

No. 607,404.

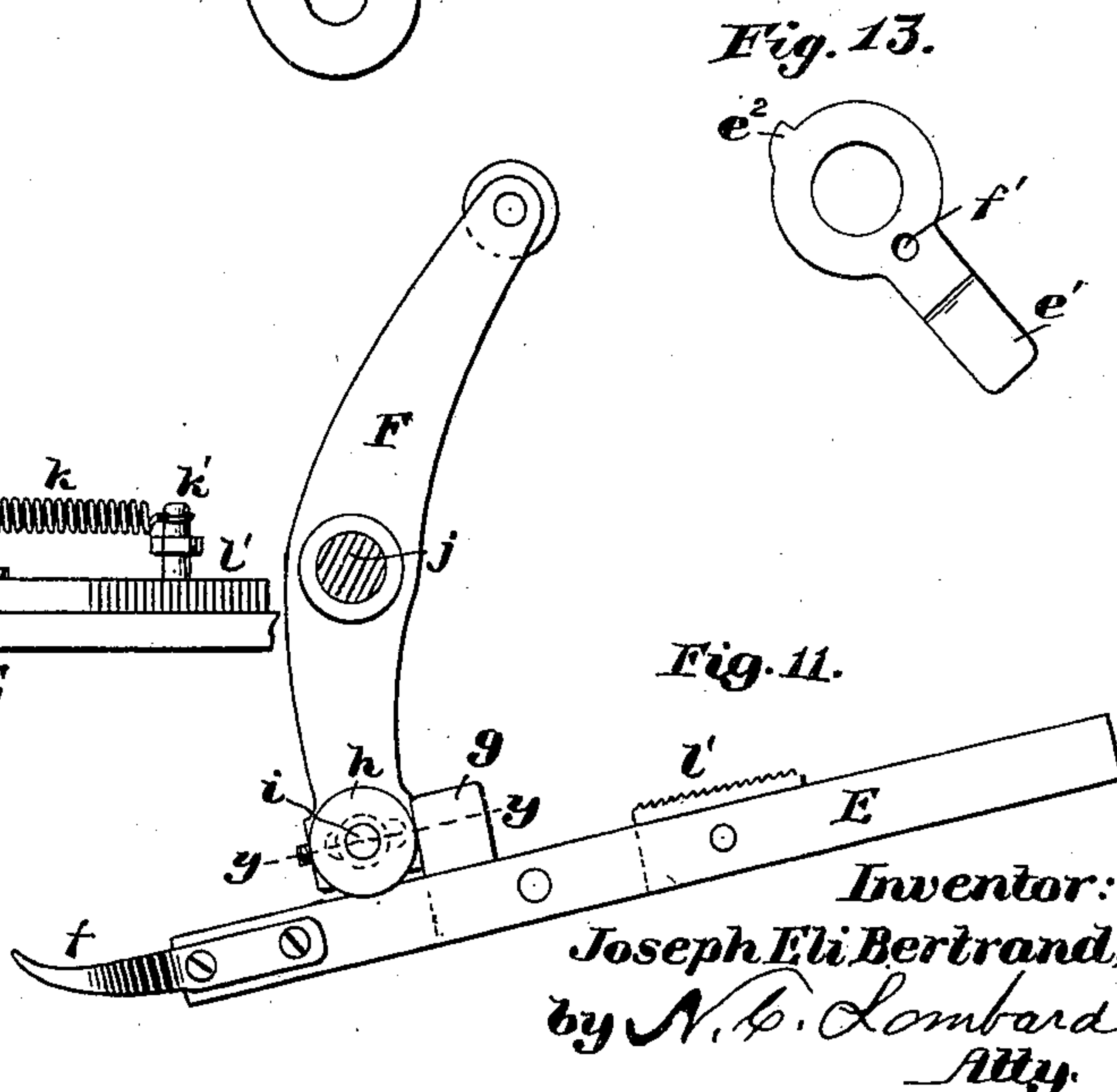
