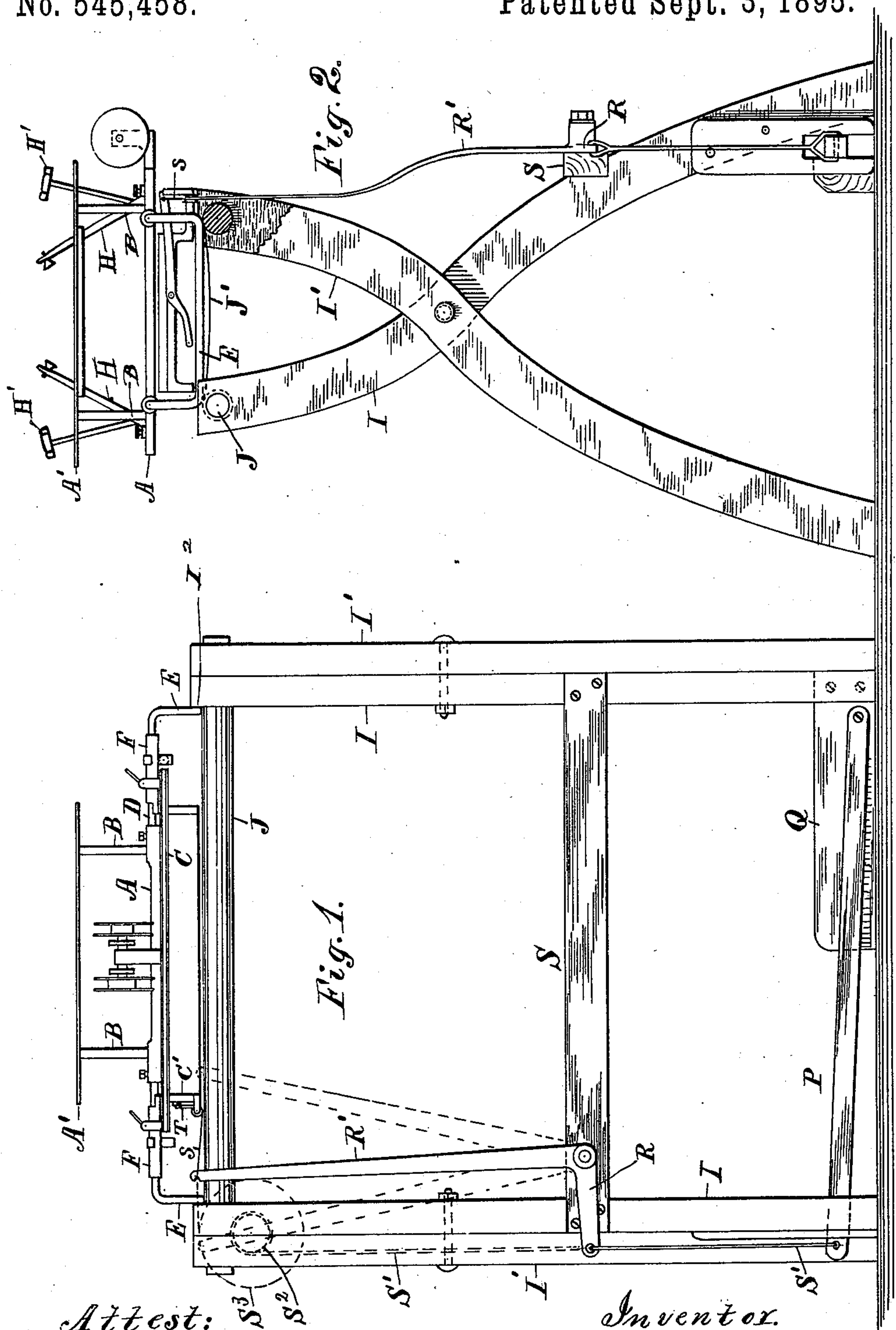


J. M. CRARY.
TYPE WRITING MACHINE.

No. 545,458.

Patented Sept. 3, 1895.



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L. Lee.
Chas. Kinney

Inventor.
Joseph M. Crary, per
Thomas S. Crane, Atty.

(No Model.)

5 Sheets—Sheet 2.

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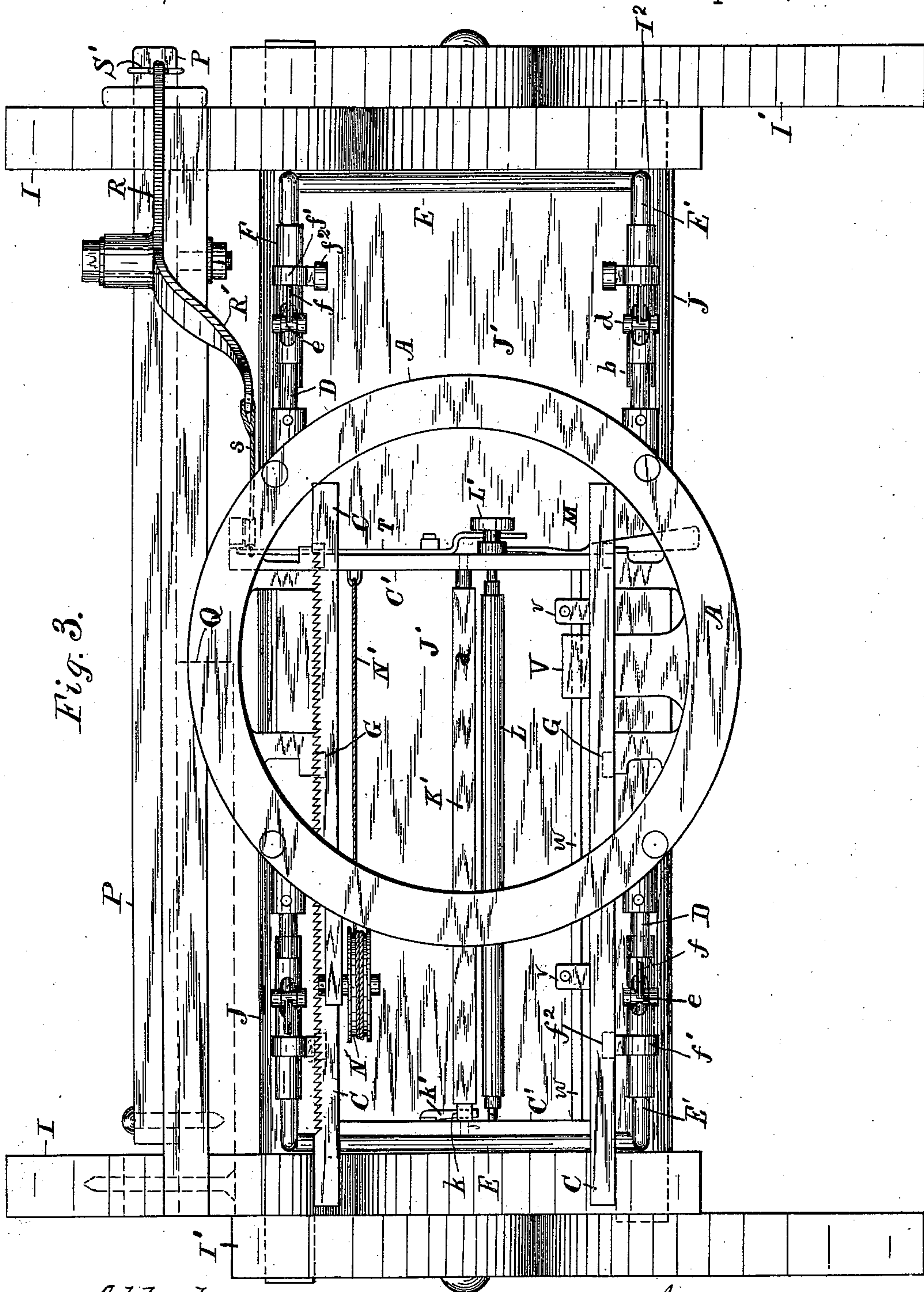


