

(No Model.)

4 Sheets—Sheet 1.

W. G. HEWINS.
FEEDING DEVICE FOR SEWING MACHINES.

No. 600,075.

Patented Mar. 1, 1898.

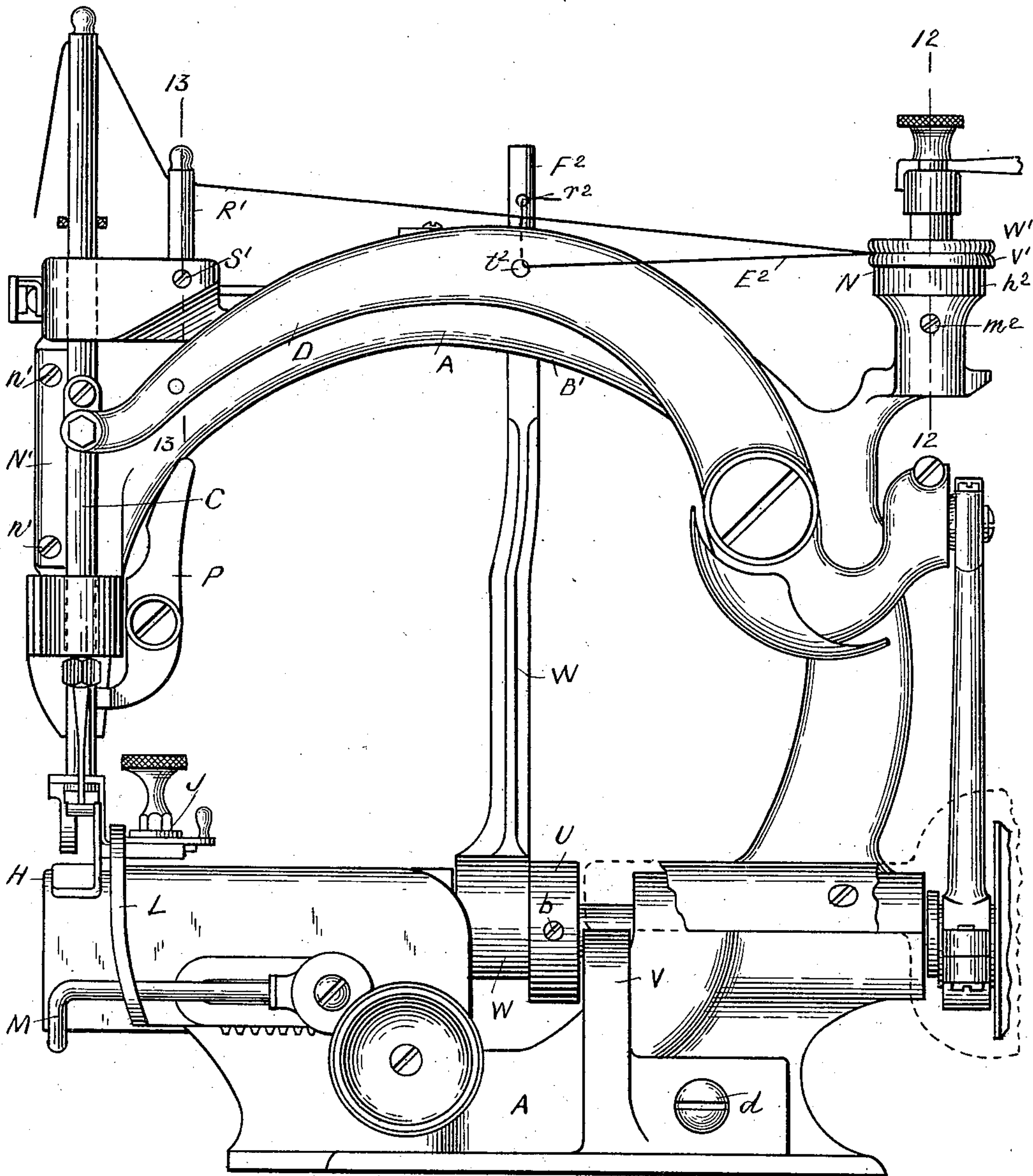


Fig. 1.

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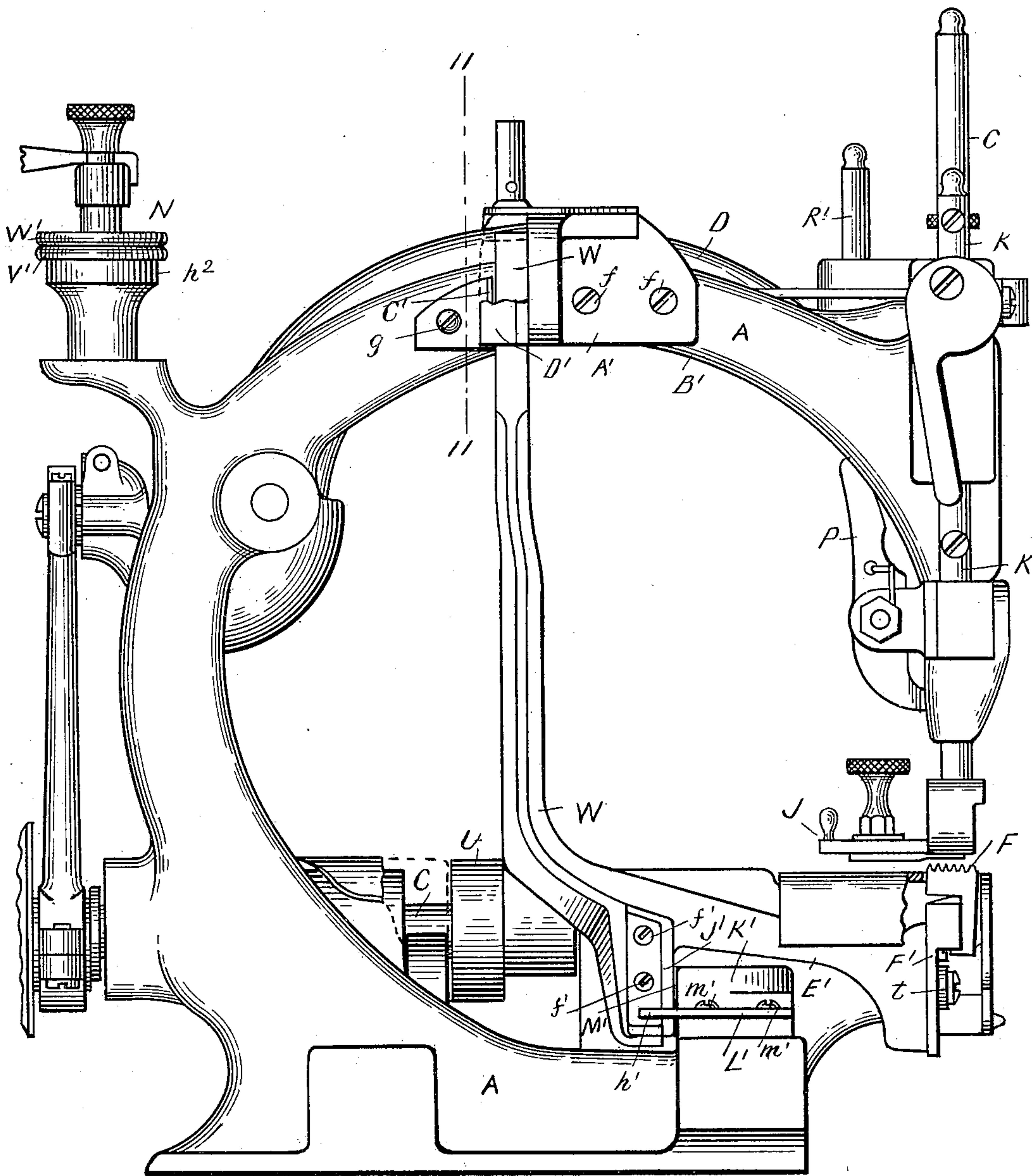


Fig. 2.