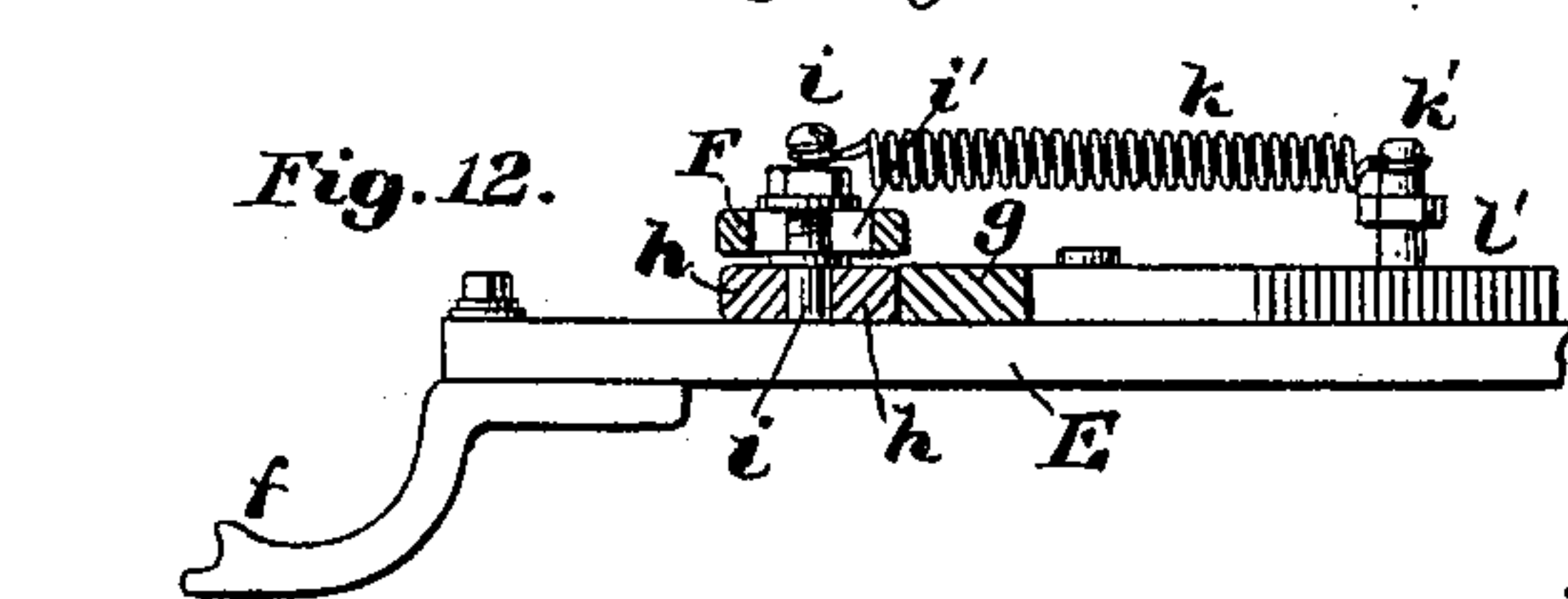
