

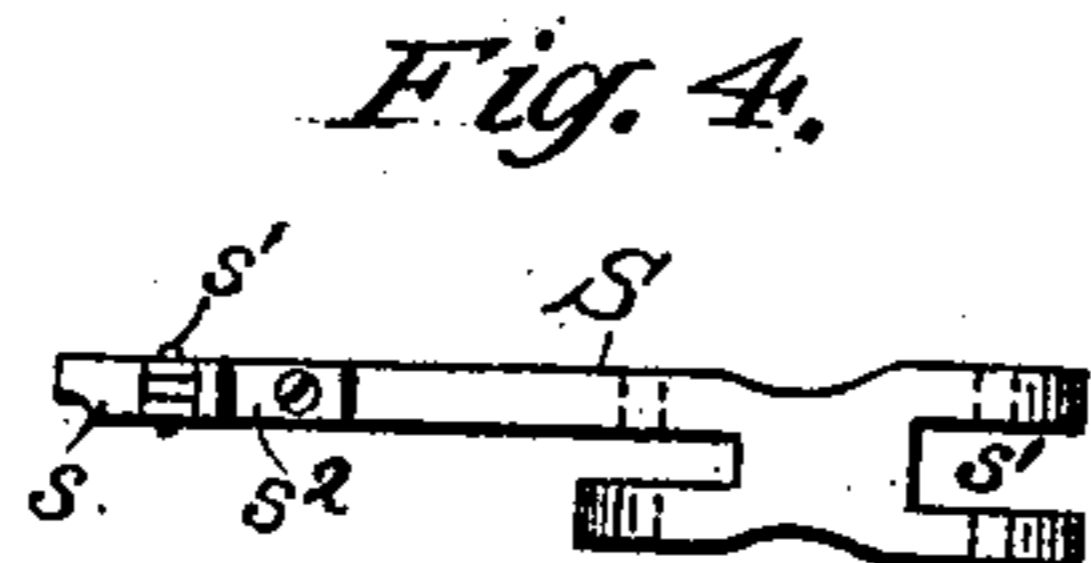
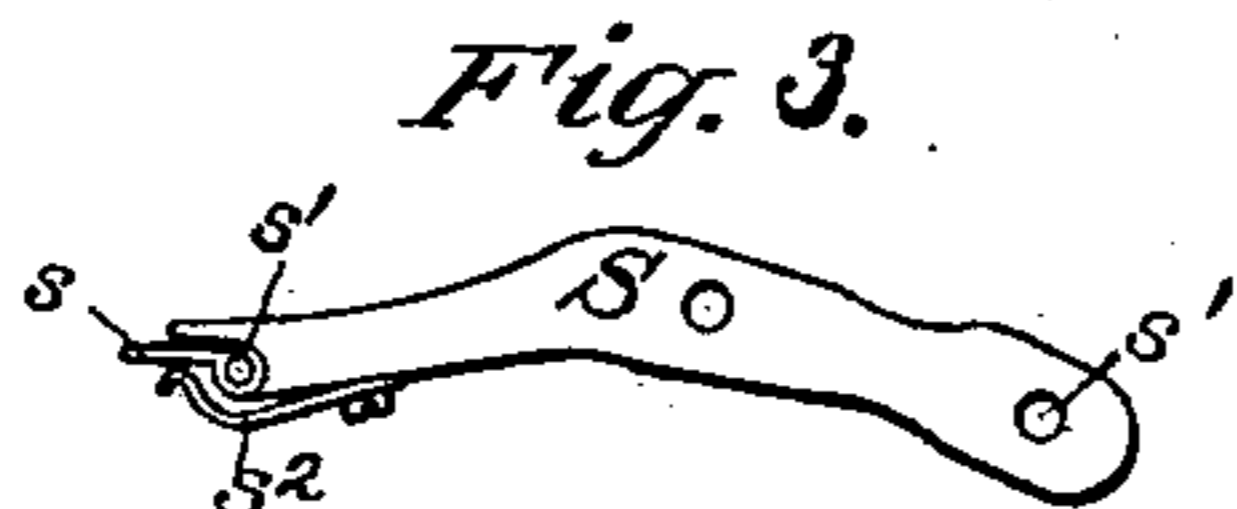