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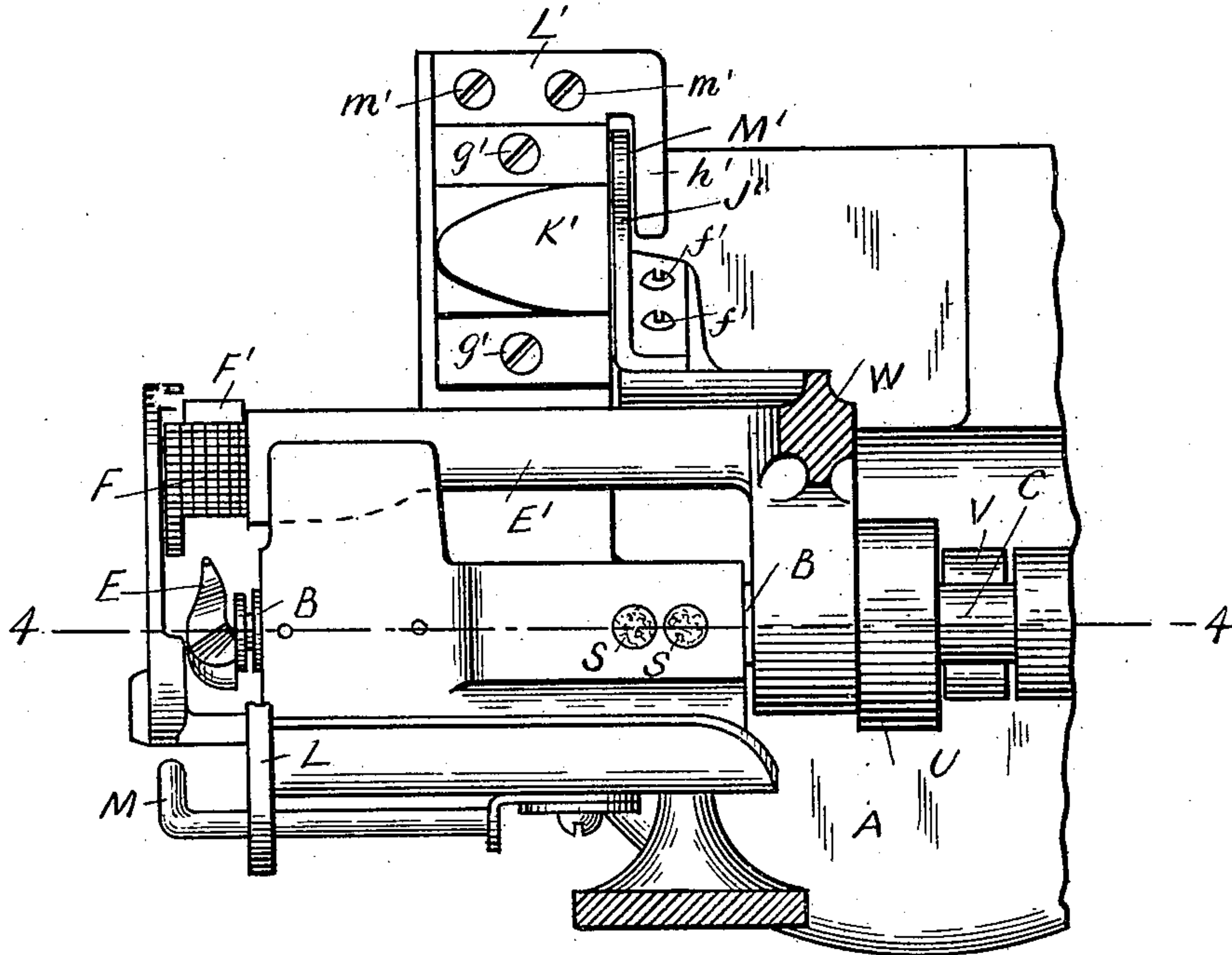


Fig. 3.

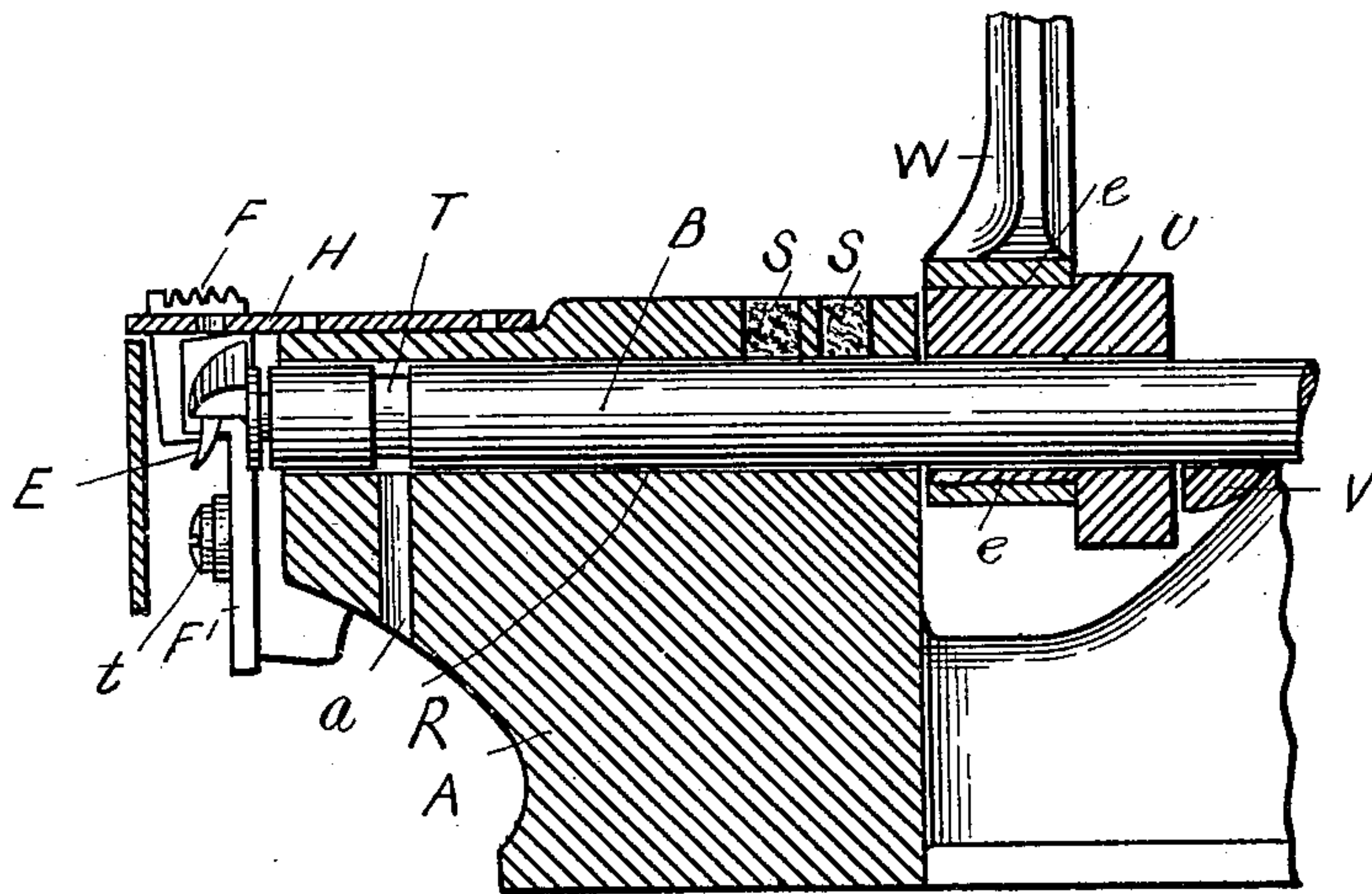


Fig. 4.

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(No Model.)

