

No. 614,084.

Patented Nov. 15, 1898.

M. CAMERON.
FABRIC TURFING MACHINE.

(Application filed Jan. 7, 1895.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

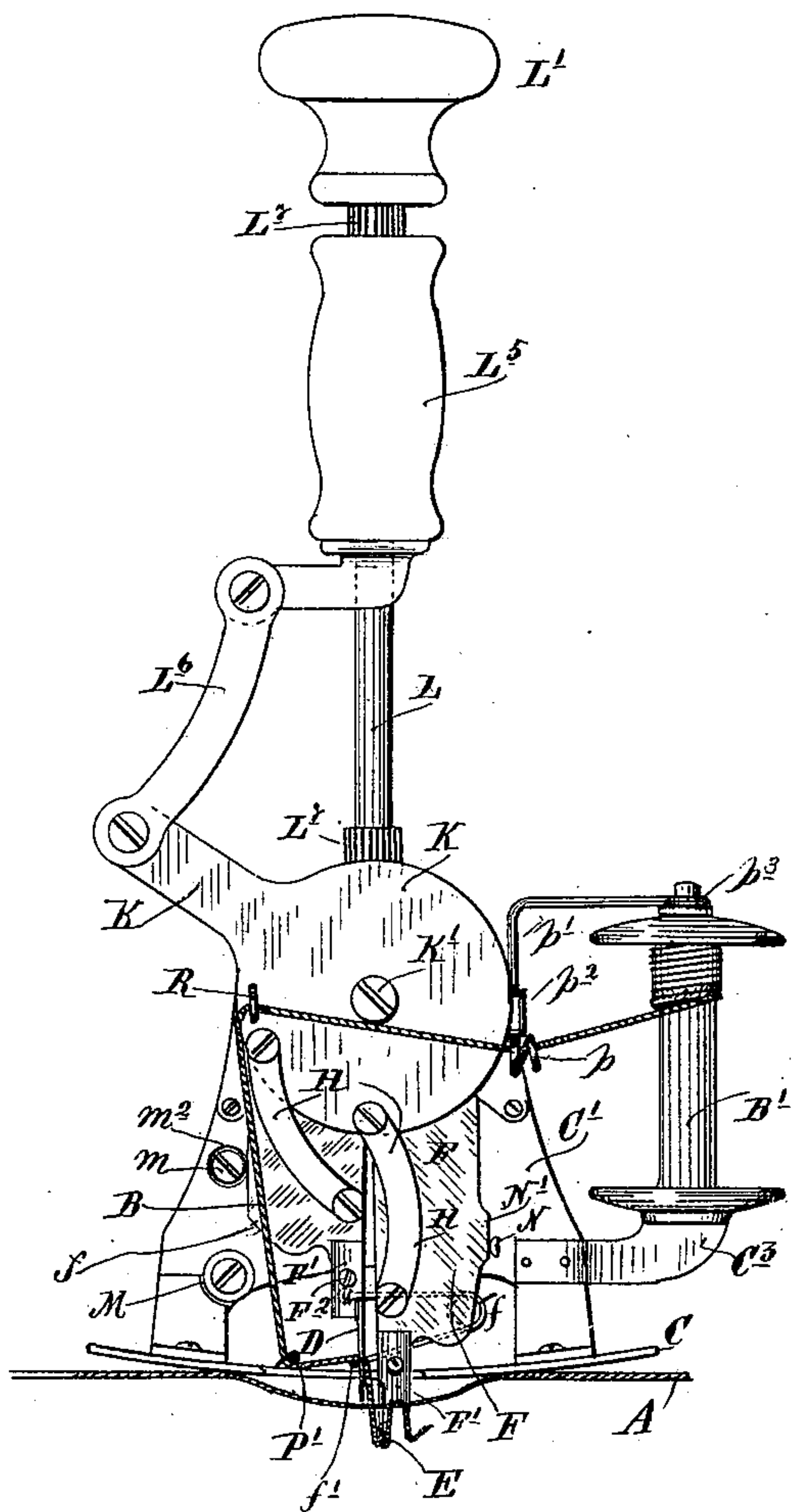


Fig. 2.

