

(No Model.)

3 Sheets—Sheet 1.

C. SPIRO.
TYPE WRITING MACHINE.

No. 435,775.

Patented Sept. 2, 1890.

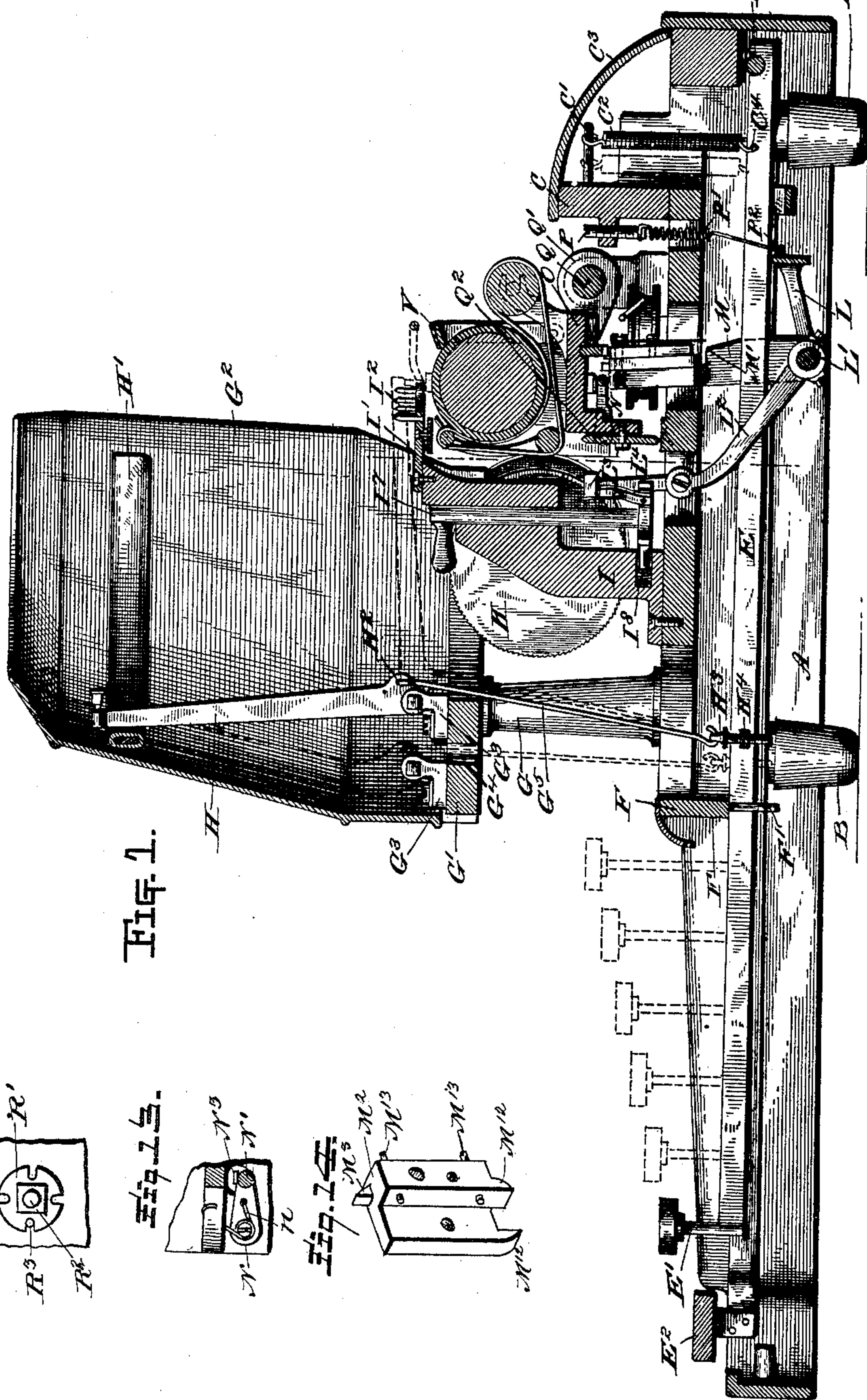


Fig. 1.

Fig. 2.

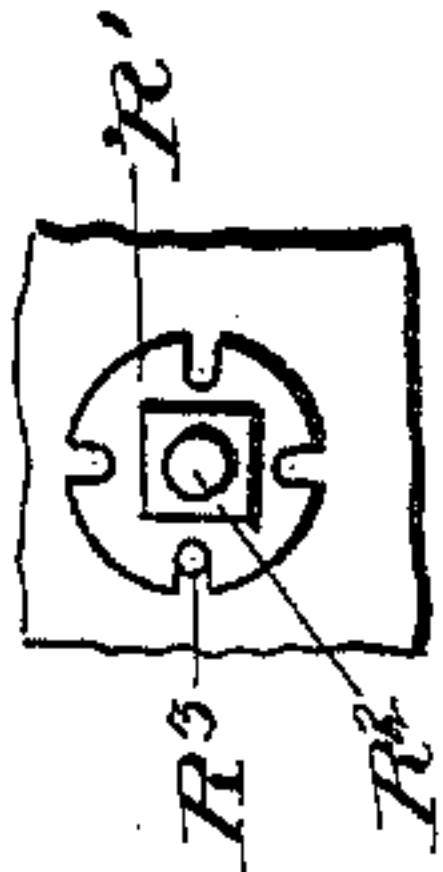


Fig. 3.

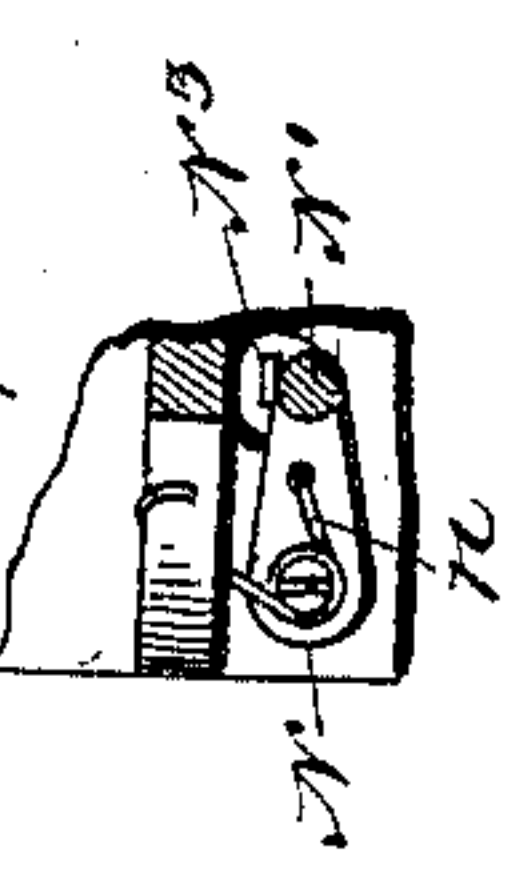
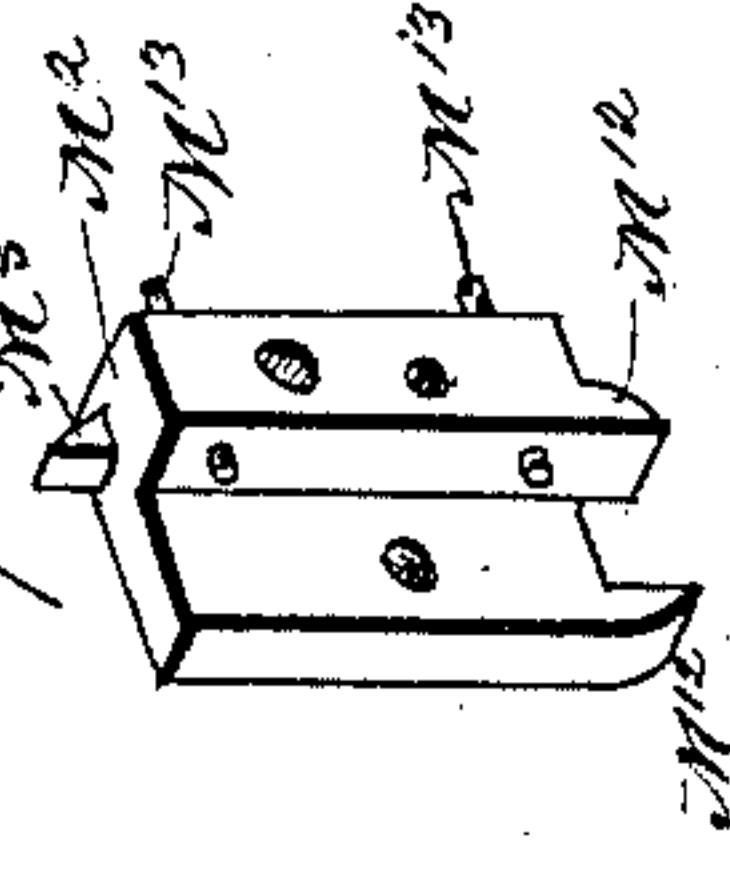


Fig. 4.



