

No. 619,027.

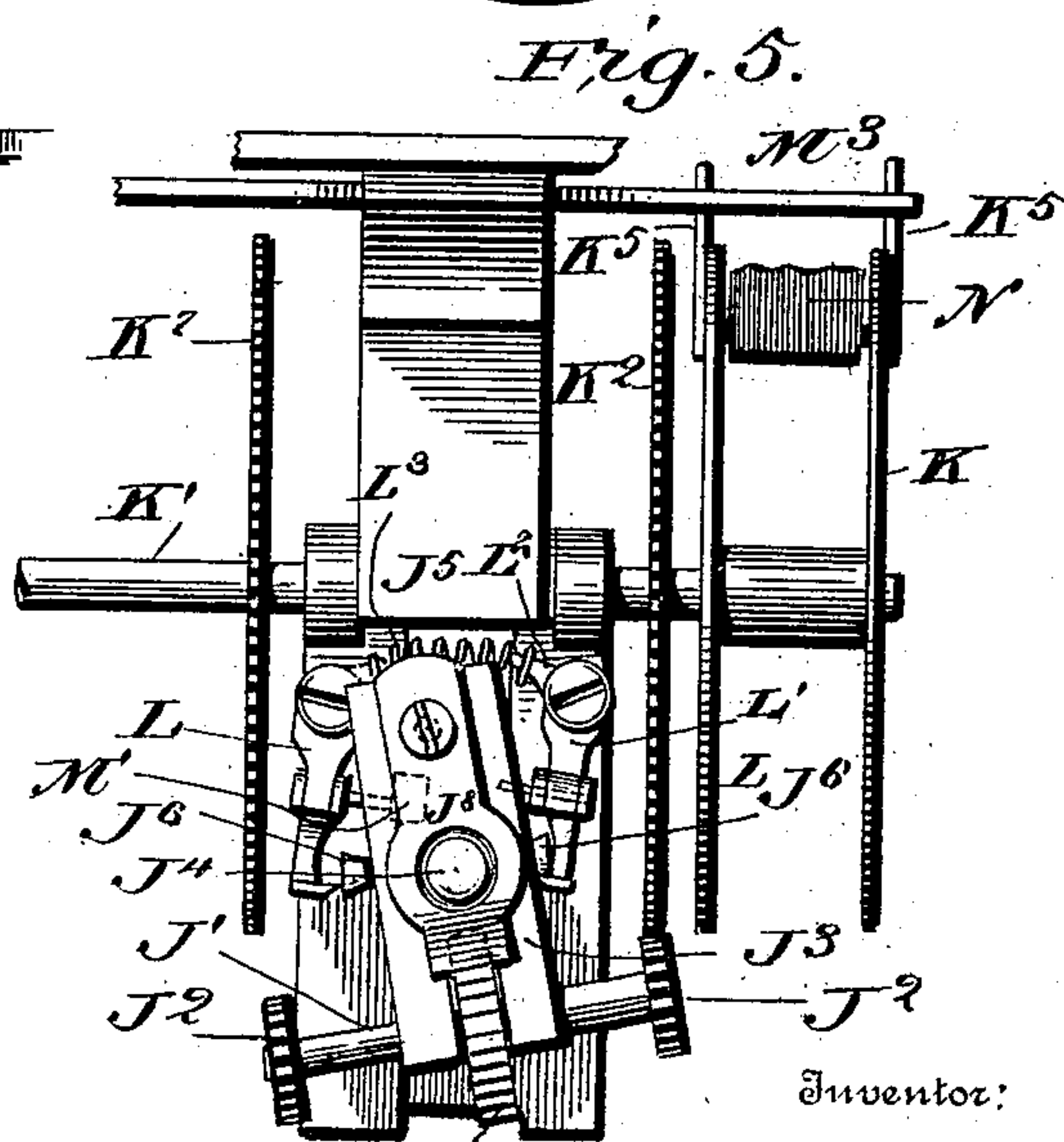