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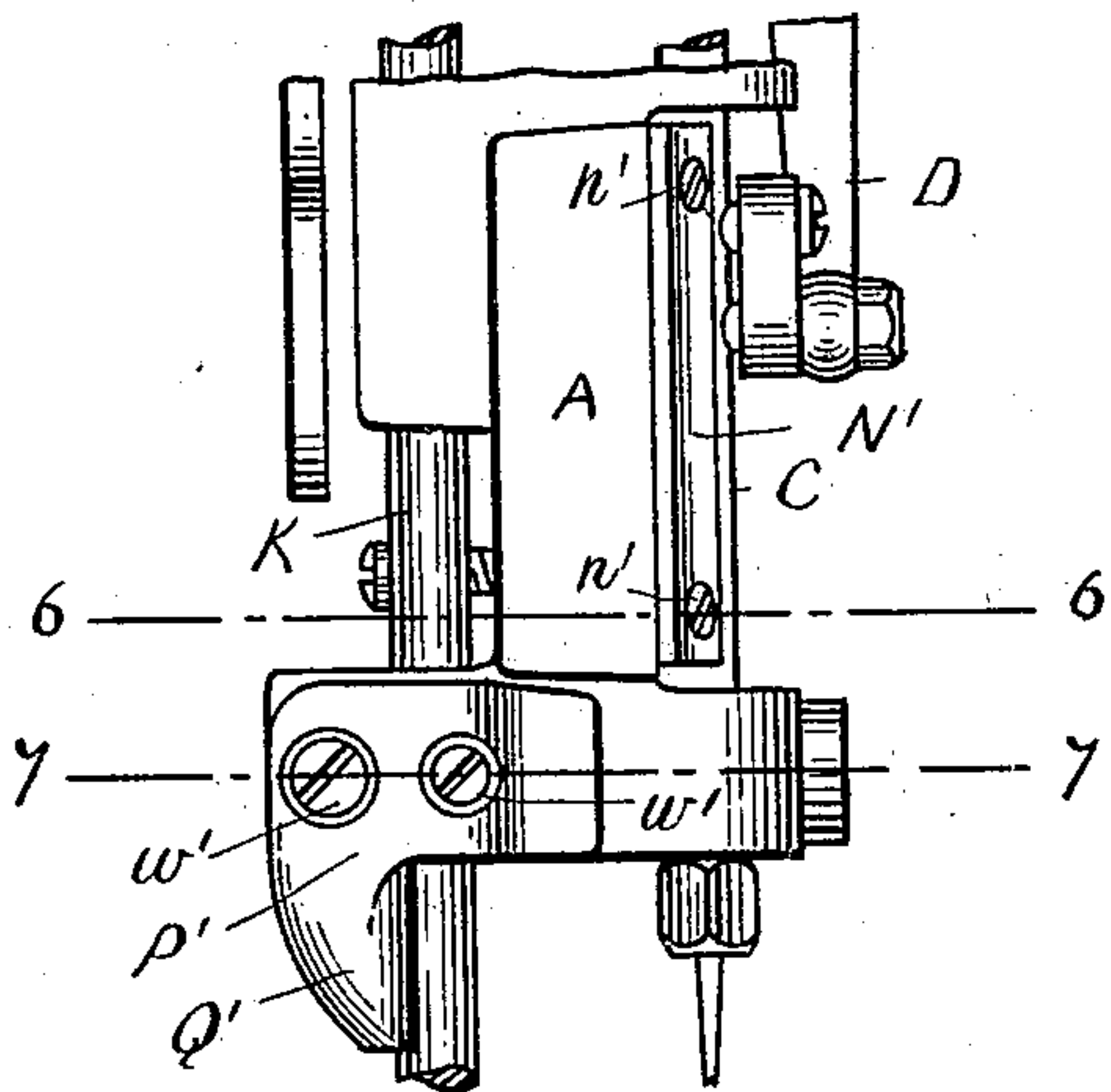


Fig. 5.

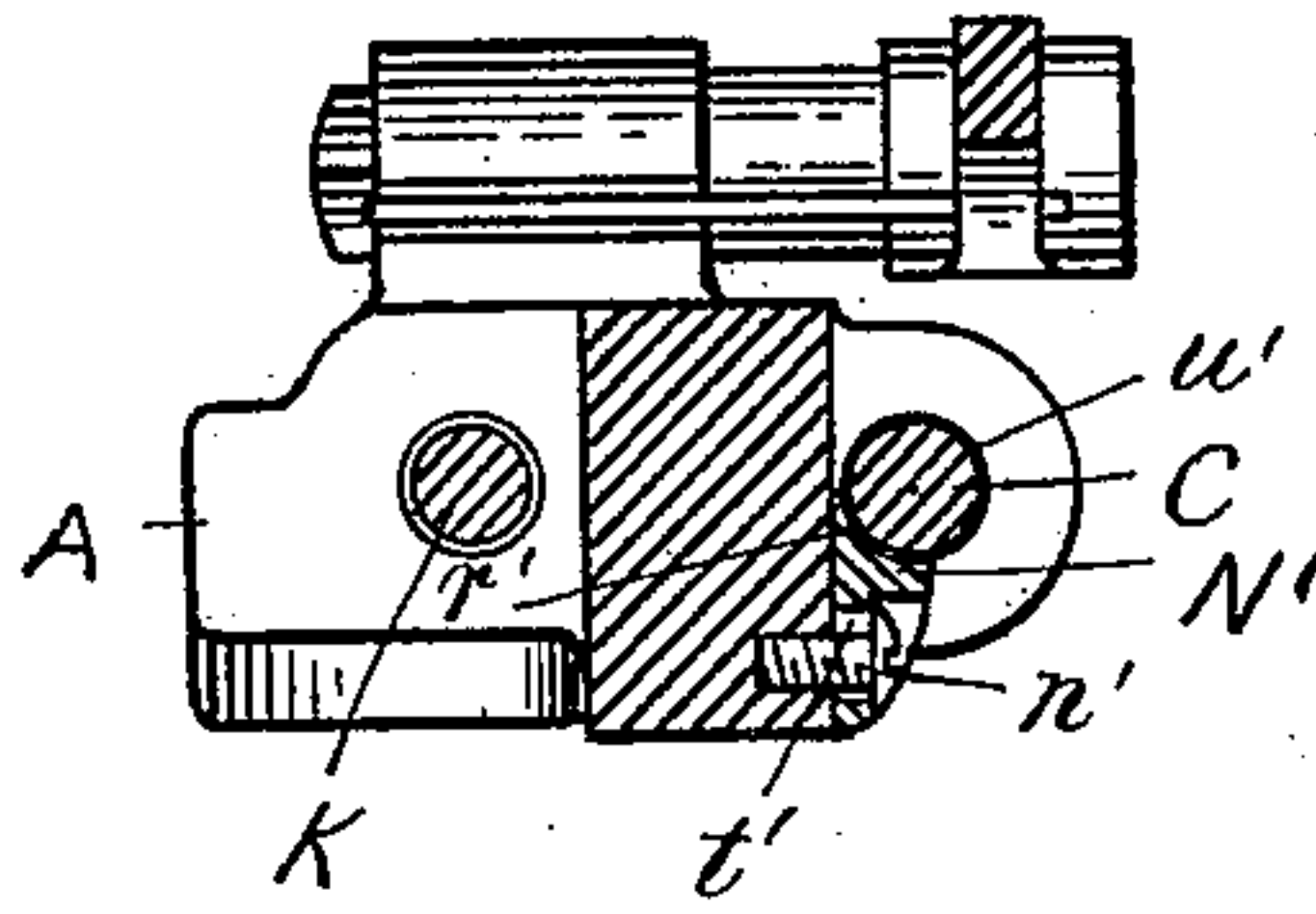


Fig. 6.

