

No. 682,216.

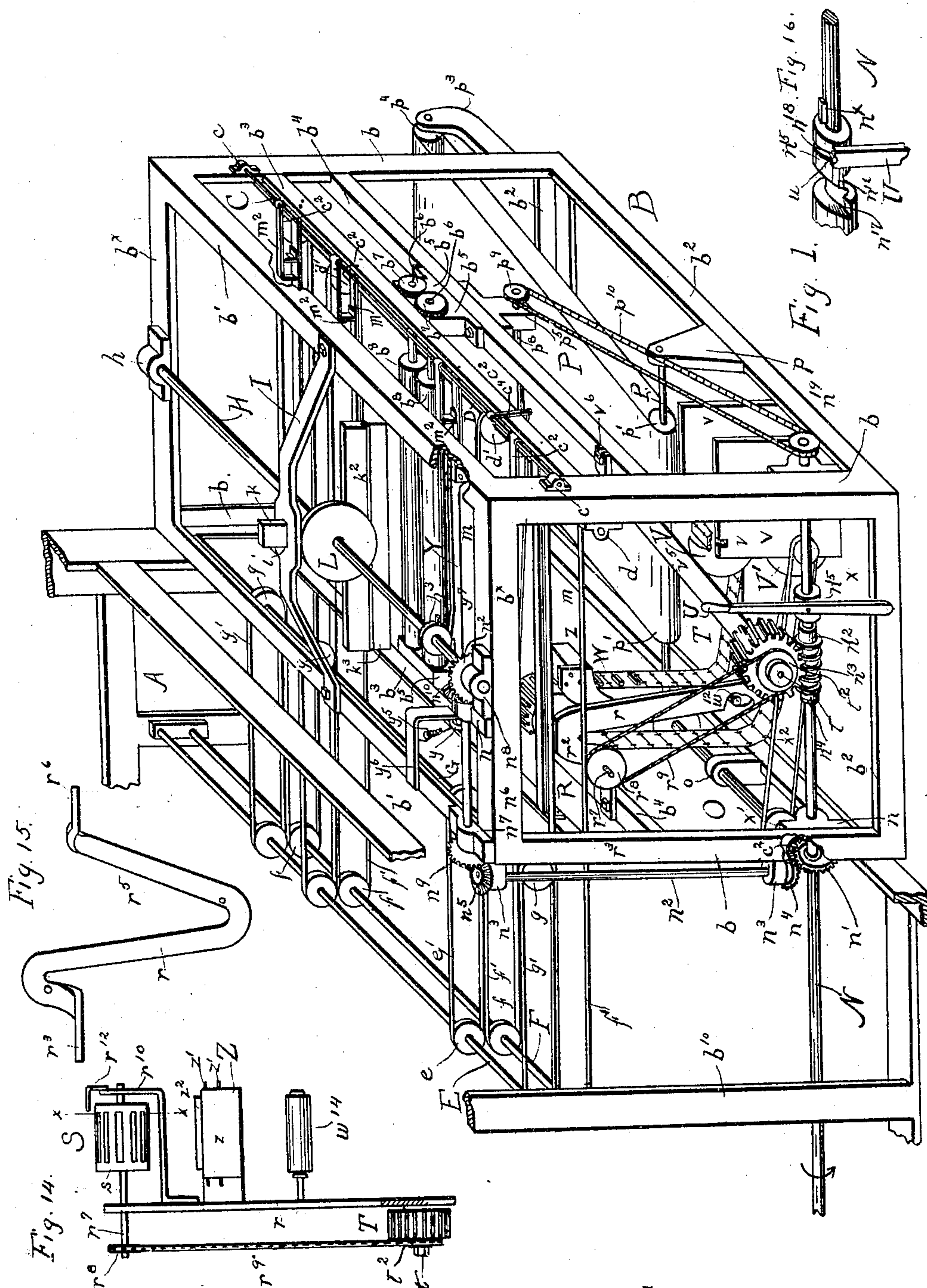
Patented Sept. 10, 1901.

R. MAXWELL.
ADDRESS PRINTING MACHINE.

(Application filed May 21, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES.
L. B. Perrine.
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INVENTOR.
Robert Maxwell.
Per. Richard Manning, Atty.