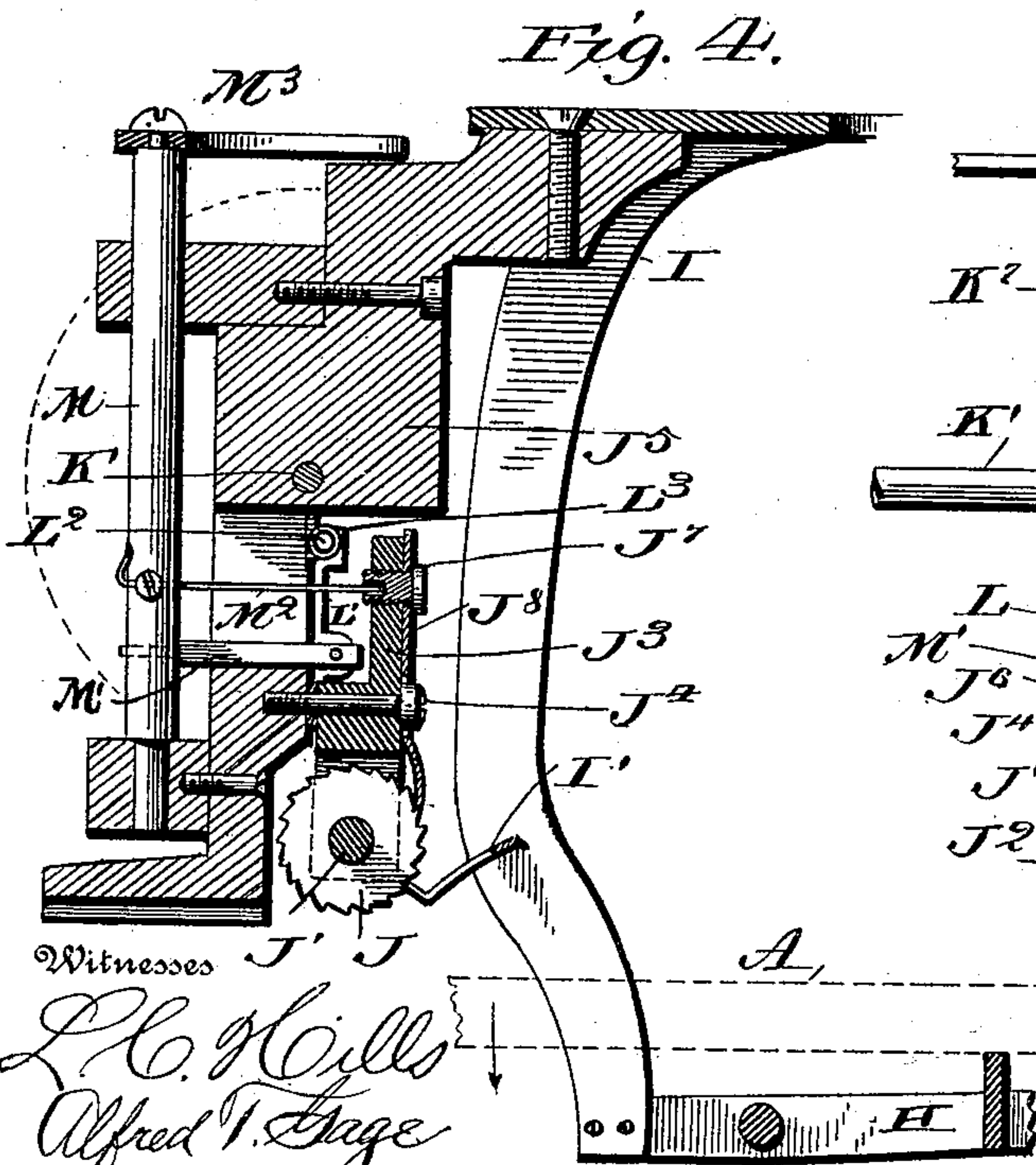
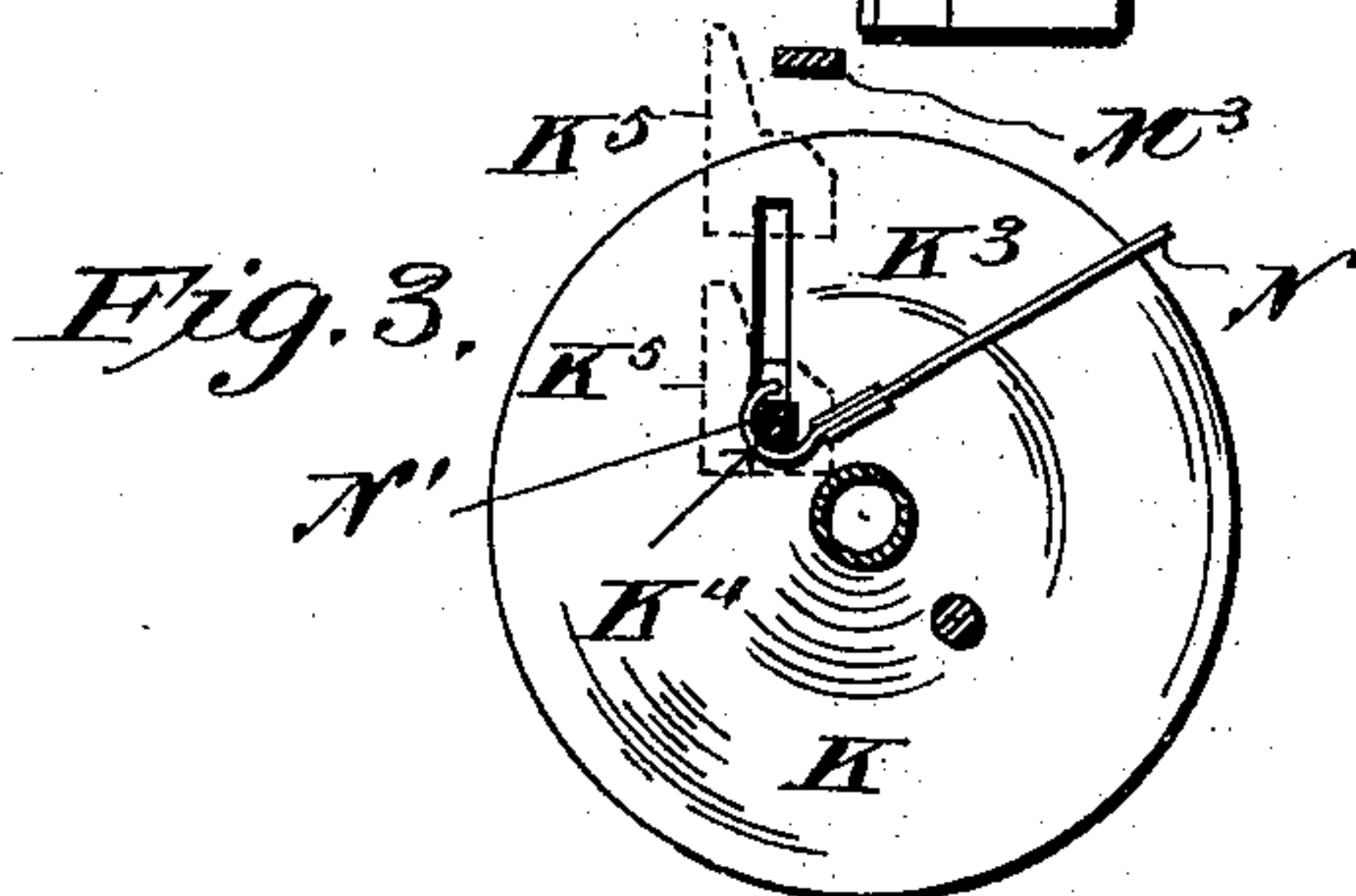