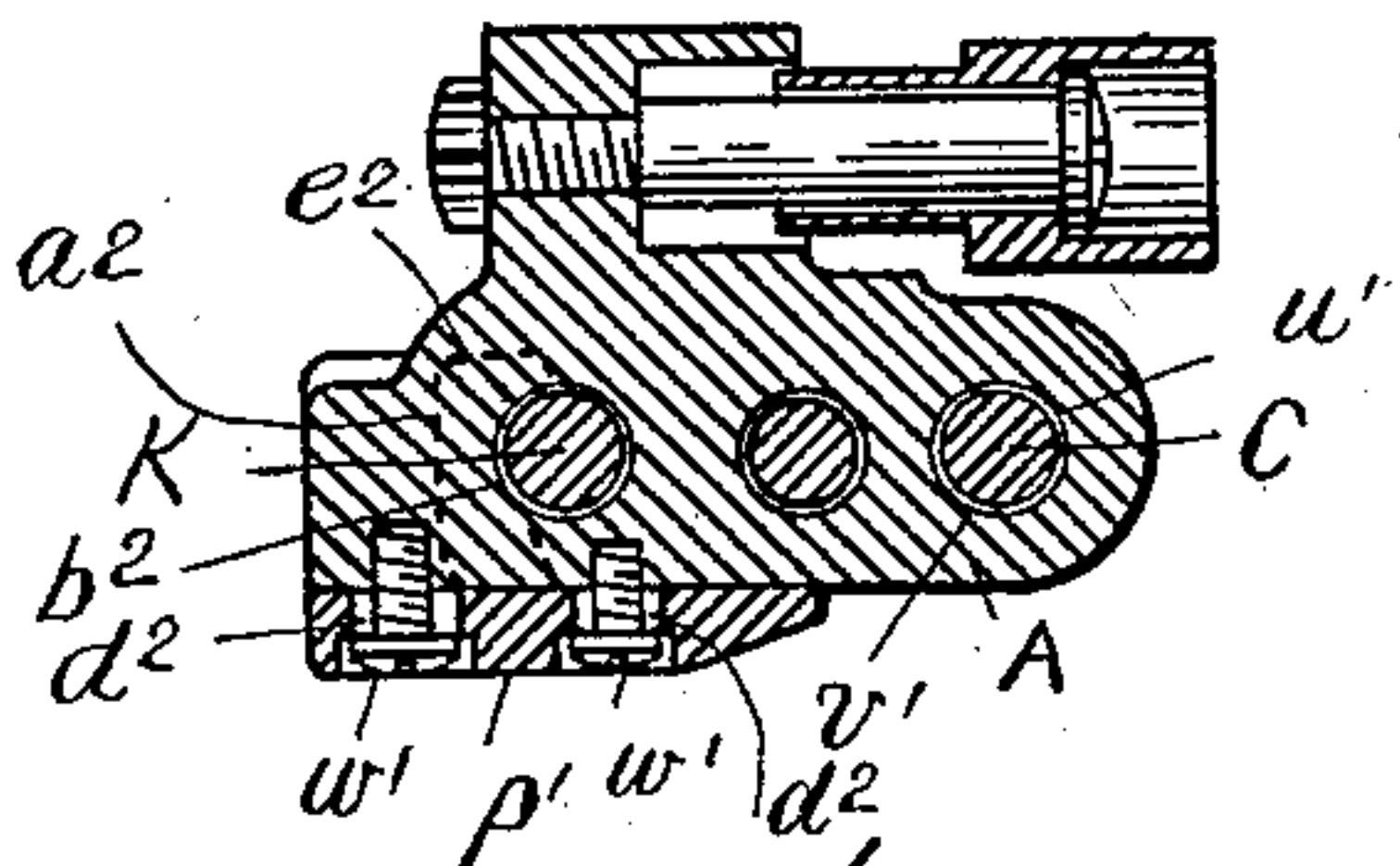


Fig. 7.

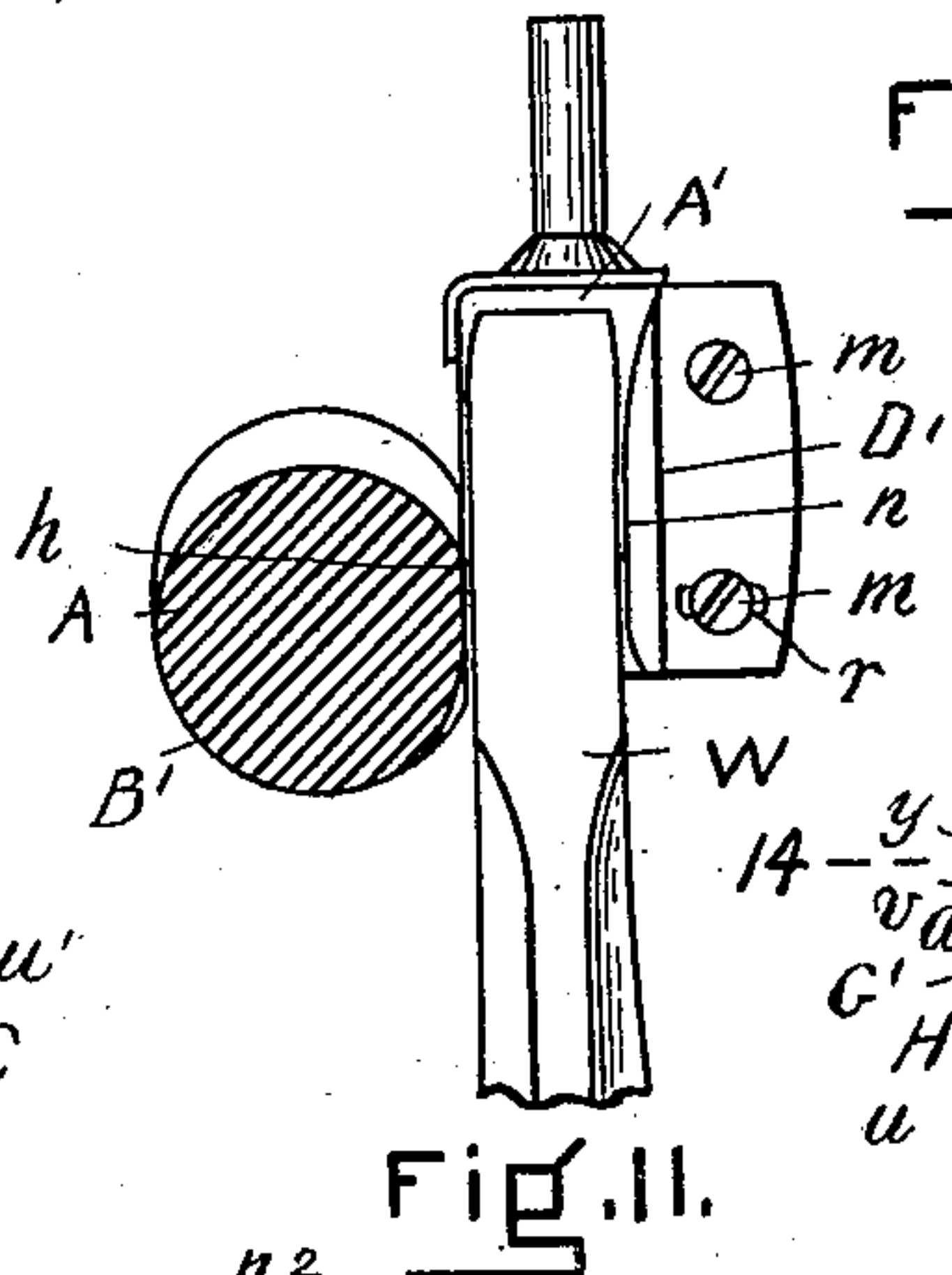


Fig. 11.

