

(No Model.)

3 Sheets—Sheet 1.

A. P. L. ISAAC.

APPARATUS FOR APPLYING CHENILLE TO TULLE.

No. 598,375.

Patented Feb. 1, 1898.

FIG. 1.

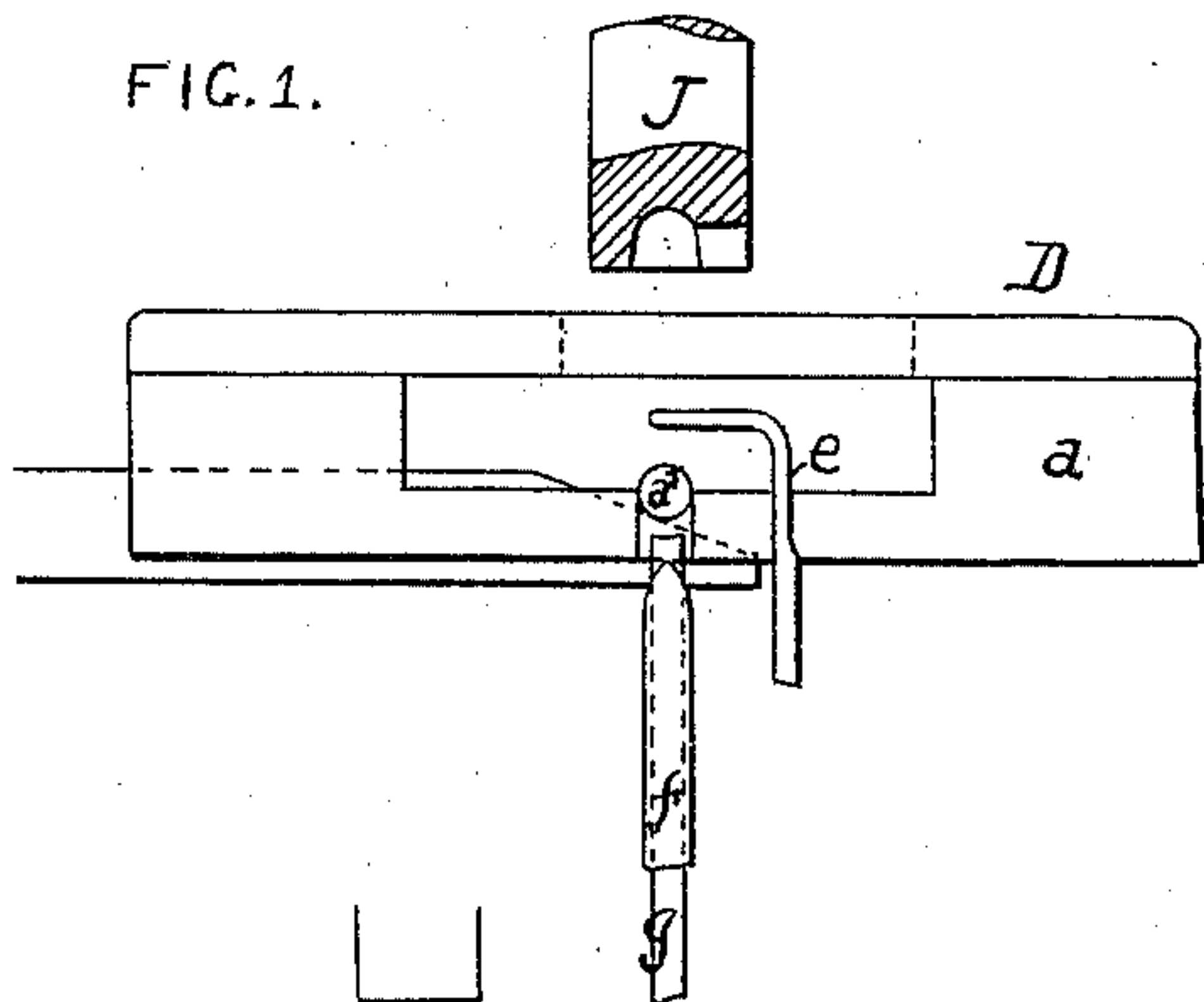


FIG. 2.