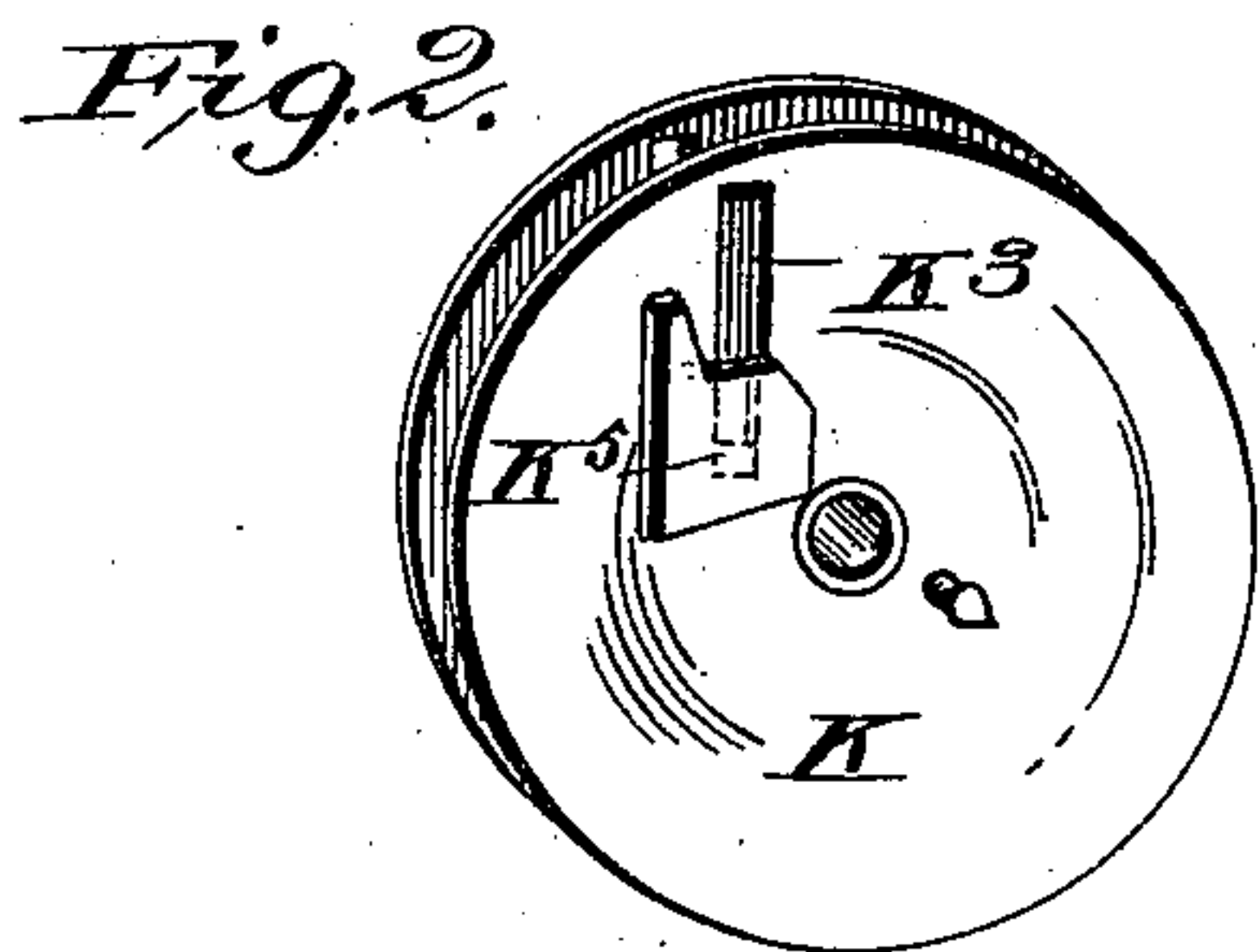