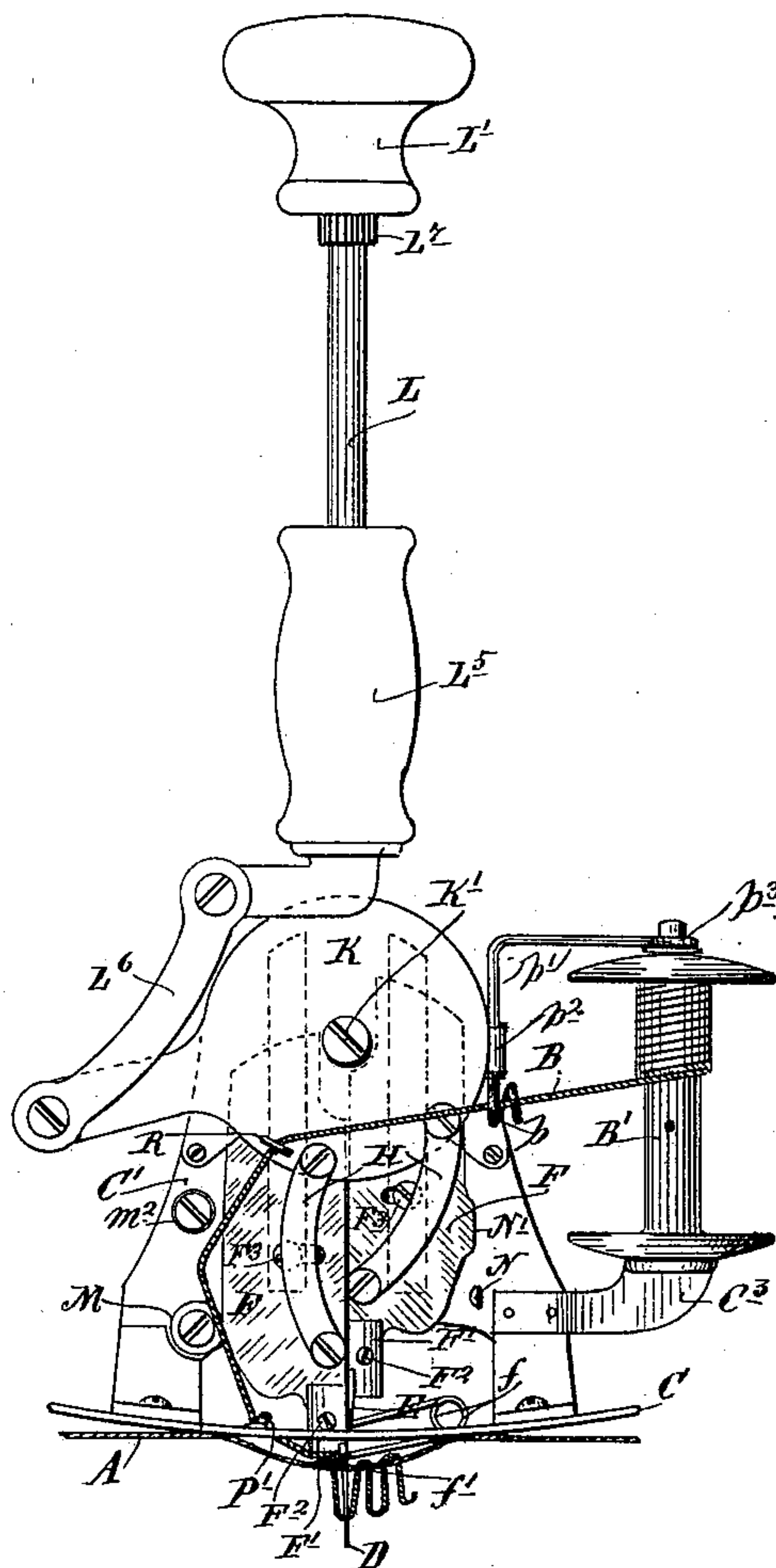
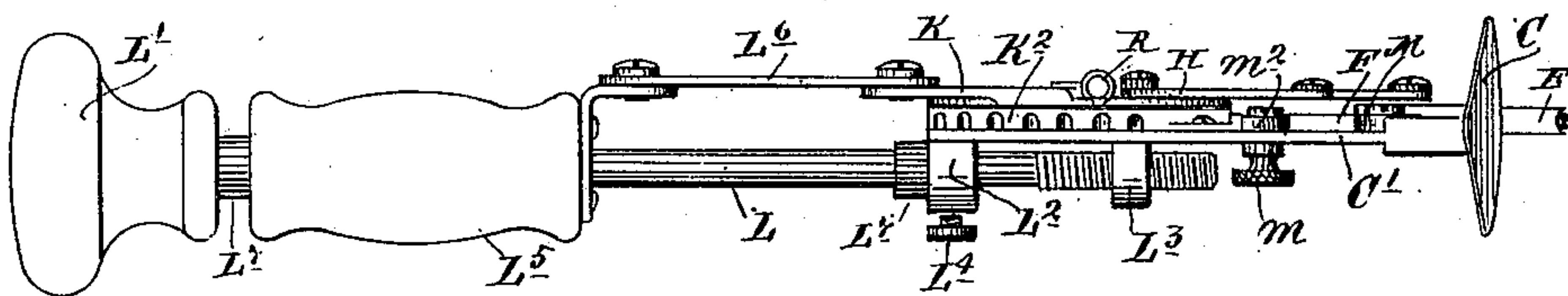