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3 Sheets—Sheet 2.

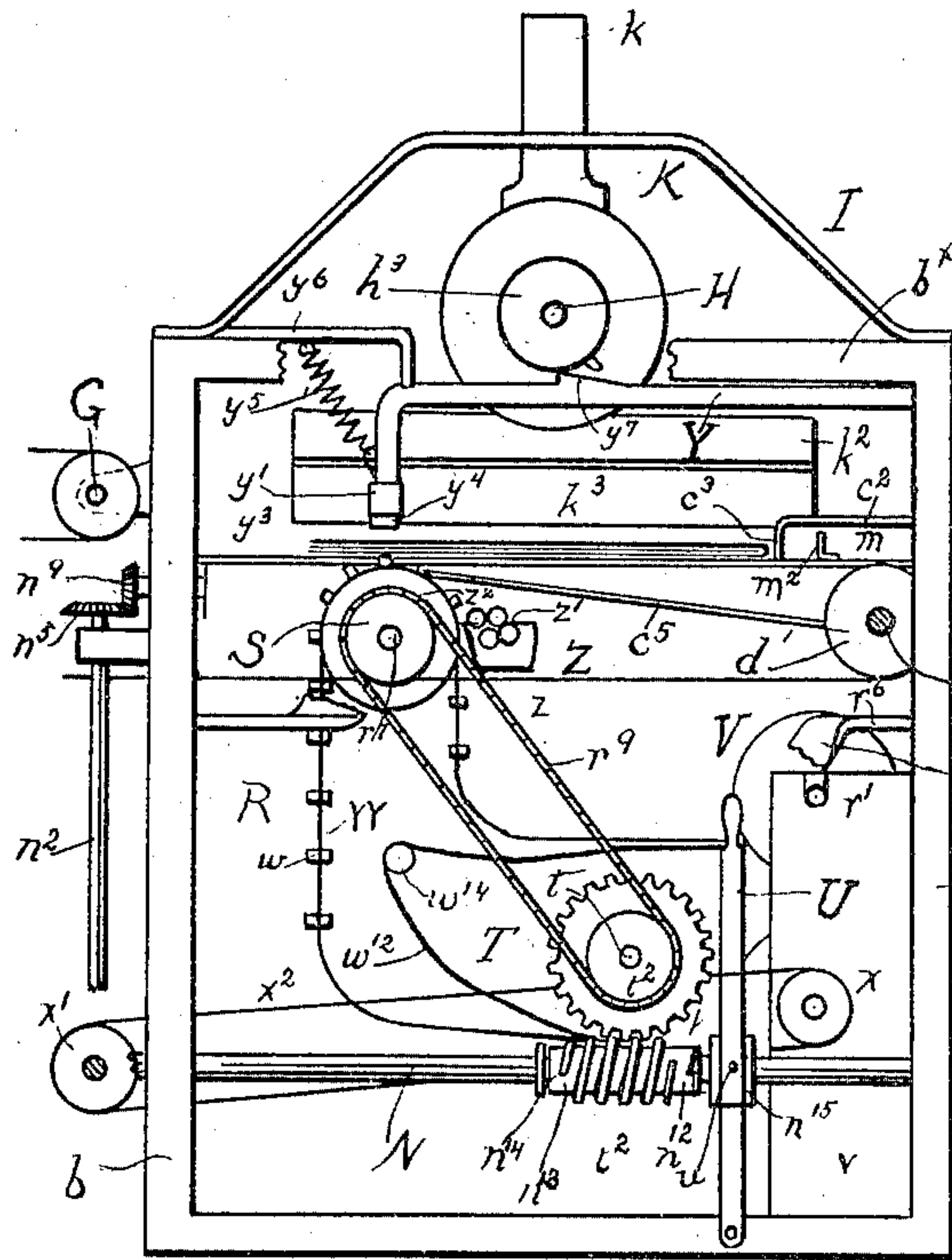


Fig. 2.