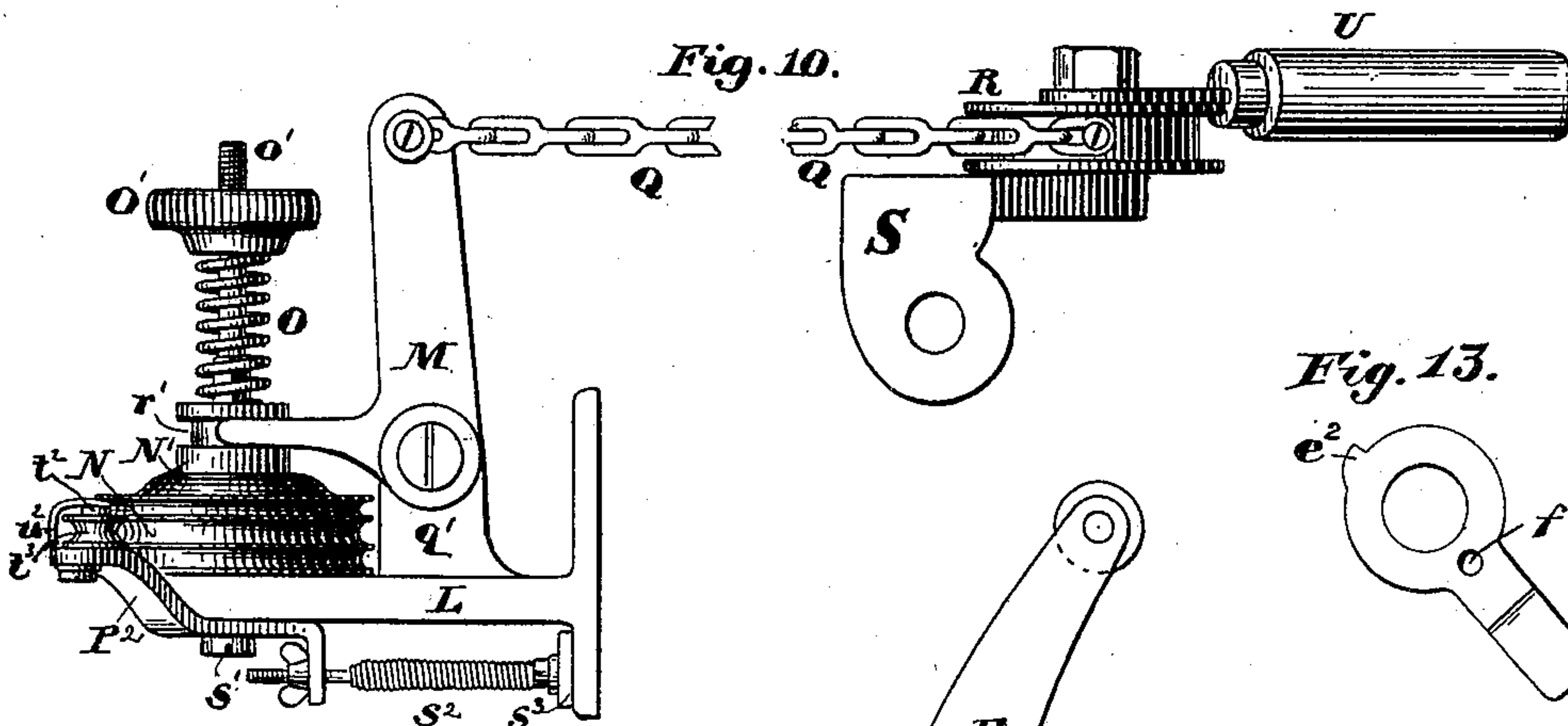