Witnesses:

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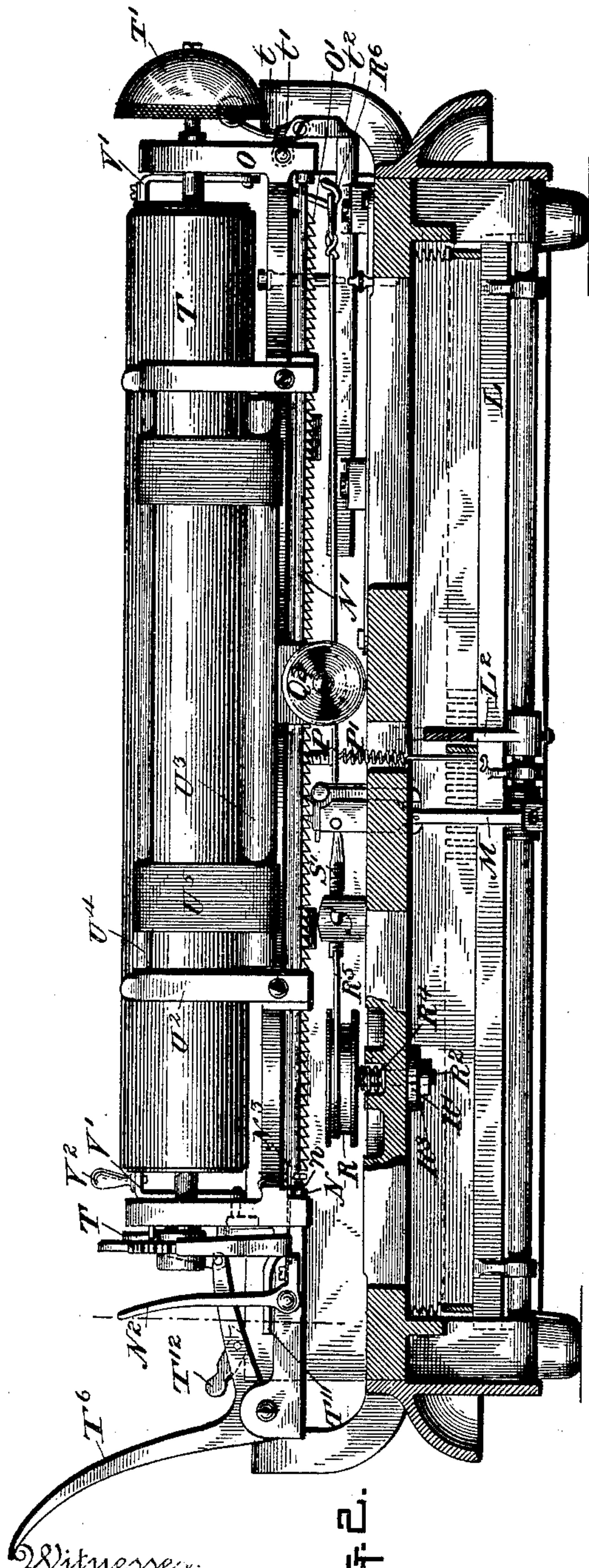


Fig. 2.

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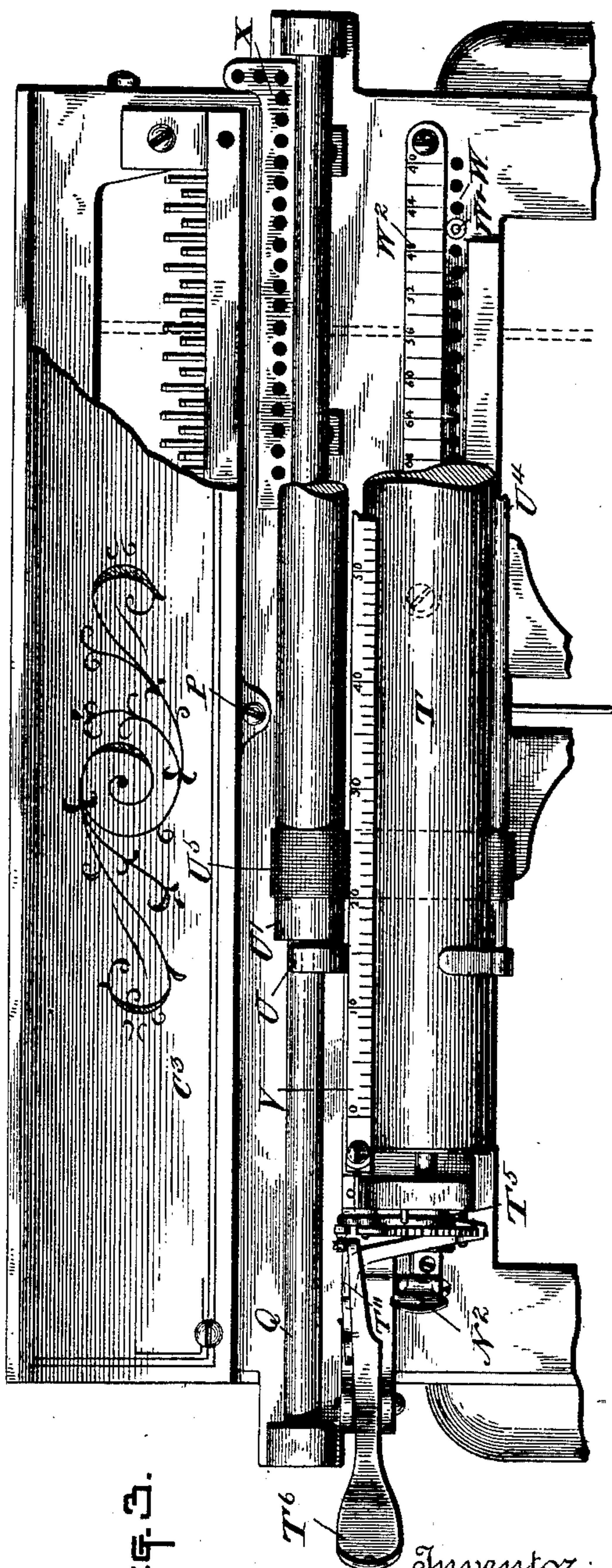


Fig. 3.