Fig. 8

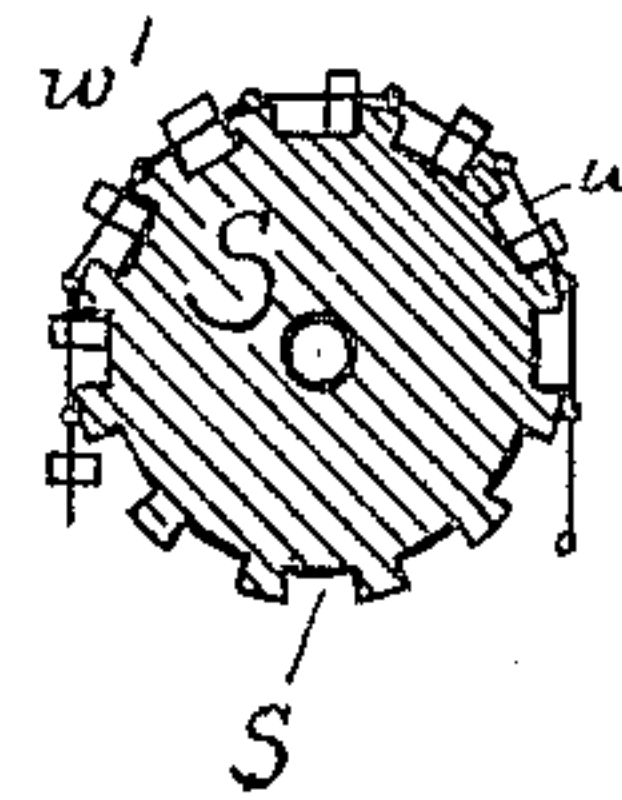


Fig. 9

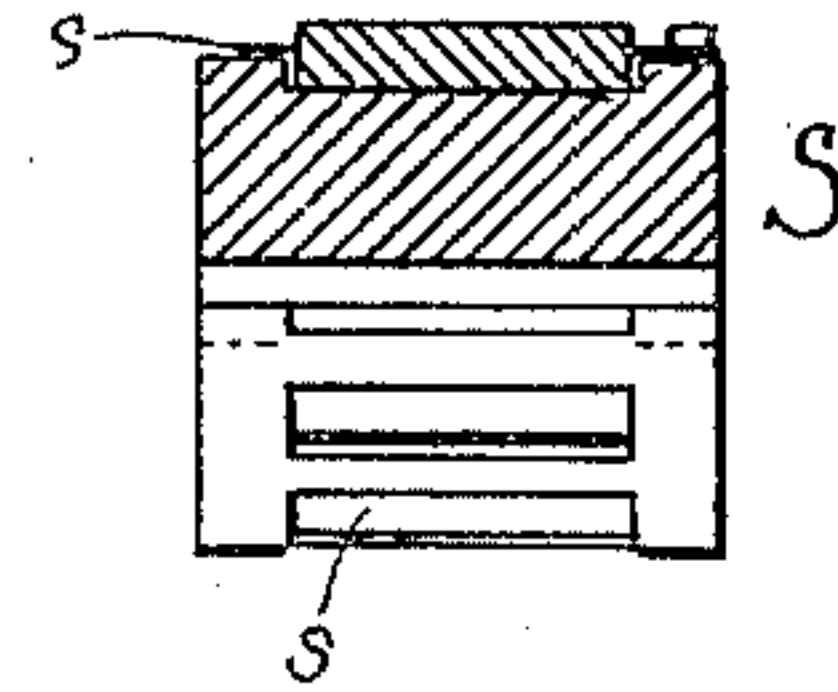


Fig. 11.