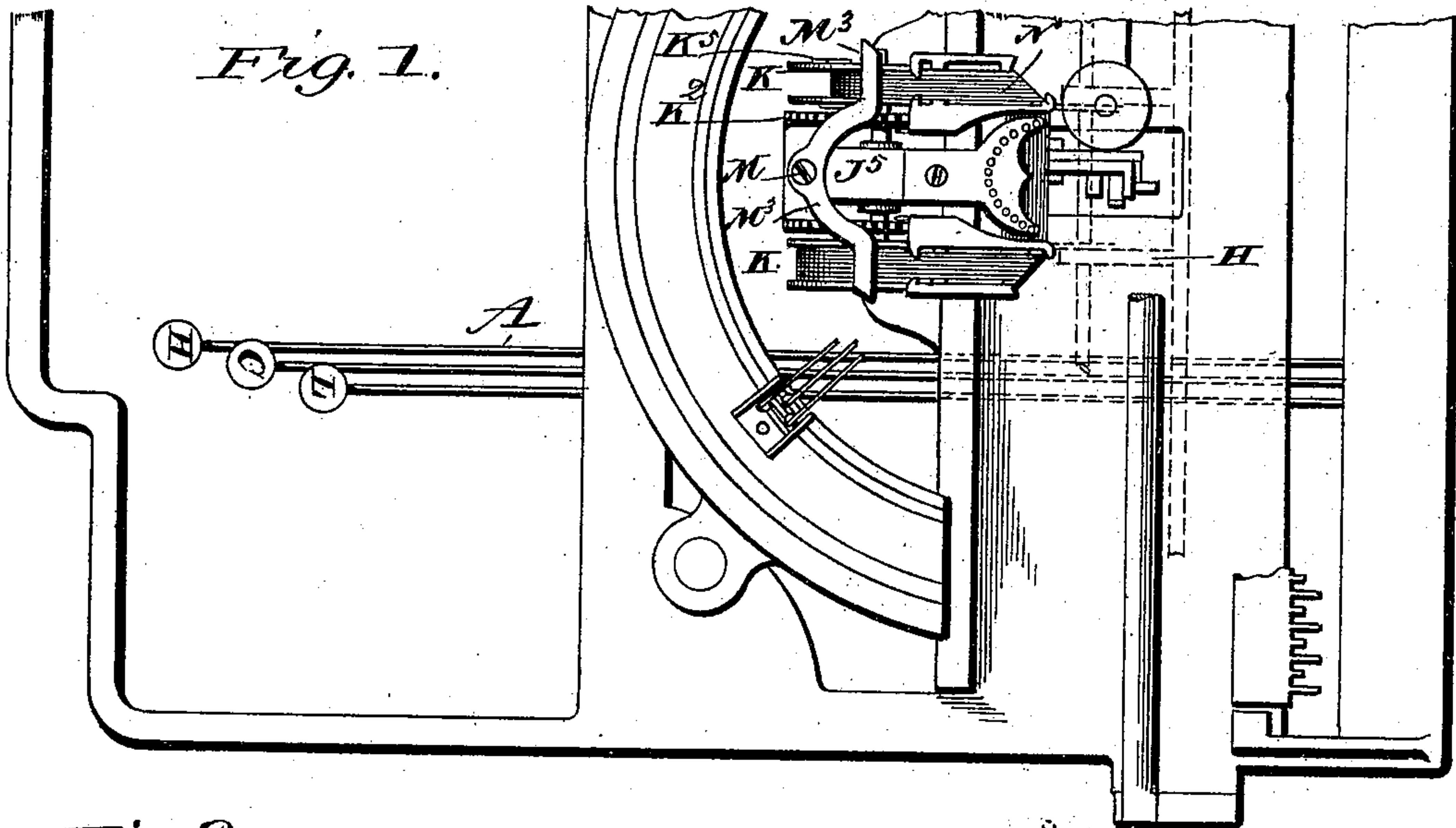
Patented Feb. 7, 1899.

