

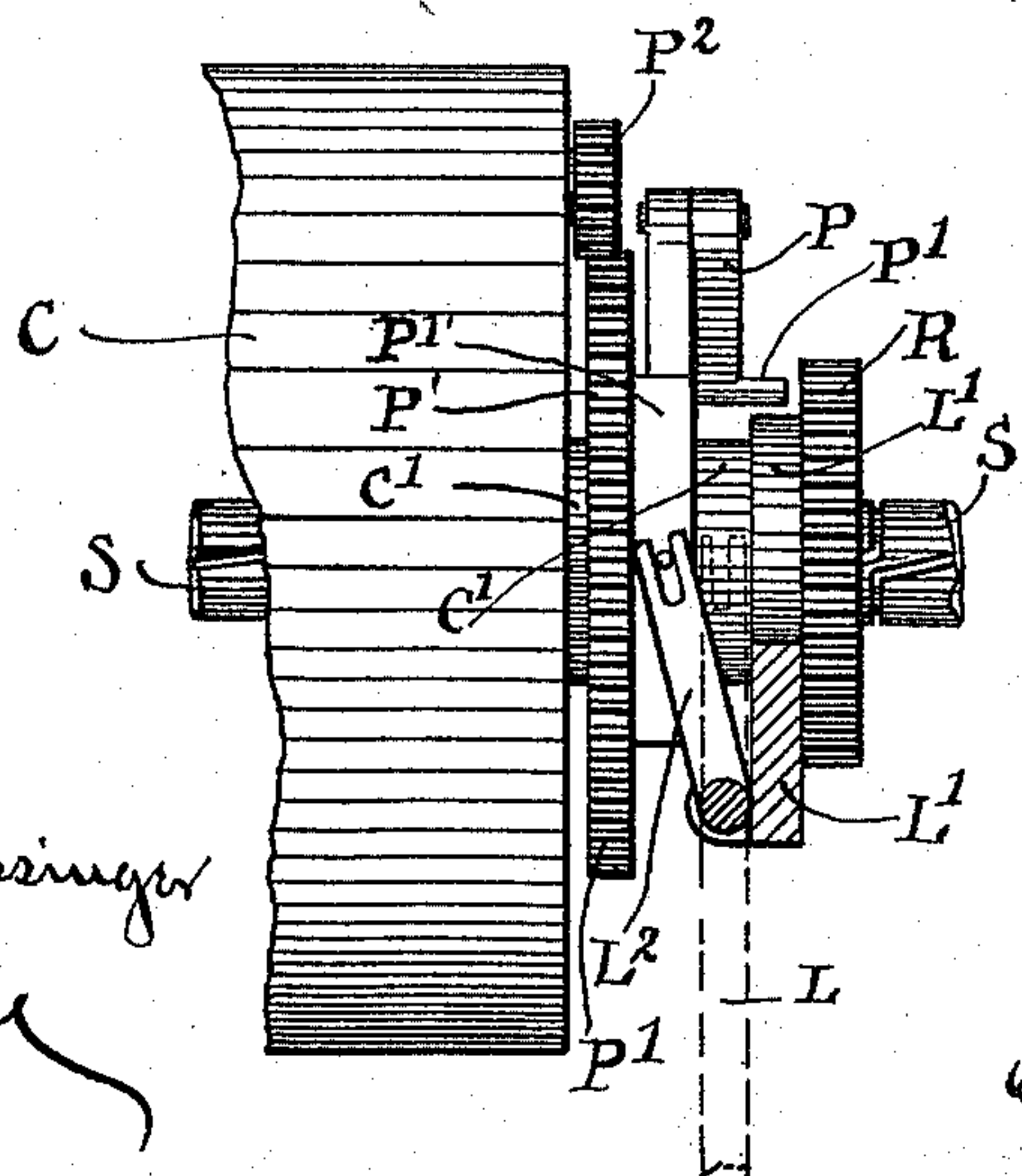