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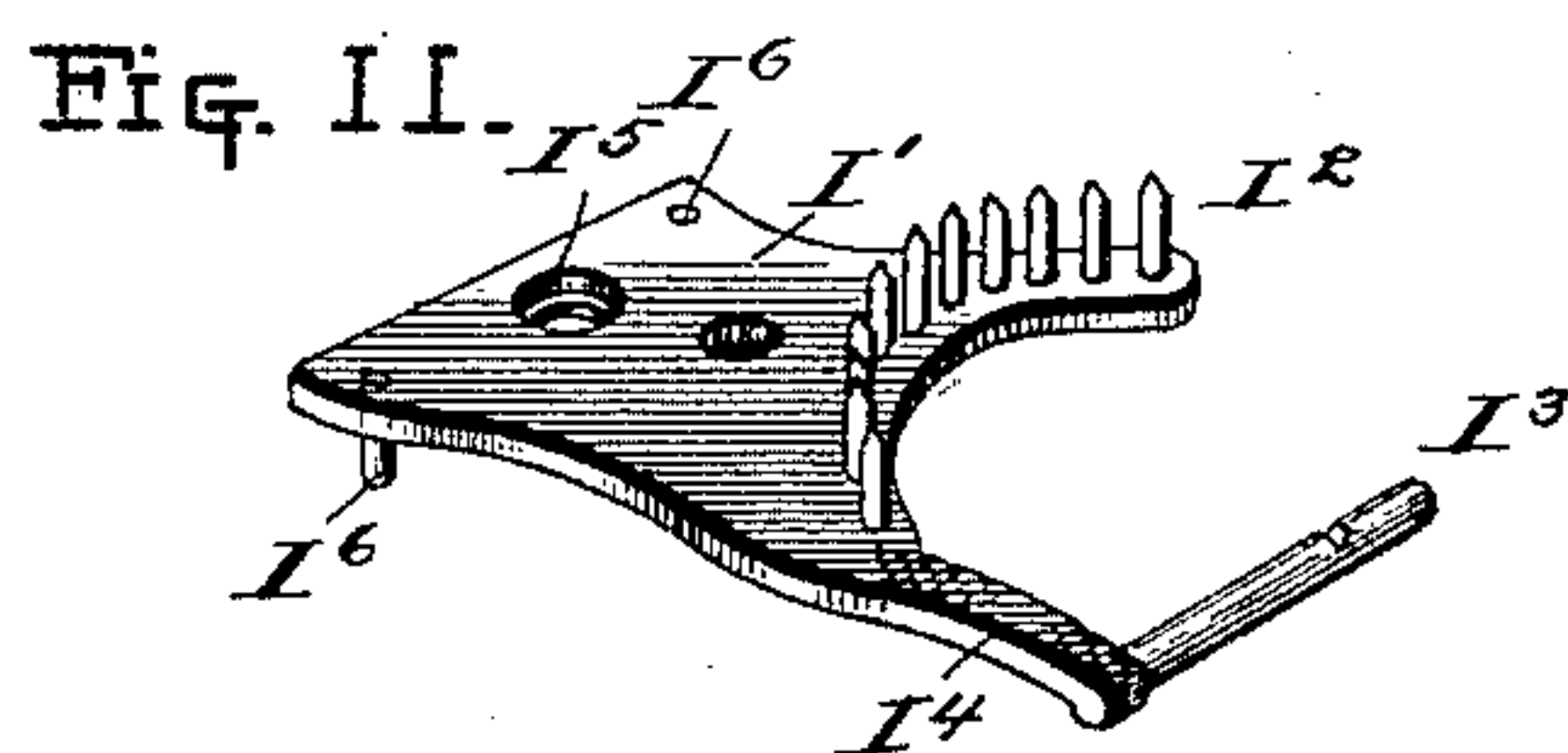
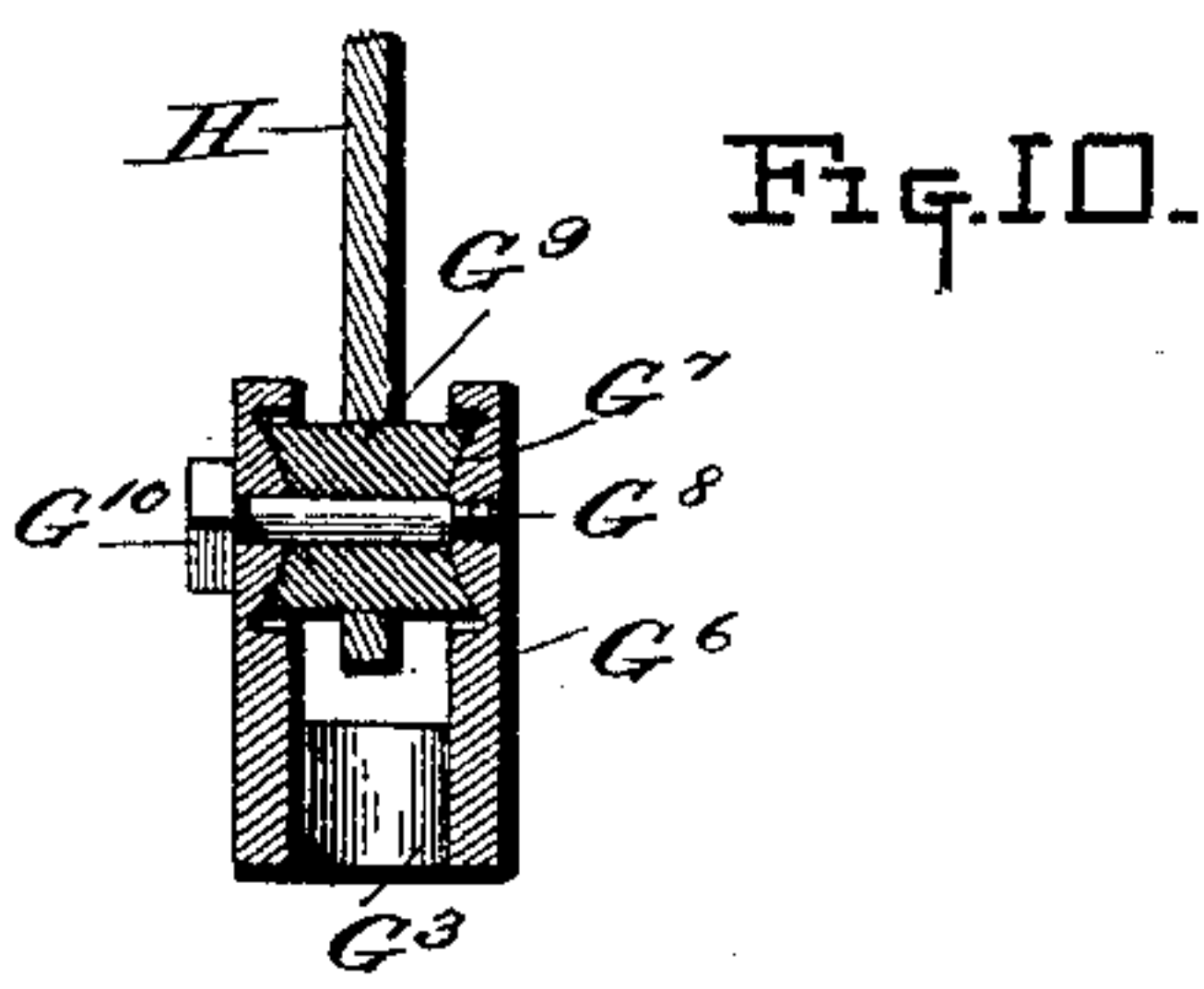