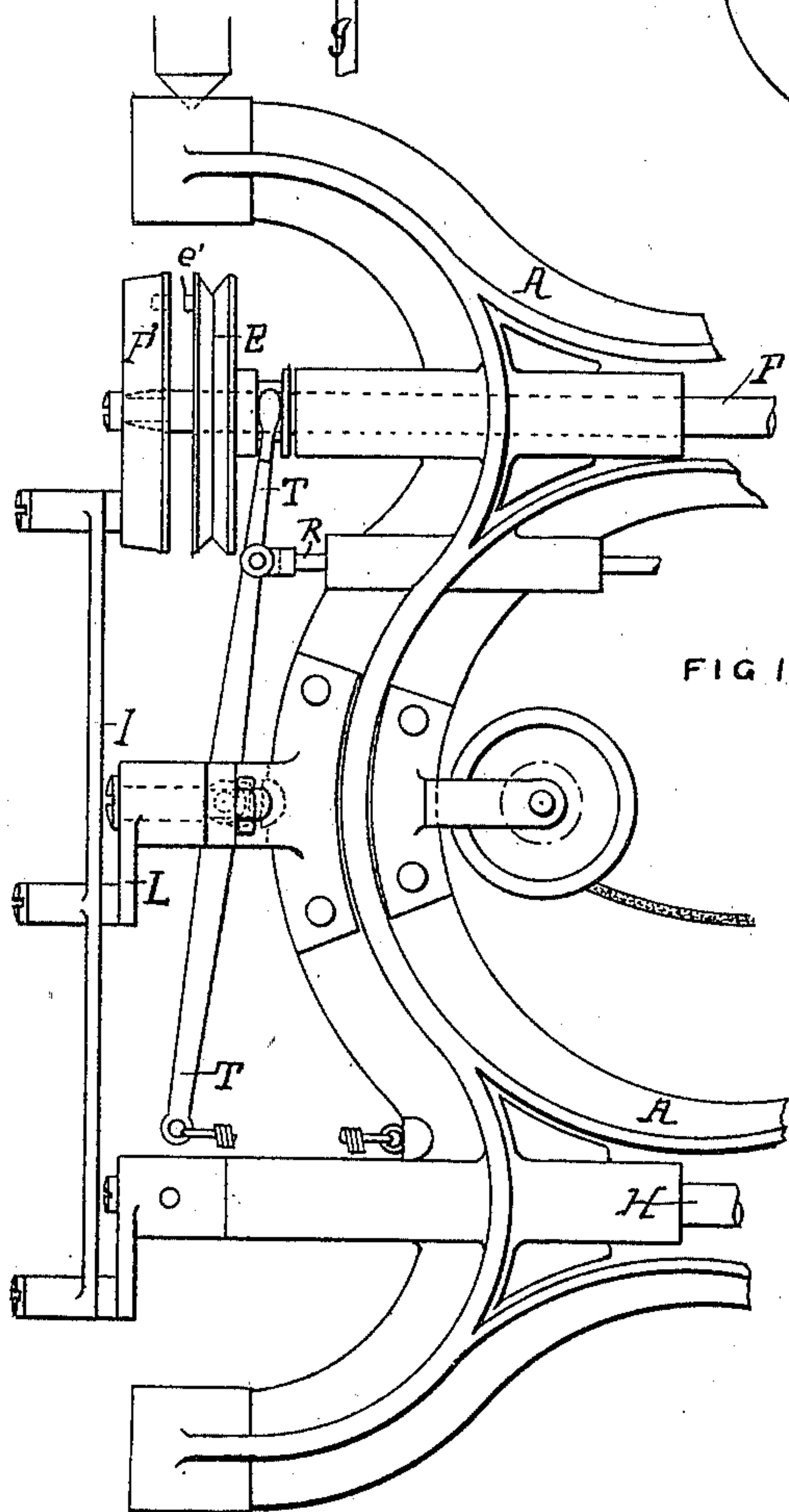
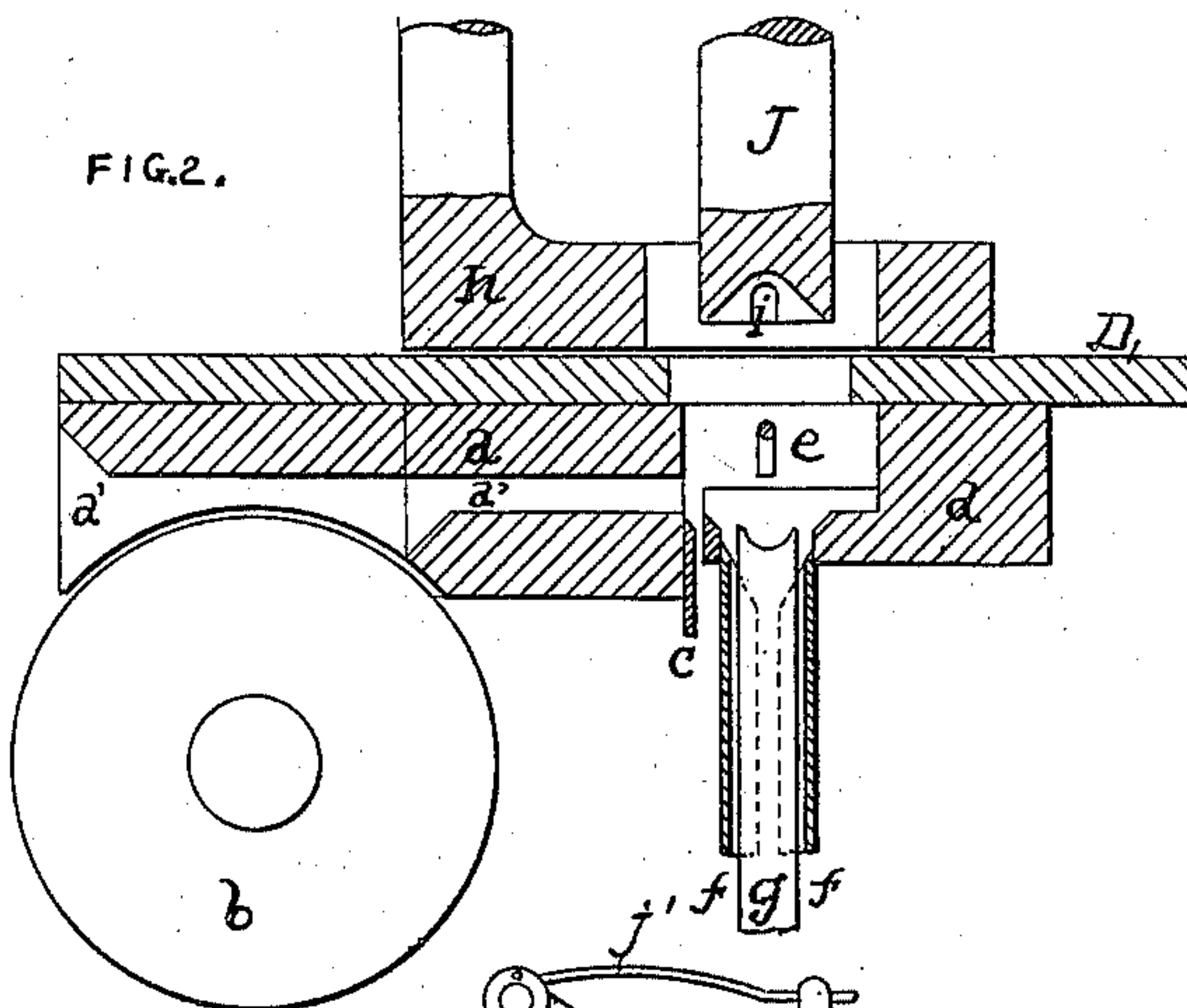