C. SPIRO.

TYPE WRITER RIBBON FEED MECHANISM.

(Application filed Oct. 31, 1898.)

(No Model.)



Inventor:

Charles Spiro,  
by E. B. Stocking  
Attorney



# UNITED STATES PATENT OFFICE.

CHARLES SPIRO, OF NEW YORK, N. Y.

## TYPE-WRITER-RIBBON FEED MECHANISM.

SPECIFICATION forming part of Letters Patent No. 619,027, dated February 7, 1899.

Original application filed April 9, 1897, Serial No. 631,437. Divided and this application filed October 31, 1898. Serial No. 695,059. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES SPIRO, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Type-Writer-Ribbon Feed Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in type-writers, and particularly to an automatic ribbon-shifting mechanism disclosed in my prior application, filed April 9, 1897, Serial No. 631,437, of which this application is a  
15 division.

The invention has for its object to secure a positive control of the ribbon-shifting mechanism, which will be automatically operated as either end of the ribbon is reached.

20 A further object of the invention is to provide a novel construction of ribbon-spool provided with a positively-operated member connected with the ribbon and adapted to engage the shifting mechanism.

25 Other objects and advantages of the invention will hereinafter appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

30 Referring to the drawings, Figure 1 is a plan view of a part of a type-writer and frame to which the invention is applied. Fig. 2 is a perspective of the ribbon-spool and its adjuncts. Fig. 3 is a vertical section through the spool. Fig. 4 is a central vertical section of the ribbon-shifting mechanism and operating connections, and Fig. 5 is a rear elevation of said shifting mechanism.