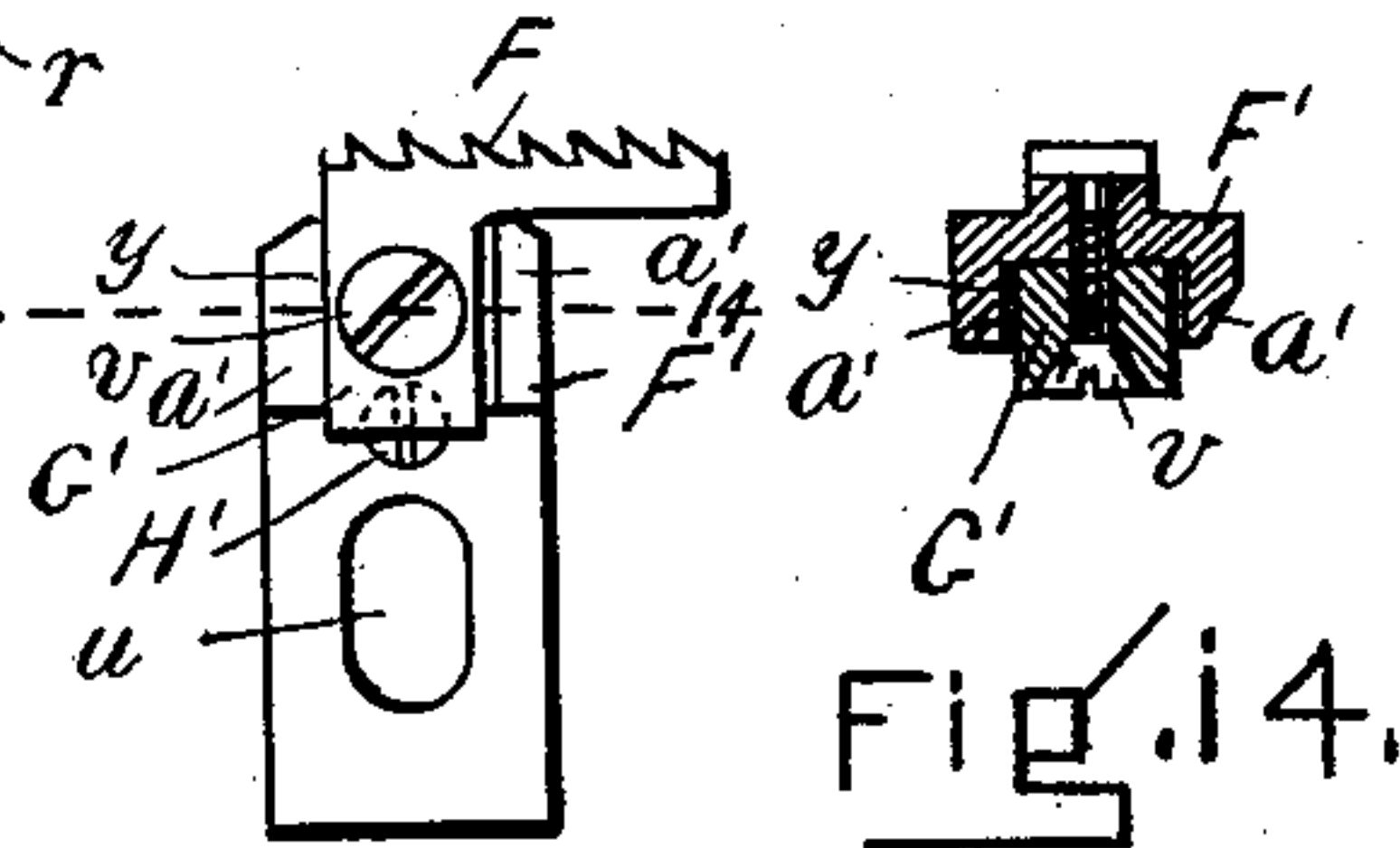


Fig. 14.

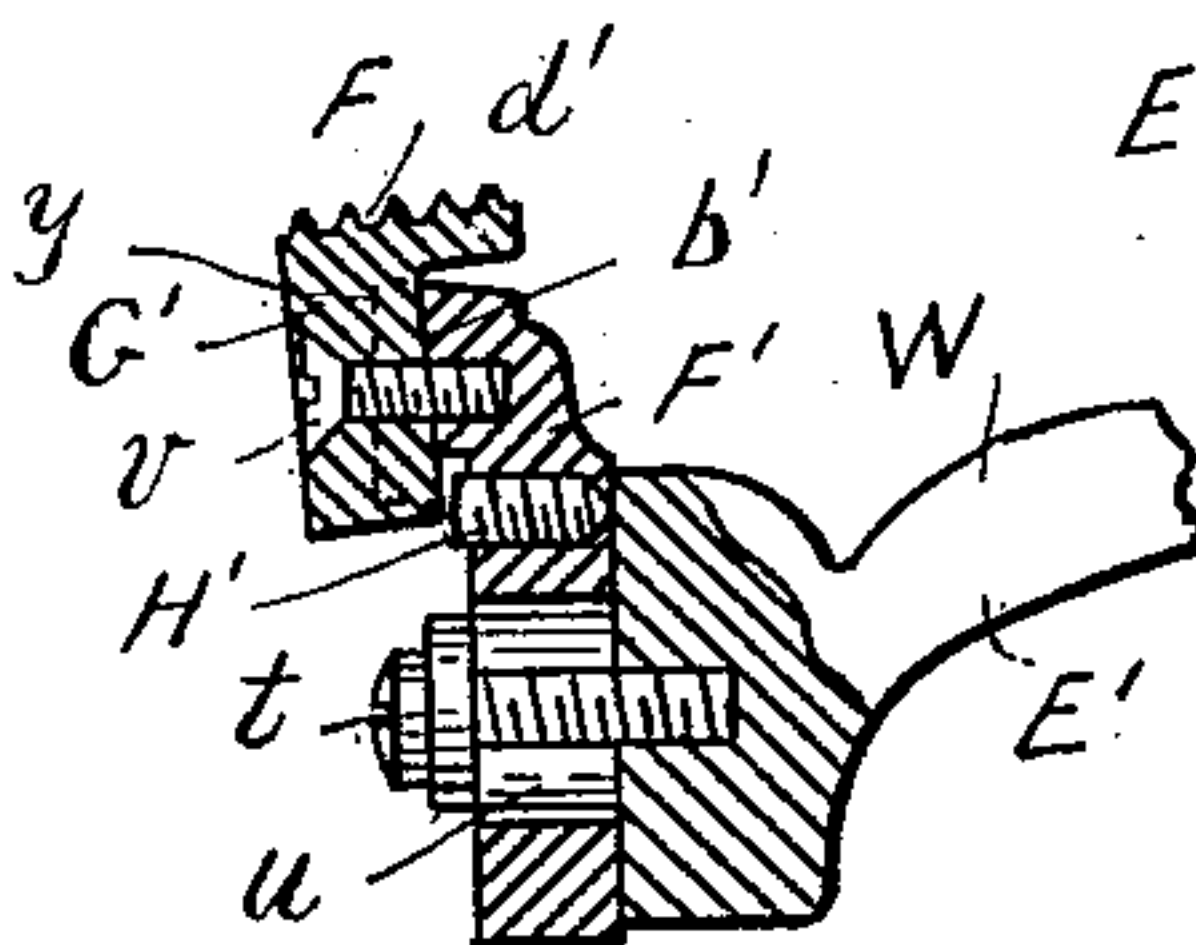


Fig. 9.