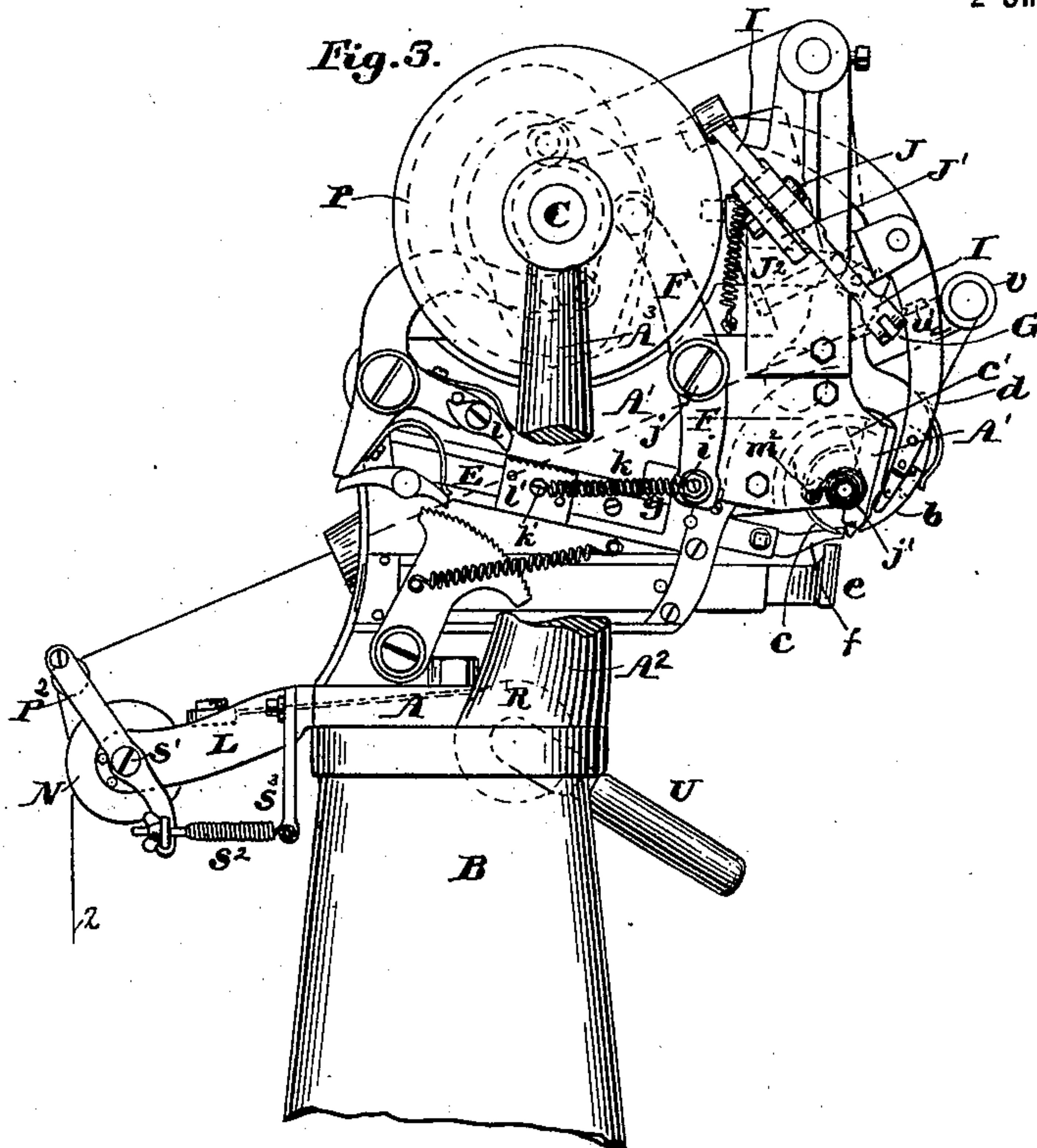
Patented July 12, 1898.