Fig. 3.

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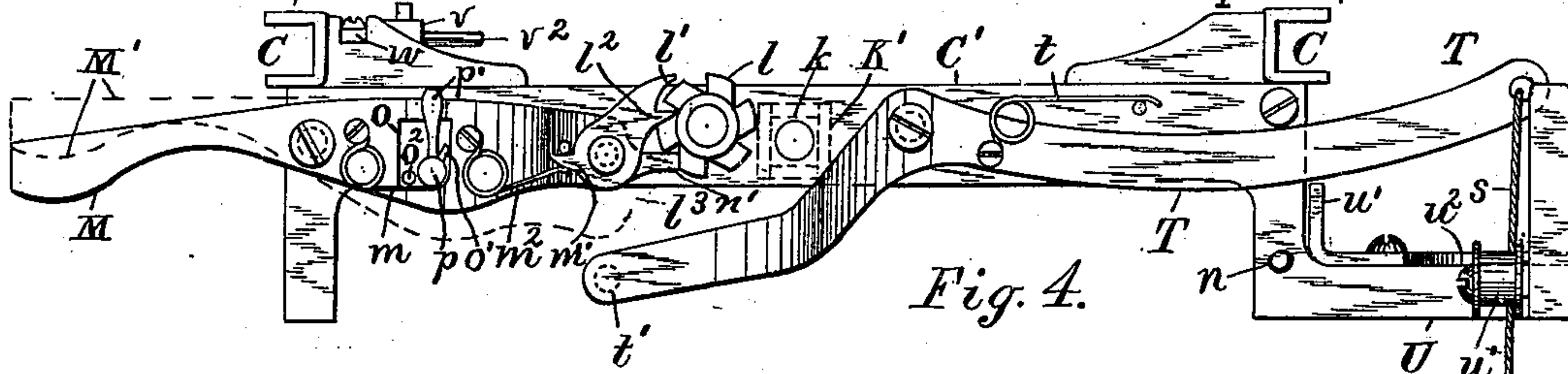


Fig. 4.

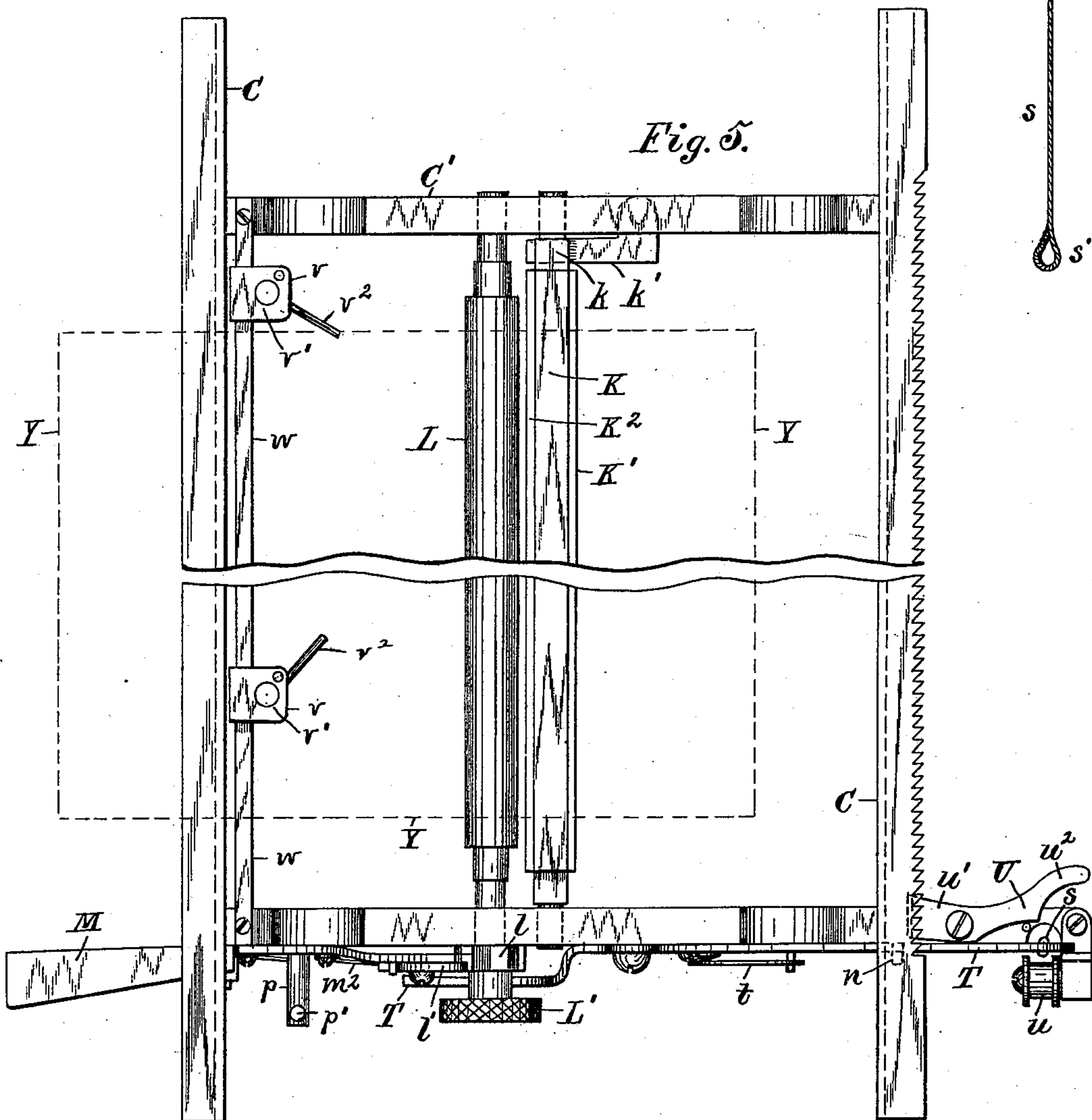


Fig. 5.