Fig. 3.



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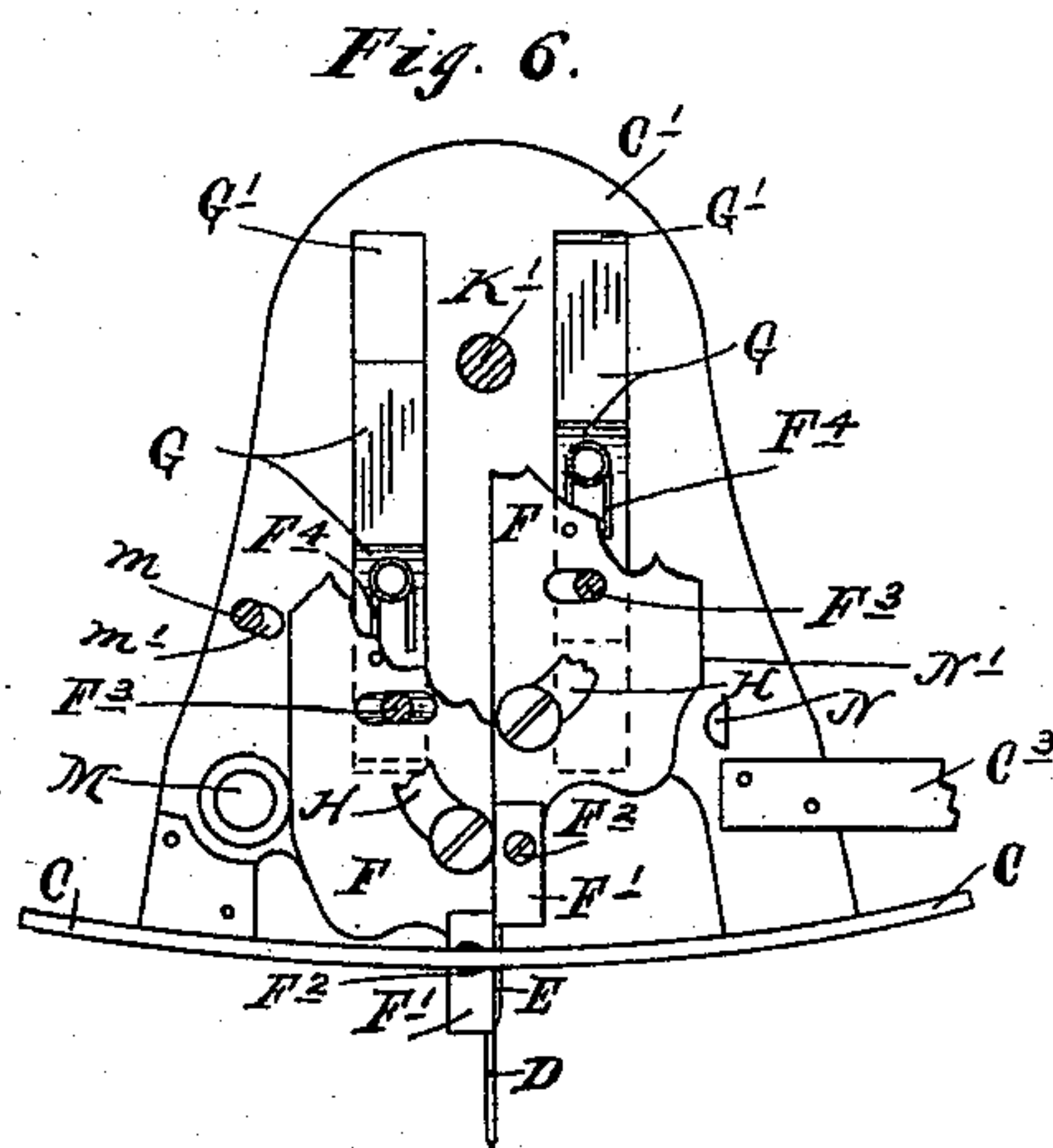