J. E. BÉRTRAND.
SEWING MACHINE.

(Application filed June 8, 1897.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JOSEPH E. BERTRAND, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
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SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 607,404, dated July 12, 1898.

Application filed June 8, 1897. Serial No. 639,825. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ELI BERTRAND, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Chain-Stitch Waxed-Thread Sewing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to chain-stitch waxed-thread sewing-machines, and is an improvement upon the invention described in Letters Patent No. 190,709, granted to Christian Dancel May 15, 1877; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings and to the claims hereto appended and in which my invention is clearly pointed out.

Figure 1 of the drawings is a front elevation of a chain-stitch waxed-thread sewing-machine embodying my invention. Fig. 2 is a side elevation of the same, looking toward the left of Fig. 1. Fig. 3 is an elevation of the opposite side of the same with a portion of the frame broken away and with the tension device attached and showing a portion of the column. Fig. 4 is a plan of the thread pull-off and measuring mechanism drawn to an enlarged scale. Fig. 5 is a sectional elevation of the pull-off bar. Fig. 6 is an elevation of the needle-segment, the needle-guide, tack-puller, and the stud upon which they are mounted, with a portion of the nose of the frame drawn to a still larger scale. Fig. 7 is an elevation of the opposite side of the nose of the frame, with the spring for moving the needle-guide toward the point of the needle. Fig. 8 is a section on line *x x* on Fig. 6, looking toward the right-hand upper portion of said figure. Fig. 9 is a perspective view of the tack-puller. Fig. 10 is a plan of the tension devices with the means for releasing the tension on the thread. Fig. 11 is an inside elevation of the back gage, its bar, and the lever for moving it toward the rear. Fig. 12 is a section plan of the same parts, the cutting plane being on line *y y* on Fig. 11 and showing in plan, in addition to the parts shown in Fig. 11, the spring for

moving the back gage toward the rear. Fig. 13 is an elevation of the needle-guiding arm detached from the contiguous parts.

In the drawings, A is the base of the head of the machine, arranged to be mounted upon a column B, and has formed in one piece therewith or secured thereto in any suitable manner the centrally-arranged and upwardly-projecting frame-section A', as shown.

The base A has formed thereon the two outwardly and upwardly projecting arms A² to receive and support the columns A³ A³, having suitable bearings formed in their upper ends, in which is mounted the driving-shaft C, upon which are mounted the several actuating-cams for operating the various moving parts of the machine.

The parts above mentioned, together with the feed-slide D, its feed point or awl *b*, the needle *c* and its carrier *c'*, the looper *d*, the shoe-supporting gage *e*, and all other parts of the machine not more particularly referred to or described herein, are constructed, arranged, and operate substantially as described in said before-cited Letters Patent and are not my invention.

E is a bar fitted to a bearing in the frame-section A', so as to be movable endwise therein, and has rigidly secured to its front end the back gage *f* of well-known construction.

The bar E has formed upon or firmly secured thereto the upwardly-projecting lug or plate *g*, which also projects outwardly from the outer face of said bar E, as shown in Fig. 12. This lug or plate *g* is engaged on its front edge by the roll *h*, mounted upon a stud or journal *i*, adjustably set in a slot *i'* in the lower end of the lever F, fulcrumed at *j* and acted upon by the cam P, as shown in Fig. 3, to vibrate it and move said bar E and the back gage *f* to and from the work, said bar and gage being moved toward the front, as the lower end of the lever F is moved in that direction, by the tension of the spring *k*, connected at one end to the stud *i* and at its other end to the pin *k'*, set in a fixed position at any suitable point in the outer side of said bar E at the rear of said lever F, as shown in Fig. 3. By this construction the back gage is moved to the rear by the positive action of

the cam to a greater or less distance, according as the stud i is adjusted in the slot i' toward or from its front end and is moved toward the front by the spring k until it comes
 5 in contact with the work. At all times when the lower end of the lever F is in its forward position the gage f presses against the work with a yielding pressure, except during the
 10 time that the stitch is being drawn through the work and tightened, when it is rigidly locked by the engagement of the pawl l with the teeth of the plate l' , secured to the bar E .

The needle-carrier c' is mounted loosely upon the tubular stud or sleeve d , secured in
 15 a fixed position in the frame-section A by a set-screw, (shown in dotted lines in Fig. 6,) and the needle-guide e' is in like manner mounted upon and movable about said stud, but is limited in its movements about said stud by
 20 the engagement of the pin f' , set in said needle-guide, coming in contact with the stop-shoulders m m' , formed in the periphery of the head of said sleeve, as shown in Fig. 6.