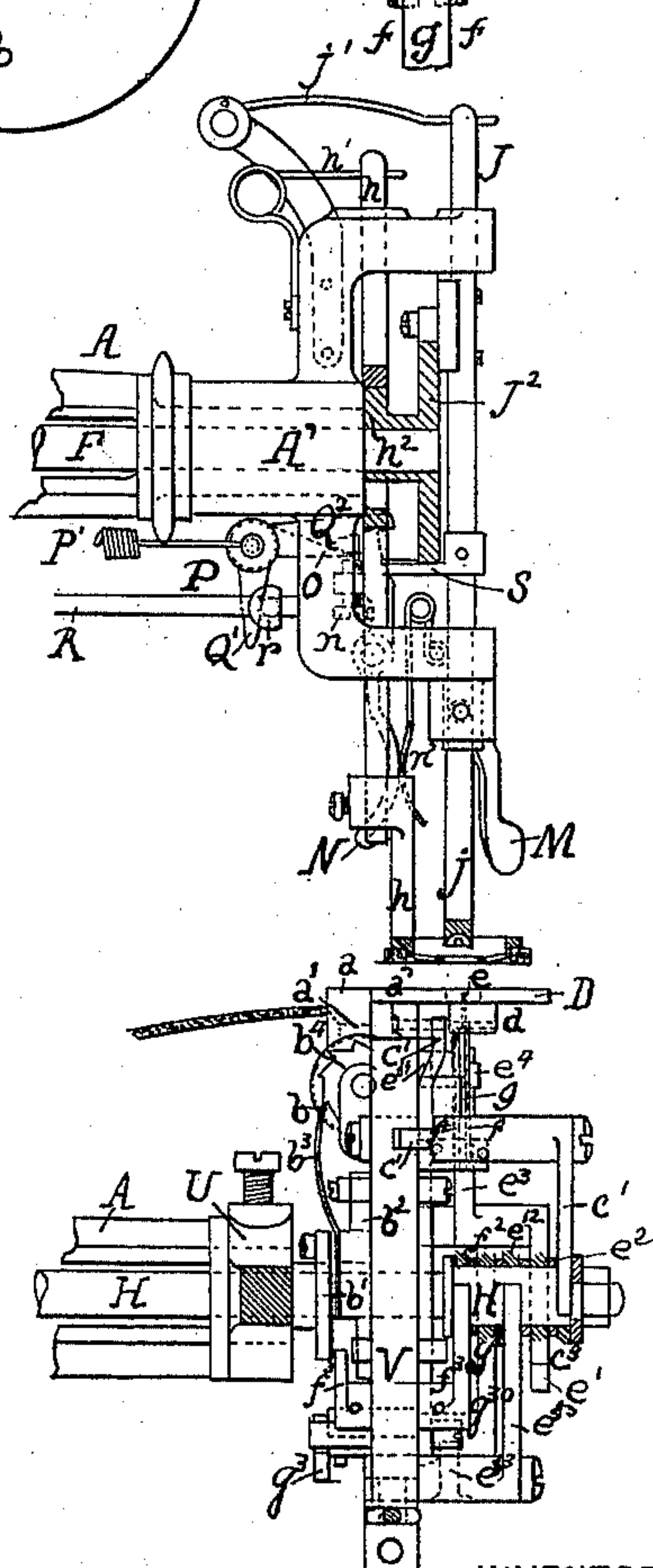