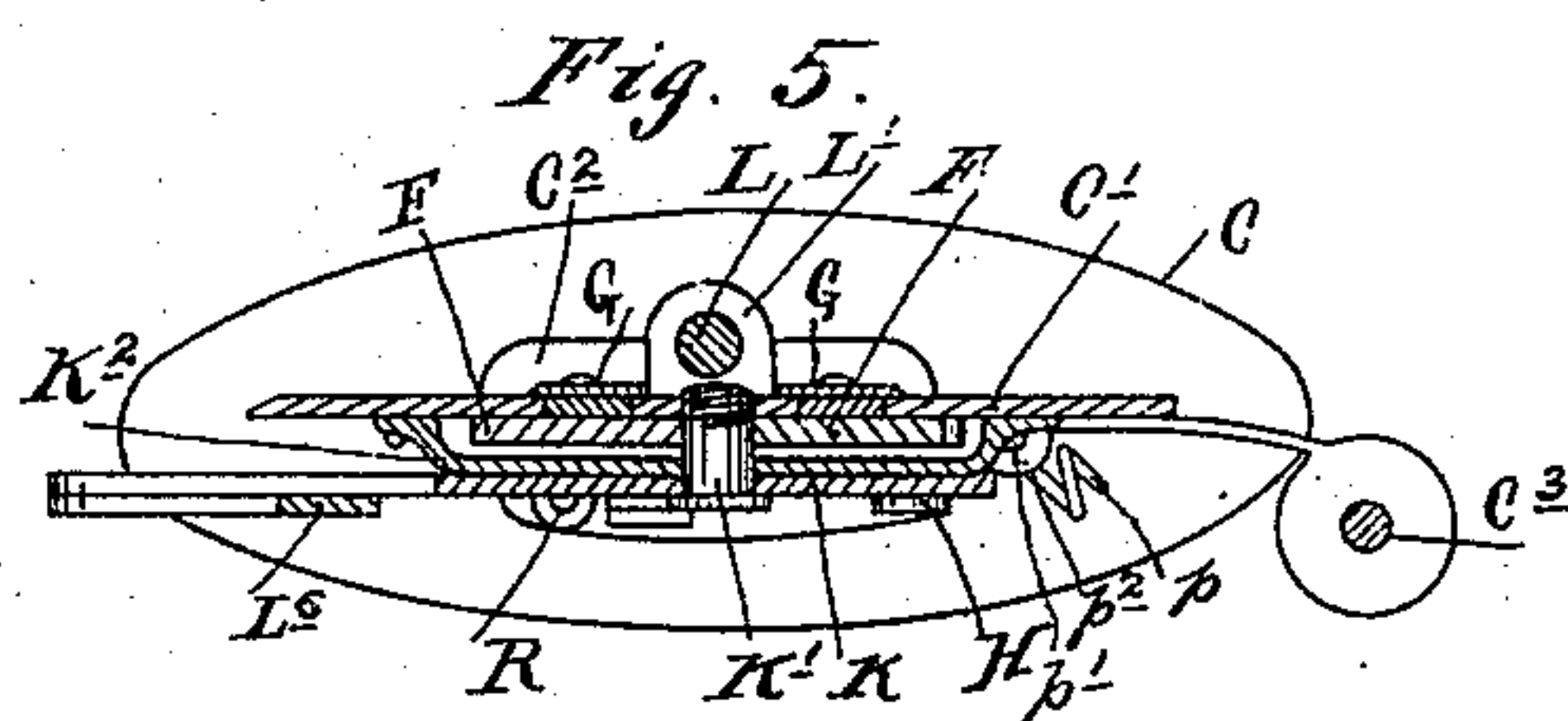
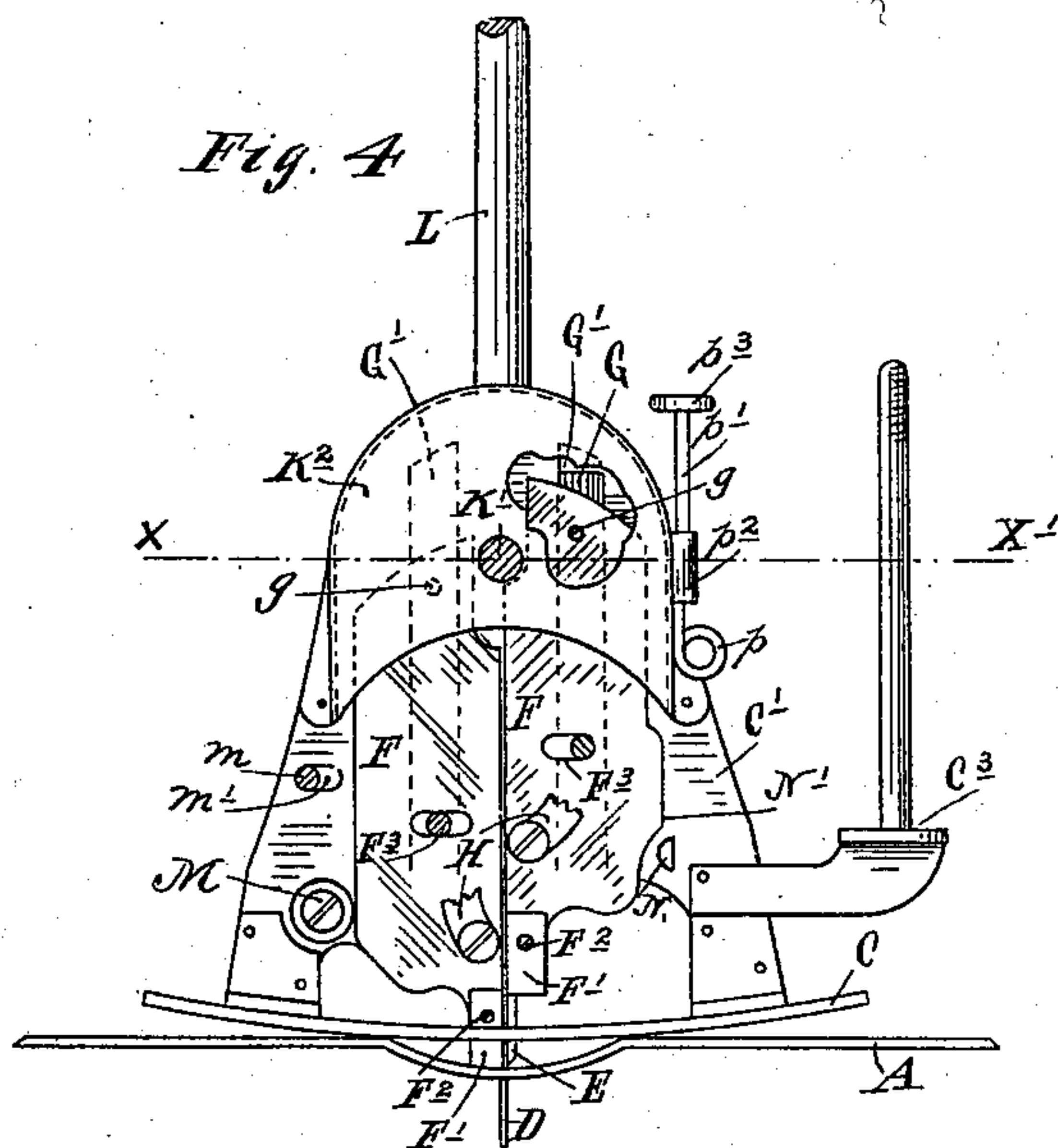
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2 Sheets—Sheet 2.