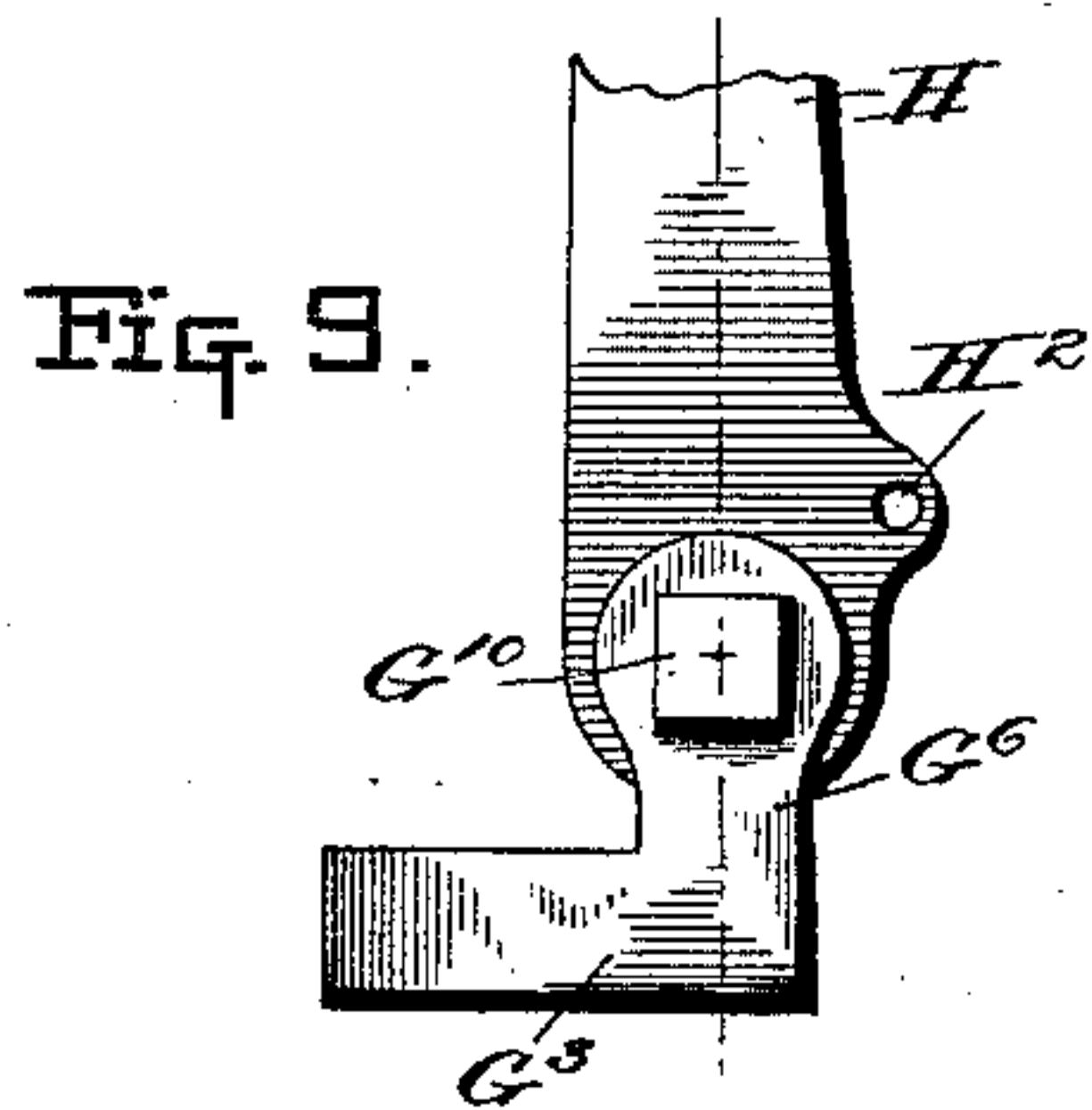
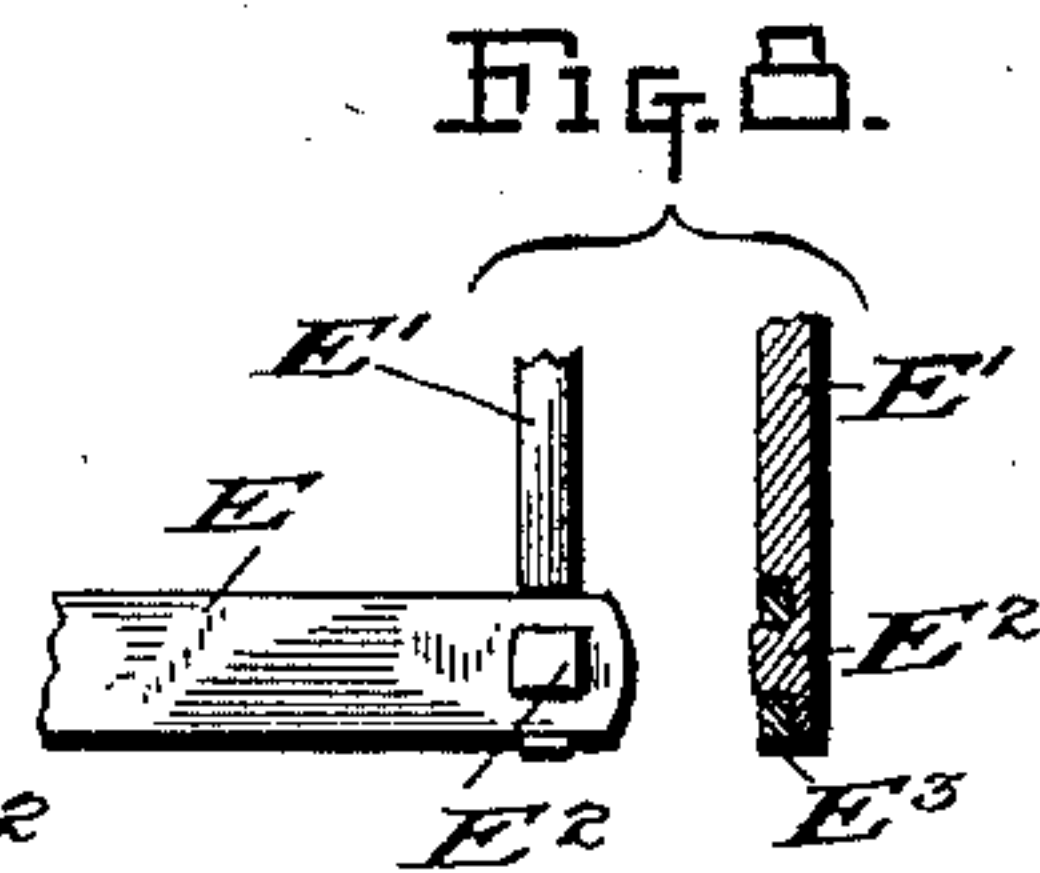
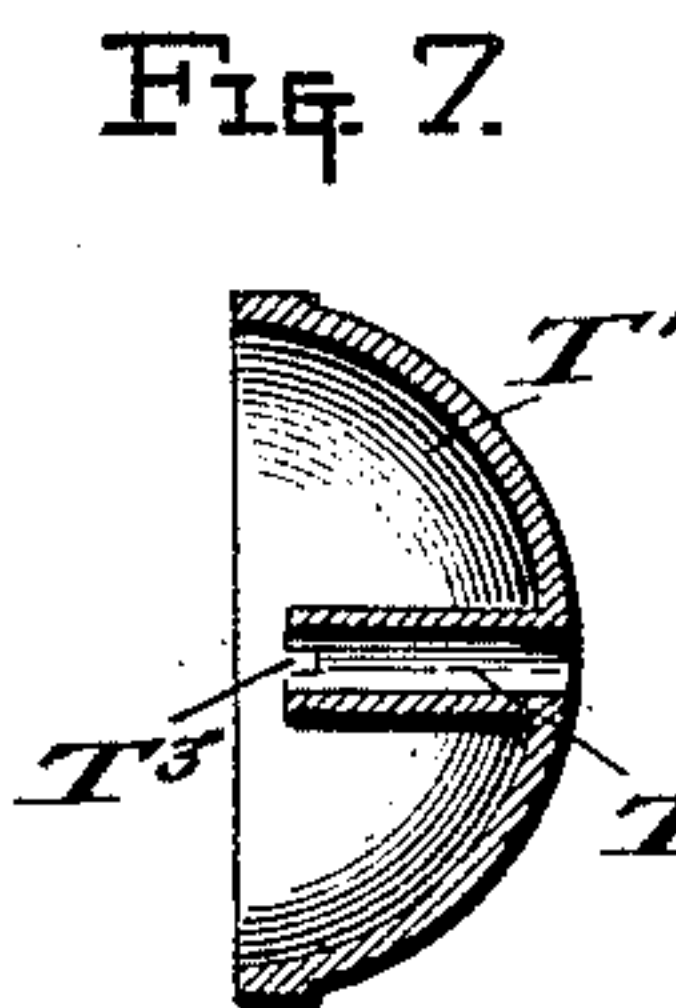
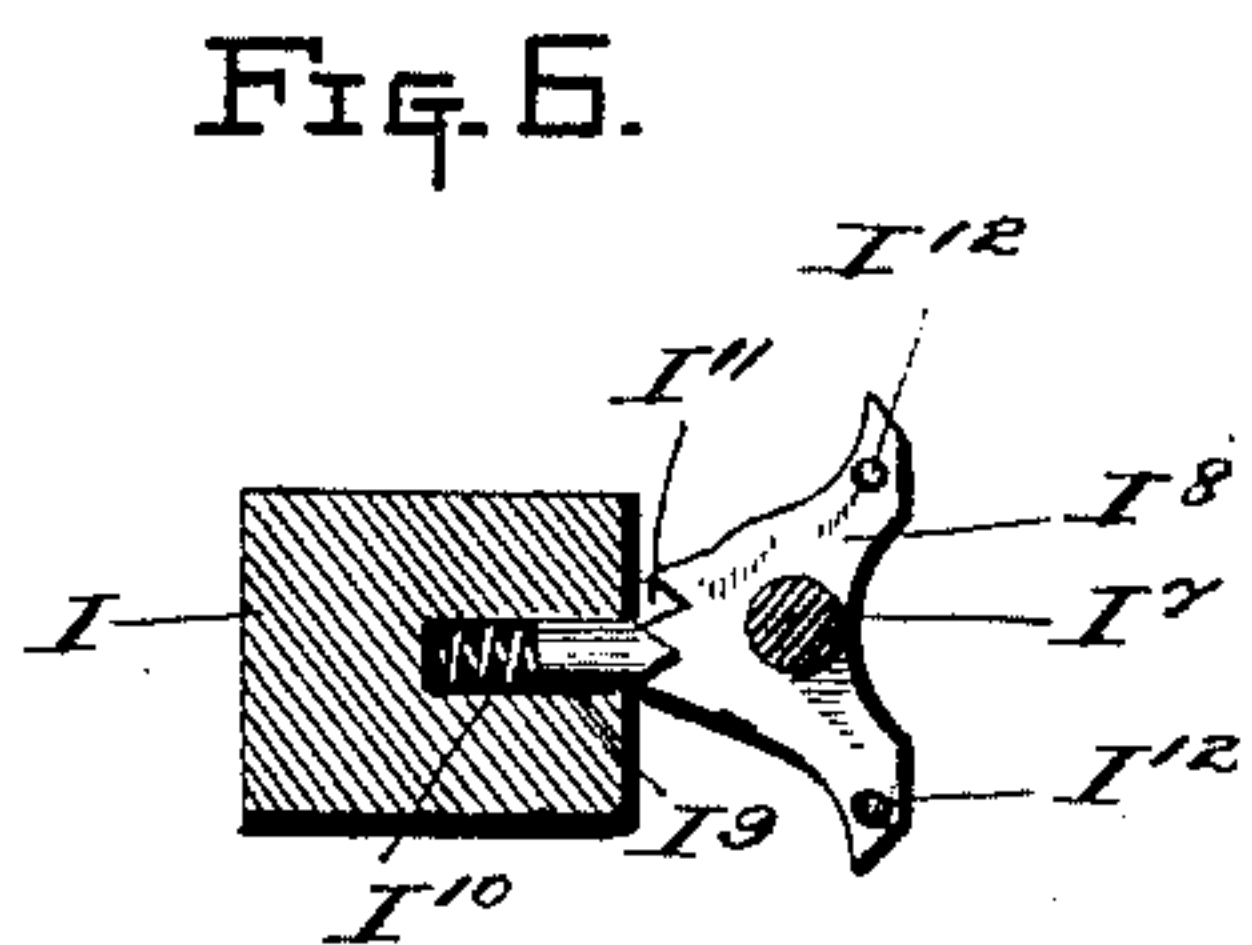