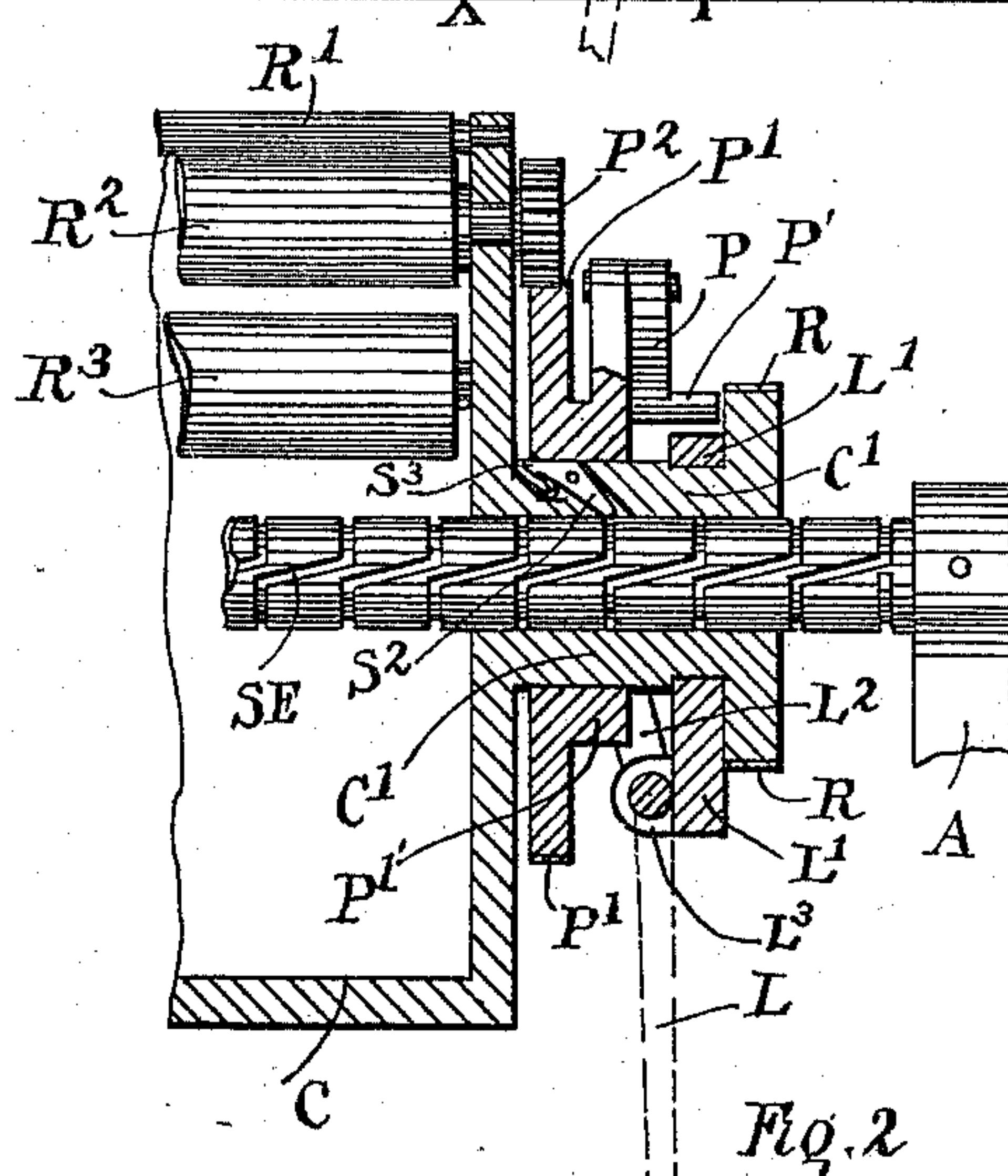
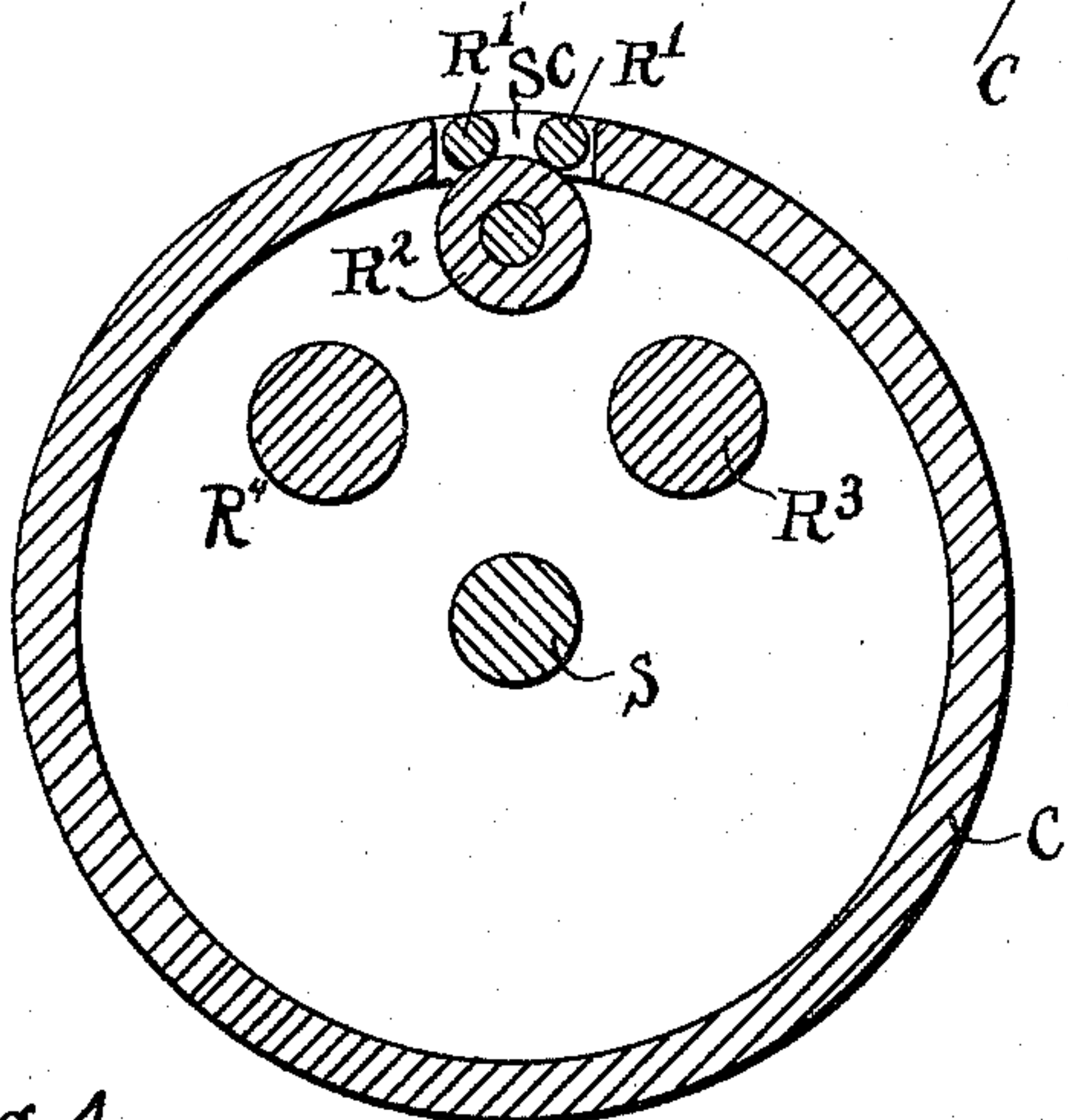