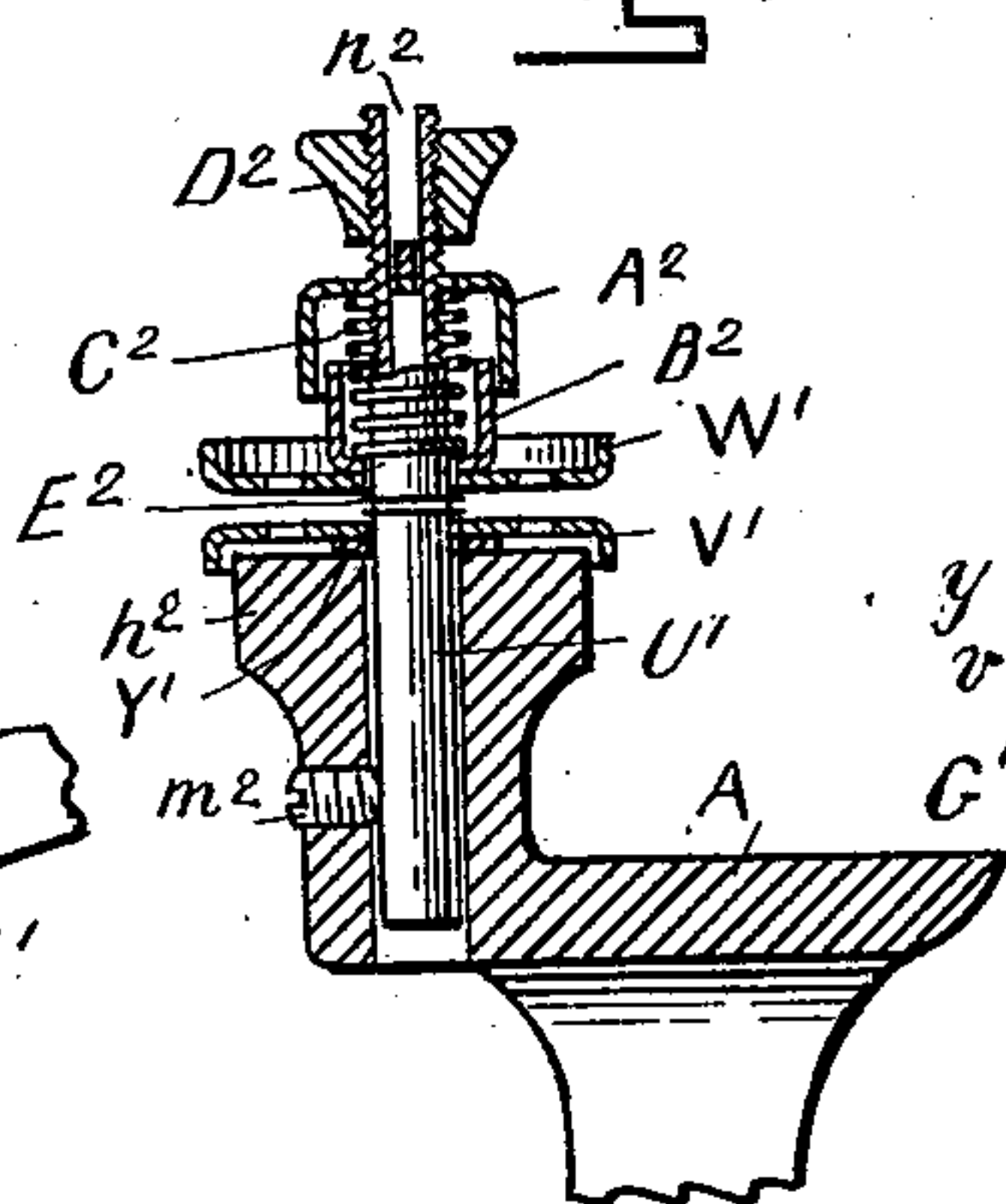


Fig. 12.

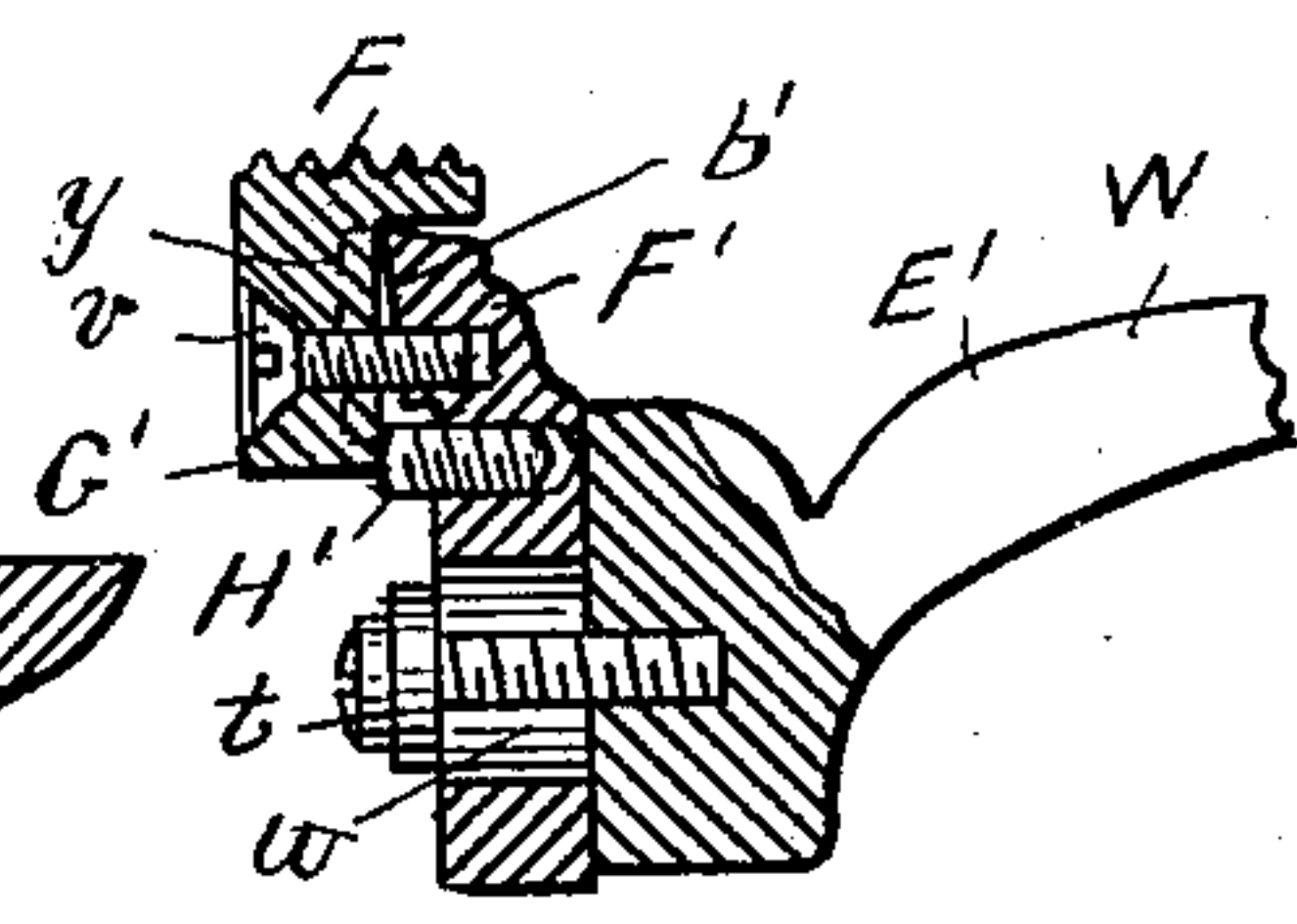


Fig. 10.