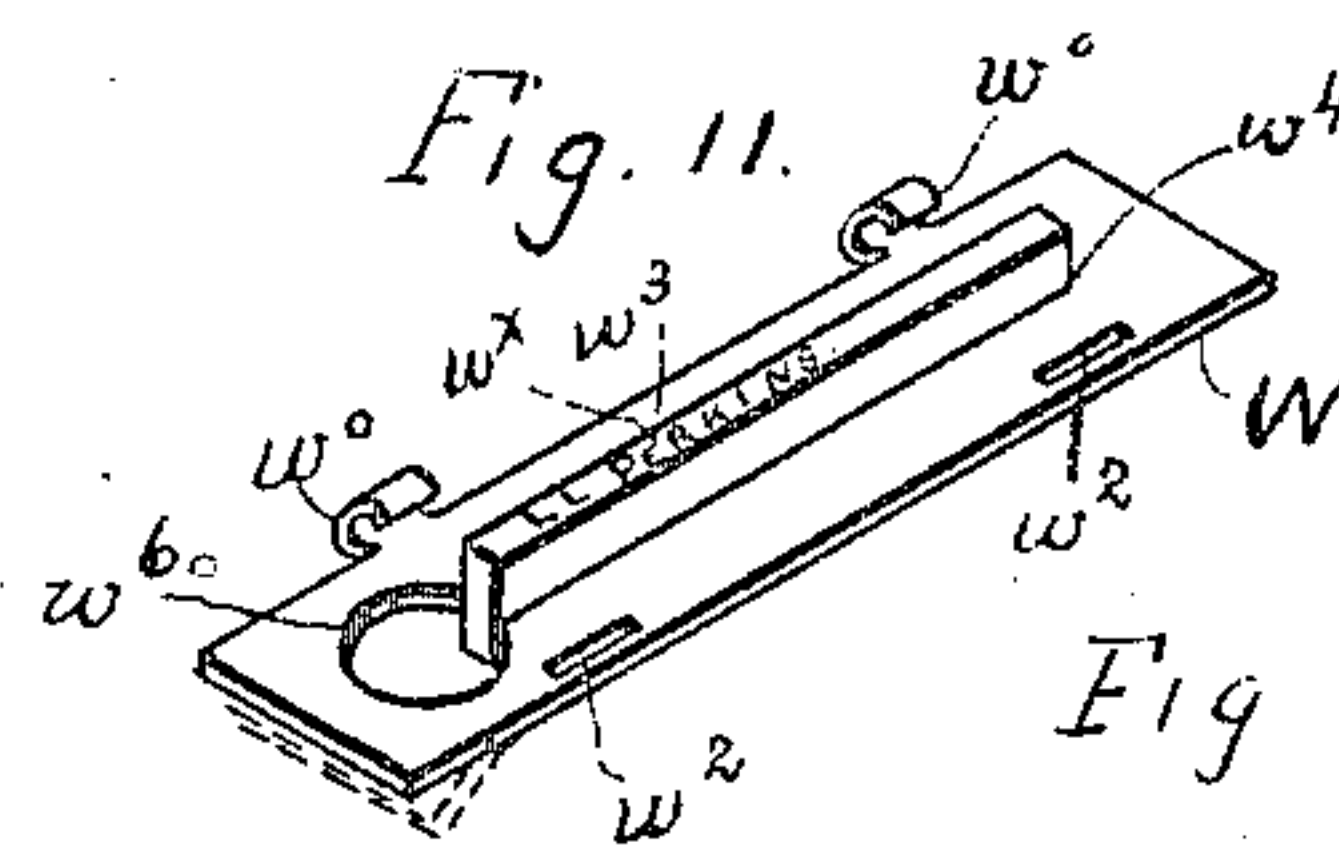


Fig. 12.