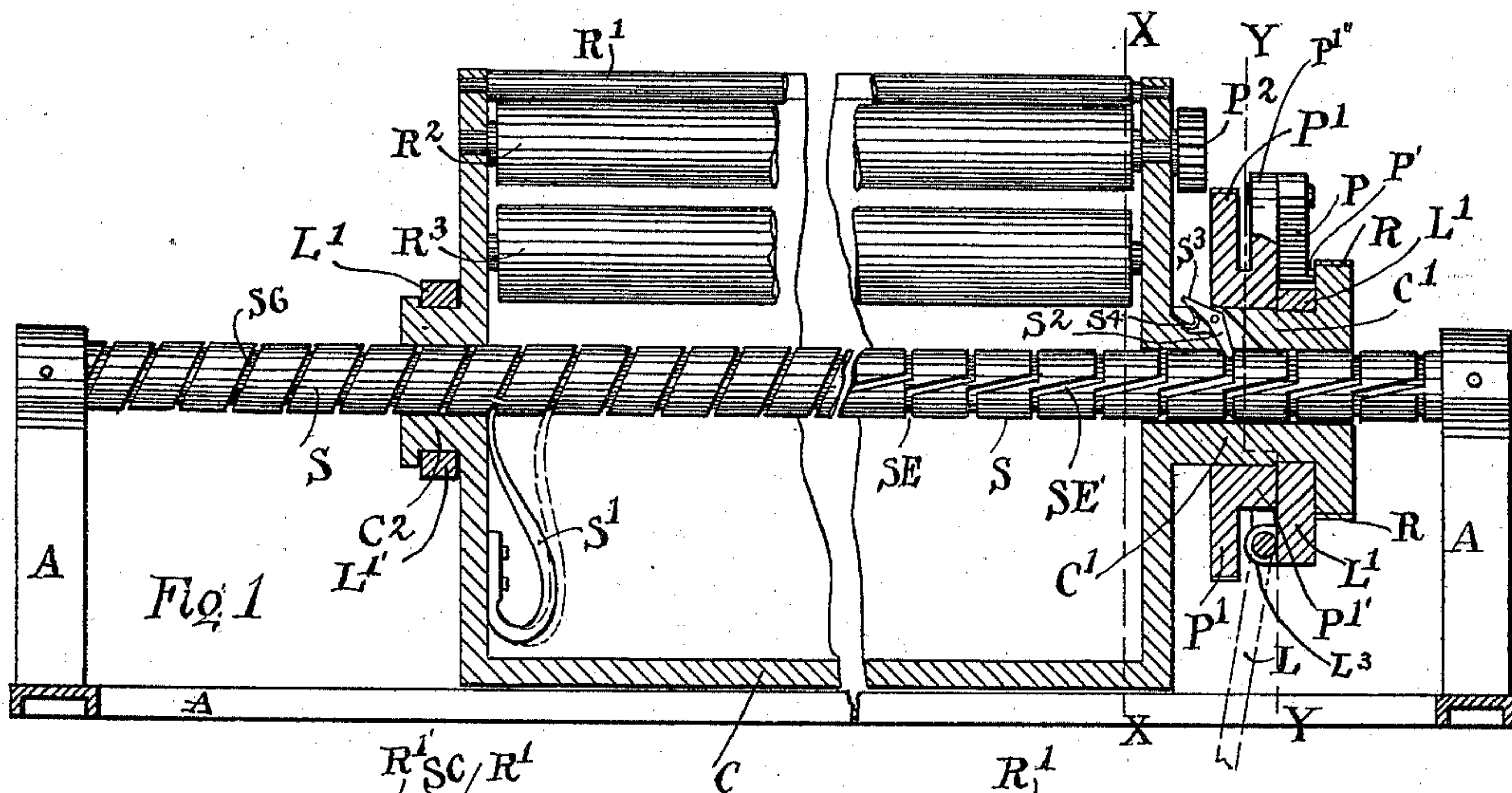
(No Model.)