FIG. 10



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FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

FIG. 7.

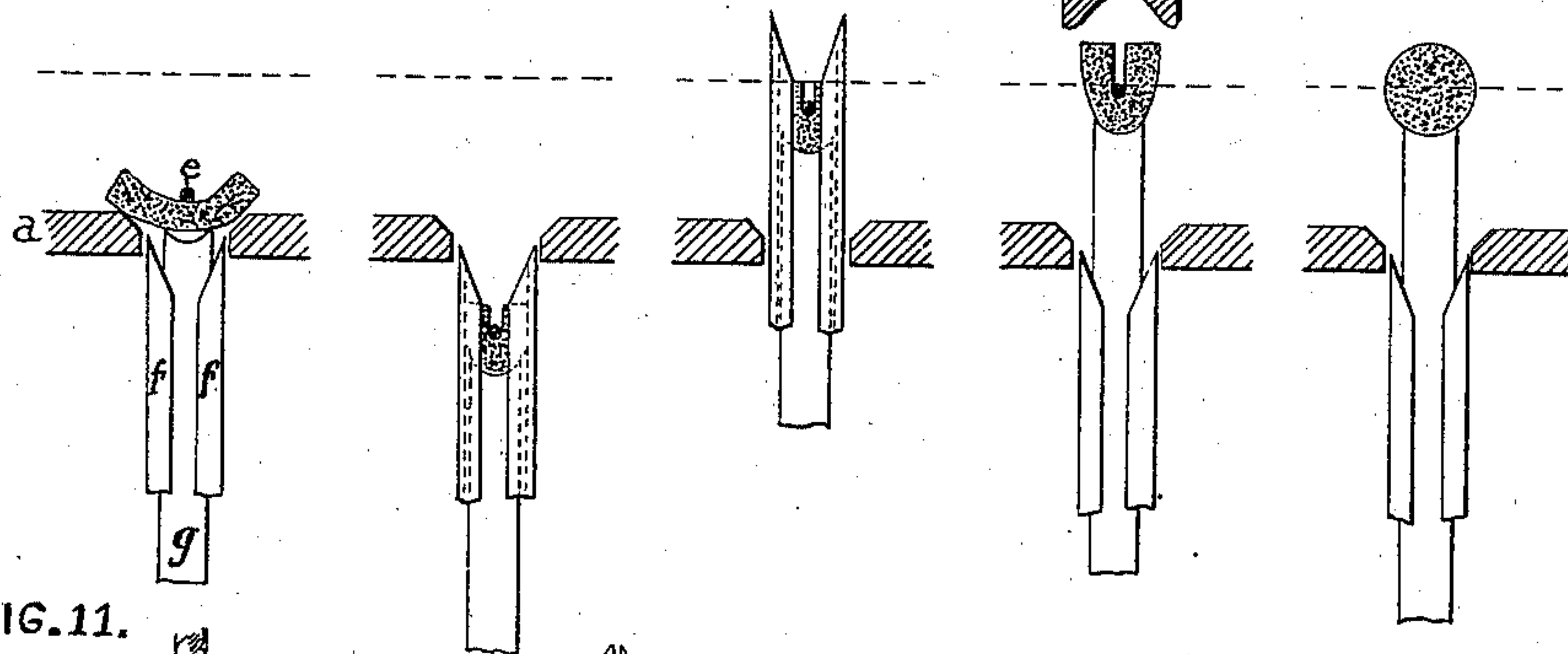


FIG. 11.

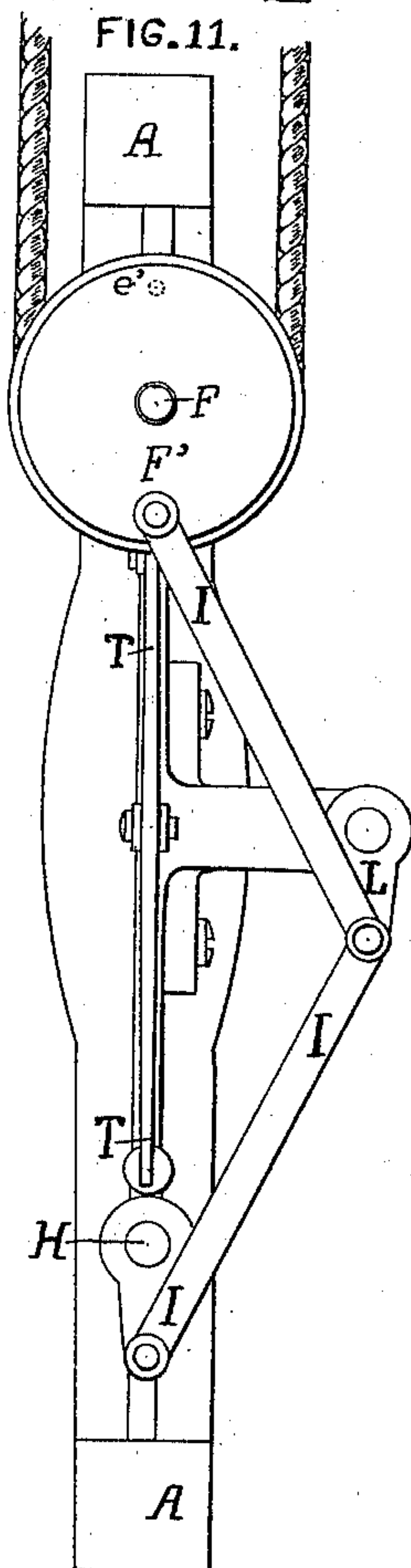


FIG. 12.