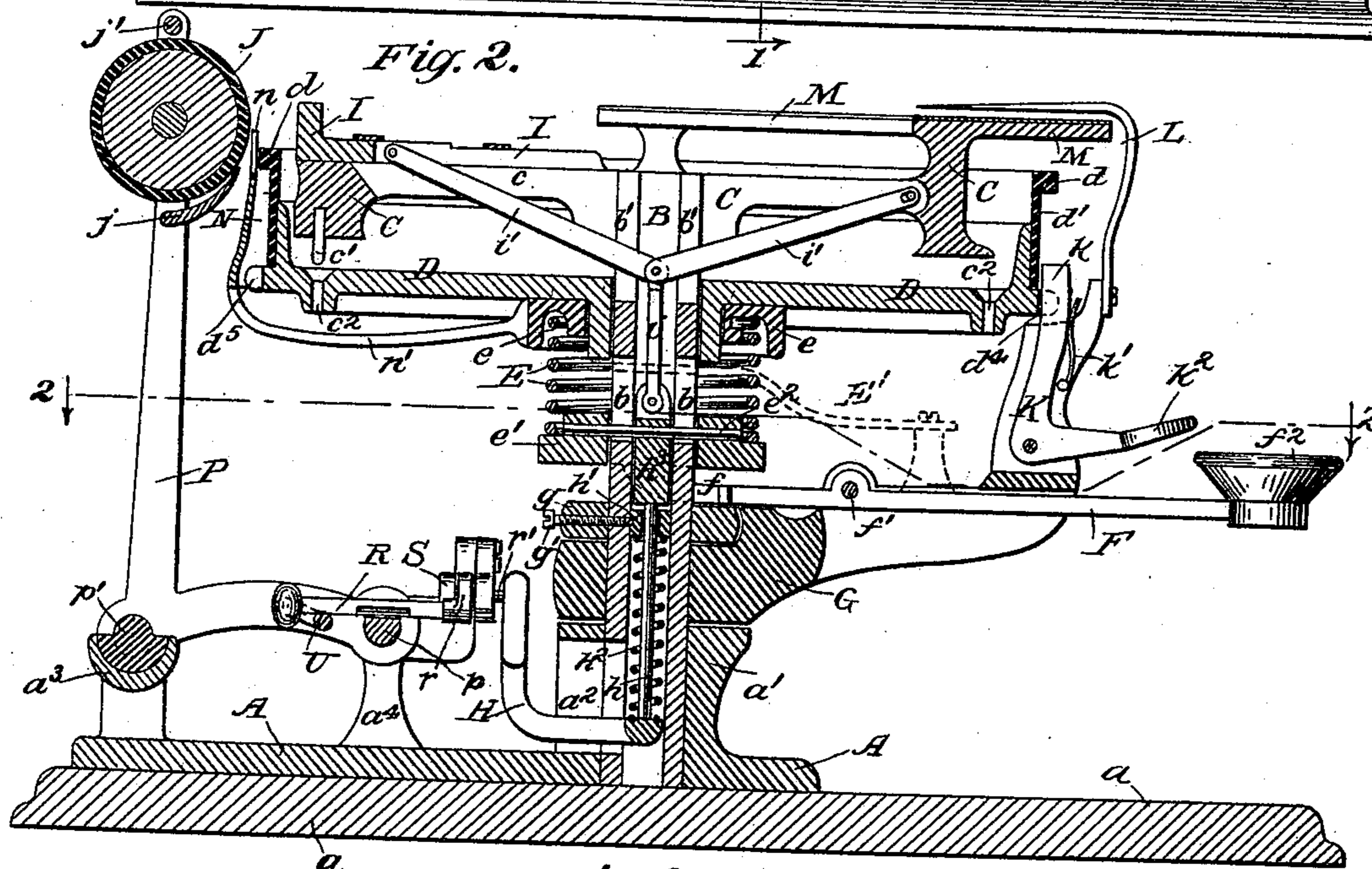
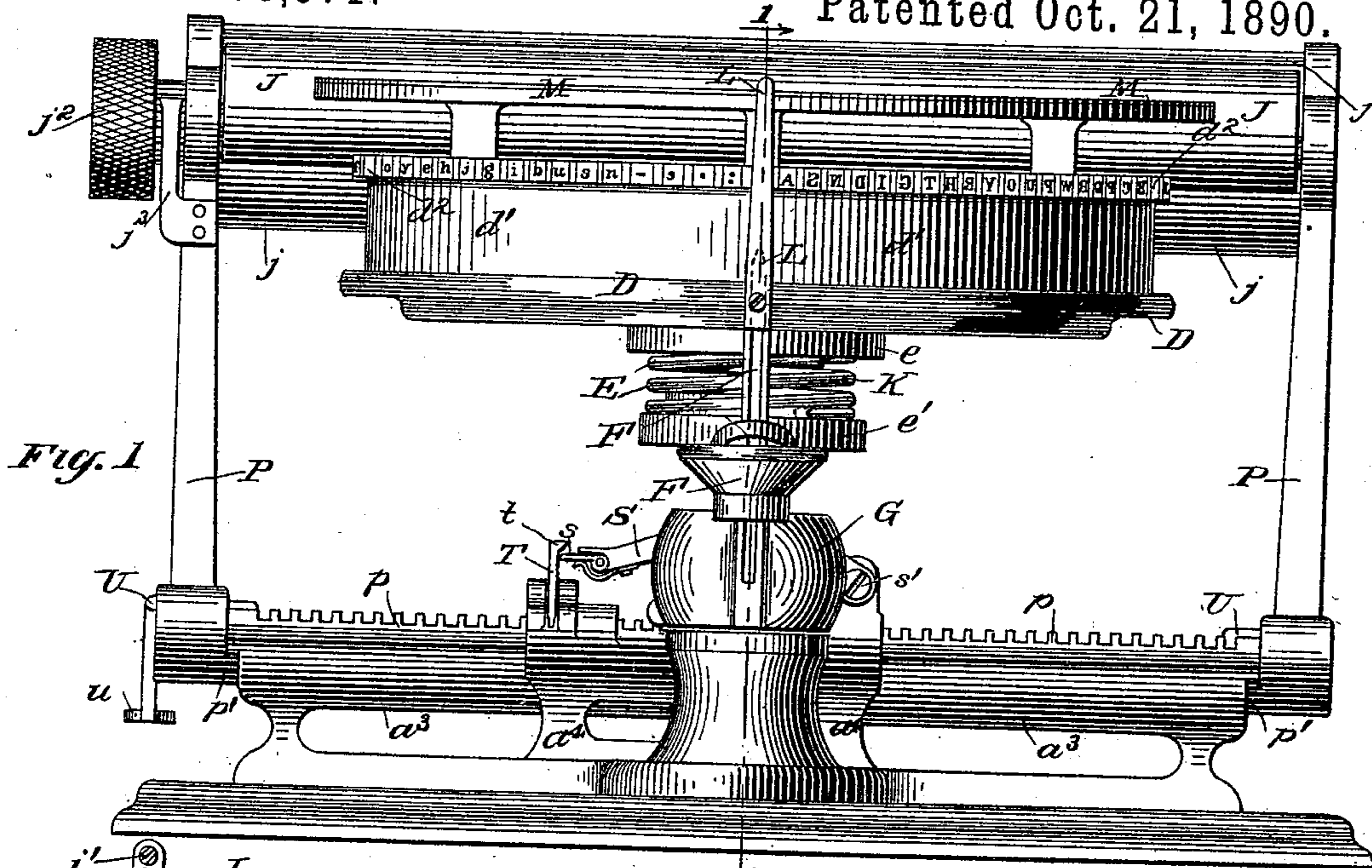
(No Model.)