40 Like letters of reference indicate like parts throughout the several figures of the drawings.

The letter A represents the key-levers of a type-writer, which are suitably mounted in a framework and connected to the type-bars of  
45 the machine. Pivottally mounted beneath the key-levers A is the universal bail H of the machine, and from it projects a ribbon-guide I, whereby at the depression of each key-lever of the machine the ribbon is carried  
50 under the type and returned with the guide, so as to expose the printed characters. The

oscillation of the ribbon-guide serves through the medium of a pawl I' to operate a ratchet J, Figs. 4 and 5, mounted on a shaft J', bearing at each end a pinion J<sup>2</sup>. The shaft is  
55 mounted in an oscillating block J<sup>3</sup>, carried by a pivot J<sup>4</sup>, seated in the standard J<sup>5</sup>, upon which the spools K and their shaft K' and gears K<sup>2</sup> are mounted, all as clearly shown in Fig. 5. It will be noted that when the block  
60 J<sup>3</sup> is inclined in one direction the pinion J<sup>2</sup> meshes with the spool-gear K<sup>2</sup> at one side of the standard, and vice versa.

L L' represent latches pivoted on the standard J<sup>5</sup> and adapted to take under projections  
65 J<sup>6</sup> at each side of the block J<sup>3</sup> for the purpose of locking a pinion J<sup>2</sup> in mesh with a gear K<sup>2</sup>. Above the pivots of the latches each is provided with an arm L<sup>2</sup>, and these arms are connected by a coiled spring L<sup>3</sup>, the purpose of  
70 which is to force one latch quickly under a projection J<sup>6</sup> as soon as the opposite latch is released from an opposite projection, the release being occasioned by an oscillation of the block J<sup>3</sup> and the operation of an arm M',  
75 projecting from a rock-shaft M, mounted in bearings projecting from the standard J<sup>5</sup>. From the rock-shaft M there is projected a spring M<sup>2</sup>, which terminates in a socket of the screw J<sup>7</sup>, which secures the detent J<sup>8</sup>, operating on  
80 the ratchet J. Of course the spring M<sup>2</sup> may be otherwise operatively connected with the block J<sup>3</sup>. Now it will be seen that when the rock-shaft M is oscillated it first brings the arm M' into contact with one of the latches  
85 or with a projection thereon, as shown in Fig. 4, and forces said latch from beneath a projection J<sup>6</sup> on the block J<sup>3</sup>. During the movement of the arm M' in thus releasing the latch the spring M<sup>2</sup> has been put under ten-  
90 sion, which then oscillates the block, the opposite latch having in the meantime been moved under the opposite projection J<sup>6</sup> by the coiled spring L<sup>3</sup>.

The oscillation of the rock-shaft M is pro-  
95 duced by mechanism operating against the double arm M<sup>3</sup>, one of the two ends of which rests above one of the spools and the opposite end above the other.

Each of the spools K has a slot K<sup>3</sup> in each  
100 wall thereof extending outwardly from the central portion thereof, and in the slot rests



a bar  $K^4$ , to which the ribbon  $N$  is connected in any suitable manner. In this instance a hook  $N'$  is employed. At each end of the bar  $K^4$  is secured a finger  $K^5$ . Now it will be noted that when the end of the type-ribbon is reached the unwinding movement of the spool continues through the operation of the pawl  $I'$ , ribbon-guide  $I$ , ratchet  $J$ , pinion  $J^2$ , and gear  $K^2$ , and the bar  $K^4$ , with the fingers  $K^5$ , is gradually brought outwardly from the center of the spool toward its periphery in the slots  $K^3$  until the fingers  $K^5$  come into contact with one end of the double arm  $M^3$  of the rock-shaft  $M$ , and said fingers continue movement about the center of the spool, forcing the arm  $M^3$  to move with them until the arm  $M'$  and spring  $M^2$  have accomplished an oscillation of the block  $J^3$ , which carries the opposite pinion  $J^2$  into mesh with the gear of the opposite spool, which then begins to wind the ribbon upon the spool, which caused the reversal of ribbon-feed. Fig. 5 shows the parts in the position assumed at the instant that the fingers have caused a meshing of a pinion with the gear of the empty spool, and it is apparent that substantially the entire length of the ribbon has been employed.