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Fig. 6.

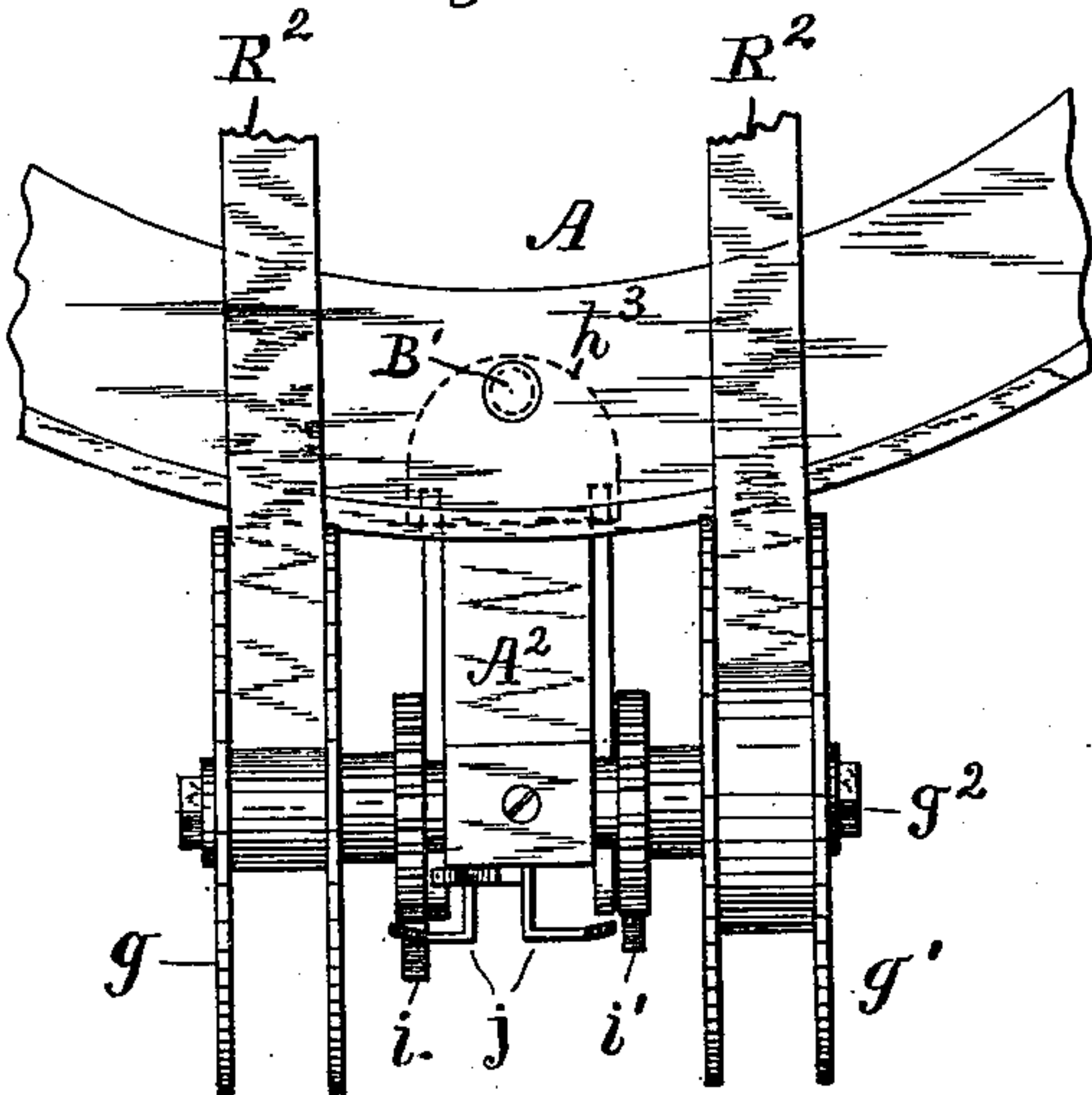


Fig. 8.