3 Sheets—Sheet 1.

E. F. YOUNGS.
TYPE WRITING MACHINE.

No. 438,971.

Patented Oct. 21, 1890.



WITNESSES:

J. H. Griswold
C. Sedgwick

INVENTOR:

E. F. Youngs.

BY

Munn & Co

ATTORNEYS.

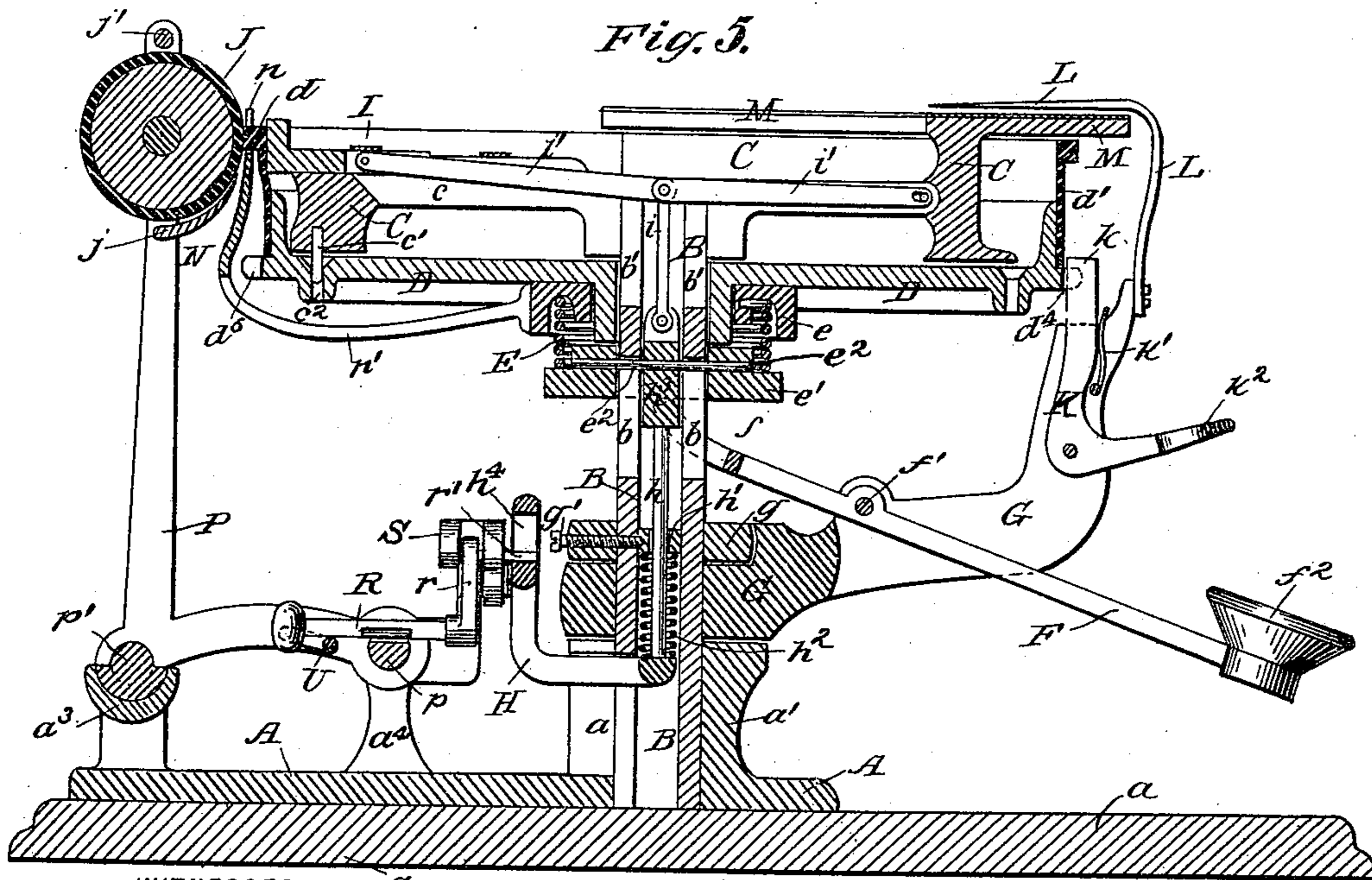
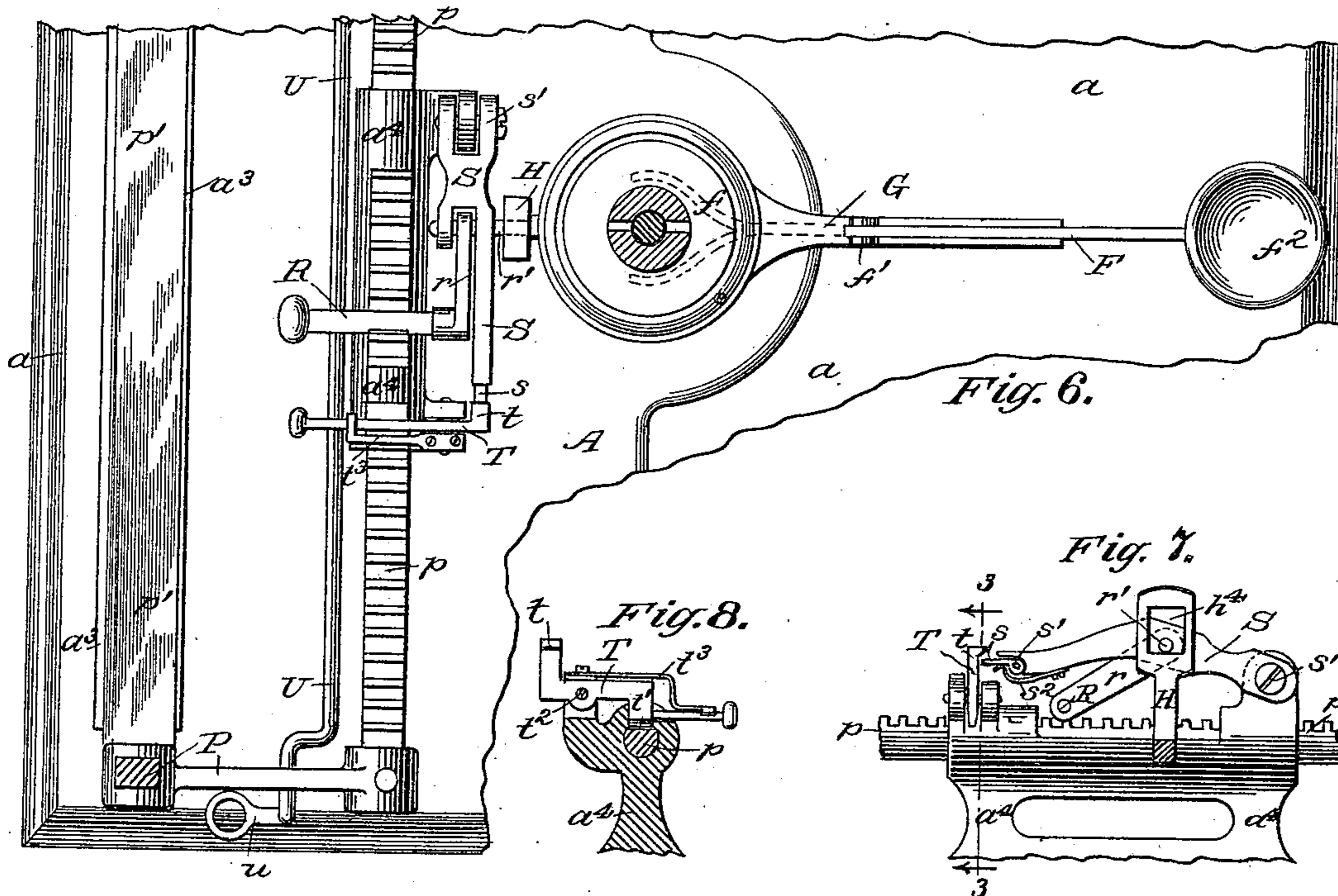
(No Model.)

3 Sheets—Sheet 2.

E. F. YOUNGS.
TYPE WRITING MACHINE.

No. 438,971.

Patented Oct. 21, 1890.



WITNESSES:

J. B. Griswold
C. Sedgwick

INVENTOR:

E. F. Youngs

BY

Munn & Co

ATTORNEYS.

(No Model.)

3 Sheets—Sheet 3.

E. F. YOUNGS.
TYPE WRITING MACHINE.

No. 438,971.

Patented Oct. 21, 1890.