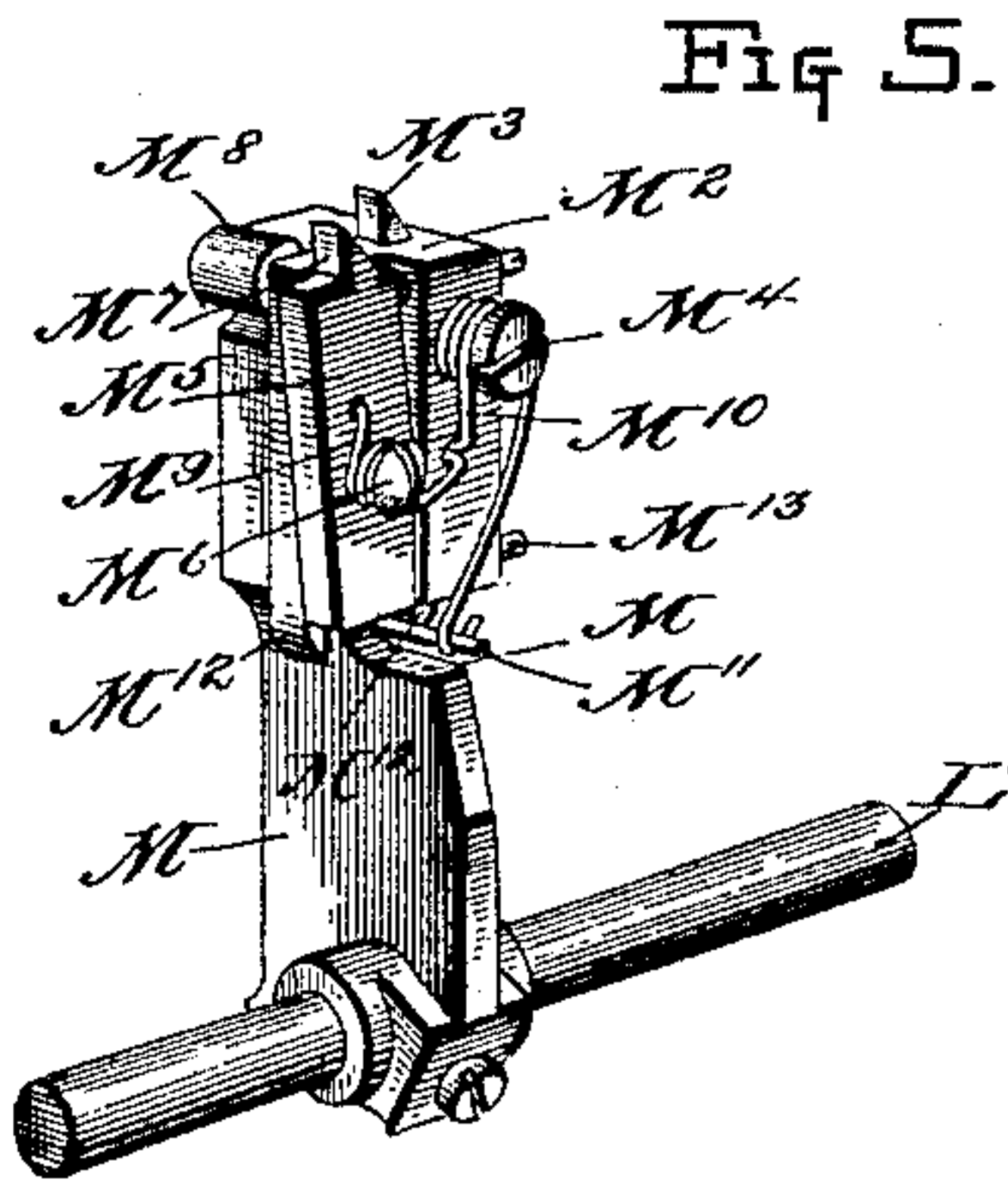
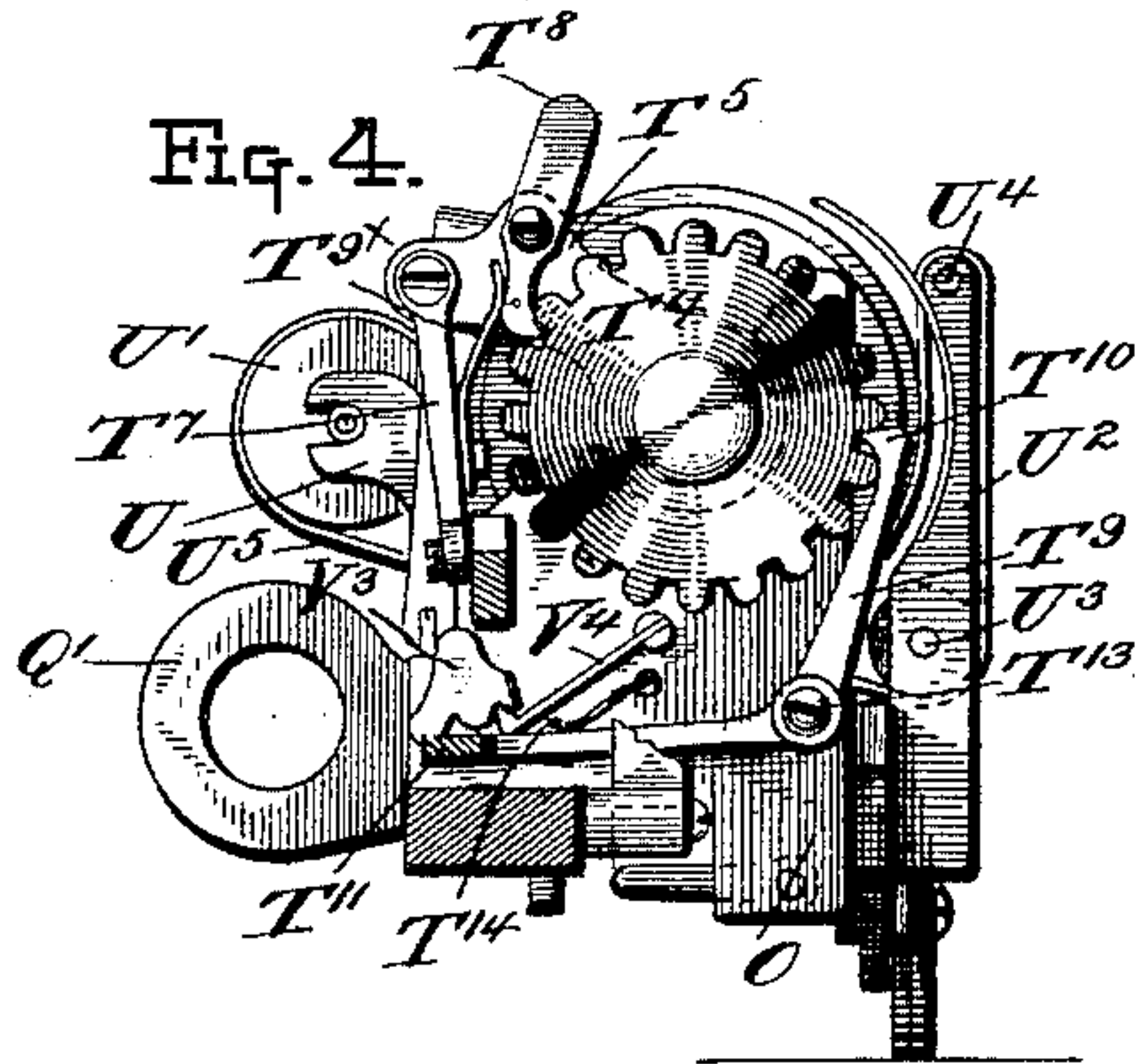
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3 Sheets—Sheet 3.