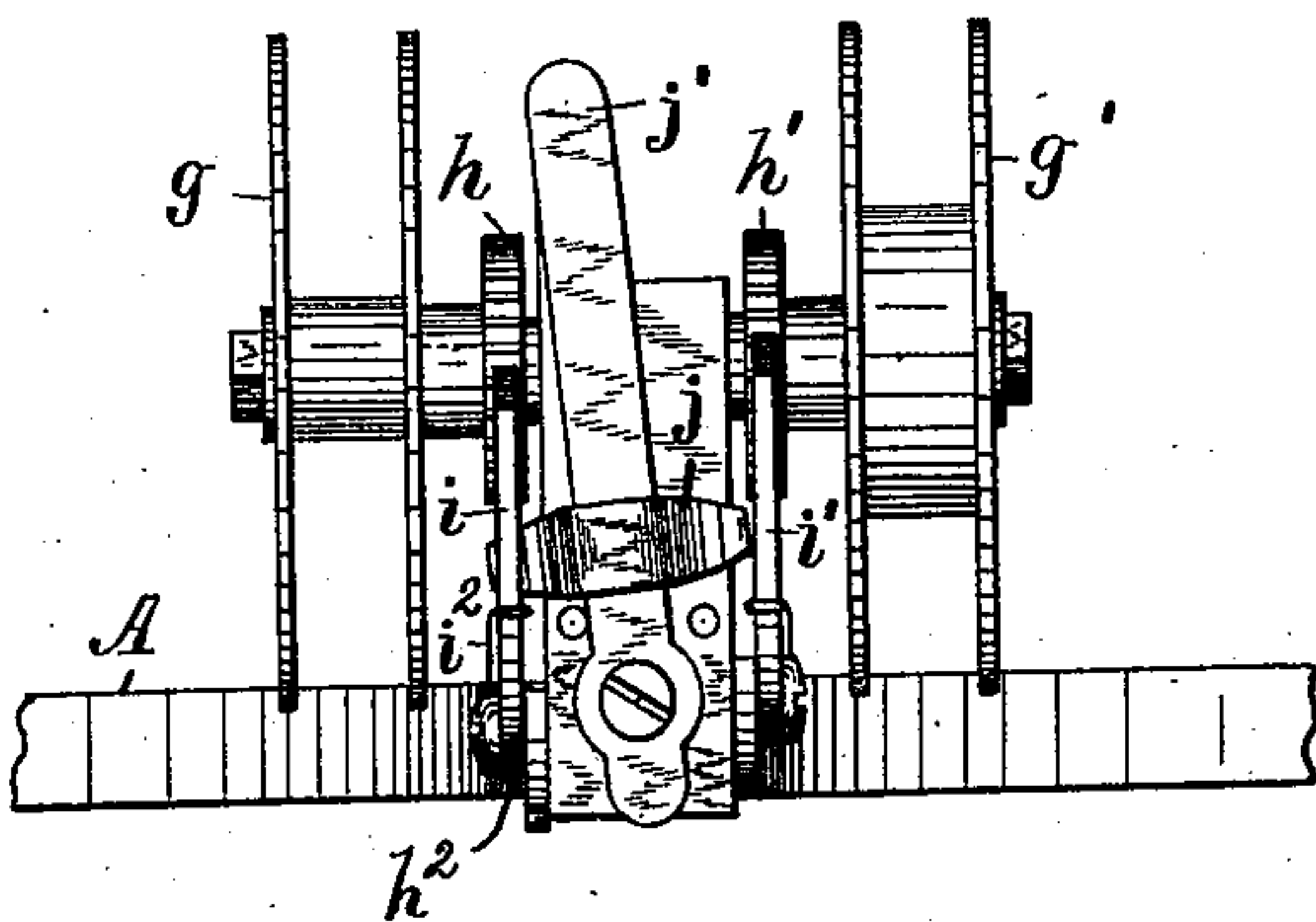
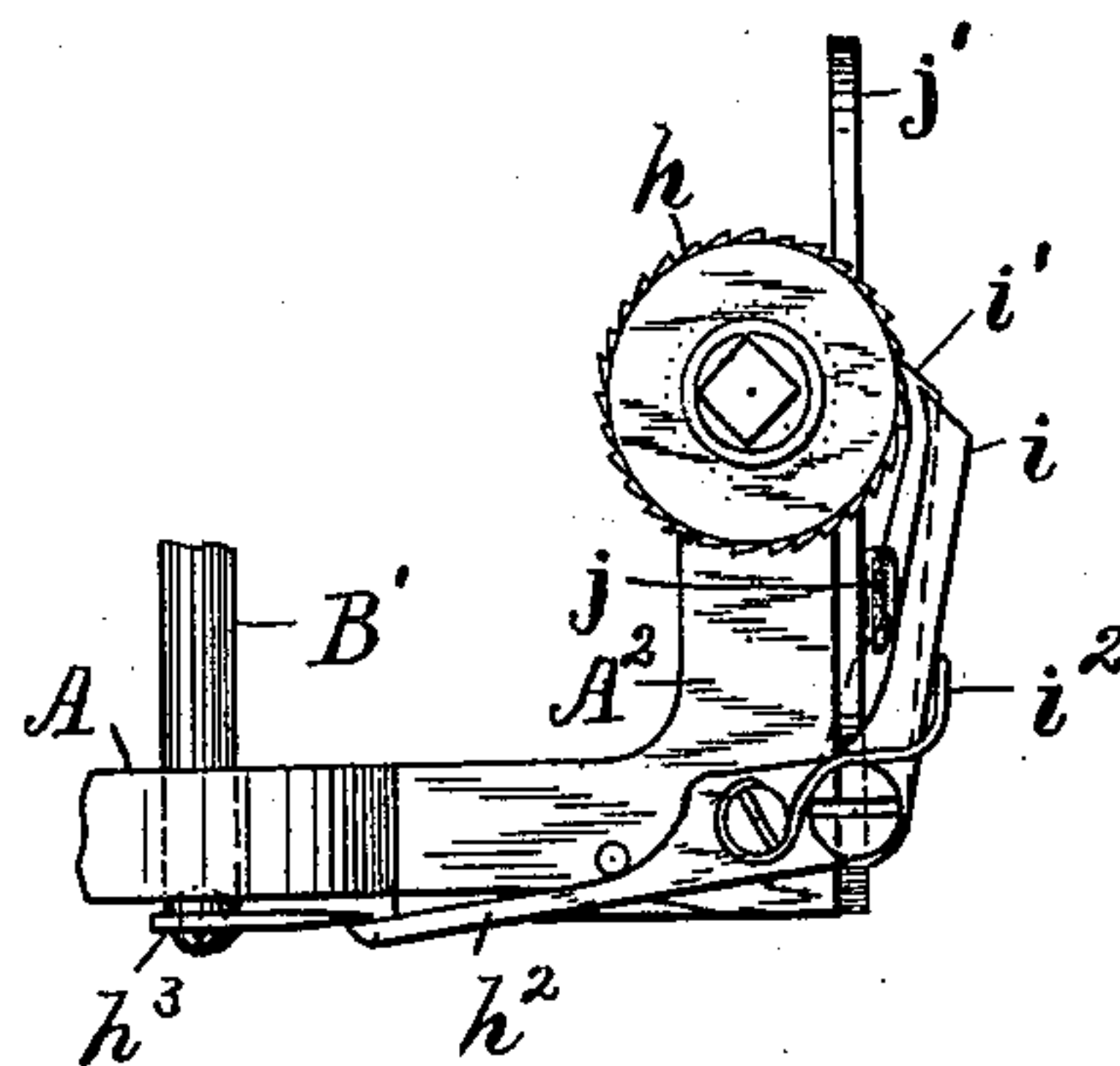


Fig. 7.