3 Sheets—Sheet 1.

L. K. COE.
TYPE WRITER.

No. 570,453.

Patented Nov. 3, 1896.



WITNESSES:

J. B. Bissinger
H. K. K.

Fig. 3

INVENTOR

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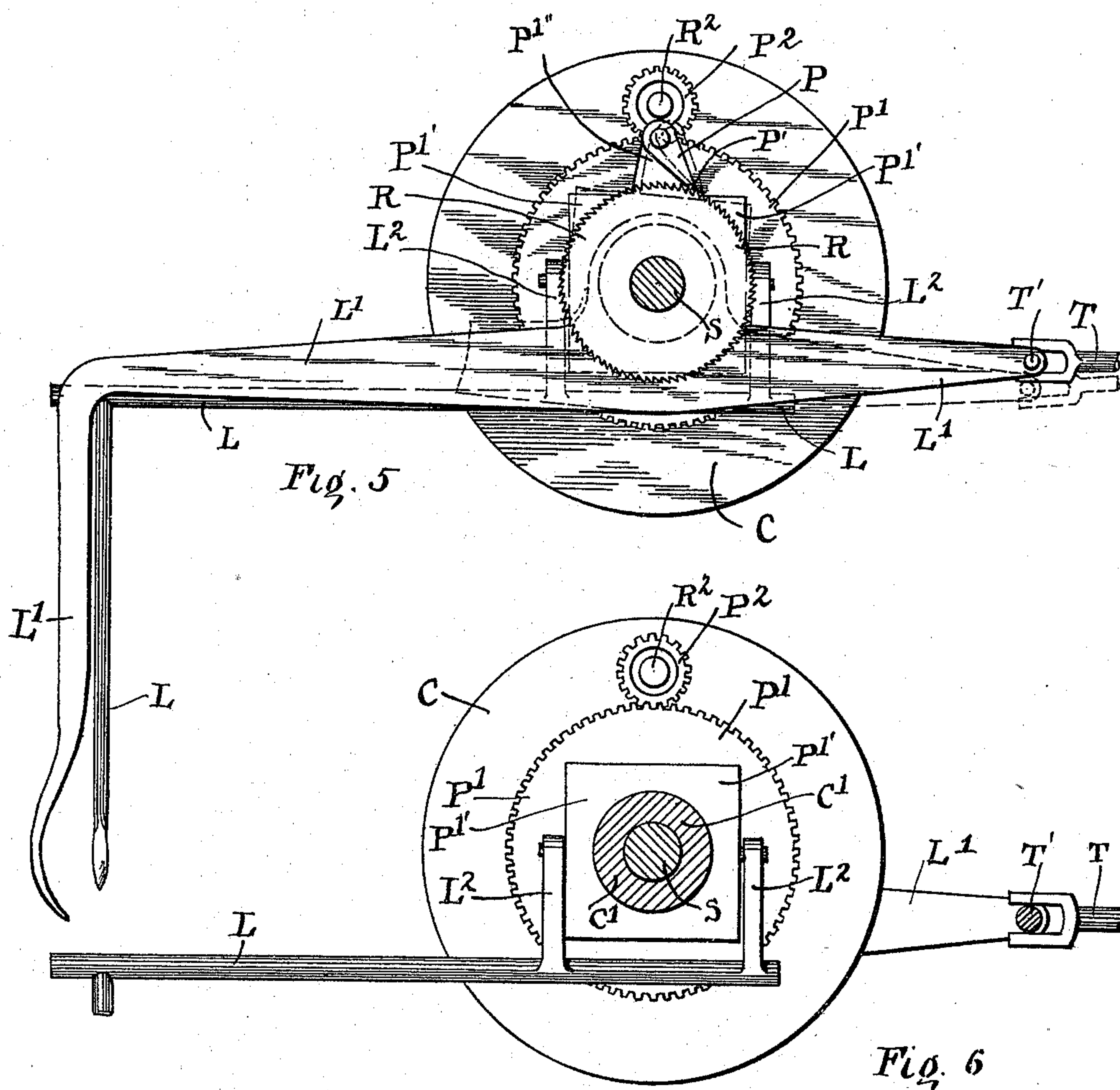
(No Model.)

3 Sheets—Sheet 2.

L. K. COE.
TYPE WRITER.

No. 570,453.

Patented Nov. 3, 1896.



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(No Model.)

3 Sheets—Sheet 3.

L. K. COE.
TYPE WRITER.

No. 570,453.

Patented Nov. 3, 1896.