Witnesses:

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MURDICK CAMERON, OF MINNEAPOLIS, MINNESOTA.

FABRIC-TURFING MACHINE.

SPECIFICATION forming part of Letters Patent No. 614,084, dated November 15, 1898.

Application filed January 7, 1895. Serial No. 534,006. (No model.)

To all whom it may concern:

Be it known that I, MURDICK CAMERON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Fabric-Turfing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to fabric-turfing machines, and is in the nature of an improvement on the machine shown and described in Letters Patent granted to me of date March 7, 1893, numbered 492,780, entitled "Fabric-turfing machine."

In common with my prior machine in my present invention as preferably constructed I employ a support movable over the fabric, on which support is mounted a pair of reversely-reciprocating arms having a step-by-step advancing movement with respect to each other and carrying one a needle and the other a loop-holder, and an oscillating lever with links connecting said reciprocating arms with said lever at points on the opposite sides of the lever's fulcrum.

In my prior machine the oscillating lever was provided with an extended handpiece, by means of which the lever was oscillated to give the needle and loop-holder and their carrying-arms their reciprocating and step-by-step advancing movements. This construction while perfectly operative was somewhat faulty, inasmuch as the to-and-fro movement of the hand in operating the lever would tend to rock the machine, thus rendering the same unsteady and difficult to guide with sufficient accuracy for fine work. This obstacle I completely overcome in my present invention by the provision of a vertical guide-rod, which is rigidly but preferably adjustably secured to the framework of the machine and terminates at its upper extremity in a gripping-piece. On this guide-rod is loosely mounted a handpiece, which may be freely reciprocated on the same and which is connected by a link with the oscillating lever at a point eccentric to its fulcrum. With this construction the gripping-piece at the extremity of the guide-rod is held in one hand to steady and guide the machine

to its work, while the loose handpiece is held in the other hand and is reciprocated on the guide-rod, thereby through the oscillating lever and intermediate connections giving the needle and loop-holder and their respective carrying-arms their reciprocating and step-by-step advancing movements.

As another feature of invention I provide a slack-adjuster comprising a guide carried by the oscillating lever or some part movable therewith, the function of which is to draw sufficient slack in the turfing material or yarn on the upward stroke of the needle to supply the needle on its next succeeding downward stroke.

As still another feature of invention I construct the loop-holder-carrying arm with a stop-surface and the framework with a stop lug or projection, which stop-surface and stop-lug cooperate to prevent the feed movement of the machine until after the needle has been forced downward through the fabric. The purpose of this feature of construction is to insure a stitch of uniform length.

The above-enumerated features of invention, together with certain minor novel points of construction, will be specifically set forth in the following detail description and will be defined in the claims.

The accompanying drawings illustrate the preferred form of my invention, wherein like letters refer to like parts throughout the several views.

Figures 1 and 2 are views in side elevation, showing the machine at its work and illustrating the opposite extreme positions of the turfing mechanism under the action of the machine. Fig. 3 is an edge view of the machine shown as laid in a horizontal position face side upward. Fig. 4 is a side elevation corresponding in position of the parts to Fig. 2, the oscillating lever and certain other parts being removed and others broken away. Fig. 5 is a horizontal section of the device, taken on the line X' X' of Fig. 4; and Fig. 6 is a side elevation corresponding in position of the parts to Figs. 2 and 4, certain of the parts shown in Fig. 4 being broken away.

A represents the fabric forming the groundwork of the rug or similar article, and B represents the yarn-like turfing material, as shown, wound upon a spool B'.

C C' is a movable support forming the framework of the machine, of which parts C is the base, and C' is a vertical standard rising therefrom. Both the base C and the vertical standard C' are, as shown and preferred, constructed of sheet metal. The base C is cut away at C² to provide a central passage for the needle and loop-holder and the lower extremities of their respective carrying-arms.

The spool B', carrying the turfing material, is, as shown, supported from the vertical standard C' by means of a spindle-bracket C³.