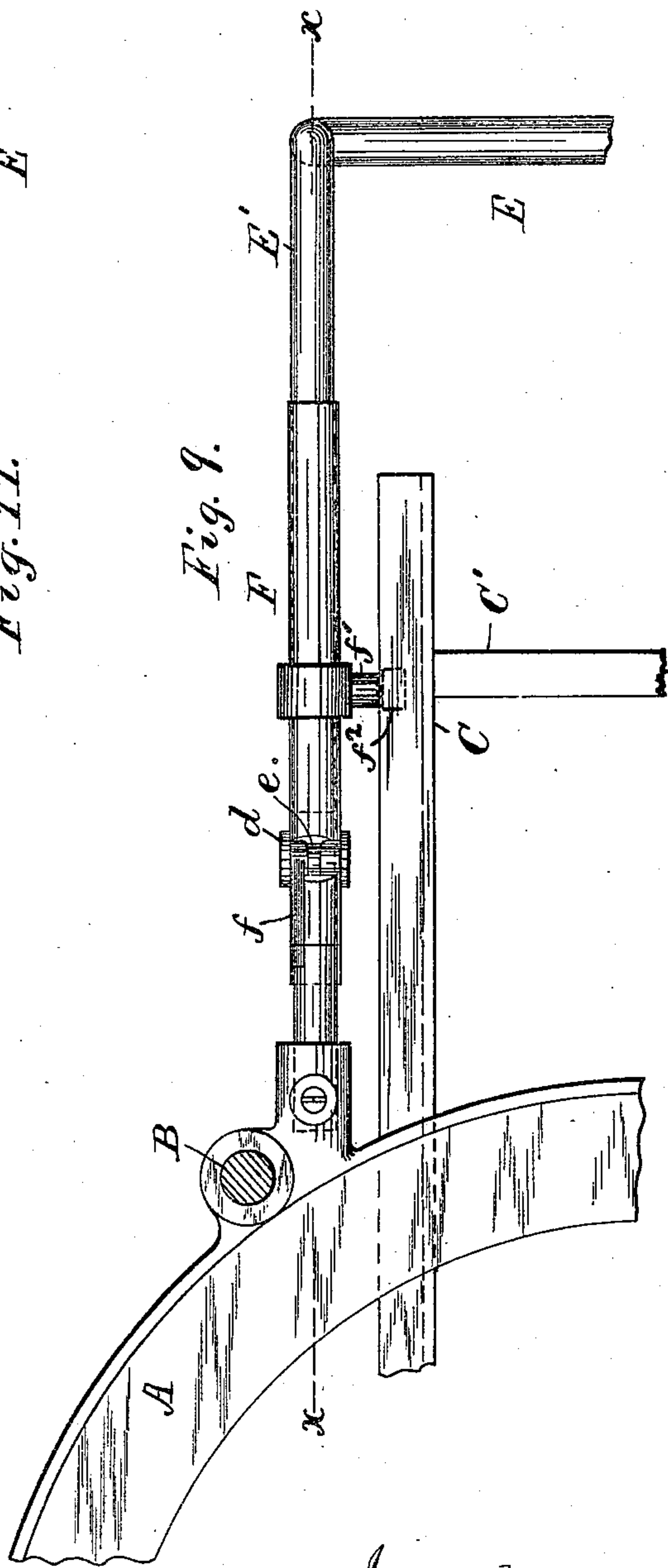
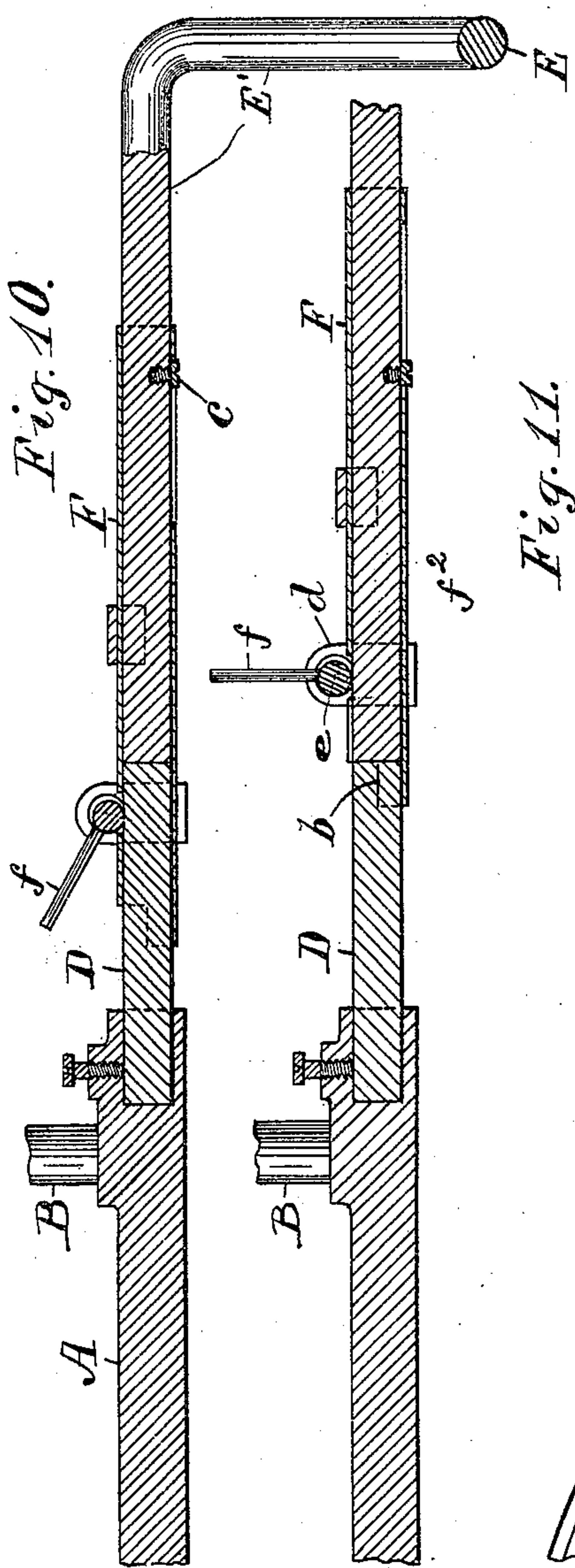
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UNITED STATES PATENT OFFICE

JOSEPH M. CRARY, OF JERSEY CITY, NEW JERSEY.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 545,458, dated September 3, 1895.

Application filed March 16, 1894. Serial No. 503,827. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. CRARY, a citizen of the United States, residing at Jersey City, Hudson county, New Jersey, have invented certain new and useful Improvements in Type-Writers with Foot-Lever Attachments, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates partly to a means of actuating the line-feed or reversing the carriage movement by means of a treadle, partly to an improved construction for the feed-pawl and its operative lever, partly to the construction of the platen, and partly to other details of construction hereinafter set forth.