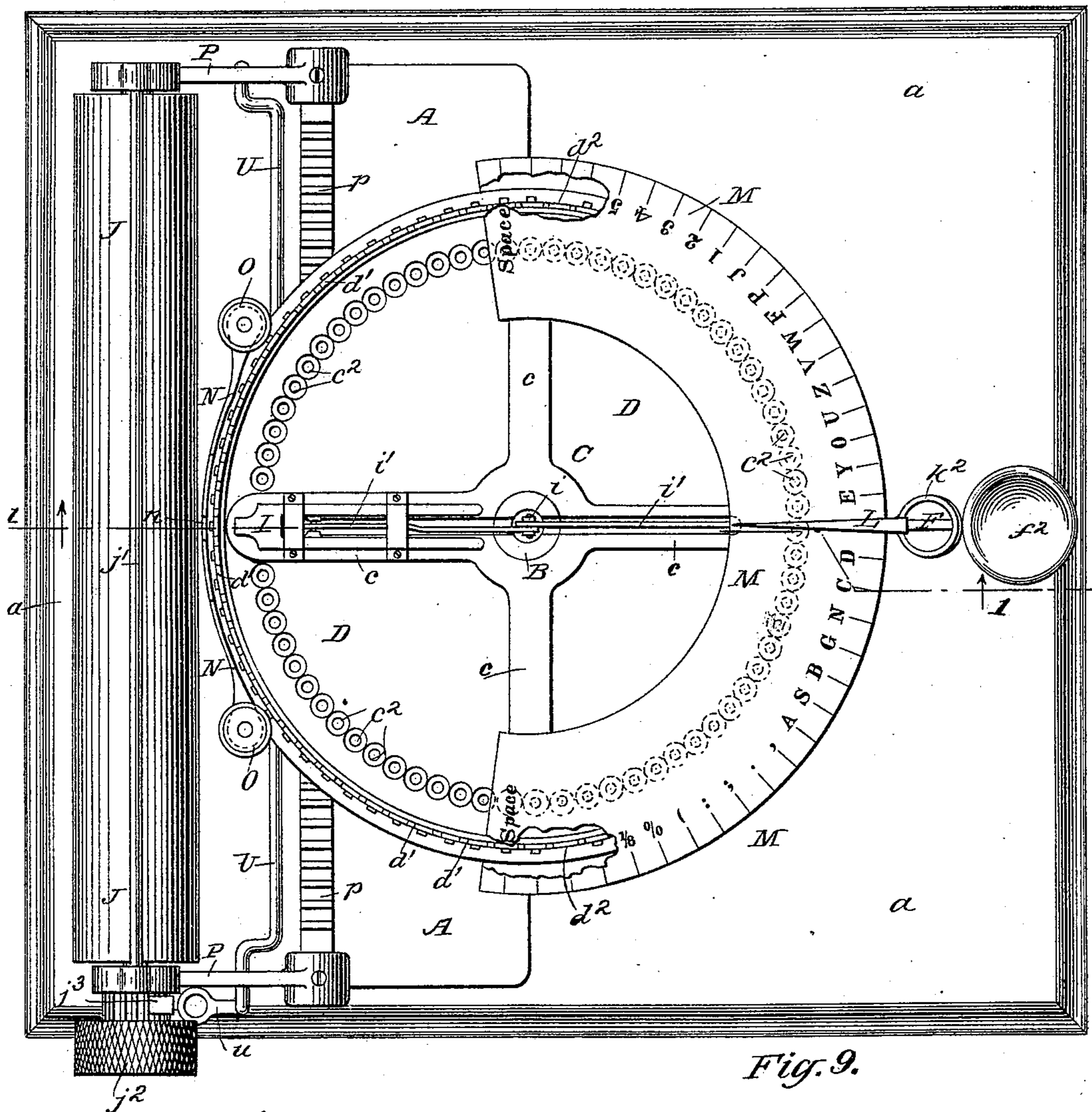


Fig. 9.

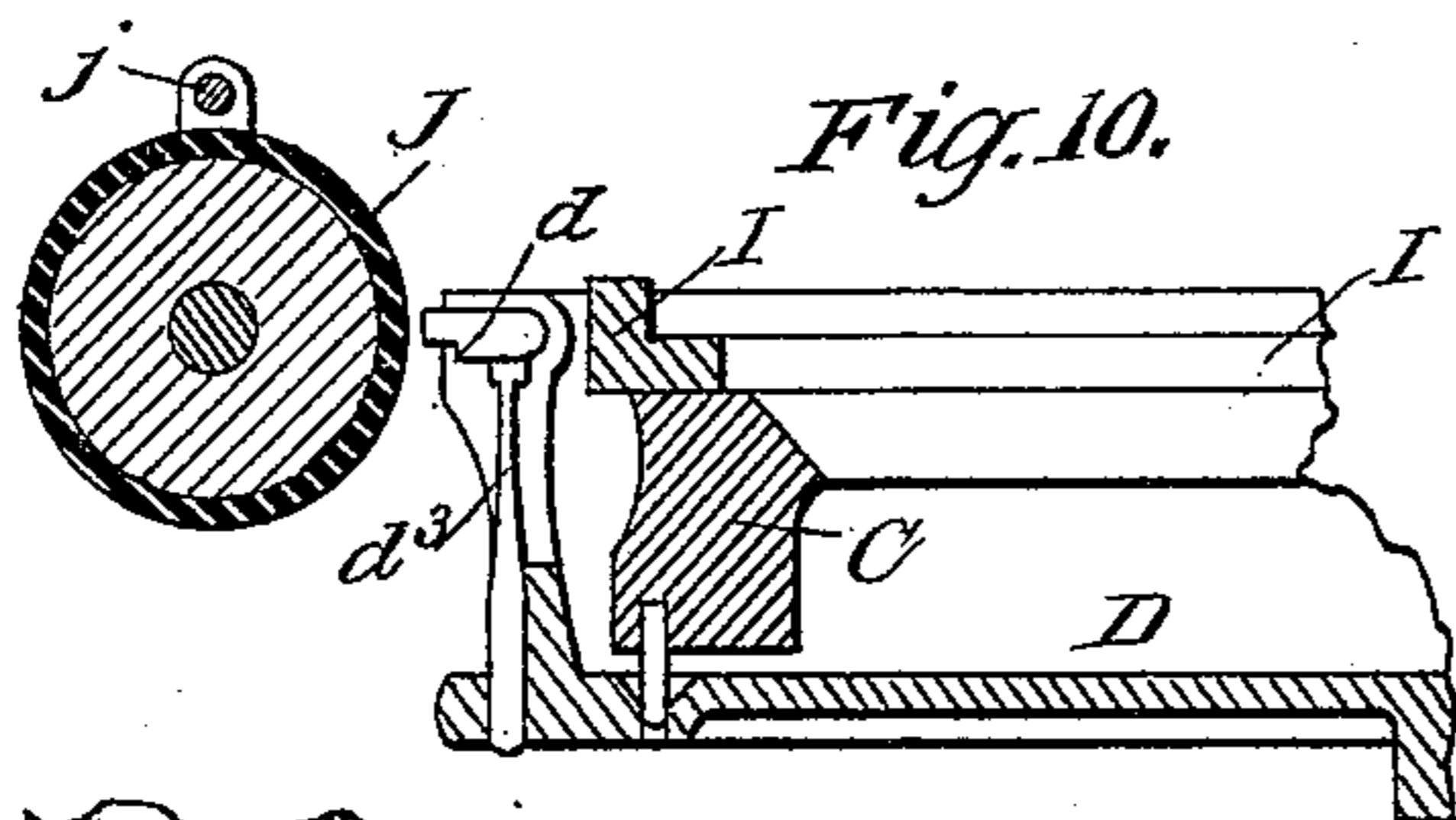


Fig. 10.