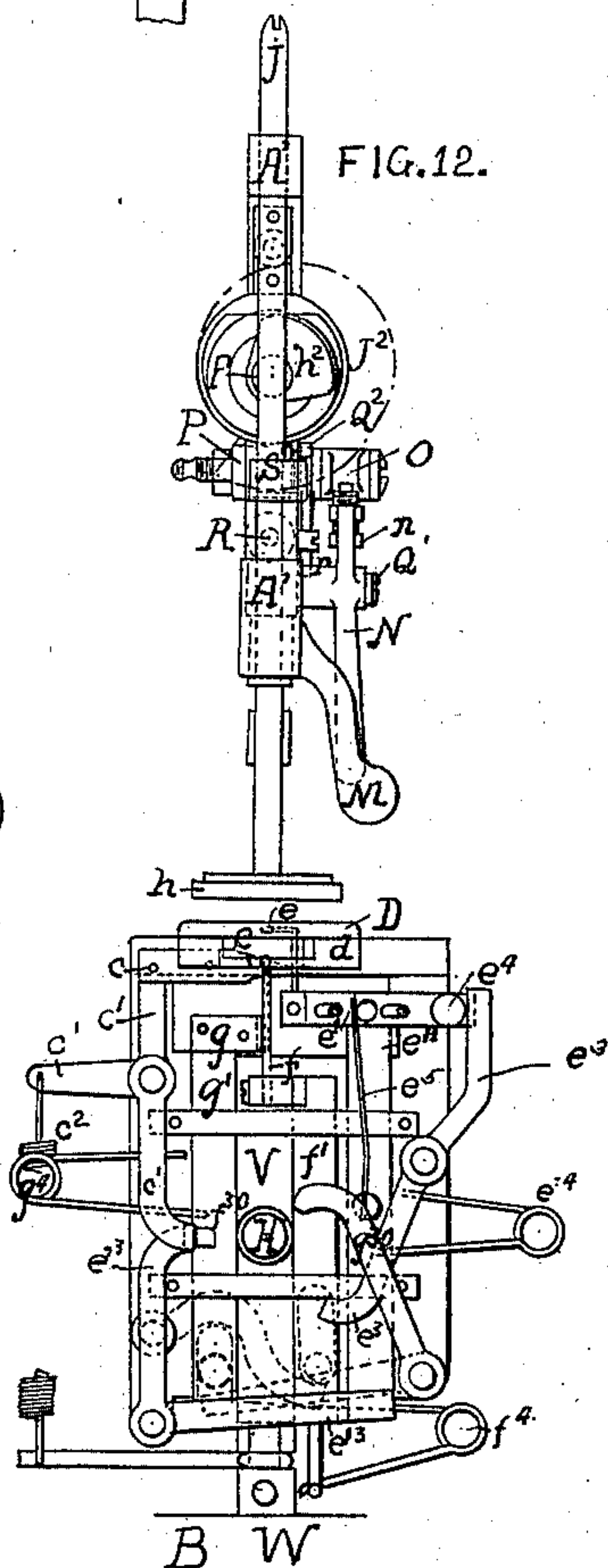


FIG. 13.

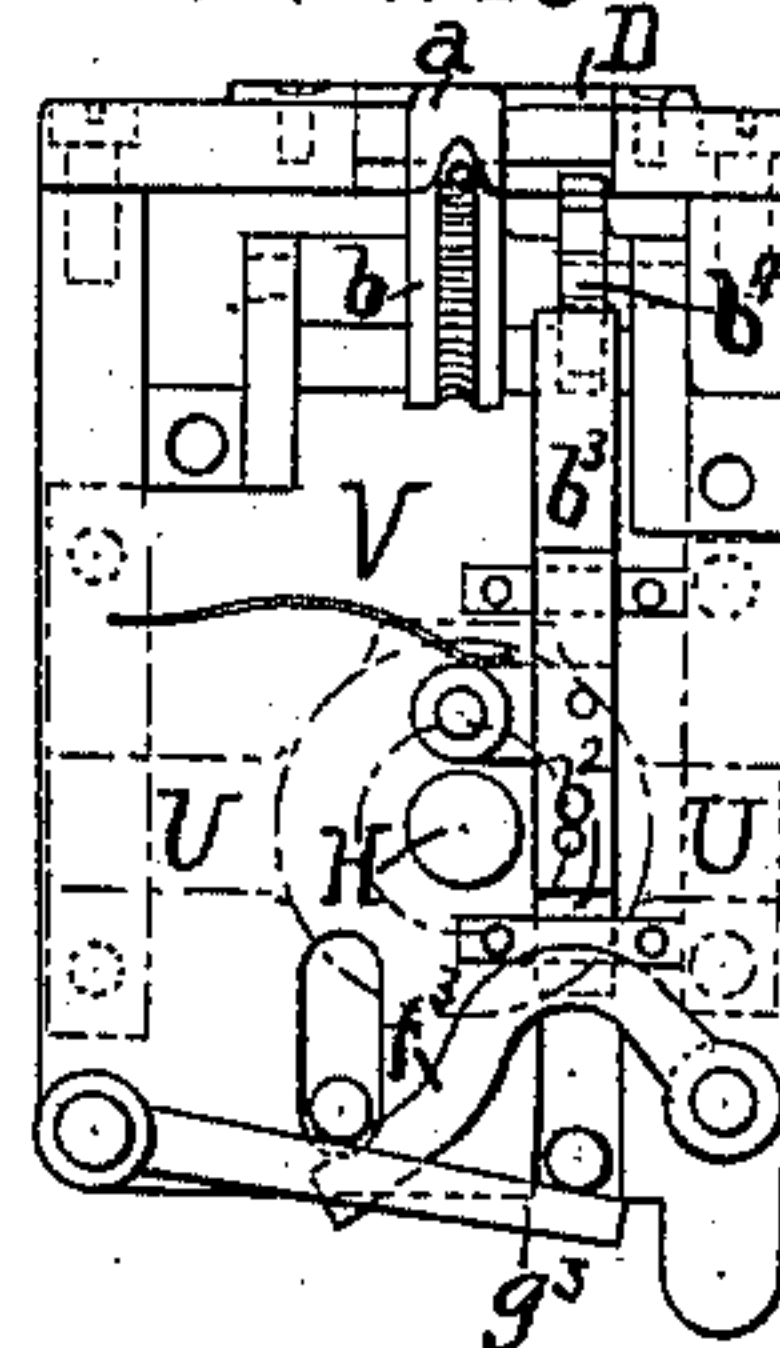
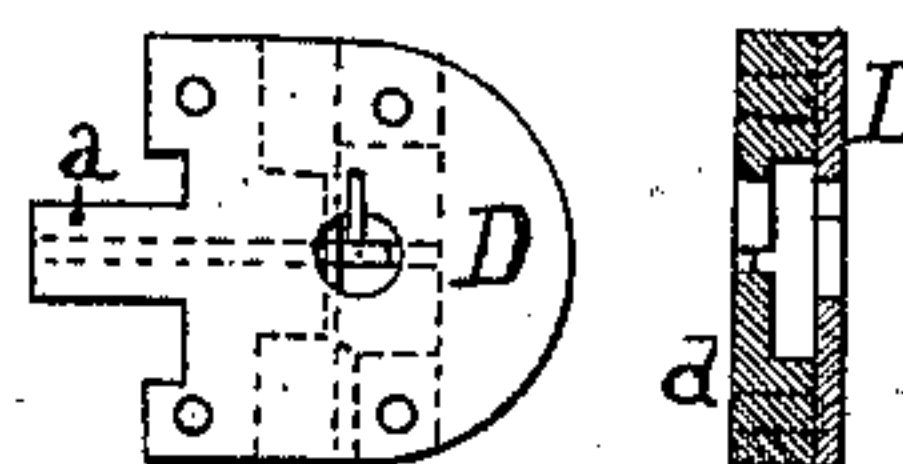