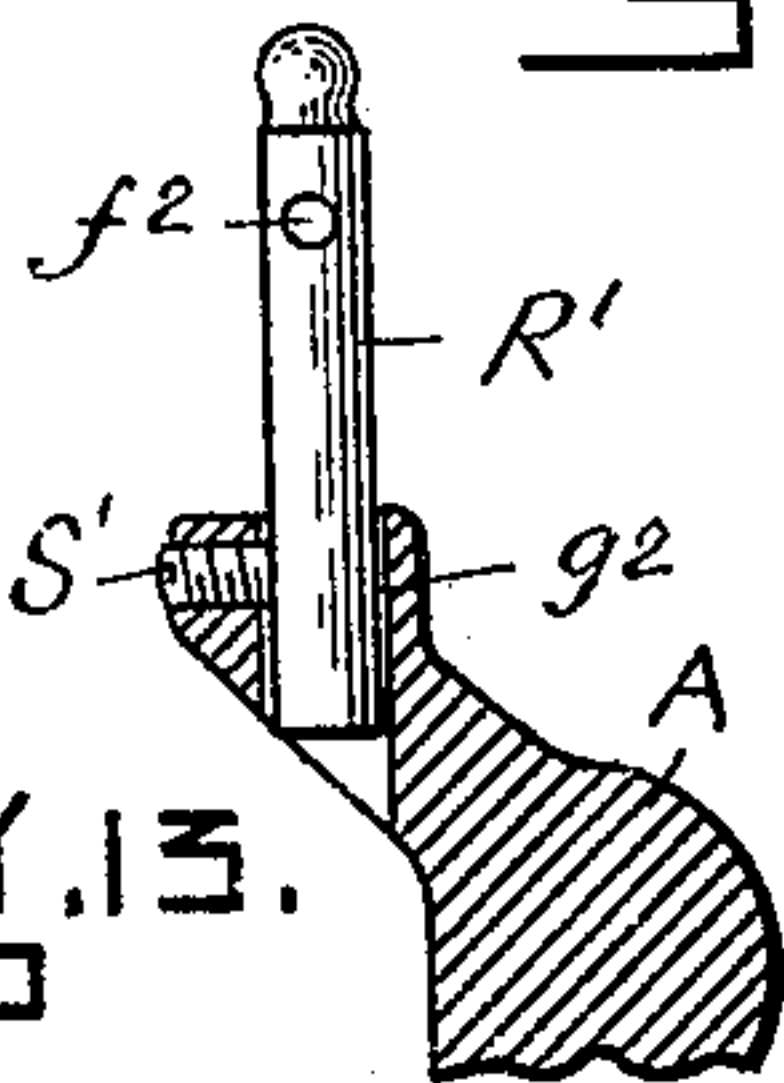


Fig. 13.

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UNITED STATES PATENT OFFICE.

WILLARD G. HEWINS, OF FOXBOROUGH, MASSACHUSETTS.

FEEDING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 600,075, dated March 1, 1898.

Application filed February 25, 1895. Serial No. 539,635. (No model.)

To all whom it may concern:

Be it known that I, WILLARD G. HEWINS, of Foxborough, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a full, clear, and exact description.

This invention relates to improvements in sewing-machines for sewing straw braid in the formation of straw hats, and more particularly to the sewing-machines used for such purpose called the "Willcox & Gibbs;" and the invention consists of improvements in sewing-machines more particularly for use in the sewing of straw braid in the manufacture of straw hats, all constructed and arranged for operation substantially as hereinafter fully described.

In the accompanying sheets of drawings is illustrated a Willcox & Gibbs sewing-machine having the present improvements applied thereto.

Figures 1 and 2 are views respectively of the opposite sides of the sewing-machine. Fig. 3 is a detail plan view below the line of the needle-plate, which is removed. Fig. 4 is a detail longitudinal section on line 4 4, Fig. 3. Fig. 5 is a detail front view. Fig. 6 is a cross-section on line 6 6, Fig. 5. Fig. 7 is a cross-section on line 7 7, Fig. 5. Fig. 8 is a detail end view of the feed and its block. Fig. 9 is a detail vertical section of Fig. 8. Fig. 10 is a section like Fig. 9, but showing the feed in a different position. Fig. 11 is a detail section on line 11 11, Fig. 2, showing some of the operating parts in front view. Fig. 12 is a detail section on line 12 12, Fig. 1. Fig. 13 is a detail elevation and section on line 13 13, Fig. 1. Fig. 14 is a cross-section on line 14 14, Fig. 8.

In the drawings, A represents the bed and frame of the sewing-machine; B, its driving-shaft; C, its needle-bar; D, its needle-bar lever; E, its looper; F, its feed-dog; H, its top plate; J, its presser-foot; K, its presser-foot bar; L, its side guide; M, its braid-guide, and N its tension device, all substantially as usual in a Willcox & Gibbs sewing-machine and needing no more particular description herein except as to the present invention.

The shaft B turns in a long longitudinal bearing R in the frame, as shown in section

in Fig. 4, and S S are two oil-feed holes for the bearing R, being located, as shown in said figure, near the end of the bearing farthest from the looper end of the shaft.

T is a circumferential groove in the shaft near its looper end, and just under this groove in the frame below it is a vertical hole or passage *a*, which extends down through the frame and is open to the outside, as shown in Fig. 4 in section.

The bearing for the shaft in the Willcox & Gibbs machine is quite short, but the bearing R of the present invention is much longer and is a great improvement upon the short bearing for the reason that the oil-feed holes for the shaft can be at quite a distance from the stitching mechanism, so that there is much less liability of the oil working along the shaft to the stitching mechanism, soiling the goods being sewed, as is now often the case in such sewing-machines having the short bearing for the shaft. The groove T in the shaft also prevents the oil from passing along the shaft beyond it, for as the oil reaches this groove it drops into it and finally falling down into the passage *a* in the frame runs out at its lower end, where it is wiped away or caught in a suitable receptacle placed in position therefor. This groove also serves another purpose—it prevents dirt from the goods being sewed passing along the shaft from the looper end, causing considerable wear upon the shaft-bearing, which of course is very objectionable.

A great deal of the straw braid is sewed at once into the hat-form from the package or bundle in which it is received at the factory, and as there is more or less dirt in it which is not cleaned out before sewing in the use of the machine with the short bearing the oil being close to the looper the dirt is mixed with the oil and works along with it on the shaft in its bearing, causing the bearing to wear very fast, making the shaft loose, which is a serious trouble; but with the long bearing herein described and shown the oil-feed holes are some distance from the looper end of the shaft, and with the groove the oil is prevented from passing from beyond it to the looper end of the shaft, so that very little dirt, if any, passes to the bearing, and thus this long bearing will keep in better condition a

much longer time than the short bearing, and this has been demonstrated fully in practical use.

U is a cam-wheel secured on the shaft by a screw *b* against a collar V, secured to the frame by a screw *d*, the cam-wheel being arranged to turn in a bearing or socket in an arm W, which extends upward therefrom, its upper end being freely disposed between a block A', secured by a screw *f* to the rear side of the frame-bar B', and a plate C', secured to the frame by a screw *g* on two of its sides and by the frame-bar at *h* and a plate D', secured by a screw *m* to the block A', on the other two sides of the arm, the side of the plate or bearing D' being on a curved line vertically, as shown in Fig. 11.

The upper screw *m* of the plate D' serves as a pivot for the plate, the other screw passing through a horizontal slot *r* in the plate, which allows the plate to be swung on its pivot toward and from the cam-arm to regulate the bearing between such plate and the side of the frame-bar B', the curved side allowing for the swinging movement of the arm as its cam by the revolution with the shaft moves the arm backward and forward.

The arm W has an extension E' toward the front of the machine substantially horizontal, as shown more particularly in Fig. 3, to the end of which is secured the feed-block F' (see Figs. 9 and 10 more particularly) by a screw *t*, passing through a vertical slot *u* in the block and screwing into the end of the arm E'. On the outer side of the feed-block, near its upper end, is secured by a screw *v* the feed-dog F, having its upper surface serrated or toothed, as usual in sewing-machine feed. This feed-dog F has a downwardly-projecting arm G' at right angles thereto arranged to fit easily in a vertical recess *y* in the feed-block, the sides *a'* of which prevent sidewise movement of the feed-dog.

The seat *b'* of the recess for the feed-arm G' is cut or inclined under, as shown in Figs. 9 and 10, toward the feed-block, so that if the feed-arm G' lies closely upon its seat *b'* the operating-surface of the feed-dog will be inclined or at angle to the horizontal plane of the machine, as shown in Fig. 9.

H' is a headless screw which screws into the block below the recess, but is so located that the lower end of the feed-arm G' will lie against or be over the screw, so that if the screw H' is turned out more or less and the feed-dog screwed down in place the lower end of its arm G' will bear on this screw, and the working face then of the feed-dog will be more or less at an angle one way or the other from the horizontal plane of the machine—as, for instance, in Fig. 9 the screw is turned way in, so that the arm G' bears its whole length upon its seat, which makes the feed-surface, as shown, incline outward; but if the screw H' is turned out sufficiently the feed-surface would be in a horizontal plane, as shown in Fig. 10; but if turned out more its

surface would be at an angle of inclination opposite to that shown in Fig. 9.