C. SPIRO.
TYPE WRITING MACHINE.

No. 435,775.

Patented Sept. 2, 1890.



Witnesses:

L. B. Hills.
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UNITED STATES PATENT OFFICE.

CHARLES SPIRO, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 435,775, dated September 2, 1890.

Application filed March 8, 1889. Serial No. 302,419. (No model.) Patented in England March 22, 1889, No. 5,002, and in France April 30, 1889, No. 197,856.

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 and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, (for which I have obtained patents in foreign countries as follows: In Great Britain, No. 5,002, dated March 22, 1889; in France, No. 197,856, April 30, 1889, and for which I have application pending in Germany,) of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has relation to certain improvements in that form of type-writer in which the writing is visible to the operator as the work progresses, and in which the type-bars are thrown downward into contact with the paper.

The main features of this machine have been described and claimed by me in applications for Letters Patent now pending before the Patent Office, and numbered as follows: Serial Nos. 249,684 and 283,080, and patents No. 400,265, dated March 26, 1889; No. 400,716, dated April 2, 1889, and No. 422,042, dated February 25, 1890.

In the drawings, Figure 1 is a central transverse vertical section of my type-writer. Fig. 2 shows the paper-carriage in full, the base of the machine being shown in vertical section lengthwise of the carriage and the bar-lock being removed. Fig. 3 is a plan of the rear portion of my machine, showing a portion of the carriage broken away, as also a portion of the spring-shield. Fig. 4 is an end view of the carriage of my machine, with the spacing-lever and the pawl-releasing mechanism removed, certain details of the line-spacing and paper-holding mechanism being shown, as hereinafter described. Fig. 5 is a perspective of my letter-spacing pawls. Fig. 6 is a plan of the yielding pin and teeth, which hold the feed-ratchet mechanism for the inking-ribbons in place. Fig. 7 is a central vertical section of my bell and inner sleeve, adapted to be used as a revolving knob for the roller. Fig. 8 exhibits the details of the

attachment of the upright keys to the key-levers. Fig. 9 is a side elevation of the fitting of the type-bars into the brackets. Fig. 10 is a longitudinal vertical section of said fitting, showing the ball-and-socket attachment of the type-bar to its bracket. Fig. 11 is a perspective of my bar-lock and turning-pin for the inking-ribbon. Fig. 12 is a detail in bottom plan. Fig. 13 is a sectional view of a portion of the under side of the carriage. Fig. 14 is a perspective view of the main pawl removed and divested of its secondary pawl and co-operating elements.

A is the base of my machine, which is mounted upon legs B, preferably provided with feet of rubber to avoid scratching and noise. Running across this base from right to left is the rear partition C. Projecting backward from this partition are the pins C', from which depend springs C², which are protected from dust by the rear shield C³, preferably fastened to the partition and curving backward. A pivot-rod extends from one side of the base to the other, and underneath the same at D. The key-levers E are indented or cut out at this point to fit this rod, as shown in Fig. 1. These key-levers are attached to the springs C² at the points C⁴, and are thus held up against the rib F and the rod D. The tension of these springs is constant, and just sufficient to keep the key-levers always in place. Depending from the rib F are a number of pins F', intended to guide the key-levers during the rise and fall to which they are subjected.

The keys proper are attached to the key-levers as follows, and as shown in Fig. 8: Two grooves E³ are cut across the end of each key-stem, leaving a boss more or less square in shape. A hole is cut through the key-lever, fitting this boss, and the latter is projected through this hole, as shown in the left-hand portion of Fig. 8 at E². This boss is then riveted over and the stem thus thoroughly secured to the lever. By this means there is no possibility of wobbling or wear between the stem and the lever.

Standing upon the base are the brackets G, one on each side of said base. To the top of

these brackets is secured the perforated curved platform G' , around the edge of which is secured the upwardly-projecting shield G^2 , intended to serve as a protection for the type-bars, as well as an abutment for the same. On this platform are set two rows of brackets G^3 , one behind the other, as shown. Between these two rows is a row of perforations G^4 , serving to admit of the passage of the depressing links G^5 , leading to the type-bars set in the rear row of brackets. The type-bars are set into these brackets, as shown in Figs. 9 and 10. In these figures G^6 are upright extensions rising from the front ends of the brackets G^3 . In the inner face of these extensions are cut, ground, or otherwise formed the curved seats G^7 , preferably forming a segment of a sphere. Coincident with one of the radii of the sphere and perpendicular to the two sides of the extension G^6 are two perforations G^8 , one of the same being screw-threaded. Through these perforations the bolt G^{10} extends, and is screwed in with the tightness desired. Mounted a trifle loosely upon this bolt as a pivot and situated between the two sides of the bracket is a sleeve secured to or forming a part of the type-bar H and shown at G^9 in the figure. This sleeve has its two sides ground or otherwise made to fit the seats G^7 in the side extensions. In the direction of the length of the type-bar this sleeve does not completely fill the seats, but a slight space is left, as shown. The object of this mode of mounting of the type-bars is to present a continuous bearing in any alignment of a type-bar and to allow for wear at the bearings. This seating prevents all twisting of the type out of the true perpendicular to the paper at the printing-point that is likely to occur, and is indeed almost inevitable in the case of conical seatings, as there is no chance for side movement in the type-bars or in the conical sleeves, thus causing a side tilt of the types and a consequent irregularity of presentation of the surfaces of the same to the paper and partial printing of the characters. When any such wear occurs with my form of seat the spherical surfaces of the sleeve are free to move evenly over the seats in the bracket without such tilt, and thus this difficulty is avoided and uniformity of wear induced.

My type-bars lie back normally against the back of the shield G^2 , against a point H' , provided with padding in order to obviate all noise on the return of the types to their normal position. This padding extends in a strip around the whole length of the row of types, and the type-bars in both rows of brackets lie against the same.

Forward of the sleeve G^9 in each type-bar there is provided a perforation H^2 , in which is fastened the end of the link G^5 for depressing the bars. The other end of this link is hooked into a screw-eye H^3 , which is screwed into a nut H^4 seated in the key-lever.

In front of the type-bar platform there is a

bracket I , mounted on the top of the base. On the top of this bracket there projects a bar-lock of the character shown in Fig. 11 over the printing-point. This consists of a plate I' , having a concave semicircular front edge, along which is placed a row of upwardly extending teeth I^2 , just far enough apart to admit of the interposition of one of the type-bars for the purpose of locking said bar and guiding the same to the exact printing-point, as described and claimed in my Letters Patent No. 400,265.

A turning-pin I^3 projects sidewise from an arm I^4 , projecting at one end of the plate I' . This pin has a notch in it for the purpose of marking the printing-point for the information of the operator, and serves for the support of the inking-ribbon, as hereinafter described. This plate is fastened to the top of the bracket I by means of a perforation I^5 , and is further held from rotation thereon by means of the pins I^6 , which are adapted to enter holes provided therefor in the top of said bracket.

Projecting downward through the body of the bracket is a swivel-bar I^7 , at the bottom of which is a throwing-piece I^8 , similar to that shown in my application for Letters Patent, Serial No. 272,565. Let into the depression in the base of the bracket I is a yielding pin I^9 in the same plane with the throwing-piece I^8 . Behind this pin and at the bottom of the recess is a spring I^{10} , which tends to keep said pin constantly in contact with the edge of the throwing-piece. This edge is provided with two notches I^{11} , and the end of the pin is shaped to enter these latter, as shown in the figure. On the two ears of the throwing-piece there are upright pins I^{12} , for the same purpose as those on the throwing-piece on my device described in my application, Serial No. 272,565, as will be further described. By turning the handle on the top of the swivel-bar I^7 the throwing-piece may be thrown from one side to the other, and the notches I^{11} on one or the other side of the same be brought into engagement with the pin I^9 to hold the throwing-piece firmly in position.

On the sides of the bracket I are pivoted the spools K , carrying the inking-ribbon, which extends from the one around and over the turning-pin I^3 and back to the other spool, as shown and described in my application, Serial No. 272,565.