The bore of the stud or sleeve d has fitted
 25 therein the rocker-shaft g' , having formed thereon at one end the laterally-projecting arm g^2 , provided near its movable end with a perforation to receive the pin f' , and said shaft has a section thereof near its other end
 30 made square in cross-section and the end section made round and threaded to receive the nut h' , said squared section of said shaft having fitted thereon the hub i^2 , to which the inner end of the flat coiled spring j' is secured,
 35 the opposite end of which is secured to the screw-pin m^2 , as shown in Figs. 7 and 8.

The tension of the spring j' tends to move the movable end of the needle-guide e' toward the front of the machine till the pin f'
 40 comes in contact with the shoulder m of the head of the tubular stud or sleeve d' , as shown in Fig. 6. When the needle-guide e' , carrying the tack-puller n , has moved toward the front to the position shown in Fig. 6, the tack-
 45 puller n will have come in contact with the lasting-tack, if such a tack is in or near the path of the needle, and withdraw it sufficiently to prevent the needle coming in contact with it as said needle advances into the
 50 work, during which further advancement of said needle the needle-guide and tack-pulley remain stationary in the position shown in Fig. 6.

When the movement of the needle and needle-carrier is reversed, after having pierced
 55 the work and engaged the loop of thread, the needle-guide and tack-puller remain in the positions shown in Fig. 6 until the needle is withdrawn from the work and has reached
 60 the position shown in Fig. 6, when the shoulder c^2 of the needle-carrier comes in contact with the lug or shoulder e^2 on the needle-guide e' and moves said needle-guide and tack-puller toward the rear against the ten-
 65 sion of the spring j' until the pin f' comes into contact with the shoulder m' , formed in the head of the said sleeve d' .

The power applied to the tack-puller for partially withdrawing a lasting-tack that may be in the path of the needle is supplied by
 70 the tension of the spring j' , acting through the shaft g' , arm g^2 , and pin f , to move said tack-puller and needle-guide toward the work to be acted upon.

The needle-guide e' has secured to its forward face the angularly-bent plate n , the forward end of which has a dull knife-edge and has formed therein the V-shaped notch n' , as shown in Fig. 9.

The notched blade of the plate n is so located relative to the needle c that its notched end will engage the head of any lasting-tack which happens to lie in the path of the needle and withdraw it to a sufficient extent to prevent the point of the needle coming in
 85 contact with said tack to its injury. This notched plate I term a "tack-puller;" but it does not disturb any lasting-tacks that are not in the path of the needle or in close proximity thereto, and does not as a rule pull the
 90 tacks which it does act upon entirely out of the work, it not being desirable that it should do so.

G is a bar mounted in the bearings H and H' and pivoted to one end of the lever I , fulcrumed upon the adjustable pin J and acted upon at its other end by the cam-path o in the disk P' to reciprocate said bar, said pin J being adjustably secured in a slot in the ear J' , projecting outward from the stand J^2 ,
 95 as shown in Figs. 1 and 3.

The bar G is made in two parts secured together by the screws a a , and the longer portion has a cylindrical hole bored longitudinally through the same, in which is mounted
 105 the stem p' of the sheave-carrier p , so as to be movable endwise therein. The outer or right-hand end of said bore is threaded to receive the set-screw q , between which and the end of said stem is inserted the coiled spring
 110 r , the tension of which tends to keep the sheave-carrier p in contact with the shoulder a' of said bar G . A small sheave s is mounted in the carrier p , and said bar G is located between the sheaves t and t' , mounted upon fixed
 115 studs u , set in the stand u' , which also carries the sheave v , mounted on a horizontal stud set therein, said stand u' being firmly secured in a fixed position to the frame-section A' , as shown in Fig. 4.

By means of the reciprocating bar G , the sheave-carrier p p' , the spring r , and the sheaves s , t , and t' , and the means for reciprocating said bar the thread is held firmly
 125 between the needle and the wax-pot when the stitch is being set, and at the proper time when thread is required for forming a new stitch the tension upon the thread between the needle and the wax-pot is reduced, so that the needle will draw the necessary amount of
 130 thread from the supply.