D is the needle, and E the loop-holder, both of which are removably and adjustably secured, one to each of the lower ends of the reciprocating carrying-arms F, by means of clamp-jaws F' and clamp-screws F². The arms F are both pivoted at their upper ends, as shown at g, to independent vertically-movable slides G, working through suitable guide-slots G', cut in the vertical standard C'. At their lower ends these arms F are permitted a limited oscillatory motion by means of the slot and screw engagements F³ with the lower ends of the slides G. Normally these arms are both held in their extreme forward positions, as shown in Figs. 1 and 6, by means of springs F⁴, secured at one end to said slides and at their other ends to the respective arms F. The arms F, together with their respective slides G, are given their vertical reciprocating motions in reverse directions through the connecting-links H, uniting the same with the oscillating lever K at points on opposite sides of the fulcrum stud or screw K' of said lever. The needle-carrying arm F has secured at its lower end one end of a U-shaped spring f', the free end of which spring is bent in the form of a loop f' and bears against the forward face of the needle from beneath the yarn. This tension device puts the yarn under friction against the needle adjacent to its eye and prevents the yarn which has been drawn through said eye under the upstroke of the needle from slipping or being drawn backward through said eye under the initial downstroke of the needle. It should be here also noted that the reciprocating arms F are spaced apart from the oscillating lever K and held out of frictional contact therewith by a spacing plate or apron K², rigidly secured to said standard C'. This bearing-plate is perforated to permit the passage of the fulcrum-stud K', and furnishes, together with the vertical standard C', the support for said stud K'. This gives a very light and rigid structure.

L is the vertical guide-rod, as shown, terminating at its upper end in the gripping piece or knob L', working through a stop-lug L², fixed to the standard C' and having screw-threaded engagement at its lower end with a nut-lug L³, both of which lugs L² and L³ are rigid with the vertical standard C'. By this construction the guide-rod may be vertically adjusted to vary the distance between the gripping piece or knob L' and the stop-

lug L², and may be securely held where set by a set-screw L⁴, working through the stop-lug L² and impinging on said guide-rod.

L⁵ is the reciprocating handpiece, loose on the guide-rod and connected by a link L⁶ with the lever K at a point eccentric to and on the needle side of the same.

L⁷ are elastic buffers, such as rubber rings, frictionally held on the guide-rod and serving to prevent the pounding of the handpiece L against the knob L' and the stop-lug L².

As must be evident from the foregoing, the under portion of the knob L' is utilized as the upper stop for the handpiece L, while the stop-lug L² limits its downward movement, and hence, of course, the upward stroke of the needle and the needle-carrying arm may be varied by adjusting the guide-rod longitudinally.

The needle-carrying member of the arms F has a cam-surface f' on its forward edge, which when the arm is thrown downward is brought into engagement with a resisting projection in the form of a stud and anti-friction-roll M, which stud projects from the face of the vertical standard C'. By the camming action of said engagement the said arm, with its needle, will be thrown into its rearmost position, as shown in Figs. 2 and 4, or, in other words, if the machine is at work the machine-frame will be fed forward.

The forward movement of the needle-carrying arm, under the action of its spring F⁴, is intercepted to determine the step of the feed by a stop in the form of a thumb-nutted stud-bolt m, working through a slot m' in the vertical standard C' and provided with an anti-friction-roll m², engageable with the forward edge of said needle-arm. This construction affords a means for varying the step of the needle.

N is the stop projection, as shown, in the form of a lug projecting from the vertical standard C', and N' is the stop-surface formed on the rear edge of the loop-holder-carrying arm, engageable with said lug N and serving to prevent the forward feed movement of the machine until after the needle has been forced downward through the fabric, after which said stop-lug and stop-surface will be disengaged and permit the feed movement of the machine. As already indicated, this will hold and prevent the support which rests on the fabric from moving forward until after the needle, which has been withdrawn from the fabric, has taken its step of movement in advance and has been again forced downward through the fabric, thus absolutely insuring stitches of a uniform and predetermined length.