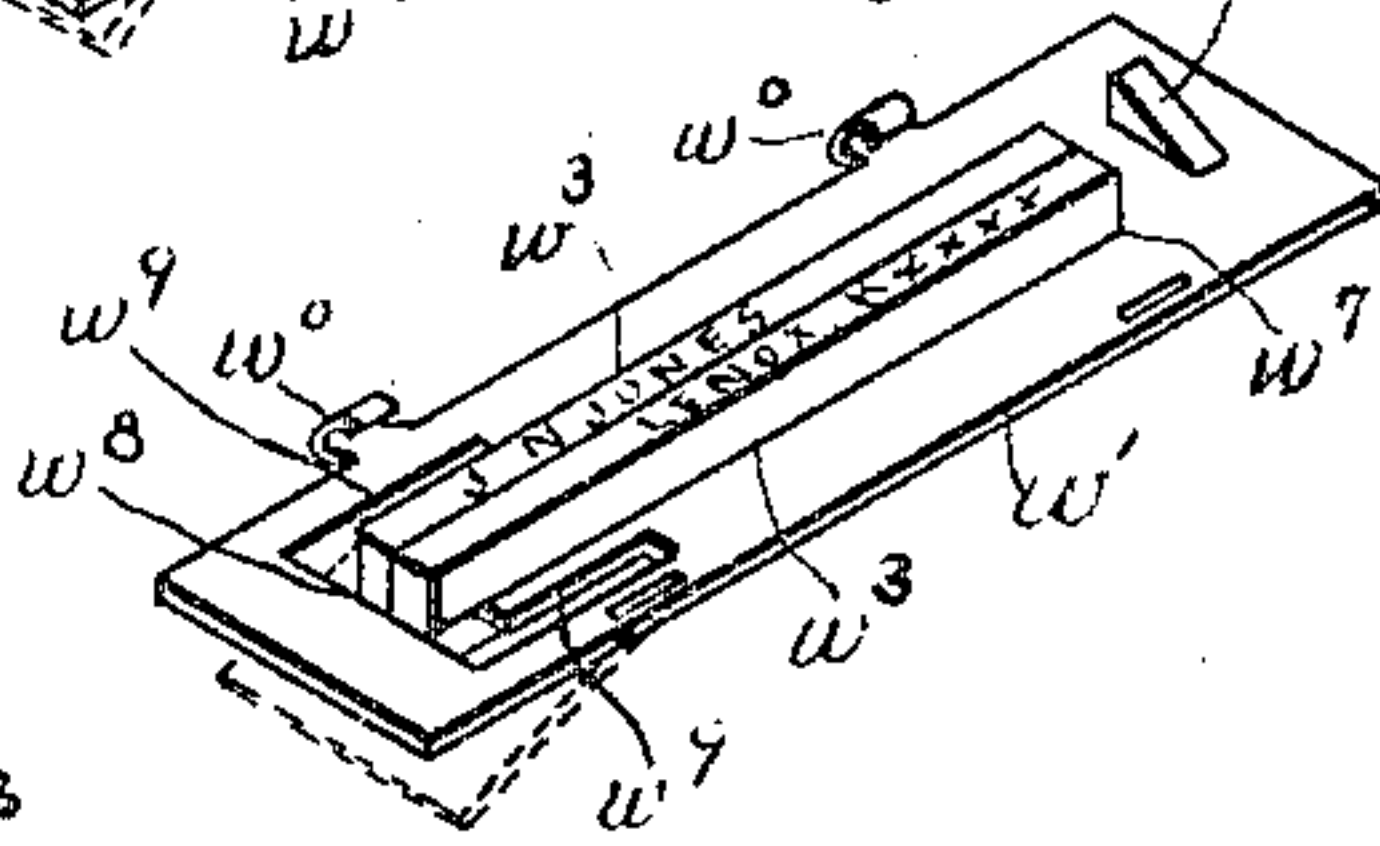


Fig. 13.

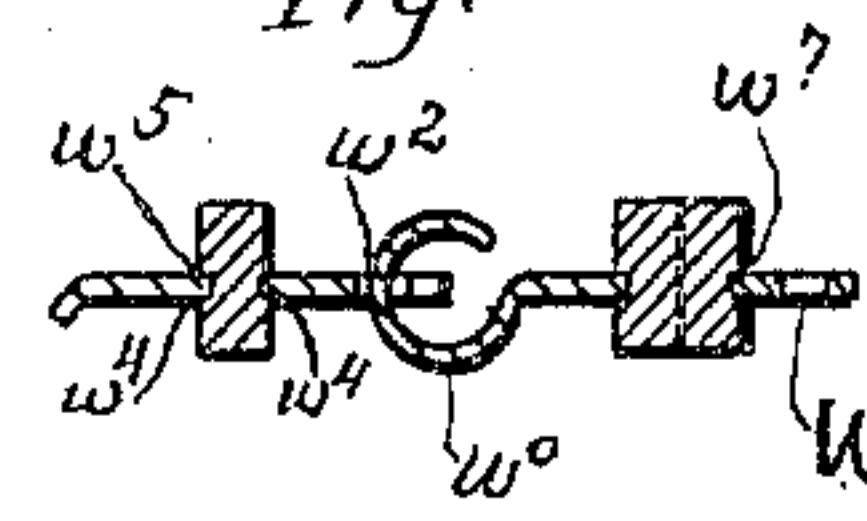


Fig. 6.