My present improvements differ from others for effecting the same object in various respects, as hereinafter pointed out and claimed.

In the annexed drawings, Figure 1 is a side elevation of a type-writer mounted upon a folding stand. Fig. 2 is an elevation, and Fig. 3 is a plan, of the same. One of the stand-legs is broken away in Fig. 2. Fig. 4 is an end view of the carriage. Fig. 5 is a plan of the same, broken across the middle for want of space upon the drawing. Fig. 6 is a plan, Fig. 7 is a side view, and Fig. 8 is a rear view, of the ribbon-feeding mechanism. Fig. 9 is a plan, and Fig. 10 a side view, of the detachable foot-pieces for the type mechanism, with a portion of the bed for the same. Fig. 11 shows the same parts in a different position. Fig. 3 is twice the scale of Figs. 1 and 2, and the remaining figures are drawn full size or twice as large as Fig. 3.

The frame of the type mechanism consists of a bed-ring A and upper ring A', connected by posts B, as in my Patent No. 477,404, and the bed is provided with foot-pieces E, which rest removably upon the stand formed of jointed legs I I'.

The machine is illustrated with only the frame of the type mechanism and the carriage for moving the paper, as the improvements relate only to such parts, and the other parts are already well known and shown and described in the said patent. The jointed legs are united at the top by bars J, having canvas J' stretched between the same.

The bed-ring A is provided with parallel

studs D, projected from opposite sides, and the foot-pieces E are provided with rods E', corresponding to such studs, and with movable sleeves F, forming a socket-coupling for the same.

The jointed legs I are projected above the bars J, which support the foot-pieces, to form stops adjacent to the foot-pieces and thereby prevent any end movement of the type-writing machine, under the pull of the treadle connection, in reversing the carriage. Each of the foot-pieces E E' is made in one piece, the bar E extending across both the bars J, with its ends E' bent upwardly and then laterally to fit the sleeves F. The ends of the legs I, which form the stops, are lettered I² in Figs. 3 and 1.

The paper-holding carriage is formed at the edges of sheet-metal channel-bars C, connected at the ends by tie-bars C', the channel-bars being fitted to move longitudinally upon rolls G, which are pivoted upon the bed A. Such channel-bars are integral and form a very light construction, while they are very stiff, owing to their form, and are much cheaper than the solid bars provided with loose gibs, as heretofore, and as shown in my prior Patent No. 477,404, dated June 21, 1892.

The bed A in this class of type-writer carries the fulcrum of the type-bars H, one of which is shown in Fig. 2, which, when pressed by the button H', strikes downward at the center of the bed-ring A, indicated by the letter a in Fig. 3.

The carriage is provided with a rectangular bar-platen K K' K², which is journaled in the carriage-bars C' and extended across the center of the bed-ring A, to receive the impact of all the types. The two opposite sides K² K' are coated, respectively, with hard and soft india-rubber, and two edges K of the bar are exposed. The bar is made of greater width than thickness, so that the faces K, K', and K² are equidistant from the center of rotation. This feature of the construction is shown in Fig. 4, where the bar is shown of oblong cross-section, reduced to square form at the end to furnish four similar seats k to engage a spring k', which operates to hold the platen adjustably with any of its four faces upward to receive the impact of the types. The naked

metallic surface is used to support the paper when it is desired to manifold heavily and the hard and soft rubber faces K^2 and K' are used in manifolding to a lesser degree. The hard rubber is used where the character of the impressions and quality of the paper require such a support. The platen is turned by grasping it with the fingers, the spring k' yielding during the rotation of the platen.

The paper-feeding roll L is shown adjacent to the platen and provided at the outer end with head L' to turn the same.

A ratchet-wheel l is provided near the bar C' , and a hand-lever M is pivoted upon the bar and provided with a pawl which is held normally out of engagement with the ratchet-wheel by a spring m depressing the lower end. The ratchet-wheel is provided with six teeth, and the pawl is so constructed as to turn the wheel one-third of a rotation to produce a coarse-line feed with a feed-roll of very small diameter, as is shown in the drawings, and also, when desired, to reduce such line-feed one-half. To thus rotate the ratchet-wheel the pawl is formed with two teeth l' and l^2 and with a toe m' , which is pressed against a pin upon the hand-lever by a spring m^2 to hold the pawl-teeth into engagement with the wheel l . The hand-lever moves the pawl sufficiently to engage such teeth successively with the ratchet-wheel and thus turn it one hundred and twenty degrees.

The ratchet-wheel is prevented from over-feeding by a tooth n' , fixed upon the hand-lever and adapted to enter the space between the ratchet-teeth at the close of each feed, as shown in Fig. 4. The hand-lever is formed of flat sheet metal with a slot o cut through the same to admit a feed-regulator, consisting in a rotary stud p , having a pin o' projected from one side, and provided with a handle p' . A stop-pin o^2 is provided at the side of the stud and when the handle is turned upward, as shown in Fig. 4, the pin intercepts the upper side of the slot o and reduces the movement of the hand-lever just one-half. When the handle is turned to the left, with the pin o' against the stop, the hand-lever is moved by spring m to the position indicated by the dotted lines M' , and the pawl is then held from contact with the ratchet-teeth, as indicated by the dotted lines l^3 in Fig. 4, thus permitting the operator to turn the feed-roll backward, if desired, by means of the head L' .

In Fig. 3 the head A is shown provided with a spring-drum N and cord N' to shift the carriage step by step automatically in the usual manner when the type are depressed.

The treadle is shown in Figs. 1 to 3, and its connections to the carriage are adapted to simultaneously operate the pawl and thus actuate the line-feed automatically each time the carriage is reversed. The treadle P is shown pivoted to a guard-block Q , secured to one of the stand-legs, and its opposite end connected by cord S' with the short arm R of a bell-crank, pivoted upon a bar S between

the legs. The bell-crank is shown with a long arm R' extended to the top of the stand, where it may be connected with the carriage by a link or by a flexible cord s , as shown in Figs. 1 and 3.

To actuate the line-feed when the carriage is reversed an auxiliary lever T is shown pivoted upon the bar C' in Figs. 4 and 5 and its outer end extended into line with the cord s , a spring t serving to hold such end elevated.