FIG. 14.



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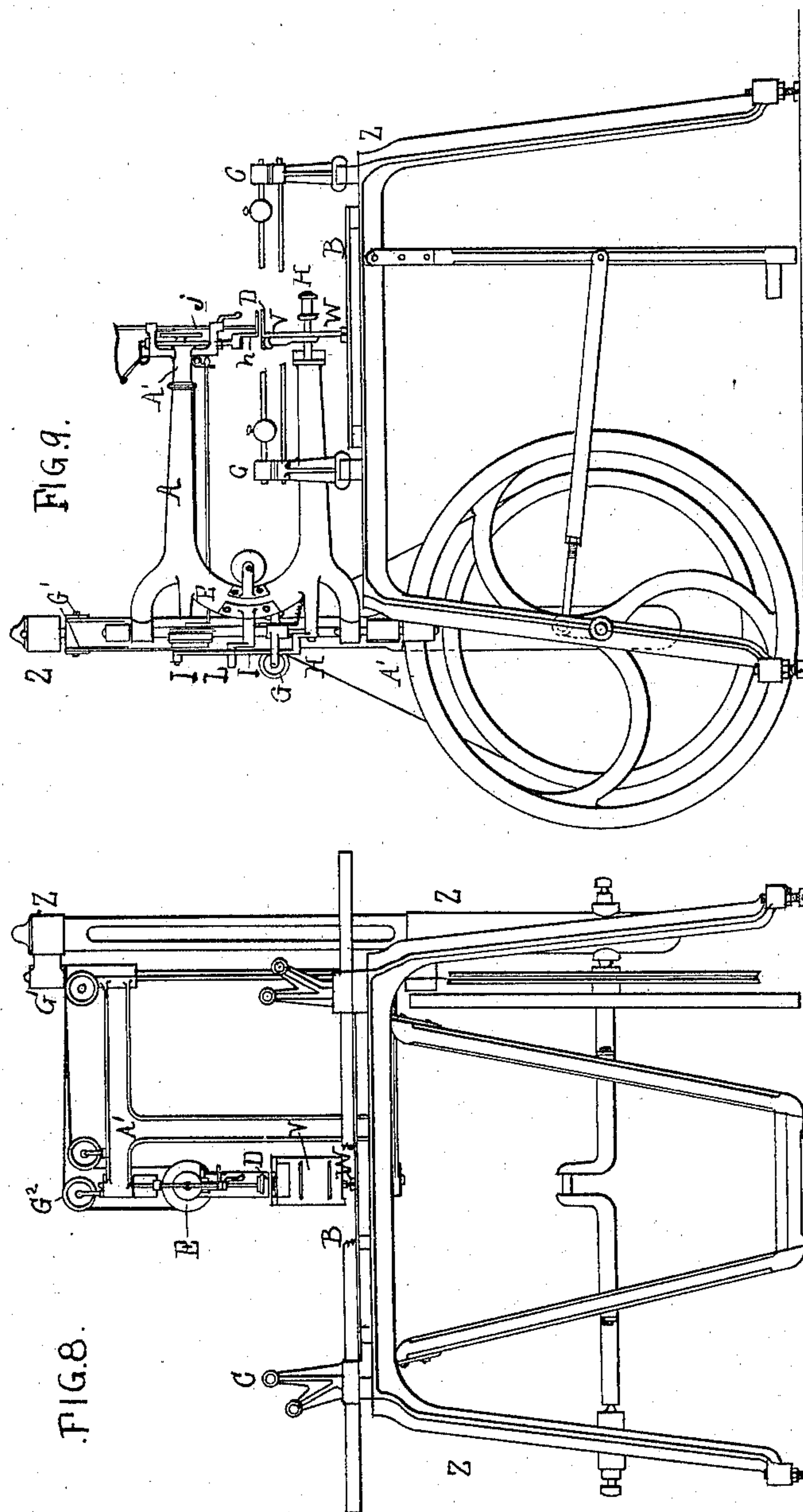
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UNITED STATES PATENT OFFICE.

AUGUSTE P. L. ISAAC, OF LYONS, FRANCE.

APPARATUS FOR APPLYING CHENILLE TO TULLE.

SPECIFICATION forming part of Letters Patent No. 598,375, dated February 1, 1898.

Application filed December 31, 1895. Serial No. 573,964. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTE P. L. ISAAC, manufacturer, a citizen of the Republic of France, residing at 1 Rue de la République, Lyons, in the Republic of France, have invented certain new and useful Improvements in Methods of and Apparatus for the Application of Chenille to Tulle, Crêpe, and other Fabrics of Open Texture, of which the following is a specification.