Under the whole length of the key-lever space there extends a bail L , which is preferably connected by three arms with the pivot-bar or rock-shaft L' , Fig. 1. Rigidly attached to this pivot-bar and extending upward are the two stems L^2 and M , the former being pivoted to the inking-ribbon feed-pawl L^3 and the latter being the carriage feed-pawl stem. L^3 is of the same form and performs the same function as the similarly-placed pawl in my application, Serial No. 272,565—namely, to turn the inking-ribbon spools alternately, according as to whether the swivel-bar is turned in one di-

rection or the other, and the pins I^{12} brought into contact with the back of one or the other side of the double feed-pawl L^3 . This pawl-stem being pivoted between the two spools and said spools being provided with ratchet-wheels, as described in my application, Serial No. 272,565, when the stem is turned in one direction by the abutment of the pin I^{12} it is brought into contact with one of the spool-ratchets, and when turned in the other direction with the other ratchet. Now when the bail L is depressed with the depression of one of the key-levers, the stem L^2 is thrown upward, and with it the pawl-stem and pawl L^3 . This last being in contact with the teeth of the ratchet, causes the spool to make a portion of a revolution, and the springs L^4 , which are situated just behind the edges of the pawl, engage with the teeth of the spools and prevent their return against the feed.

The stem M carries the carriage feed-pawls, and is best shown in Fig. 5. This stem is cut out, as shown at M' , and above the cut there is provided the main swinging pawl M^2 , carrying the beveled tooth M^3 , and turning upon the pivot M^4 . The side of this pawl is cut out, as shown, for the reception of the secondary swinging pawl M^5 , turning upon the pivot M^6 , and carrying the tooth M^7 , beveled in the same direction as the tooth M^3 . On the back of the pawl M^2 there is placed the friction-pin M^8 , which may be replaced by a small roller, if desired, and which plays within a space cut out of the end and top of the pawl-stem. The spring-wire M^9 is wound around the pivot M^6 , and tends to hold the secondary pawl in the open position shown in the figure. The spring M^{10} is wound around the pivot M^4 , and has its end attached to the pin M^{11} , tending to hold the main pawl M^2 upright in the position shown in the figure. On the bottom of the main pawl M^2 there are two depending points M^{12} , which are adapted to be brought into contact with the pin M^{11} , when the pawl M^2 is swung on its pivot. The teeth of these pawls are always in different planes.

Under the carriage O , and running the whole length thereof, is the rack-bar O' , having depending teeth beveled to allow of the motion backward of the carriage, but having vertical faces so placed as to arrest the forward motion of the carriage by engagement with the teeth on the pawls of the feed mechanism. This is plainly shown in Figs. 1 and 2.

There is a projection on the front face of the partition C , through which is inserted a screw P , on the end of which is inserted a spiral spring P' , having its other end fastened to the bail L , through the medium of which the tension of said spring is transmitted to the key-levers, and they are held up against the rib with an adjustable pressure. It is the tension of this one spring which holds the inking-ribbon pawl down and which holds the carriage feed-pawls in the position shown in Fig. 1—that is to say, with the secondary

pawl-tooth in contact with the rack on the carriage. Now when the keys or the spacing-levers are depressed this spring is extended and the carriage feed-stem is tilted in such a position as to throw the main pawl-tooth into engagement with the teeth of the rack. This movement frees the secondary tooth, and the spring M^9 causes the secondary pawl to tilt forward a distance equal to the space between two teeth of the rack, as shown in Fig. 2. On the release of the levers the spring P^2 comes into action, the bail is lifted, and the stem tilted back again into the position shown in Fig. 1. At this time the secondary pawl-tooth being caught by the next tooth in the rack, the carriage is allowed to move forward a distance of one tooth, by means hereinafter described, and the secondary tooth is brought back into its upright position upon the main-pawl body. By means of the screws M^{13} in the body of the main pawl the secondary pawl may be readily adjusted in its throw to the teeth of the rack-bar, and thus expensive labor in fitting the parts is avoided.

The carriage is provided with back ears Q' , which slide upon a back rod Q , held in brackets at the two ends of the machine, the forward portion of said carriage being supported by a wheel which runs on the base at Q^2 .

At the two ends of the carriage and under the platen are pivoted two arms N , held up by a spiral spring n . (Shown in Fig. 2.) Extending from one of these arms to the other is a wire bail resting upon the friction-pin M^8 of the main pawl. On one end of the carriage there is pivoted a bell-crank N^2 , on the short horizontal arm of which is attached a spring N^3 , which projects over one of the arms N . By pressing the handle N^2 toward the platen the spring N^3 is depressed, and with it the arm N and the bail N' . This causes the depression of the pin M^8 and the side tilting of the main pawl M^2 , thus throwing the teeth upon both pawls out of gear with the rack and allowing the carriage to be moved either way without obstruction.

The motive power which actuates my machine in its feed is a spring-drum of the nature shown in my application, Serial No. 272,565, and seen in Fig. 2 at R . This drum is mounted upon a pivot which projects downward through the base of the machine, and around which there is wound a spiral spring R^4 to keep the drum up and off of the base. At the bottom of the pivot is a disk R' , having notches R^2 at various points in its periphery intended to engage with a pin R^3 projecting from the under side of the base of the machine. This is for the purpose of tightening the spring within the drum, as shown in my application, Serial No. 272,565, which is accomplished as follows: When it is desired to tighten the spring, said drum is depressed against the action of the spring R^4 , and the disk-notch thrown out of engagement with the pin R^3 . The drum in this position is

turned through the required arc and then allowed to rise again in such a position as to allow of the engagement of the pin with a new notch. Wound upon this drum is the cord

5 R⁵, which is attached to the machine at R⁶, and by which the spring within the drum draws the carriage.

A firm projection S rises from the top of the base just behind the pawl-stem, and through the same there is an adjusting-screw S', which may be screwed farther from or nearer to the pawls. Against this screw the pawl is made to abut when the carriage is brought to a stand by the resistance of the

10 tooth on the secondary pawl. By this means all the jar of the sudden stoppage of the carriage is taken off of the pawls and is transmitted directly to the body of the machine, a circumstance conducive to the increased life

20 of the machine, and which prevents much of the noise incident to the use of a type-writer. By the adjustment of the screw the abutment may be brought to such a position as to bring the teeth in a vertical posture at the moment

25 of abutment. This adjustment is useful where there is a new rack to be used with a different spacing of the teeth. It also prevents diminution of speed arising through tremor of the machine.

30 The platen is pivoted in the ordinary manner between two brackets at the extremities of the carriage, and the axle of the same is carried out at both ends, as shown in Fig. 2. On one end there is a bell T', attached to this

35 axle in a manner best understood by inspection of Fig. 7, where the bell is shown in section. As will be seen, there is an inwardly-projecting sleeve T², adapted to fit tightly over the end of the axle of the roller, and in which

40 there is a notch cut out, as at T³, for the purpose of engaging with a pin on the side of the axle. By this means the bell serves the double purpose of a knob for the more convenient turning of the roller and a bell for

45 warning the operator when he has come near the end of a line. This warning is accomplished by means of a little gravity-bell hammer t pivoted to the body of the carriage at t', within the bell almost, and provided with a

50 depending point t² pivoted thereto, so that it will only operate to lift the bell-hammer on the forward movement, and will allow the point to pass the peg, hereinafter described, on the back movement without sounding the

55 bell.

At the other end of the roller, Fig. 4, there is a wheel mounted on the axle of the platen and having round teeth, as shown at T⁴. Within this wheel, or between it and the

60 platen, is a pawl-carrier, pivoted also to the end of said platen-axle, as at T⁵, and this piece carries a pawl T⁸ pivoted thereto and held against the teeth of the wheel T⁴ by the spring T⁹ on a link T⁷ depending from said pawl-carrier.

Pivoted at the extremity of the carriage is a bell-crank lever T⁶, having a point at one

end T¹⁰, which fits in between two of the teeth on the wheel T⁴ and is turned at T¹¹ in a longitudinal direction.

Pivoted to the bell-crank T⁶ at a point part way between the pivot of the same and the end nearest the platen is a stop-piece T¹², which is adapted to be turned up, as shown, or down, so as to strike the bottom of the carriage before the bell-crank has made a full turn. This piece is so placed as to abut on the piece T¹¹ and throw the end T¹⁰ into mesh with the teeth of the wheel T⁴ and prevent displacement of the platen by momentum.