The carriage is shown with an extension-piece U projected outward and provided with a pulley u beneath the end of the lever, the cord s hanging behind the pulley in Fig. 4, with an eye s' upon its lower end. Such eye is adapted to slip over the end of the bell-crank arm R' when it is desired to use the treadle, the spring in the drum N being made of sufficient strength to shift the carriage and simultaneously raise the treadle. The auxiliary lever T is adapted by a lateral stud t' to engage the under end of the pawl, and a pull upon the cord s thus operates, first, by depressing the outer end of the lever T , to press the pawl upward and actuate the ratchet-wheel l , the stop n then preventing any further movement of the lever T , and a continued pull upon the cord then shifts the carriage in the desired manner. A depression of the treadle thus operates to feed the paper and reverse the carriage and requires but a slight movement of the foot, owing to the disparity between the arms of the bell-crank.

A stop for checking the movement of the auxiliary lever is shown in an arm u' , pivoted upon the extension U , and provided with a handle u^2 to shift the same beneath the lever T , as shown in Fig. 4. The handle u^2 and stop are shown in a reverse position in Fig. 5. When in such position, the stop holds the lever from movement and the treadle effects the reversal of the carriage only. To limit the movement of the carriage when actuated by the treadle, an abutment V is formed upon the bed A , Fig. 3, and dogs v (shown in Figs. 3 and 5) are fitted to a square bar w , attached to the carriage under such abutment. The dogs are provided with eccentric-cams v' , adapted to pinch the bar and clamp the dog firmly in position. The cams have handles v^2 , the one at the right being turned to release the dog and the one at the left with its cam pinched upon the bar.

The paper Y is indicated by dotted lines passing over the feed-roll L and platen K in Fig. 5, and in practice would be pressed upon the top of the feed-roll by suitable presser-rolls, as shown in my aforesaid Patent No. 477,404.

The foot-pieces E are made of the peculiar shape shown herein to extend across the top of the folding stand and rest upon both of the bars J , and are made detachable from the bed-ring A to facilitate the packing and transportation of the parts. The means for the application of the foot-pieces to the machine and means for locking them thereon are con-

5 constructed as follows: The sleeve F is formed with a notch *b* upon its outer end to assist in centering the rods upon the studs when first applying the feet thereto, as shown in Fig. 11.

10 Screw-pins *c* are fitted through slots in the sleeves to limit the movement, and a yoke *d* is fitted around the outer end of each sleeve to carry an eccentric-cam *e*. The cams are provided with handles *f*, which when turned down,

15 as shown in Fig. 10, press the cam upon the stud D and thus lock the foot-piece to the stud. By turning the handle up, as shown in Fig. 11, the cam is withdrawn from the stud and the foot-piece may be withdrawn. The sleeves F

20 carry brackets *f'*, provided with rolls *f''*, adapted, like the rolls G, to fit the channel-bars C and guide the carriage when it is near the opposite ends of its stroke. By means of the eye

25 *s'* upon the cord *s* (shown in Fig. 4) the cord furnishes a detachable connection with the treadle, the cord also serving as a flexible connection to draw the lever T downward before shifting the carriage. Where the treadle

30 is intended to reverse the carriage only, the arm R' may be connected directly to the carriage by a detachable link or any other suitable connection. By making such connection detachable the carriage can be shifted by

35 hand to write titles, headings, and other kinds of work which are usually performed without using a line-stop. The dogs *v* are intended to form stops at the opposite ends of the line and thus regulate the movement of the carriage when shifted by the treadle in writing

40 lines of uniform length. By securing the dogs *v* and the sleeves F by cams instead of set-screws, as shown in Figs. 3 and 4 herein, such parts may be released and fastened by a single rapid motion of the fingers. The guard-

45 block Q prevents the operator from pressing the treadle accidentally when it is not required for use in reversing the carriage, and it is extended along the treadle about one-half its length for such purpose, as shown in

50 Fig. 1, which exhibits the rear side of the machine. The operator would sit upon the opposite side of the machine and the guard-block would be projected upward beyond the path or stroke of the treadle in its extreme upward movement. As the guard-block would thus cover a portion of the treadle, it is adapted to support the operator's foot when not using the treadle.

55 The folding stand shown herein is, with the constructive features of the type-writer, especially adapted to render the whole apparatus portable, and I have therefore claimed the same as constituting a cheap and effective means of adjusting the machine detach-

60 ably to a stand provided with a treadle.

65 In Figs. 6 to 8, inclusive, is shown a means for reversing the ribbon-feed, the ribbon-spools *g g'* being mounted upon a bearing A², attached to the rear side of the ring A, as shown in my Patent No. 477,404. The spools are provided, respectively, with ratchet-wheels

upon a stud *g*², fixed in the bearing A². Levers *h*² are pivoted upon the bearing A² and are both actuated by a toe *h*³, attached to a

70 rod B', which reciprocates at each movement of the letter-spacing mechanism. Pawls *i i'* are attached to the levers *h*² and are pressed upon the outer sides of the ratchet-wheels by

75 springs *i*².

My present improvement consists of a double wedge *j*, affixed to a lever *j'*, which is pivoted upon the bearing A² between the pawls and is adapted to throw the opposite points

80 of the wedge, respectively, behind the pawl *i* or *i'*, and thus detach either of such pawls at pleasure from contact with its ratchet-wheel. The lever or handle *j'* is shown in Fig. 8 pushed

85 to the left, and the pawl *i* thereby detached from the wheel *h*. The pawl *i* remains in contact with the wheel *h*, and thus actuates the spool *g'* to wind up the ribbon, as required. By

90 shifting the handle *j'* to the reverse position the pawl *i* would be detached from the ratchet-wheel and the pawl *i'* would become operative. It will be noticed that the pawls operate

95 automatically through the constant pressure exerted by the springs *i*². The double wedge *j* thus differs from any heretofore used in its particular arrangement upon the

100 bearing A² and its adaptation to hold either pawl from performing its normal function. Stop-pins are shown upon the bearing just above the fulcrum of the lever *j*², and the lever is shown in contact with the left-hand pin.

105 Such stops prevent the lever from moving into contact with the wheels *h h'* when pushed by the operator.

I have already stated that the spring in the drum M is made of sufficient strength to not

110 only shift the carriage, but to simultaneously raise the treadle P. The spring is enabled to raise the treadle (without materially strengthening the spring) by the vertical arrangement of the bell-crank arm R' and the great

115 proportion of its length to the horizontal arm R. By such arrangement the spring is required to lift only a small proportion of the bell-crank's weight, and the bell-crank lever and treadle, being wholly unbalanced when

120 detached from the carriage, retain voluntarily their lowest positions, which they would not do if provided with special means for counterbalancing their weight. When the treadle is connected with the carriage by the cord *s*,

125 it follows the movement of the carriage, and as the tension of the spring N balances the treadle the carriage may be shifted by hand in the usual manner. When the cord *s* is detached, the weight of the treadle draws the

130 bell-crank arm R' out of the way automatically, and the type-writer carriage may then be shifted by hand or the machine removed and the stand folded for transportation. The treadle P is attached by pivot to the guard Q,

135 which is secured to the legs I, the same as the bar S, upon which the bell-crank is mounted, and the relation of the treadle and the bell-crank is thus preserved at all times.