My invention has for its object to enable chenille to be mechanically applied to or worked in tulle, crêpe, and generally any fabric of open texture. The devices for obtaining this result are shown double size in the accompanying drawings.

Figure 1 is a front elevation, and Fig. 2 a sectional side elevation. Figs. 3 to 7 are diagrammatic views representing the different steps of the operation. Figs. 8 and 9 are views at right angles to each other showing a machine for applying a single dot at a time. Figs. 10 to 14 are detail views of parts of Figs. 8 and 9, hereinafter referred to.

The parts or devices consist of, on the lower side of the material, first, a device consisting of a fixed plate or support *a*, Figs. 1 and 2, having a passage *a'*, through which the chenille is fed, and of a grooved or fluted cylinder *b*, recessed into the plate *a*; second, a cutting-blade *c*, forming with the edge of the passage *a'* a shears; third, a plate *d*, perforated with a small T-shaped opening and shown separately in Fig. 14; fourth, a square bent hook *e*; fifth, two needles *f f*, each grooved on one side and just separated sufficiently from each other to allow of the bent part of the hook *e* passing between the two of them; sixth, a piece *g*, capable of sliding between the two needles in their grooves, the T-shaped opening in the plate *d* allowing the parts *e*, *f*, *f*, and *g* to pass through this plate when necessary; seventh, another plate *D*, (shown in detail Fig. 14,) bored with a round hole and a little recess for the hook *e*, which plate covers all the previously-mentioned parts and supports the material to be chenilled on the upper side of the material; eighth, a presser-foot *h* of any suitable shape intended to hold the material on the plate *D* at the necessary moment; ninth, a plunger or stamp *J*, in

which there is a small recess *i*, into which the end of the hook *e* can enter.

The application or working in of the chenille is effected in eight operations.

First. The fluted or grooved cylinder *b* revolves to a certain angle and causes the chenille to advance through the passage *a'* to an extent necessary for forming one spot.

Second. The hook *e*, passing through the opening in the plate *d*, seizes in the center the length of chenille which has advanced, gripping it onto the piece *g*, which at this moment grazes the upper face of the plate *d*.

Third. The cutting-blade *c* cuts sharply the chenille by acting, as already stated, as a shears against the edge of the passage *a'*.

Fourth. The hook *e* and the piece *g* descend, carrying down the piece of chenille; but as the latter is longer than the T-shaped opening in the plate *d* it is bent, Fig. 3, into the form of a U, the arms of which engage in the grooves of the needles *f f*, Fig. 4. These needles have at this moment their points in the opening of the plate *d*, so that the arms of the U-shaped chenille cannot fail to engage in the needle-grooves. The edges of the opening in the plate *d* are chamfered, as shown in Figs. 3, 4, &c., so as to facilitate this bending to a U shape of the chenille.

Fifth. When the chenille U has descended sufficiently into the groove of the needles, the latter rise and pass through the material (which is to be chenilled) up to a certain extent of their length, Fig. 5, while the presser-foot *h* holds the material down against the plate *D*. The hook *e* and the piece *g* have risen simultaneously with the needles and have caused the branches of the U-shaped chenille to pass through the material to which it is to be applied, this passage taking place in the grooves of the needles.

Sixth. The needles then descend again, leaving the chenille in position, still held by the piece *g* and hook *e*, Fig. 6.

Seventh. The stamp *J* then falls down. Its form is such that it bends up the arms of the U-shaped chenille and closes them into the form shown in Fig. 7, and, in fact, makes a round spot clenched on one or more threads of the fabric. In order that the spot may be well clenched, the hook *e* can engage in the

recess *i* of the stamp the moment the latter passes the level of the plate D, bending the material, and it is then sharply withdrawn as soon as the stamp J falls. The latter there-
 5 fore clenches or grips the spot on the piece *g*.

Eighth. The piece *g* again descends, the stamp J and the presser-foot *h* rise, and the cycle of operations recommences.

The parts hereinbefore described may be
 10 operated in various ways to obtain the movements mentioned and according as it is intended to fix one or more spots at a time. In the first case the machine only comprises a single group of fixing or applying mechanisms
 15 or parts. In the second case several groups are arranged in one machine, which operates them simultaneously. I will now describe one example, merely observing that in both cases the essential parts remain the same and work
 20 in the same way, only their driving mechanism, and consequently the general form of the machine, being varied.

In a machine having a single group of parts the whole of the chenilling devices run on
 25 the fabric to which the chenille is to be applied. It is composed of two beams or arms A, hingeably connected to one another, and a frame or table Z, Figs. 8 and 9. The front arm A, which carries the chenilling devices,
 30 can move in a horizontal plane, sliding on a plate B. I provide a screw with a head W, fastened to the plate V, to slide on the support-plate B and thus maintain the arms A A in their normal positions and so relieve the
 35 joints of the frame. The material to be treated with chenille is stretched on a frame C, Figs. 8 and 9, and rests lightly on the plate D. An arrangement of pedal, crank, and fly-wheel imparts a continuous rotary movement
 40 to a pulley E, Figs. 8, 9, and 10, loose on a shaft F, by means of an endless cord running over return-pulleys G G' G² and the like. The rotary movement which is imparted to the shaft F when the pulley E is engaged with
 45 a fixed pulley F', Fig. 10, is transmitted to a lower shaft H by known means of an elbowed crank I and intermediate crank L, Figs. 10 and 11.