75 A small spring T¹⁴ over the end of the bell-crank arm T¹¹ tends to throw the point of said lever into mesh with the same. Now when the end of a line has been reached, and it is desired to return to the beginning again and

85 commence a new line, the operator has merely to push against the lever T⁶ and the carriage will not only be pushed back to the end of its travel, but the roller will be turned through a greater or less arc, according to whether the

90 piece T¹² is turned up or down, for on pressing the lever T⁶ toward the platen the link T⁷ is drawn downward and the piece T⁵ revolved with the pawl upon it until the wheel is turned through the required distance. At this mo-

95 ment the piece T¹² or the end of the bell-crank itself comes in contact with the end T¹¹ and the point T¹⁰ is forced against the teeth of the wheel, thus stopping positively all further movement and preventing the possibility of

100 any bad effects from the inertia of the parts in carrying the roller too far.

Two brackets U extend upward and backward from the carriage behind the platen, and into notches in the ends of said brackets are

105 fitted the ends of the axle of a roller for holding the rubber bands that carry the paper, as shown at U' in Figs. 4 and 3.

A standard U² in front of the roller has bearings carrying two more rollers U³ and U⁴, and around all three of these rollers there are two or more rubber or other flexible bands U⁵, which press tightly against the platen and keep the paper securely in place. By the use of the bands in this manner I am enabled to

115 assemble and feed as many as twelve or fifteen sheets of paper at a time for multiple work without the least danger of any of them slipping.

A paper-scale is provided, which is pivoted

120 at the ends of the carriage by means of the side arms V', and at one end of the carriage the pivot extends through the bracket and has fastened to it at the outer end a holding-piece V³, provided with two notches, as shown

125 in Fig. 4, while a spring V⁴, fastened to the outside of said bracket, is provided with a point which fits into said notches and holds the piece in either position desired. Now, by taking the handle V² and thrusting the

130 same backward, the paper-scale may be thrust away from the platen and the paper carried over the same and under the scale. When the paper is so adjusted, the scale is again

brought forward and the paper held secure by the action of the point of the spring against the piece V³.

Underneath the platen and in the path of the point of the bell-hammer is a row of holes W, into which a peg W' is adapted to be fitted. Parallel with these holes W there is placed a graduated scale, which is preferably made to correspond with the graduations on the paper-scale V. This scale has lines pointing to the various holes in the row W, and by placing the peg W' into a hole opposite any one of these lines the point of the hammer may at any point be brought into contact therewith and the bell be made to ring at any time during the travel of the carriage. This is a convenient feature for those persons who may wish to employ paper of various widths.

Just back of and under the back rod of the carriage there is a strip attachment or ferrule adapted to be screwed or otherwise attached to the machine, and which is perforated, as shown, for the reception of a peg similar to that used under the roller. This strip X has numbers placed thereon opposite the various holes and which correspond with the numbers upon the scale above the platen. The peg is so proportioned as to project into the path of the boss Q' and stop the movement of the carriage at any desired point of the backward travel and thus secure any width of margin desired.

The reason of another detail of construction has a further advantage. N² connects with the release-bail through a spring instead of by rigid mechanism, on account of the shock and strain that would otherwise result to the wire bail when the handle of the lever actuating it was pushed far enough to allow of the operator's pushing the carriage as is desired when this bail is employed for releasing the feed-pawl.

The broad features of the throwing device and detent for the inking-spools are claimed in my application, Serial No. 272,565, pending simultaneously with this application.

What I claim is—

1. In a type-writer, a platen carrying a ratchet-wheel and a positive detent adapted to be in mesh with said wheel, in combination with a pawl normally in engagement with said wheel, and a bell-crank lever connected to said pawl and moving through a path intersecting a portion of said detent, substantially as and for the purposes specified.

2. In a type-writer, a platen carrying a ratchet-wheel and a bell-crank detent normally in contact with the same to maintain the platen against rotation, in combination with a pawl normally in engagement with said wheel, and a bell-crank lever connected to said pawl and moving over one of the arms of said detent, substantially as specified.

3. In a type-writer, a platen carrying a ratchet-wheel and a bell-crank detent normally in contact with the same, in combina-

tion with a pawl normally in engagement with said wheel, a bell-crank lever connected to said pawl, and a stop-piece pivoted to the side of said bell-crank lever and moving over one of the arms of said detent, substantially as described.

4. In a type-writer, a platen carrying a ratchet-wheel, a bell-crank detent normally in contact with the same, and a spring over one of the arms of said detent, in combination with a pawl normally in engagement with said wheel, a bell-crank lever connected to said pawl, and a stop-piece pivoted to the side of said bell-crank lever and moving over one of the arms of said detent, substantially as described.

5. In a type-writer, a platen carrying a ratchet-wheel, a bell-crank detent having an upright and a substantially horizontal arm, said upright arm having a point adapted to be inserted between two of the teeth on said ratchet wheel, and a spring over said horizontal arm for keeping said point in contact with said wheel, in combination with a pawl normally in engagement with said wheel, a bell-crank lever connected to said pawl, and a stop-piece pivoted to the side of said bell-crank lever and moving over the horizontal arm of said detent, substantially as described.

6. In a type-writer, a roller having a projecting axle carrying a ratchet-wheel, a pawl-carrying piece loosely pivoted upon said axle within said wheel, a pawl mounted thereon and normally in contact with said wheel, and a bell-crank lever connected to said pawl, in combination with a bell-crank detent having an upright and a substantially horizontal arm, said upright arm having a point adapted to be interposed between two of the teeth of said wheel and said horizontal arm projecting under said pawl-actuating lever, substantially as described.

7. In combination with the toothed ribbon-spools of a type-writer and the double pawl for actuating the same, a throwing-piece having two notches cut therein, and a yielding pin adapted to engage with said notches, substantially as described.

8. In combination with the toothed ribbon-spools of a type-writer and the double pawl for actuating the same, a throwing-piece having two notches cut therein, a pin, and a spiral spring behind said pin to keep the same in contact with said notches, substantially as described.

9. In combination with the toothed ribbon-spools of a type-writer and the double pawl for actuating the same, a swivel-bar, a throwing-piece attached to the bottom thereof and having two notches cut therein, a yielding pin, and a spiral spring behind said pin to keep the same in contact with said notches, substantially as described.

10. In a type-writer, a key-stem having two horizontal grooves cut in its side, forming a boss between them, in combination with a key-lever having a perforation near its end

adapted to fit over said boss, substantially as described.

11. In a type-writer, a key-stem having two horizontal grooves cut in its side, forming a boss between them, in combination with a key-lever having its end cut to fit over said boss and into said grooves, substantially as described.

12. In a type-writer, a carriage adapted to be drawn across the base thereof, in combination with a spring-drum mounted on a sliding vertical spindle having a slotted disk at its under end, a cord attached to said drum and to said carriage, and a pin on the under side of the base adapted to engage with the slots in said disk, substantially as described.

13. In combination with the paper-carriage of a type-writer, a spring drum mounted upon a vertically-reciprocating spindle, a spring under said drum, a disk at the lower end of said spindle, said disk having notches, and a pin projecting from the under side of said base and adapted to engage with the notches in said disk, substantially as described.

14. In a type-writer, a feed-pawl stem having pawls pivoted thereto and bearing a friction-pin on one side of said pivot, in combination with a bail on the carriage of said type-writer adapted to be depressed against said pin, substantially as described.

15. In combination with the carriage of a type-writer, a feed-pawl stem, pawls pivoted thereto and bearing a friction-pin on one side of said pivot, arms pivoted to the sides of said carriage, a bail attached to the ends of said arms and extending across said carriage, and means, substantially as described, for depressing said arms and bail.

16. In combination with the carriage of a type-writer, a feed-pawl stem, pawls pivoted thereto and bearing a friction-pin on one side of said pivot, arms pivoted to the sides of said carriage, and one of said arms bearing a spring holding it off of said friction-pin, a bail attached to the ends of said arms and extending across said carriage, and means, substantially as described, for depressing said arms, so as to bring said bail in contact with said friction-pin.

17. In combination with the carriage of a type-writer, a feed-pawl stem, pawls pivoted thereto and bearing a friction-pin on one side of said pivot, arms pivoted to the sides of said carriage, one of said arms bearing a spring holding it off of said friction-pin, a bail attached to the ends of said arms and extending across said carriage, and a bell-crank lever pivoted to the end of said carriage and having one of its ends projecting across the arm nearest it, substantially as described.

18. In a type-writer having a platen and provided with a series of holes in the frame under the platen, of a peg adapted to be removably inserted in a vertical position into any one of said holes, a bell, and a bell-hammer having a trip moving with said carriage over and along said series of holes and adapted to come in direct contact with said peg, substantially as and for the purpose specified.

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

CHARLES SPIRO.

Witnesses:

J. FREUDENTHAL,
C. W. STUBBINGS.