Fig. 7

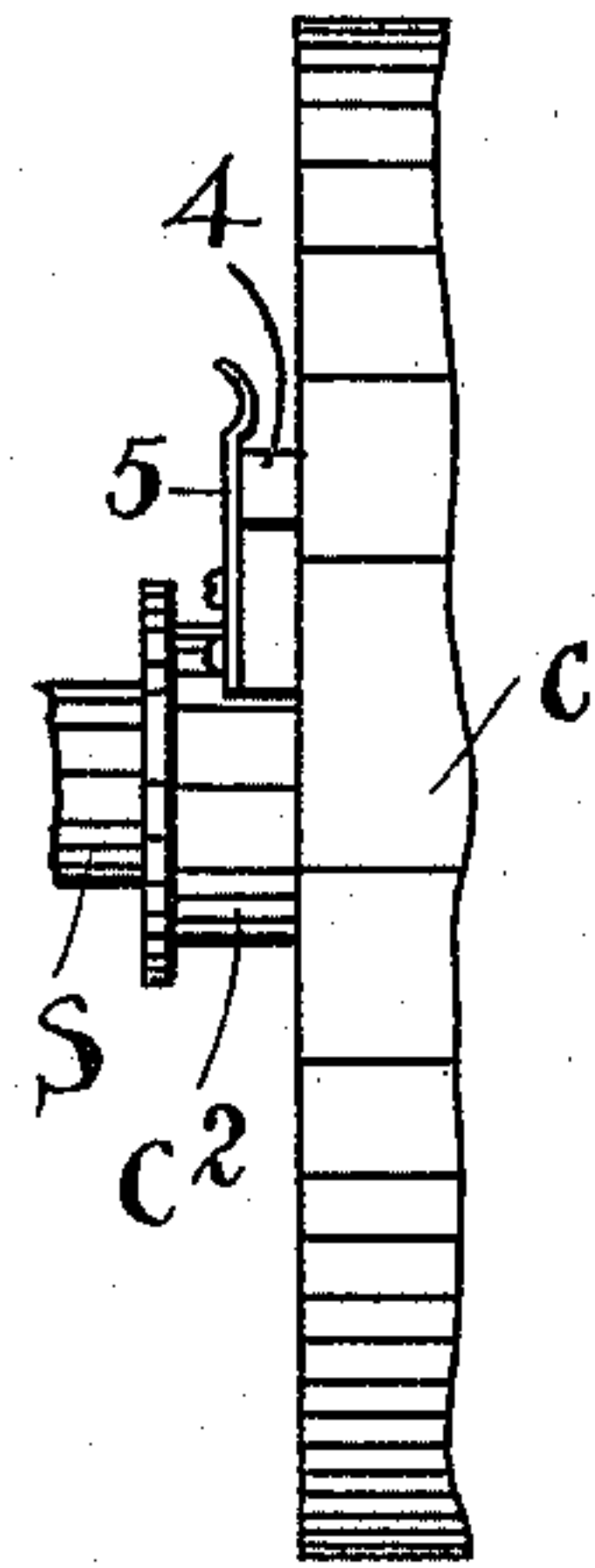
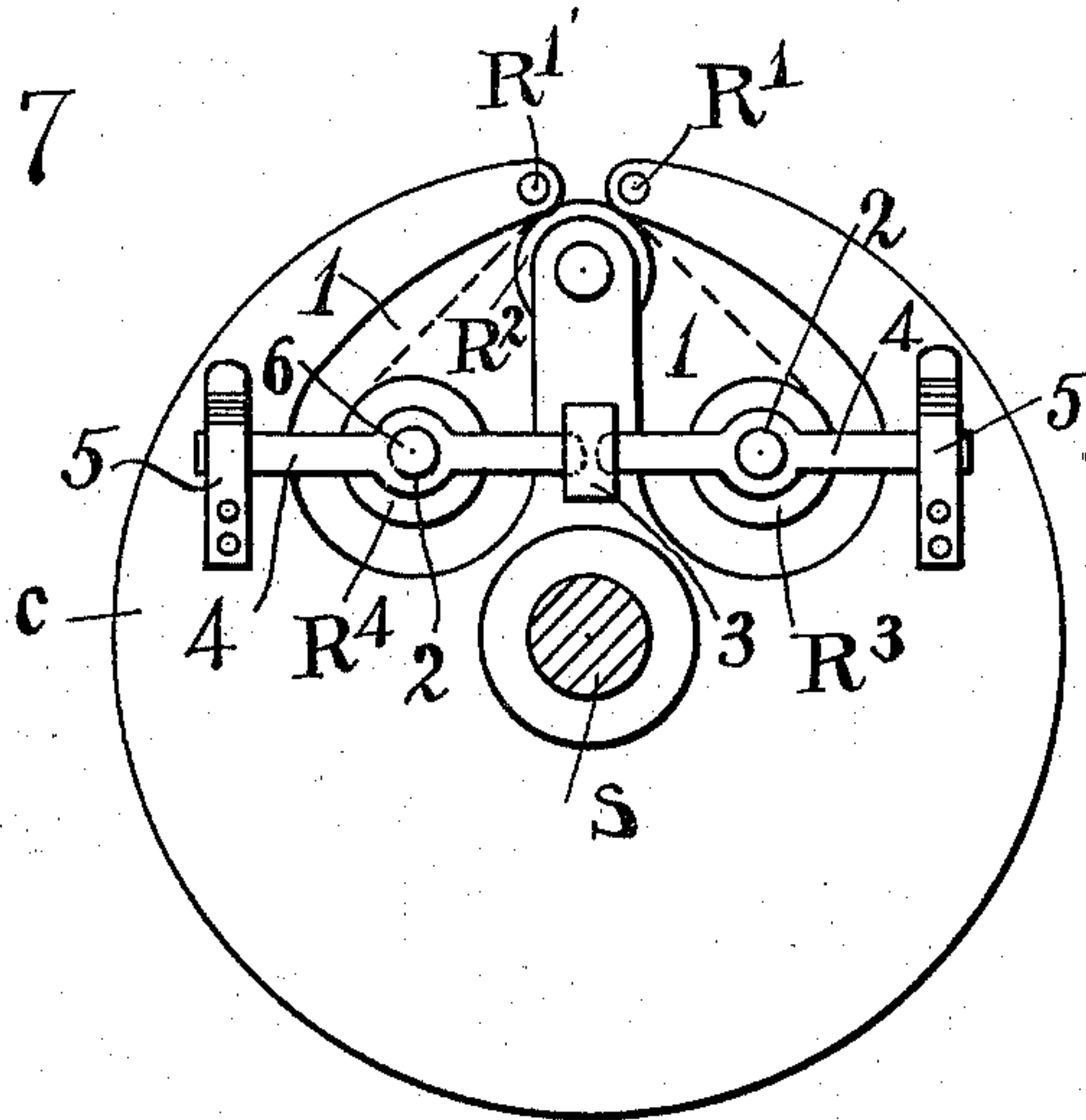


