically to its permanent position on the fabric and then moved to disengage said loop and returned to operative position to engage the succeeding loop.

4. In an overseaming sewing-machine, the combination of the needles S^2 and K' having mechanism for actuating them as described with an oscillating finger adapted when in operative position to engage and hold down the loop formed by the lower thread on the under side of the goods and to pass over the loop formed by the upper thread on the said under side of the goods, said finger engaging and holding said loops close to the edge of the goods and mechanism for moving said finger to and from its said operative position whereby said finger is held in operative position until the engaged portion of the said loops thrown off by the needles are drawn practically to their permanent positions on

the fabric, and then moved to disengage said loops and returned to operative position to engage the succeeding loops.

5. In an overseaming sewing-machine, the combination of the needles S^2 and K' having mechanism for actuating them as described to form an overseam with a double purl, with a purl-engaging finger provided with means whereby it is adapted when in operative position to engage the lower purl as it is formed and hold it in the desired position until the threads have been drawn to their permanent position on the fabric, and mechanism for disengaging said finger from the finished part of the purl and restoring it to operative position to engage the succeeding portion of said purl as described.

6. In an overseaming sewing-machine, the combination of the needles S^2 and K' having mechanism for actuating them as described to form an overseam with a double purl, with a finger P having actuating mechanism whereby it is thrust forward to engage the loop thrown off by the upper needle on the under side of the goods and retracted to disengage said loop after the lower needle has entered it on its upward movement, a purl-engaging finger provided with means whereby it is adapted when in operative position to engage the lower purl as it is formed and hold it in the desired position until the threads have been drawn to their permanent positions on the fabric, and mechanism for disengaging said finger from the finished part of the purl and restoring it to operative position to engage the succeeding portion of said purl as described.

7. In an overseaming sewing-machine having the needles S^2 and K' and mechanism for actuating said needles as described to form the overseam, the combination therewith of take-up mechanism for the threads of the two needles adapted in normal operation to effect the formation of a seam having a single purl, a supplemental take-up mechanism adapted when in operation to facilitate the formation of the seam with a double purl, a finger adapted when in operative position to engage and hold the lower purl in position on the bottom edge of the goods, mechanism for withdrawing said finger and restoring it to operative position as described, and mechanism for holding said finger out of operation when desired.

RAYMOND L. PLUMLEY.

Witnesses:

GEO. R. HOFFECKER,
JOHN J. MCGOVERN,
THOMAS J. BOWEN, Jr.