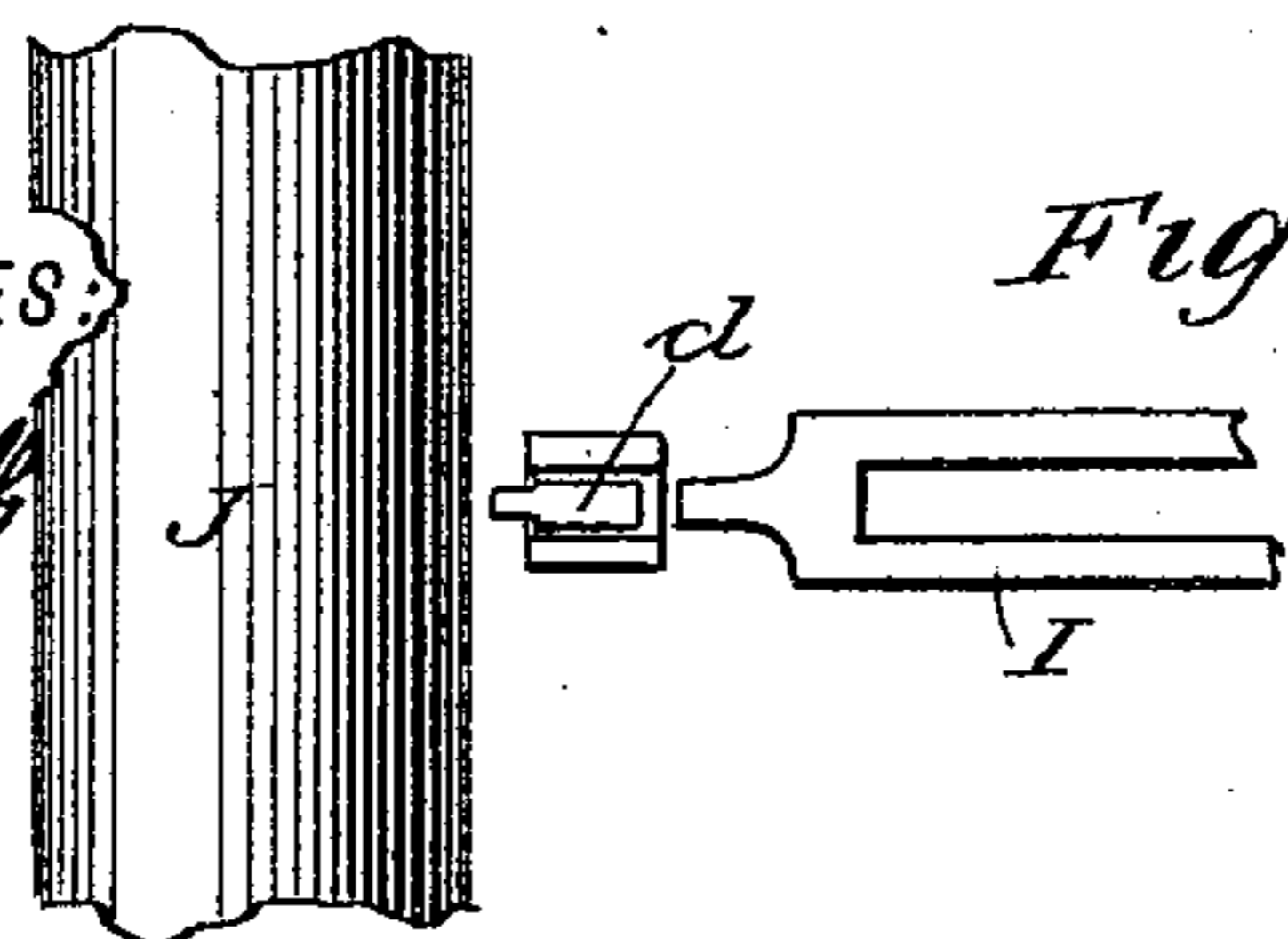


Fig. 11.

WITNESSES:
J. M. Baiswell
C. Bedgwick

INVENTOR:
E. F. Youngs
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWARD F. YOUNGS, OF WEST CAMP, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 438,971, dated October 21, 1890.

Application filed July 11, 1889. Serial No. 317,229. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. YOUNGS, of West Camp, in the county of Ulster and State of New York, have invented a new and Improved Type-Writer, of which the following is a full, clear, and exact description:

My invention has for its object to provide a simple, inexpensive, and efficient type-writing machine which may be manipulated by one hand of the operator and allow unobstructed view of the printed characters immediately they are made; to provide for quick detection of errors and allow verification of the work as it proceeds, and which will be rapid and comparatively noiseless in action and allow the use of upper and lower case and special type characters at will.

The invention consists in certain novel features of construction and combinations of parts of the type-writer, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my improved type-writer. Fig. 2 is a central vertical section of the machine, taken on the lines 1 1 in Figs. 1 and 9, and with the parts in normal position. Figs. 3 and 4 are respectively side and bottom plan views of the carriage-latch trip-lever. Fig. 5 is a central vertical sectional view of the machine when taking an impression. Fig. 6 is a detail plan view with parts in horizontal section on the line 2 2 in Fig. 2. Fig. 7 is a detail front view of the carriage-feed and latch mechanism. Fig. 8 is a vertical transverse section taken on the line 3 3 in Fig. 7. Fig. 9 is a plan view of the type-writer. Fig. 10 is a detail sectional side view showing a modified arrangement of the type characters, and Fig. 11 is a partial plan view thereof.