Fig. 8

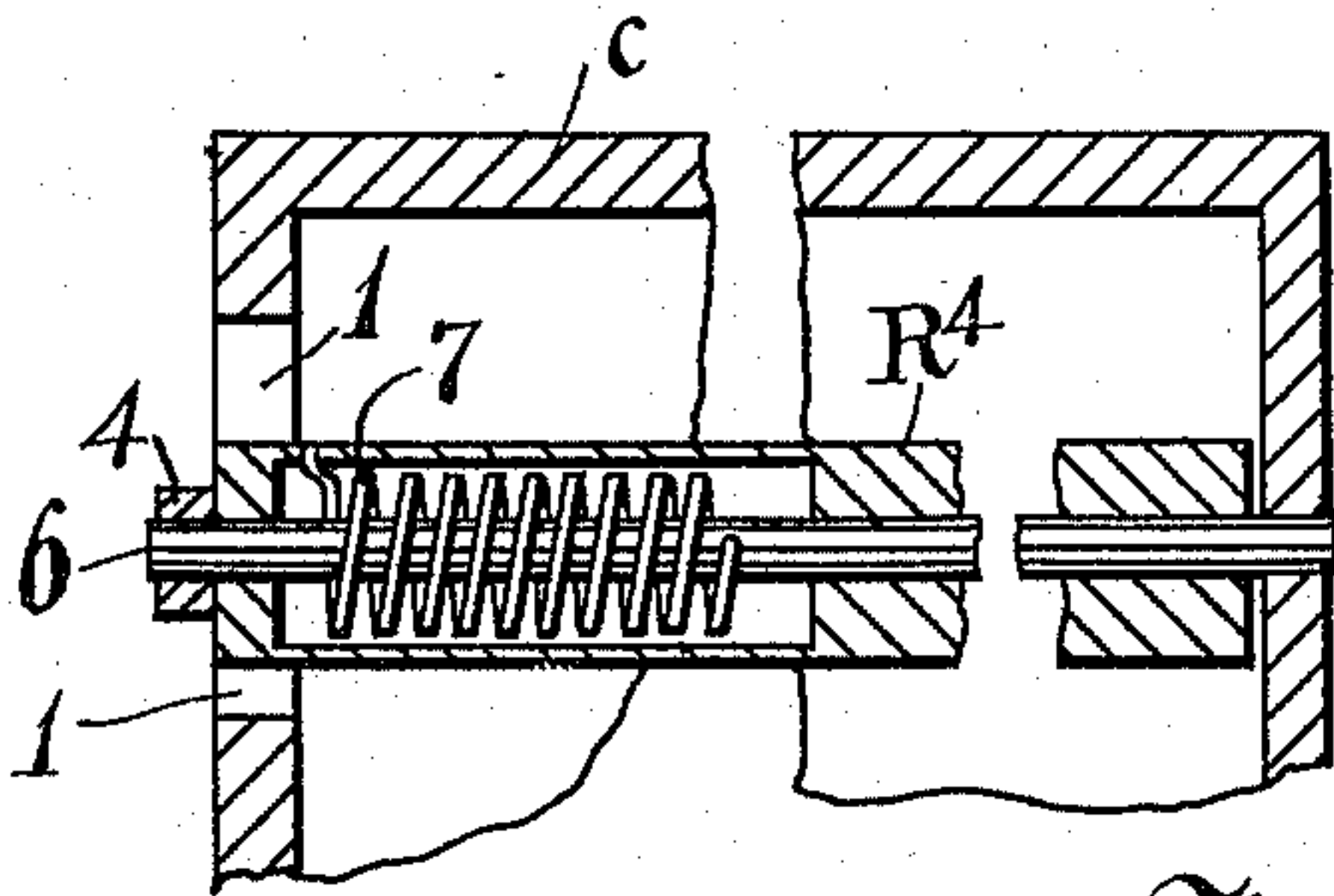


Fig. 9

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UNITED STATES PATENT OFFICE.

LOUIS K. COE, OF SAGINAW, MICHIGAN.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 570,453, dated November 3, 1896.

Application filed August 22, 1895. Serial No. 560,116. (No model.)

To all whom it may concern:

Be it known that I, LOUIS K. COE, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Type-Writers; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention is an improved paper-carriage for type-writers, its object being to eliminate the shifting mechanism, automatically supply the paper, and make visible writing. This I obtain by the mechanism illustrated in the accompanying drawings, of which—

Figure 1 is a sectional view. Fig. 2 is a part of the same view enlarged, showing the parts in different positions. Fig. 3 is an elevation of the right end front. Fig. 4 is a vertical section through the cylinder on line X X of Fig. 1. Fig. 5 is an elevation of the right-hand end. Fig. 6 is a section on line Y Y of Fig. 1. Fig. 7 is a view of the left-hand end of the cylinder. Fig. 8 is a front elevation of the same, and Fig. 9 a section of the cylinder and bobbin R¹.

In the drawings, S is a shaft journaled in the type-writer frame A and has a spiral groove SG, commencing at its left hand and extending to the middle of the shaft, and having upon the other half of the shaft the peculiarly-formed groove SE, which, commencing on the right hand of the shaft, passes nearly around it in a vertical plane, then slants to the left at an oblique angle for a certain distance, then around the shaft parallel to the first groove to a point on a line with the commencement of the slant SE', then slants again to the left parallel with the first slant and in the same horizontal plane, and so on toward the middle of the shaft, forming a continuous groove having a slant to the left at regular distances, the slants all being upon the same side and parallel and in the same plane.

C is a hollow cylinder having bearing at

each end upon the shaft S, the right-hand bearing C¹ projecting three-eighths of an inch from the cylinder and the left-hand bearing C² projecting three-sixteenths of an inch from the cylinder, or in that proportion. The right-hand bearing forms a collar C¹, carrying the handle-bar L¹ and large pinion P¹. The outer end of the collar C¹ has an annular rib R, provided with ratchet-teeth, as shown in Fig. 5. The large pinion P¹ has a projection P^{1''} from its bearing P^{1'}, to which is pivoted the dog or pawl P, having an extended end P', adapted to engage the ratchet-teeth of the rib R.

To the bearing P^{1'} of the pinion P¹ are pivoted the arms L² of the rod L, which has a depending arm. By moving this depending arm to the right or left the pinion P¹ may be made to slide correspondingly on the collar C¹.

S² is a pawl pivoted in a slot in the collar C¹, so as to engage and enter the groove SE and follow it as the collar is revolved.

S⁴ is a spring underneath the outer end of the pawl for the purpose of keeping it in position in the groove.

The outer end S³ of the pawl S² is beveled to the left. This pawl is located at such a point in the collar C¹ that when the pawl P is in engagement with the ratchet-wheel R the pawl S² is in its groove SE, but when the pawl P is drawn out of engagement with its ratchet-wheel R, as it will be when the depending arm of the rod L is moved to the right, thereby moving the large pinion P¹ on the collar C¹ to the left, the large pinion P¹ will slide upon the beveled end S³ of the pawl S² and force it, S², out of the groove SE, as will be hereinafter mentioned.