The front arm A A A (shown separately,
 50 Fig. 10) has at one of its ends a puppet-head A', which itself supports, as is clearly shown in Figs. 10 and 12, the stamp *j*, the presser-foot *h*, and their springs *j'* *h'*. The shaft F carries two cams *j*² *h*², acting, respectively, on the stamp *j* and presser-foot *h*. The puppet-head A' is further provided with a knob M, which is taken hold of by the operative with the thumb and third finger of his right hand in order to guide or control the machine, the
 60 index-finger of the same hand actuating the engaging lever N. This lever N carries a screw *n*, which encounters the end of a catch *o* of a lever P. This lever P, oscillating on a vertical screw *p*, carries another elbow-lever
 65 Q' Q². The arm Q' acts on a releasing-bar R by means of a screw *r*. The other arm Q² is in contact with a finger S, fixed on the shank

of the stamp *j*. When the operative presses on the lever N, the series of parts O P Q' Q² oscillates on the screw *p*, the arm Q² escapes
 70 from the finger S, and the releasing-rod R, released from the arm Q' and returned by a spring and forked lever T T, brings the loose pulley E against the fast pulley F', which is moved as soon as the pin or stud *e'* enters the
 75 corresponding hole in the pulley F'. The screw *n* has escaped from the catch *o* immediately the arm Q² has escaped from the finger S, so that the spring *p'* returns the lever P to its former position and with it the lever-
 80 arms Q' Q², and the latter arm Q² engages the finger S, when after being lowered with the stamp *j* said finger rises with the latter when the spot of chenille has been formed. The arm Q' will then act on the disengaging-rod
 85 and the machine will stop precisely at the moment when the stamp *j* and presser-foot *h* have risen, and the operative can then displace the arm A, in order to make a fresh spot at any desired point. For this purpose it is
 90 necessary to release the lever N, which, returned by its spring *n'*, will return to its first position, the screw *n* slipping over the bevel of the catch *o*, which oscillates on the same axis as the arms Q' Q² without being rigidly
 95 connected therewith.

The lower end of the front arm A, which is under the material, carries, by means of a double-socketed foot U, an upright plate V, on which all the parts of the machine not
 100 hereinbefore described are arranged.

In order to feed the proper length of chenille into position to be cut by the knife *c*, I provide a grooved or fluted cylinder *b*, rev-
 105 olubly mounted on a spindle in fairly close relation to the piece *a*, so as to allow the cylinder *b* to grip the chenille and force it into position. On the same spindle with the cylinder *b* I mount a ratchet-wheel *b*⁴ to control the movement of the said cylinder *b*, and I pro-
 110 vide a pawl *b*³ on a slide *b*², moved by a cam *b'* on the shaft H, to cause the ratchet-wheel *b*⁴ (and consequently the cylinder *b*) to advance, as will be readily understood by reference to Figs. 10 and 13.
 115

To control the bent lever *c'*, which carries the cutting-blade *c*, I provide a spring *c*² to press the lever *c'* against the cam *c*³, keyed on the end of the shaft H, Figs. 10 and 12.

To control the hook *e*, I fix it on a horizontal slide *e'*, which slide is movable on a vertical slide *e*¹¹. This horizontal slide *e'* receives its horizontal movement by means of the bent lever *e*³, against the vertical arm of which the screw-head *e*⁴ bears. The bent lever *e*³ is controlled by the cam *e*², upon which it is pressed by a suitable spring *e*⁵. The vertical slide *e*¹¹ receives its movement from the bell-crank lever *e*¹³, which is pressed against the cam *e*¹² by means of the spring *e*¹⁴, bearing upon the slide *e*¹¹, as will be readily seen
 120 in Figs. 10 and 12.
 125
 130

The two needles *f* I fix on a slide-piece *f*², having a projection extending through a slot

in the upright plate V and on which projection the end of the bent lever f^3 bears. The spindle of the bent lever f^3 is mounted in and extends through the upright plate and on the needle side thereof carries the bent lever f^{30} . The bent lever f^{30} bears against the cam f^2 , which thereby serves to control the needles f . In order to return the needles out of the fabric, I provide a spring f^4 , Figs. 10, 12, and 13.

The piece g is controlled in much the same manner as the needles f , being mounted on a slide g' , controlled by lever g^3 and bent lever g^{30} , which latter is acted upon by a cam g^2 . The spring g^4 serves to return the piece g , Figs. 10, 12, and 13.

The piece a , hereinbefore mentioned, is formed in one with a plate D, which plate supports the plate d .

I declare that what I claim is—

1. In a machine for applying chenille on tulle, crêpe or the like, the combination of a guide for the chenille, with two hollow needles, a piece adapted to slide up or down, between the needles, a hook acting with the sliding piece to grip the chenille, a stamp and presser-foot, all substantially as set forth.

2. In a machine for applying chenille on tulle or the like, the combination of an upper and lower driving-shaft each provided with

cams, a perforated plate on which the material rests, a stamp and a presser-foot above the perforated plate, each actuated by cams on the upper driving-shaft, with needles actuated by cams on the lower driving-shaft, a hook and gripping-piece also actuated by the cams on the lower driving-shaft, all substantially as and for the purposes set forth.

3. In a machine for applying chenille on tulle or the like, the combination of an upper and lower driving-shaft and a perforated plate between them on which the material rests, with a stamp and presser-foot actuated by the upper shaft, needles actuated by the lower shaft, a gripping-piece actuated by the lower shaft, and a hook adapted to engage with the gripping-piece, two sliding pieces the first carrying the said hook and sliding on the second piece and means for actuating each sliding piece from the lower driving-shaft whereby the hook receives horizontal and vertical movements, substantially as set forth.

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

AUGUSTE P. L. ISAAC.

Witnesses:

JOANNES CUSSET,
LANDIUS MICOLLIE.