The type-writer is preferably supported by its metal bed-plate A upon any suitable base-plate a , which may be made of wood or other suitable material. The bed-plate has a central boss a' , to which is fixed a vertical round post B, which is tubular or hollow, and carries fixedly at its upper end a head C, which is preferably made with a hub, which fits the

post, and four radial arms. The type-wheel D is fitted loosely on the post B below the head C and rests on a loose collar e , which is sustained on a spring E, which is preferably of spiral form and is fitted around the post and upon a collar e' , which is fitted loosely on the post. This collar e' rests freely upon the forked inner end f of the type-wheel lever F, which is fulcrumed at f' to an arm G, which is also fitted loosely onto the post B above the bed-plate boss a' , and is thus free to turn horizontally around the post. A collar g is held to the post above the arm G, and preferably by a screw g' , which also holds to the inside of the post B a bushing h' , which serves as a guide to the stem h of a bent arm or yoke H, which actuates the paper-carriage-shifting mechanism. This bushing h' , which may be formed on or fixed to the post in any manner, also forms a resistance-piece against which a spiral spring h^2 , placed on the stem h , acts to force the yoke H downward after it has been lifted by operation of the type-wheel lever, as hereinafter more fully explained.

A pin e^2 is passed through the spring-supporting collar e' and through diametrically-opposite slots b in the post B, and also through a head h^3 , fixed to the stem h of the carriage-operating yoke H. The yoke-head h^3 is connected by a link i with a couple of toggle bars or levers $i' i'$, the outer end of one of which is connected to the post-head C, while the outer end of the other bar is pivoted to a plunger or slide I, which is fitted for radial movement in an arm c of the head, and is adapted to press the type d on the wheel D to a sheet of paper held on the impression-roll or platen J of the machine. The toggle-bars i' work through slots made in the post B and head C. The type may be produced on the upper edge and outer face of two strips d' of rubber or other elastic material, which are fixed in any suitable manner to a peripheral flange of the type-wheel, said strips being slit between the type characters to allow the slide I to press them flat and easily to the impression-roller or the paper thereon. One of these strips d' is shown in Fig. 1 at one side of the dotted line 1 1 and the other on the opposite side of said line. The ends of the two strips meet at points diametrically

opposite to the spaces d^2 d^2 , Fig. 1, and thus a continuous band or strip is formed. Capitals or upper-case type characters are produced on one of the two rubber type strips or plates, and small letters or lower-case characters are produced on the other of the two type strips, ordinary punctuation-mark type characters being produced on both the strips. Each type-strip at its center is devoid of a type character or has a "space" d^2 , which will not produce an imprint when the plunger-slide I is moved outward, thus allowing "spacing" of words or sentences by the operation of the type-wheel lever, as hereinafter explained.

Instead of using these rubber or flexible type-character strips, which are shown in Figs. 1, 2, 5, and 9 of the drawings, I may make each type character separately and upon a flexible bar or plate d^3 of metal, which yields forward by the pressure of the slide I to imprint the paper held on the impression-roll J, and as will be understood from Figs. 10 and 11 of the drawings. Two of these separate metal type characters will be omitted to assure spacing of the words as the type-wheel lever is depressed for this purpose.

The spring E has sufficient resistance to compression to cause it to raise the type-wheel D from the normal position shown in Fig. 2, when the lever F is depressed at its outer end and lifts the collar e' by its inner forked end. The rising type-wheel stops against the head C, which is provided with a pin c' , which enters a countersunk hole c^2 in the wheel, which is behind the type character brought to the printing-point, and as there is one of these holes c^2 in the type-wheel for every type character on the wheel it is obvious that whatever type be brought to the printing-point it will be accurately held immediately in front of the plunger-slide I, so that as the depression of the type-wheel lever F is continued after the type-wheel strikes the head C the spring E will be compressed, while the link and toggle bars $i i' i'$ carry the slide I forward against the raised type and press it to the paper on the roller J behind the wheel, this operation being shown in Fig. 5 of the drawings.

It will be remembered that the type-wheel D is loose on the post B, and the collar e is loose upon the pendent hub of the type-wheel, and that the upper end of the spring E is preferably fixed in the collar e and its lower end rests freely on the collar e' . Hence there is nothing to prevent the free turning of the type-wheel on the post B as an axis of motion and on the upper collar e , while the lower collar e' is held against turning by the pin e^2 , which passes through the slots b of the post, and as the type-lever fork f always bears against the under side or face of the collar e' the entire arm G and the attached lever F are free to swing around on the post B.

An elbow-lever K is fulcrumed at its angle to the outer upper part of the arm G, and its upper inner end k is pressed by a spring k' against the margin of the type-wheel D, so as

to enter one of two diametrically-opposite notches d^4 d^5 in the wheel, while the outer lower part of this lever is formed as a ring or plate finger-piece k^2 , which stands a little behind the finger-piece f^2 of the lever F. When the finger-piece k^2 of the lever K is depressed, this lever will be withdrawn from the type-wheel notch to allow the wheel to be turned half-way around, so that the lever K may be engaged with its other or opposite notch. The type characters are so arranged on the wheel that when the lever K is engaged with the wheel-notch d^4 the half-circle of lower-case characters will be presented to the impression-roller J, and when the lever K is engaged with the wheel-notch d^5 the half-circle of upper-case characters will face the roller. Whichever notch d^4 or d^5 the lever K is engaged with, it is obvious that by turning the arm G on the post by pressing the type-wheel lever F laterally to either side the type-wheel will be turned likewise to bring any desired type character to the printing-point. A pointer L, fixed to the upper end of the swinging arm G, works over or around an index-plate M, which is held to the head C on the shaft B, and is marked with the type characters, as shown in Fig. 9, and when the lever F and arm G are turned around to bring the pointer L over any desired type character on the plate M this character will be brought directly in front of the plunger-slide I, which when the lever F is depressed will carry the type against the paper on the impression-roller. The index-plate M also is marked twice with the word "space," and when the pointer is swung around over either of these words one of the blank places d^2 on the type-strips or a portion of the type-wheel not provided with a yielding metal type character will be brought opposite the slide I, which, when carried outward, will then not cause an imprint on the paper. It is manifest if the lever K be engaged with the type-wheel notch d^4 and the series of lower-case characters then face the impression-roller that any one of these characters or special characters at one side or half of the type-wheel face may be brought to the printing-point by moving the pointer L over the index-plate M to indicate said characters, and if a capital or other special character at the opposite side or half of the type-wheel face is required it may be most conveniently brought to the printing-point by first swinging the arm G around by turning the lever F either to the right or left hand until the pointer L is over one of the space marks on the index-plate M, and then depressing the lever F to lift the type-wheel D to the head C and lock it against turning by the engagement of the head-pin c' with a hole c^2 in the wheel. As a space d^2 of the type strip d' is now opposite the plunger L, no imprint would be made on the paper by the forward movement of the plunger caused by the aforesaid depression of the lever F to lock the type-wheel at $c'c^2$. This being done,

the lever K will be tripped from the type-wheel notch d^4 , and while the lever F is held depressed to maintain the locked position of the type-wheel the lever, together with the arm G and lever K, will be swung around until the lever K stands opposite the other notch d^5 of the type-wheel, whereupon the lever K will be released and will enter this notch, and the machine is now ready to print the capital or special characters. Lower or upper case characters may thus be brought as required to the printing-point by one hand only of the operator, and the index-plate need extend but half-way around the type-wheel, or a little more, and a range of movement of like extent only be required of the type-wheel lever, thus leaving the entire rear or farther part of the type-wheel uncovered and giving a clear view of the printing mechanism to the operator. It will also be noticed that immediately after each imprint and as the type-lever F is released and caused to resume its normal position by the spring E the type-wheel D descends by gravity and leaves the last printed or written characters clearly visible to the operator, who thus may verify the work as it proceeds. If desired, a plate-spring E' (shown in dotted lines in Fig. 2 of the drawings and held to the lever F or a lug thereon) may be used instead of the spiral spring E, above described.