The cylinder C, as previously mentioned, is loosely journaled on the shaft S. Across the longitudinal surface of the cylinder C is a slot SC about one-fourth of an inch wide. Within the cylinder and just at the edges of this slot are two steel rollers R¹ and R^{1'}, which may be about three thirty-seconds of an inch in diameter, and pressing against the under side of these rollers is a large rubber roller R², all being journaled in the ends of the cylinder, with the shaft of the roller R² extending through the right-hand end of the cylinder and having upon its outer end out-

side of the cylinder a pinion P^2 , adapted to mesh into the large pinion P^1 when the same is moved to the left on the collar C^1 , so that when the pinion P^1 is in the position just described and the cylinder is revolved by the means hereinafter described the pinion P^2 on the end of the roller R^2 will run around upon P^1 as the cylinder is revolved and thus revolve the roller R^2 .

Just back of the roller R^2 and a little to one side is a bobbin R^3 , upon which is wound the paper used in writing. This paper is a continuous sheet and may be provided with perforations transversely dividing it into the usual sheets of paper used in type-writing. They may be, of course, of any length, and it is understood that the paper must be manufactured expressly for use in this style of a type-writer carriage and that the bobbin must be wound with this paper before placing it in the cylinder.

When first placed in the cylinder, the sheet is drawn out by and between the rollers R^1 and R^2 and extends around the cylinder and into the slot SC and between the rollers $R^{1'}$ and R^2 . S^1 is a spring within the cylinder on the left side thereof adapted to enter the spiral groove SG and move through it as the cylinder is revolved, which action, it will be observed, will draw the spring to the position shown in the dotted lines in Fig. 1. When the pawl S^2 , in traveling through the groove SE , has reached the slanting part of the groove, the spring S^1 will force the cylinder C along the shaft S to the right, the pawl S^2 traveling in the sliding groove until it has reached the end of the slant, which will check the movement of the cylinder along the shaft S , the spring S^1 at the same time having been relieved of its tension.

L^1 is a handle-bar, connected at the rear of the machine at T' to the spacing-bar T , connected to the keyboard in the common way. The rod L is connected to the handle-bar L^1 through the lug L^3 on the handle-bar L^1 . The handle-bar L^1 rocks loosely on the collar C' , the collar serving as a pivot for the bar, as shown in Figs. 1, 2, and 5.

Depressing the spacing-bar tips the rear end of the handle-bar L^1 and with it the rod L , which it carries, thereby turning the large pinion P^1 , engaged by the arms L^2 , and thus pushing the pawl P' upon the ratchet-wheel R and turning it over one tooth, which, it will be observed, also turns the cylinder C .

Releasing the spacing-bar allows the pinion P^1 to go back, carrying with it the pawl P , which will then engage the next tooth of the ratchet-wheel R . At each depression of the spacing-bar the handle L^1 will be rocked, which communicates motion to the cylinder, as just described, through the ratchet and pawl $R P$, which movement, being the space of one ratchet-tooth at a time, is adapted to give the required space for the letters, the spacing-bar being depressed as each letter of

the keyboard is struck, as in the ordinary typewriter-carriage.

The pawl S^2 , moving in the groove S^3 , guides the cylinder C , as previously stated, in revolving, and when the pawl S^2 has reached the slanting groove SE' the spring S^1 forces the cylinder to the right, as heretofore described, the length of the slant SE' being the distance desired between the lines of the writing upon the outside of the cylinder. It will thus be seen that the letters are spaced automatically and that a new line is presented when the cylinder has completed one revolution, and that the written line will extend around the cylinder instead of across it longitudinally, as is common. When the cylinder C has thus revolved and moved to the right regularly, and the pawl S^2 has reached the right end of the shaft S , the blank sheet will have been filled with writing.

To remove the written sheet and obtain a blank sheet, the operator presses the depending arm of the rod L to the right, which, as previously described, forces the large pinion P^1 to the left and into mesh with a smaller pinion P^2 on the end of the roller R^2 , thereby drawing the pawl S^2 out of the groove SE and the pawl P out of the ratchet-teeth of the wheel R . Then the operator pushes the cylinder C to the left along the shaft S , which, by reason of the spring S^1 , running in the spiral groove SG , causes the cylinder C to revolve, and the revolving of the cylinder revolves the roller R^2 within the cylinder for the reason that the pinion P^2 , in mesh with the pinion P^1 , which is held against rotation by the arms L^2 of the rod L , is carried around the pinion P^1 by the revolution of the cylinder, thus revolving the roller R^2 .

The revolution of the roller unwinds the paper from the bobbin R^3 and pushes it out between the rollers R^1 and R^2 and draws it in between the rollers $R^{1'}$ and R^2 , which draws the written sheet within the cylinder.

An empty bobbin R^4 may be placed within the cylinder for the purpose of winding the paper upon it after it has been written. The bobbins R^3 and R^4 are placed within the cylinder by passing them through the holes 11 in the end of the cylinder, with their inner ends in bearings in the opposite end of the cylinder.

4 4 are bars placed across the openings 11 and rest in the sockets 3 and 5 on the end of the cylinder. These bars are each provided with a bearing 2 for the left-hand end of the bobbins R^3 and R^4 . The bobbin R^4 has a central shaft 6, carrying within the bobbin the coiled spring 7, one end of the spring secured to the shaft 6, the other to the wall of the bobbin, and when placed within the cylinder and the written paper passed over it the tension of the spring 7 will cause the bobbin to revolve just enough to take up the slack of the paper between the roller $R^{1'}$ and R^2 , and, as the type-writer is run, to continue to wind

the paper passed between these rollers upon the bobbin.

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

1. In an automatic carriage for type-writers, the combination with a hollow cylinder journaled on a central shaft, and the central shaft, having on one half thereof a worm-groove, the other half provided with a groove extending nearly around the shaft in a vertical plane, then slanting to the left at an angle thereto for the proper distance, then nearly around the shaft in a vertical plane, then slanting as before in a line parallel with the first slant, and so on to the middle of the shaft, of a spring secured within the cylinder and adapted to travel within the worm-groove, a pawl in the bearing of the cylinder adapted to travel in the circular slanting groove, whereby when the cylinder completes one revolution it will be pushed to the left by the spring until the pawl has traveled the length of the slant, thereby spacing the lines on the cylinder, and means as described for moving the cylinder in the opposite direction, as desired, substantially as and for the purpose set forth.