The direction of changing the angles of the feed-dog is at right angles to the forward and backward movement of the feed or across it. These changes of incline of the feed-dog are for the purpose when sewing the straw braid into the form of the hat to cause one side or the other of the braid to be fed faster than the other in order to produce a fulling of the braid when shaping it in the hollow or concave form of the hat, for if the feed-surface on the angle shown in Fig. 9 is feeding the braid the edge of the braid over the highest point *d'* will be fed or forced faster than the edge of the braid at the opposite side of the feed, consequently fulling the braid, and if the angle of incline is opposite to that shown in Fig. 9 the other edge of the braid will be fed faster accordingly, such differences in feeding effect being more or less according as the feed-dog is more or less at an angle either way to the horizontal plane of the machine and as desired to effect the feeding of the braid one side or the other, as is well understood in sewing braid into hats.

At the lower end of the feed-lever arm W is secured by screws *f'* a vertical plate J', which extends outward and is freely disposed between a block K', secured to the frame by screws *g'*, and an arm *h'* of a plate L', secured by screws *m'* to the block K', the plate J' being carried by the feed-arm and moving in the space M', between the plate-arm *h'* and block K', serving as a guide to the feed-arm in its movements to prevent any undue angular strain or cramp on its cam U'.

Secured to the forward end of the frame-arm B' by screws *n'* is a plate N', which has a hollow or curved bearing-surface *r'* in cross-section to fit the side of the needle bar or rod, as shown in side view in Fig. 5 and in section in Fig. 6. The holes *t'*, through which the two screws *n'* pass in this bearing-plate, are elongated horizontally, as shown in Fig. 6 in section, so that this plate can be moved to and from the needle-bar within the limits of its screw-slots and secured at any place by its screws. The object of this plate is to take up the wear of the bearings *u'* of the needle-bar from its operation, for in the throw of the needle-bar arm D the outer side *v'* of the needle-bearings wear away more or less faster than the opposite side, and therefore the needle-bar becomes loose in its bearings, and consequently does not work so well, and to properly fix it otherwise than in accordance with this invention takes considerable time and work, whereas with the plate N' applied thereto if such bearings wear the plate can be moved up sufficiently close to the needle-bar to make the proper joint between the bar and bearings, and then securing the plate by its screws in such position the needle-bar will be properly guided for its work, overcoming this looseness with little trouble and time. The presser-foot bar K has applied to it a similar

arrangement to obviate the wear of its bearings.

Secured by screws w' to the front end of the frame-arm B' is a small plate P' , which extends down alongside, as at Q' , and then under the frame end, as at a^2 in dotted lines in Fig. 7, and back of the presser-foot bar K has a vertical groove b^2 in its side, which fits and is arranged to bear against the rear side of the presser-foot bar, as shown in dotted lines in Fig. 7.

The holes d' in the plate or block P' through which the screws w' pass are elongated horizontally, so the block can be moved backward and forward within their limits. As the tendency of the presser-foot-bar bearing is to wear upon its rear side, caused by the operation of the feed in feeding the goods through the machine, this bearing-block P' can be moved up to the presser-foot bar and secured by its screws to hold it firmly for its proper bearing upon the presser-foot bar.

The post R' , having an eye f^2 for guiding the thread to the needle-bar, is inserted in a vertical socket g^2 in the frame, so it can be moved up and down therein and is secured at any desired height by a set-screw S' , as shown in Fig. 13, by which as in sewing some class of goods more strain is needed on the thread the post is moved down a sufficient distance for such purpose and secured by the set-screw, and when desirous of lessening this strain the post is moved up the desired distance and secured as before.

The tension device N (shown in section in Fig. 12) consists of a post U' , secured in a socket in a portion h^2 of the frame by a set-screw m^2 , in which socket it can be moved up and down. The portion h^2 of the frame is preferably round in cross-section and has just above its upper surface two disks $V' W'$, loosely fitting over the post, the lower one, V' , resting on a washer Y' on the frame and having its edges turned down all around, and the upper disk W' having its edges turned up, and above these disks are two caps $A^2 B^2$, encircling the post, their open ends toward each other and one, A^2 , being of larger diameter to freely fit over the other, B^2 , as shown in section in Fig. 12, and in between these two caps is a spiral spring C^2 . On the outer end of this post U' is a screw-thread, over which screws a nut D^2 to press down upon the upper cap against the spring C^2 and holds the two disks close together with the proper pressure upon the thread E^2 , which passes between them from the spool. The upper end of the post is slit or cut longitudinally into two parts, as at n^2 , which form a spring to act laterally upon the screw-nut to prevent its accidentally becoming loose and thus alter the tension on the thread.

The sewing-thread E^2 comes from the spool (not shown) forward through an eyehole r^2 in a short post F^2 , secured to the frame back of the needle-bar lever, through an eye t^2 in said lever, to and around the post U' , as de-

sired, back to and through an eye in a post R' , to and through an eye in the upper end of the needle-bar C , down to the needle.

The constant passing of the thread about the tension-post U' after a while wears more or less upon the post, roughening or grooving it, making the passage of the thread round about the post more or less irregular and thus interfering with the proper delivery of the thread therefrom, and to obviate this trouble the present arrangement of the post and its support is provided for by loosening the set-screw m^2 and either lower or raise the post N' in its socket until a new place on the post comes in line with the travel of the thread around the post between the two disks, and then tightening the set-screw securing the post in place, which makes it as good as new. The post can be moved quite a number of times for such purpose, which extends the life of the post and in a very simple, convenient, and cheap manner.

If desired, a cover or plate can be placed over the top of the frame above the shaft to cover up the oil-holes S to prevent dirt getting in the oil, and in such case such plate can be pivoted at one end, so it can swing out of the way when desirous of supplying oil to the bearing.

The cam-arm W can be of any form or extend in any direction to its guide-bearing at its upper end—as, for instance, it could extend in a curved line thereto, following substantially the outline of the curved frame-arm back of the needle-bar lever.

The advantage of a small washer under the tension-disks is that the resistance on the lower disk is so slight that it allows the two disks to revolve around the post as the thread moves along, thus presenting constantly a new surface of the disks to the thread, which prevents any wear upon the disks at any particular place by the thread, as it would if the disks were held practically from any movement.

Having thus described my invention, what I claim is—

1. In a sewing-machine, in combination, a revolving shaft carrying the stitching-looper, a cam on said shaft, an arm engaging said cam and extending upward therefrom, a guiding-bearing for the upper end of said arm, a side extension of said arm and the feed-dog secured to said extension.

2. In a sewing-machine, in combination, a revolving shaft carrying the stitching-looper, a cam on said shaft, an arm carrying the feed-dog engaging said cam and extending upward therefrom, a guiding-bearing for the upper end of said arm, an extension of said arm, and a guide or bearing for said extension.

3. In a sewing-machine, in combination, a revolving shaft carrying the stitching-looper, a cam on said shaft, an arm carrying the feed-dog engaging said cam and extending upward therefrom, a bearing for the upper end of said arm, having one of its sides curved longitudinally.

4. In a sewing-machine, a feed-block, a recess in said block on its outer side, a bearing-surface in said recess cut or inclined under, a regulating-screw in the feed-block at the lower end of said bearing-surface, and a feed-dog having an arm to be secured to said feed-block by a screw through said arm.

5. In a sewing-machine, in combination a feed-block, bearing-surface on its side, cut or inclined under, a regulating-screw in the feed-block at the lower end of said bearing-surface, and a feed-dog adapted to be secured to said feed-block and to be adjusted by the regulating-screw.

6. In a sewing-machine, in combination a feed-block, a bearing-surface on its side cut or inclined under, a regulating-screw in the feed-block at the lower end of said bearing-surface and a feed-dog having an arm by which it is secured to said feed-block by a screw through said arm.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLARD G. HEWINS.

Witnesses:

EDWIN W. BROWN,
LEONA C. ARNO.