Having thus set forth the nature of the invention, what is claimed herein is—

1. The combination, with the typewriter having suitable foot pieces, and a feed carriage with lever to actuate the line feed, and a spring drum to reverse the carriage, of a stand having the typewriter fitted removably to its top, the stand being provided with stops, as l^2 , adapted to admit the foot pieces and resist the longitudinal movement of the same, the treadle P, the treadle lever with arms R, R', of unequal length, the connection S' from the treadle to the short arm, the detachable connection s from the long arm to the feed lever, and the spring drum having a spring of suitable strength to perform the triple function of lifting the treadle, actuating the line feed, and shifting the carriage, substantially as herein set forth.

2. The combination, with a suitable stand having a treadle pivoted thereon and a bell crank with arms of unequal length, a typewriter with foot pieces to rest upon the stand and stops upon the stand to admit the same, the hand lever M having a pawl formed with two teeth l' , l^2 , a feeding roll L with ratchet wheel l to fit said teeth, the auxiliary lever T having one end arranged to engage the under end of the pawl, the stops n to restrict the lever's movement, a connection from the lever to the long arm of the bell crank, and a connection from the treadle to the short arm of the bell crank, substantially as herein set forth.

3. The combination, with a suitable stand having a treadle and bell crank pivoted thereon, of stops upon the upper ends of the stands, a typewriter with foot pieces arranged to fit between the stops, the hand lever M pivoted upon the typewriter carriage and provided with the tooth n' and the pawl having teeth l' , l^2 , the auxiliary lever T having one end arranged to engage the under end of the pawl, the pulley u' pivoted upon the carriage below the opposite end of the lever, a connection from the auxiliary lever to one arm of the bell crank, and a connection from the treadle to the other arm of the bell crank, substantially as set forth.

4. The combination, with the ring casting A and rolls supported thereon to guide the carriage, of the carriage having the feeding roll L and platen K mounted thereon, the ratchet wheel l upon the end of the feeding roll, the hand lever M pivoted upon the bar C' at the end of the carriage and provided with the slot O, having the stud P pivoted within the same and provided with pin o' , the tooth n' upon the end of the hand lever with pawl having teeth l' and l^2 , pivoted adjacent thereto, and provided with toe m' , a pin to stop the same, and spring m^2 to press the toe against the pin, and spring m to move the pawl normally downward substantially as herein set forth.

5. The combination, with a suitable stand having a treadle and bell crank pivoted there-

on, of stops upon the top of the stand and a typewriter with foot pieces to fit between the stops, the typewriter carriage having the lever M provided with tooth n' and pawl having teeth l' , l^2 , the auxiliary lever T with one end arranged to engage the under end of the pawl, the pulley u' pivoted on the carriage under the opposite end of the lever, the stop m below the lever, and the adjustable stop u' pivoted upon the carriage and provided with handle u^2 to set such stop, a connection from the treadle to the bell crank, and the cord s extended under the pulley u' and connecting the bell crank with the lever T, as and for the purpose set forth.

6. The combination with a typewriter having foot pieces to rest upon a stand, and a carriage movable longitudinally between such foot pieces, of the stand consisting of the jointed legs I, I' with bars J at the top and canvas J' stretched between the same, the bar S attached to the legs I and carrying the bell crank with horizontal arm R and vertical arm R', a detachable connection from the arm R' to the typewriter carriage, a treadle pivoted suitably to one of the legs I, and a connection from the end of the treadle to the bell crank R, the whole arranged and operated substantially as set forth.

7. In a typewriter, the combination with the bed ring A carrying the type bars H adapted to strike downward and having rolls to support the carriage, of the carriage formed of the tie bars C' and integral sheet metal channel bars C attached thereto, with the feeding rack teeth formed directly in the edge of one of such channel bars, and the feeding roll and platen being supported at their ends upon the tie bars C', and suitable means for actuating the carriage and roll, substantially as described.

8. In a typewriter having the type mechanism with supporting feet, and a carriage movable beneath such mechanism, the combination, with the bed A having parallel studs D projected upon opposite sides, of the foot pieces E having the rods E' corresponding with the studs, the sleeves F fitted movably to the rods with stops to limit their motion and carrying clamping devices to engage the studs, as herein set forth.

9. In a typewriter having the type mechanism with supporting feet and a carriage movable beneath such mechanism, the combination, with the bed A having parallel studs D projected upon opposite sides, of the foot pieces E having the rods E' corresponding with the studs, the sleeves F fitted movably to the rods and notched upon their upper sides at the outer end, and provided with the guide rolls G and the eccentric cams H to clamp the studs, substantially as set forth.

10. In a typewriter, the combination with the carriage having a feed roll for propelling the paper, of a rectangular bar platen having greater width than thickness and coated upon its broader sides with hard and soft india rub-

ber to make the sides equidistant from the center, pivots fixed centrally at the ends of the platen, similar seats k adjacent to one of the pivots, and a spring k' adapted to press
5 upon one of the seats, as and for the purpose set forth.

11. In a typewriter provided with the bed ring A and type bars adapted to carry the types into the center of the ring, of the bearing A² at the rear side of the ring, ribbon-
10 spools g, g' mounted upon a stud g^2 in such bearing and provided with the ratchet wheels h, h' adjacent to the bearing, levers h^2 pivoted upon the bearing and actuated by suitable
15 connection to the buttons H', pawls i, i' and springs i^2 carried by the levers h^2 , and the lever j' pivoted upon the rear side of the bearing, with stops at its opposite sides, and car-

rying the double wedge j to detach either of the pawls at pleasure from its ratchet wheel, 20 substantially as herein set forth.

12. The combination with a typewriter having the bed ring A, with studs D projected from opposite sides, of the foot pieces E having at their ends rods E' corresponding to 25 such studs, and the coupling sleeves F notched upon the upper side and having cams fitted through the notches to clamp upon the studs, as and for the purpose set forth.

In testimony whereof I have hereunto set 30 my hand in the presence of two subscribing witnesses.

JOSEPH M. CRARY.

Witnesses:

THOMAS S. CRANE,
L. LEE.