L is a stand firmly secured to the rear edge of the base of the head of the machine and projecting to the rear therefrom, in the rear

end of which is set the stud o' in a fixed or non-revoluble position, said stand also being provided with the ear q' , to which is pivoted the elbow-lever M.

5 The stud o' has loosely mounted thereon the tension-wheel N and the friction-hub N', provided with the peripheral groove r' to receive the forked arm of the elbow-shipper lever M, said hub being pressed against the tension-wheel N by the spring O, the tension of which may be regulated by the thumb-nut O', fitted to the threaded end of the stud o' , as shown in Fig. 10.

15 P^2 is a lever pivoted at s' to the stand L and connected at its lower end to one end of the spiral spring s^2 , the opposite end of which is connected to the lower end of the pendent arm s^3 , also secured to the stand L, as shown, and the upper end of the lever P has set therein a stud t^2 , upon which is mounted the thread-guiding sheave t^3 , and also has secured thereto the guard-wire w^2 , which extends across the outer edge of said sheave in such close proximity to its periphery as to prevent the thread being accidentally displaced from said sheave when the thread is slack.

25 The long arm of the lever M has pivoted thereto one end of a chain Q, the opposite end of which is secured to the periphery of the grooved wheel or drum R, mounted upon the horizontal stud set in the stand S, which in turn is secured to the base of the head of the machine by the bolt T, as shown in Fig. 2.

30 The wheel R has firmly secured thereto the handle U, by a movement of which in the direction indicated by the arrow 3 on Fig. 2 the tension upon the thread may be released when it is desired to remove a boot or shoe after completing the sewing.

40 The thread 2 is drawn upward from the wax-pot (not shown) in a plane tangent to the rear of the tension-wheel N and is passed over and around said wheel, then over the sheave t^3 , carried by the lever P^2 , and thence to the right-hand side of the sheave t , partially around it, thence around the left of the sheave s , thence partially around the right of the sheave t' , thence over and partially around the sheave v , and then downward to and through the eye of the looper-lever d , as shown in Figs. 1, 3, and 4.

By the employment of the lever P^2 , spring s^2 , and thread-guiding sheave t^3 , in combination with the tension-wheel N and the reciprocating bar G, the bar G may be moved to- 55 ward the left to control the tension on the thread without danger of breaking the thread when the machine is being run at a high rate of speed and without drawing any thread from the tension-wheel or wax-pot, all of the 60 thread being drawn from the tension-wheel N and the wax-pot by the needle, when the increased tension upon the thread is withdrawn by the right-hand movement of the bar G and the sheave s . 65

The operation of my invention will be readily understood from the foregoing without further explanation here.

What I claim as new, and desire to secure by Letters Patent of the United States, is— 70

1. The combination of a needle-carrier provided with the stop-shoulder c^2 and mounted upon and movable about a fixed stud or journal; a curved barbed needle set in said needle-carrier; means for oscillating said needle 75 and carrier about said stud; the needle-guide mounted loosely upon said fixed stud and provided with the lug or shoulder e^2 ; the pin f' set in said needle-guide; the tubular stud d' set in a fixed position in the frame and provided with the stop-shoulders m and m' ; the 80 rocker-shaft g' ; the arm g^2 ; the spring j' , and the tack-puller n secured directly to, and movable only with said needle-guide.

2. The combination of the stand L; the stud 85 o' ; the tension-wheel N; the friction-hub N' provided with the circumferential groove r' ; the elbow-lever M, the drum or grooved wheel R mounted on a fixed fulcrum, the handle U connected to said drum; and a flexible con- 90 nection between said lever M and drum R substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 4th day of 95 June, A. D. 1897.

JOSEPH E. BERTRAND.

Witnesses:

N. C. LOMBARD,
GEORGE H. BROWN.