The construction of operating-finger shown causes the same to be positively operated by the pull of the ribbon when the last portion thereof is unwound from the spool. The finger is thus brought into position to operate the shifting mechanism, and when the reverse movement of the spool begins the finger is positively withdrawn by the contact of the ribbon. All unnecessary connecting mechanism is dispensed with and the ribbon itself extends and withdraws the finger in a line outwardly from the central portion of the spool, thus producing a quicker action of the finger than if the slot were otherwise located.

It is obvious that numerous changes in the construction and arrangement of the details of this invention may be made without affecting the spirit of the same as defined by the appended claims.

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

1. A type-ribbon spool provided with a finger, a type-ribbon connected at its end to said finger, and means for guiding or directing the movement of said finger; substantially as specified.
2. A ribbon-spool having a slot in its head and a movable finger mounted for travel along said slot in its head and provided with means for connection with the end of a ribbon; substantially as specified.
3. A ribbon-spool provided with a slot in its head extending outwardly from the central portion thereof and arranged on other than a diametrical line, and a movable finger traveling in said slot; substantially as specified.
4. A ribbon-spool provided with a slot in each of its heads, a bar mounted in said slots

and carrying at one end a finger and means for connecting the end of a type-ribbon to said bar whereby said finger may be operated; substantially as specified.

5. The combination with a ribbon-feed-reversing mechanism, of a double arm connected with said mechanism, and ribbon-spools provided with movable fingers, to each of which one end of a ribbon is secured; substantially as specified.

6. A ribbon-shifting mechanism comprising a rock-shaft having a double arm projecting over the ribbon-spools, latches or locks for spool-driving devices, an arm for controlling the latches or locks of the spool-driving devices and also having a spring-arm for changing the position of said driving devices, and means carried by the spools and connected to the ribbon for changing the position of said double arm by engagement therewith; substantially as specified.

7. The combination with ribbon-spools provided with movable fingers connected with the ribbon, of a rock-shaft having a double arm projecting into the path of the fingers, spool-driving devices, latches or locks for spool-driving devices, and an arm projecting from said shaft into the plane of movement of said locking-latches; substantially as specified.

8. A ribbon-spool provided with a movable finger, and means for connecting the ribbon at its end to the finger whereby in the winding movement of the ribbon the finger is positively moved to a position within the periphery of the spool and in the unwinding movement when completed the finger is positively moved to a position beyond the periphery of the spool; substantially as specified.

9. A ribbon-shifting mechanism comprising a rock-shaft having a double arm projecting over the ribbon-spools, a pivoted block carrying gears to mesh with the gear-wheels of the spools, pivoted latches at opposite sides of said block to hold the same in its shifted position, means carried by said rock-shaft to move said latches, means to move said block when released from said latches, and means carried by the spools and connected to the ribbon for shifting the position of said double arm by engagement therewith; substantially as specified.

10. A ribbon-shifting mechanism comprising a rock-shaft having a double arm and means carried by the ribbon-spools and connected to the ribbon for shifting said arm by engagement therewith, a pivoted block carrying gears adapted to mesh with the gear-wheels of the spools, latches for retaining said block in its shifted positions, a spring for normally forcing one end of said latches inward, an arm carried by said rock-shaft to engage said latches, and an arm carried by said rock-shaft and engaging said block to shift the same; substantially as specified.

11. A ribbon-shifting mechanism comprising a rock-shaft having a double arm and



means carried by the ribbon-spools and connected to the ribbon for shifting said arm by engagement therewith, a pivoted block carrying gears to mesh with the gear-wheels of the spools, latches for retaining said block in its shifted positions, a spring for forcing one end of said latches inward, an arm carried by said rock-shaft to engage said latches, and a spring secured to the rock-shaft and having a bearing in said block; substantially as specified.

12. A ribbon-shifting mechanism comprising a rock-shaft having a double arm and means carried by the ribbon-spools and connected to the ribbon for shifting said arm by engagement therewith, a pivoted block carrying

gears to mesh with the gear-wheels of the spools, projections secured to the opposite sides of said block, pivoted latches located upon opposite sides of the block to engage said projections, a spring for forcing the ends of said latches toward said block, and means carried by the rock-shaft for releasing said latches and moving said block; substantially as specified.

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

CHARLES SPIRO.

Witnesses:

MICHAEL P. CORRIGAN,  
HENRY LESINSK.