The turfing-yarn B in passing from the spool to the needle is guided by a coiled eye p, formed by the depending end of a thin rod p', which rod p' is pivotally mounted in a bearing p², fixed to the standard C' and has its upper spring end bent off at right angles and terminated in an eye p³ for engagement over the stem of the spindle-bracket C³ to

hold the spool in position. As is obvious, the yarn may be inserted through the coiled loop *p* after the needle is threaded simply by placing the yarn obliquely to the loop and winding the same through the coils of the loop. This coiled eye and spring-arm are shown in their working positions in Figs. 1 and 2, and are shown as turned into position to permit the removal of the spool in Figs. 3 and 4. Further, the yarn is passed through a slack-adjuster, shown as in the form of an eye R, carried by and projecting from the needle side of the oscillating lever K. By this engagement, on the upstroke of the needle, sufficient slack will be produced to supply the needle, on its downstroke, without any further drawing action on the yarn.

As is further evident, the one and the same action of adjusting the stroke of the hand-piece L⁵ for adapting the machine to different depths of stitch will correspondingly vary the amount of slack produced by the tension device.

The operation of the machine is evident from the foregoing description.

As is evident, alterations in the details of construction may be made without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a fabric-turfing machine, the combination with a pair of reversely-reciprocating arms, having a step-by-step advancing movement with respect to each other, and carrying, one the needle and the other the loop-holder, of an oscillating lever and links connecting said reciprocating arms to said lever at points on the opposite sides of its fulcrum, an extended guide-rod secured to the framework of the machine, and a handpiece freely reciprocating on said guide-rod and connected by a link to said oscillating lever, at a point eccentric to the fulcrum of said lever, whereby, by reciprocating said handpiece, motion will be transmitted through said oscillating lever and intermediate connections, to impart the reciprocating motion to said reciprocating arms, substantially as described.

2. In a fabric-turfing machine, the combination with a pair of reversely-reciprocating arms, having a step-by-step advancing movement, with respect to each other, and carrying, one an adjustable loop-holder, of an oscillating lever and links connecting said reciprocating arms to said lever, at points on opposite sides of its fulcrum, an extended guide-rod vertically secured to the framework of the machine and terminating, at its upper end, in a gripping-piece, a handpiece freely reciprocating on said guide-rod and connected by a link to said oscillating lever, eccentric to and on the needle side of the fulcrum of said lever, and a pair of stops on said guide-rod, the upper member of which is adjustable with respect to the lower member, for varying the

upward stroke of the needle-carrying arm, substantially as described.

3. In a fabric-turfing machine, the combination with the pair of reversely-reciprocating arms, having a step-by-step advancing movement, with respect to each other, and carrying, one the adjustable needle and the other the loop-holder, of the oscillating lever and links connecting said reciprocating arms to said lever, at points on opposite sides of its fulcrum, the vertically-extended guide-rod, secured to the framework of the machine and terminating in the gripping-piece, the reciprocating handpiece working on said guide-rod and connected to said oscillating lever, at a point eccentric to the fulcrum of said lever, the pair of stops on said guide-rod for limiting the stroke of said handpiece, said guide-rod being longitudinally adjustable with respect to one of said stops, to vary the distance between the same, substantially as described.

4. In a fabric-turfing machine, the combination with reversely-reciprocating arms, having a step-by-step advancing movement, with respect to each other, and carrying, one a needle and the other a loop-holder, of an oscillating lever having connections to said arms for reciprocating the same, a slack-adjuster for the turfing material, carried by said oscillating lever or parts movable therewith, and arranged, with reference to the travel of the turfing material to the needle, so as to draw sufficient slack on the upstroke of the needle, to supply said needle on its downstroke, substantially as described.

5. The combination with a support movable over the fabric, of reversely-reciprocating needle and loop-holder carrying arms, mounted on said support for a step-by-step advancing movement, means for reciprocating said arms, and cooperating stop-surfaces on said support and said loop-holder-carrying arm, for preventing the forward or advance movement of said support, while the needle is raised above the fabric and until after the needle has penetrated the fabric on its downstroke, substantially as described.

6. In a fabric-turfing machine, the combination with the needle and loop-holder carrying arms, and needle and loop-holder carried, respectively, thereby, of a spring tension device operating to hold the yarn under frictional tension to move with the needle, which tension device is applied to the yarn adjacent to the needle-eye, whereby said yarn is held against return movement through the needle-eye, under the downstroke of the needle, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MURDICK CAMERON.

Witnesses:

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F. D. MERCHANT.