To the upper but relatively stationary collar e , on which the lowered type-wheel D rests, is fixed an arm n' , which extends radially to the periphery of the wheel, where it carries a laterally-extending plate N, which at its central upwardly-extending part is provided with a notch or opening n , through which the type characters on the raised wheel D will be pushed to the paper by the slide I when the lever F is depressed. This plate N serves as a guard to prevent any other than the intended type character being carried to the paper, and serves also as a shield to prevent soiling by the type of the paper as it is passed up between the ordinary clamp or clip plate j , held next the impression-roller J, and under a cross bar or rod j' , which ranges along the upper side of the roller. I further utilize the plate N as a support or bearing for two inking-rollers O O, which may be supplied with ink in any preferred manner, and against which the faces of the type press to ink the type as the type-wheel D is turned by the levers F K.

The paper-carriage P is made with two L-shaped end pieces, which at their upper ends sustain the impression-roller J and the paper clip and rod $j j'$, and at their lower parts the carriage end pieces are fixed to two parallel rods $p p'$. The rod p' slides in a long bearing a^3 on the bed-plate A, and the rod p slides in a shorter bearing a^4 , and is provided at its upper face with teeth forming a rack in which a pawl R operates to shift the carriage, as presently explained. These parallel rods $p p'$ and their bearings allow lateral movement of

the carriage for spacing the printed letters and words, but prevent backward movement of the impression-roller, which thus is sustained against impact of the type on the paper.

The carriage-shifting pawl R, which engages the rack p , is provided with a laterally-extending arm r , which at its upper end carries fixedly a forwardly-projecting pin r' , which enters a slot h^4 in the upper end or head of the rear part h^5 of the yoke H, which is raised by the type-wheel lever F, as hereinbefore described. This pin r' also pivots to the pawl-arm r the central part of a lever S, which ranges laterally, and at one end is fulcrumed at s' to lugs on the bearing a^4 , and at its other end carries a pawl s , which is free to swing downward, but resists upward pressure, and is adapted to be held by a spring s^2 against an upper lip or shoulder of the lever. A latch-pawl T, which is fulcrumed at t^2 to lugs on the bearing a^4 and ranges at about right angles to the rack p and lever S, is provided with a laterally-projecting lip t , which is beveled underneath and normally overlies the free end of the pawl s of the lever S, and the opposite or rear end t' of the latch T is normally held by a spring t^3 into engagement with the carriage-rack p . A cranked rod U, which extends laterally across between the end pieces of the carriage, always underlies the rear ends of the pawl R and latch T, both of which may at any time be simultaneously disengaged from the rack p by depressing the finger-piece u of the rod U to allow the carriage to be freely shifted to the right or left by hand for quickly setting the carriage and paper thereon in any required relation to the point of impression of the type. With this construction it is obvious that during the depression of the type-wheel lever F to cause the imprint on the paper, as above described, the yoke H will be lifted against the tension of the spring h^2 , and the lower wall of the yoke-slot h^4 will by action on the pin r' of pawl R move this pawl to the right the distance of one tooth of the carriage-rack p , and the lever S will at the same time be lifted to swing its yielding pawl s above the latch T, and after the impression of the type is made by the slide I and pressure on the lever F is relaxed the spring h^2 will in expanding carry the slide I back from the type and will simultaneously lower the yoke H. During the first part of the downward motion of the yoke its slot h^4 allows full retraction of the slide I and withdrawal of the type from the paper to prevent blurring of the last imprint before the top wall of the slot h^4 strikes the pawl-pin r' , and when this contact takes place the first effect will be to lower the lever S to cause its pawl s to lift the latch T from the carriage-rack p , and immediately thereafter the pawl R will be depressed to cause it to feed the rack-bar p , and consequently the entire paper-carriage, one space to the left, ready for the next imprint of the type on

the paper. The lever S, being longer than the pawl-arm r , causes the lever to trip the latch T from the rack p in ample time to allow the pawl-arm to feed the carriage one space, and as the lever-pawl s trips the latch T it passes below the pawl-lip t to normal position. At the completion of one line of printing the hand-wheel j^2 of the impression-roller J will be turned to rotate the roll to carry the paper forward, and the roll will be locked again by the usual pawl j^3 engaging a ratchet on the roll-shaft, and by depressing the finger-plate u to raise the cranked center part of the rod U the pawl R and latch T will be disengaged from the carriage-rack p to allow quick setting of the carriage and paper by hand, as hereinbefore explained. During the first part of the next depression of the lever F the pawl s of the lever S will again be lifted above the latch T as the springs s^2 yields, and the latch T will remain engaged with the carriage-rack p , to be disengaged therefrom the next time the lever S is depressed by the yoke. It will be seen that the prompt withdrawal of the impression-slide I from the type and consequent withdrawal of the type from the paper before the pawl R is actuated to shift the carriage absolutely prevents blurring of the imprints, and that the latch T securely locks the carriage against movement while the imprint is being made. Hence a clear sharp impression is always obtained, and after the imprint is made the type-wheel falls, to fully expose the last-printed character to the operator.

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

1. The combination, with the impression-roller or platen, of a stationary vertical post, a horizontal rotary type-wheel movable vertically on said post, the wheel normally resting with the type below the printing-point, a type-operating mechanism within the periphery of the type-wheel, and a lever connected with said type-wheel for throwing it vertically into position and simultaneously actuating the type-operating mechanism, substantially as set forth.

2. The combination, with the impression roller or platen, of a vertical post, a type-plunger on the upper end or head thereof, a horizontal rotary type-wheel provided with peripheral teeth and movable vertically on said post to bring the type between the plunger and roller or platen, and a lever for elevating the type-wheel and simultaneously actuating the said plunger, substantially as set forth.

3. In a type-writer, the combination, with a post and a fixed head thereon provided with a guide-pin, of a rotatory type-wheel fitted loosely on the post for movement bodily at an angle with the plane of movement of the parts making the impression, and provided with series of holes opposite to the type and to which the guide-pin of the post-head is adapted, a plunger on the post-head, a slide

in the post, connections, substantially as described, between the plunger and slide, an arm on the post, and a lever fulcrumed to said arm, adapted to lift the type-wheel bodily and then cause projection of the type to the printing-point by the plunger, substantially as herein set forth.