2. In a carriage for type-writers, the combination with means for automatically spacing the lines on the writing-cylinder as it revolves, of means for revolving the cylinder comprising the handle-bar adapted to be tipped by the spacing-bar, the handle-bar journaled on the collar of the cylinder, a rod carried by the handle-bar and pivotally secured to a pinion also journaled on the collar of the cylinder at the side of the handle-bar, a pawl, carried by the pinion, adapted to engage a ratchet-wheel on the end of the cylinder-collar, whereby as the handle-bar is tipped the pawl will engage the ratchet-wheel and revolve it and the cylinder the distance of one tooth, as described.

3. In an automatic carriage for type-writers, a writing-cylinder journaled on a central shaft, and means for revolving the cylinder as the spacing-bar is operated, in combination with automatic means for moving the cylinder longitudinally a regular distance after each revolution comprising a central shaft having a groove commencing at one end and extending nearly around the shaft in a vertical plane then obliquely to the left the proper distance then nearly around the shaft in a vertical plane then to the left obliquely parallel with the former oblique slant, and so on to the middle of the shaft, thence to the end of the shaft in a worm-groove, a pawl, adapted to travel in the circular oblique slant, secured in one end of the cylinder, and a spring adapted to travel in the worm-groove at the other end of the cylinder, whereby when the pawl has traveled through the circular part of the groove it will be forced into the slant by the spring at the other end of the cylinder and travel across it, thus moving

the cylinder longitudinally the distance of the slant, substantially as and for the purpose set forth.

4. In an automatic carriage for type-writers, a hollow cylinder having bearings on a central shaft, and having a longitudinal slot, and having at the inner edges of this slot small steel rollers, and just back of the rollers, and bearing against them, a large rubber roller, all having their bearings in the cylinder, the large roller extending through the cylinder and having upon its outer right-hand end a pinion, a bobbin within the cylinder carrying the paper to be used in writing, and means for revolving the cylinder and winding the paper over the outside thereof, and into the cylinder, substantially as described.

5. In an automatic carriage for type-writers, a hollow cylinder having a longitudinal slot through which the paper to be written upon is passed from the bobbin placed upon the inside thereof, the paper wound over and into the cylinder, means turning the cylinder the space between the written letters as the space-bar is operated, whereby the written letters will extend around the cylinder, and means for moving the cylinder longitudinally at the end of each line and revolution the distances between the lines, as specified.

6. In an automatic carriage for type-writers, a cylinder upon a central shaft, the cylinder adapted to be revolved and to move automatically at each revolution along the shaft, a uniform distance, a bobbin within the cylinder carrying type-writing paper, and means for winding the paper over the cylinder and back into it, and means for revolving the cylinder.

7. In an automatic carriage for type-writers comprising a cylinder carrying within it upon proper bobbins paper for type-writing, means for unwinding the bobbins and winding the paper automatically over and into the cylinder, and means for revolving the cylinder comprising a ratchet-wheel on the end of the cylinder-collar, a pawl engaging the ratchet-wheel and operated by the spacing-bar, and means as described for moving the cylinder along the central shaft a uniform distance at each revolution of the cylinder, thereby forming spaces between the lines, substantially as specified.

8. In an automatic carriage for type-writers, a cylinder upon a central shaft having a collar around the shaft for its bearing, a large pinion having its bearing on the collar and adapted to slide thereon, and means for sliding it thereon, a spiral groove on the central shaft, a spring secured within the cylinder and running in the groove on the central shaft, a bobbin carrying type-writing paper within the cylinder, a rubber roller by means of which the type-writer paper is drawn out of the cylinder, a pinion on the outside of the cylinder connected to the rubber roller and meshing into the large pinion on the collar of the cylinder, whereby when the cylinder is revolved by means of the spring running in the groove

the paper may be drawn out, substantially as described.

9. An automatic carriage for type-writers, comprising a shaft having upon its right hand
5 a groove commencing near its end and running circularly nearly around the shaft, thence obliquely to the left for the proper distance, thence circularly nearly around the shaft, thence obliquely to the left the same distance
10 in lines parallel to the former-mentioned oblique lines and in the same plane, thence circularly and obliquely as before to the middle of the shaft, and having upon the other half of the shaft a spiral groove commencing near
15 the left end and extending spirally toward the middle, a hollow cylinder having its bearing on the shaft and having a longitudinal slot across its face provided with two rollers near the edges thereof, and a large roller pressing against the two smaller rollers, and having
20 a bobbin within the cylinder carrying type-writing paper, a pawl in the right-hand collar of the cylinder adapted to follow in the circle of the oblique groove described, a spring
25 within the cylinder on the left-hand side there-

of, adapted to engage and follow in the spiral groove and to be depressed as the cylinder is revolved until the pawl on the opposite end reaches the oblique part of the groove, when the spring forces the pawl through the oblique
30 groove thus carrying the cylinder along the shaft, a large pinion upon the right-hand collar of the shaft, the pinion carrying upon an extension thereof a pawl adapted to engage the ratchet-teeth on the rib of the collar, and
35 means as described for sliding the large pinion on the collar, whereby the pawl engaging the circular oblique groove will be forced out of the groove, thereby allowing the spring to control the revolution of the cylinder, a small
40 pinion upon the end of the rubber roller adapted to mesh into the large pinion when the latter is moved as described.

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

LOUIS K. COE.

Witnesses:

J. F. O'KEEFE,

A. H. SWARTHOUT.