4. In a type-writer, the combination, with the post B, having a head C provided with a plunger I, of a wheel D, carrying flexible peripheral type, an arm G and collar e' on the post, a slide h^3 in the post, a pin e^2 , connecting the parts e' h^3 , a lever F, fulcrumed to the arm G and bearing on the collar e' , a spring interposed between said collar and the type-wheel, and link and toggle connections between the slide h^3 and the plunger I, substantially as herein set forth.

5. In a type-writer, the combination, with a post or support, a head thereon provided with a type-index plate, and a wheel loose on the post having peripheral type of two classes at opposite sides or parts and provided also with two opposite notches or detents, of an arm pivoted to the post, a lever fulcrumed to said arm and adapted to the type-wheel notches or detents, and a pointer held to the arm and ranging along the index-plate, substantially as described, whereby both classes of type characters may be selected and brought to the printing-point by engaging the lever alternately with the two opposite type-wheel notches, and the one index-plate will serve for either of the two classes of type characters, as herein set forth.

6. In a type-writer, the combination, with the post B, having a head C provided with a plunger I, of a wheel D, carrying flexible peripheral type, an arm G and collar e' on the post, a slide h^3 in the post, a pin e^2 , connecting the parts e' h^3 , a lever F, fulcrumed to the arm G and bearing on the collar e' , a spring interposed between the collar and the type-wheel, a lever K, fulcrumed to the arm G and engaging one of two opposite notches or detents on the type-wheel, and link and toggle connections between the slide h^3 and plunger I, substantially as herein set forth.

7. In a type-writer, the combination, with a post B, having a head C provided with a plunger I, of a wheel D, carrying flexible peripheral type of two classes, an arm G and collar e' on the post, a spring interposed between the collar and the type-wheel, a slide h^3 in the post, link and toggle connections between the parts h^3 I, a lever F on the arm G, and bearing on the collar e' , a lever K on the arm G and engaging one of two opposite notches or detents on the type-wheel, an index-plate M on the post-head, and a pointer L on the arm G, ranging along the plate M, substantially as herein set forth.

8. In a type-writer, the combination, with a post or support and a rotary type-wheel movable vertically thereon, of a guard-plate sustained between the type-wheel face and the impression-roll or platen movable vertically

with the type-wheel, and provided with a notch through which the type characters pass to make the imprint, said plate provided also with an inking roller or rollers with which the type-faces come in contact as the wheel is rotated to bring the proper character to the printing-point, substantially as herein set forth.

9. In a type-writer, the combination, with the post B, having a head C provided with a plunger I, a collar e' , a spring E, a collar e , and the type-wheel D loose on the post above the collar e and provided with flexible peripheral type, of a plate N, sustained from the collar e and provided with a central notch n , allowing projection of the type by the plunger, and type-inking rollers O, sustained by the plate N, substantially as herein set forth.

10. In a type-writer, the combination, with a post or guide, a paper-carriage, and an impression-roll or platen on the carriage, of a rotary type-wheel movable bodily to the printing-point at an angle with the plane of movement of the parts making the impression, a slide in the post, and provided with a stem forming part of a yoke extending beyond the post, said yoke provided at its outer part with a vertical slot, means, substantially as described, connecting the post, slide, and plunger, an arm pivoted to the post, a lever fulcrumed to said arm and adapted to carry the type-wheel and its flexible peripheral type to the printing-point, a pawl having a pin entering the vertical slot of the yoke and engaging the rack of the paper-carriage, and a spring normally retracting the yoke, substantially as described, whereby as the type-wheel is first lifted by its operating-lever it will be carried to the post head or stop and the type will then be projected for imprint, and as the yoke is retracted the plunger will be withdrawn and the type-wheel then lowered and the paper-carriage then fed laterally to space the imprints, as herein set forth.

11. In a type-writer, the combination, with a post or support, a type-wheel thereon, a type-wheel lever, and a yoke connected to said lever to be lifted thereby as the type-wheel is operated, and provided with a slot h^4 and a retracting-spring, of a paper-carriage having a platen and rack, a lever fulcrumed near the rack, and a pawl R, engaging the rack and fulcrumed to said lever by a pin r' entering the yoke-slot h^4 , substantially as herein set forth.

12. In a type-writer, the combination, with the post B, having a head C provided with a

plunger I, a type-wheel D, having flexible peripheral type and placed loosely on the post, a yoke H, having a stem h , and slide-head h^3 , and a vertical slot h^4 , a spring h^2 , normally retracting or depressing the yoke, link and toggle connections between the yoke-head h^3 and the plunger I, a collar e' on the post B, a pin e^2 , connecting the parts e' h^3 , a spring interposed between the collar e' and the type-wheel, an arm G, pivoted to the post, a lever F on the arm and bearing on the collar e' , a paper-carriage having an impression-roller or platen and a rack, a lever S, fulcrumed near the rack, and a pawl R, engaging said rack and fulcrumed to the lever S by a pin r' entering the slot h^4 of the yoke H, all arranged for operation substantially as herein set forth.

13. In a type-writer, the combination, with a post or support, a type-wheel thereon, a type-wheel lever, and a yoke lifted by said lever as the type-wheel is operated, and provided with a slot h^4 and a retracting-spring, of a paper-carriage having a platen and rack, a lever S, fulcrumed near the rack and provided with a yielding latch s , a pawl R, engaging the rack and fulcrumed to the lever S by a pin r' entering the yoke-slot h^4 , and a latch normally engaging the rack and disengaged therefrom by the lever-latch s , substantially as herein set forth.

14. In a type-writer, the combination, with a post or support, a type-wheel thereon, a type-wheel lever, and a yoke lifted by said lever as the type-wheel is operated, and provided with a slot h^4 and a retracting-spring, of a paper-carriage having a platen and rack, a lever fulcrumed near the rack, a pawl R, engaging the rack and fulcrumed to said lever by a pin r' entering the yoke-slot h^4 , and a cranked rod U, adapted to lift the pawl from the rack, substantially as herein set forth.

15. In a type-writer, the combination, with a post or support, a type-wheel thereon, a type-wheel lever, and a yoke lifted by said lever as the type-wheel is operated, and provided with a slot h^4 and a retracting-spring, of a paper-carriage having a platen and rack, a lever S, having a latch s , a pawl R, engaging the rack and fulcrumed to the lever S by a pin r' entering the yoke-slot h^4 , a latch T, normally engaging the rack, and a cranked rod U, disengaging the pawl R and latch T from the rack, substantially as herein set forth.

EDWARD F. YOUNGS.

Witnesses:

GEORGE W. BATES,
ELDOM F. HAINES.