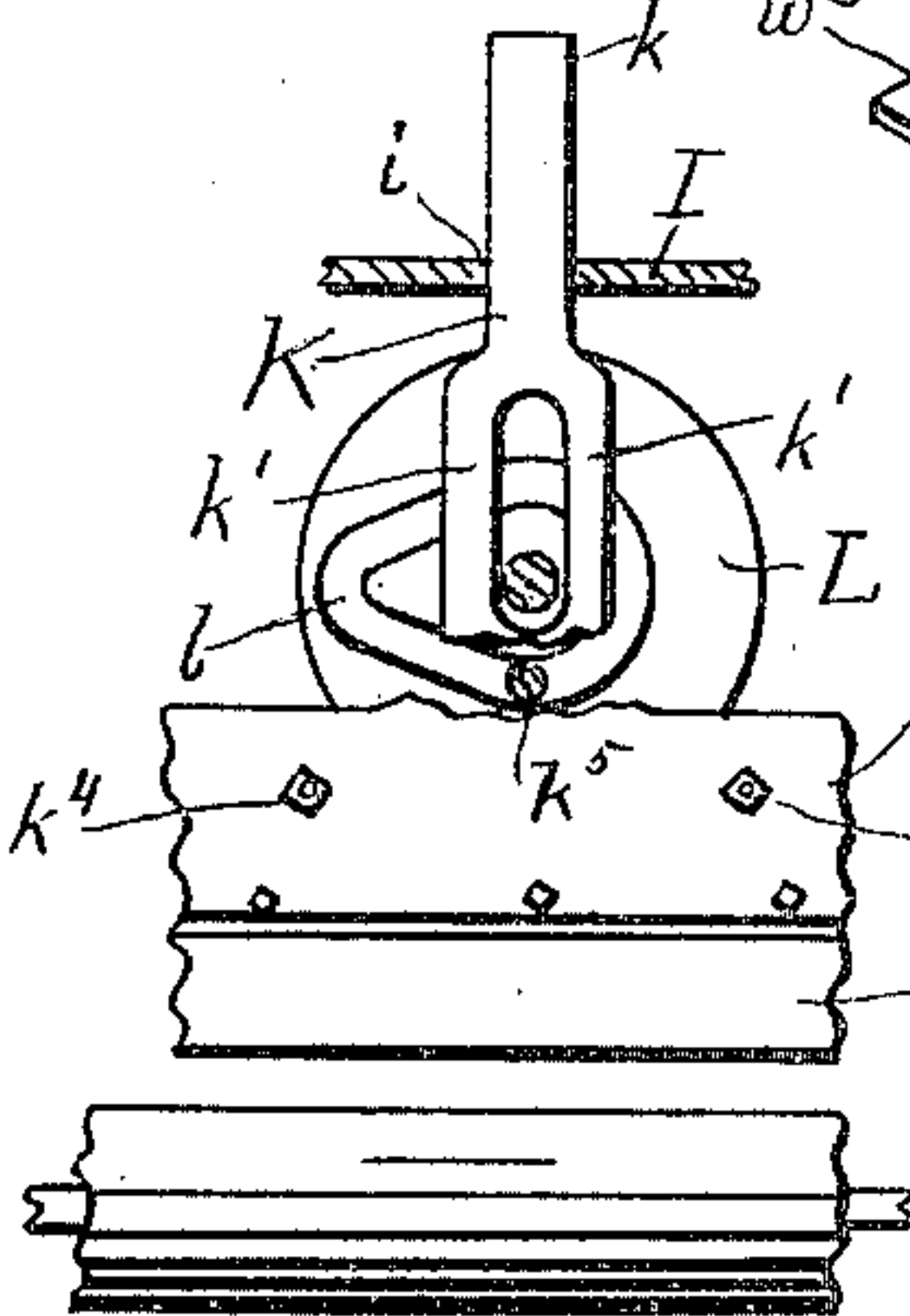
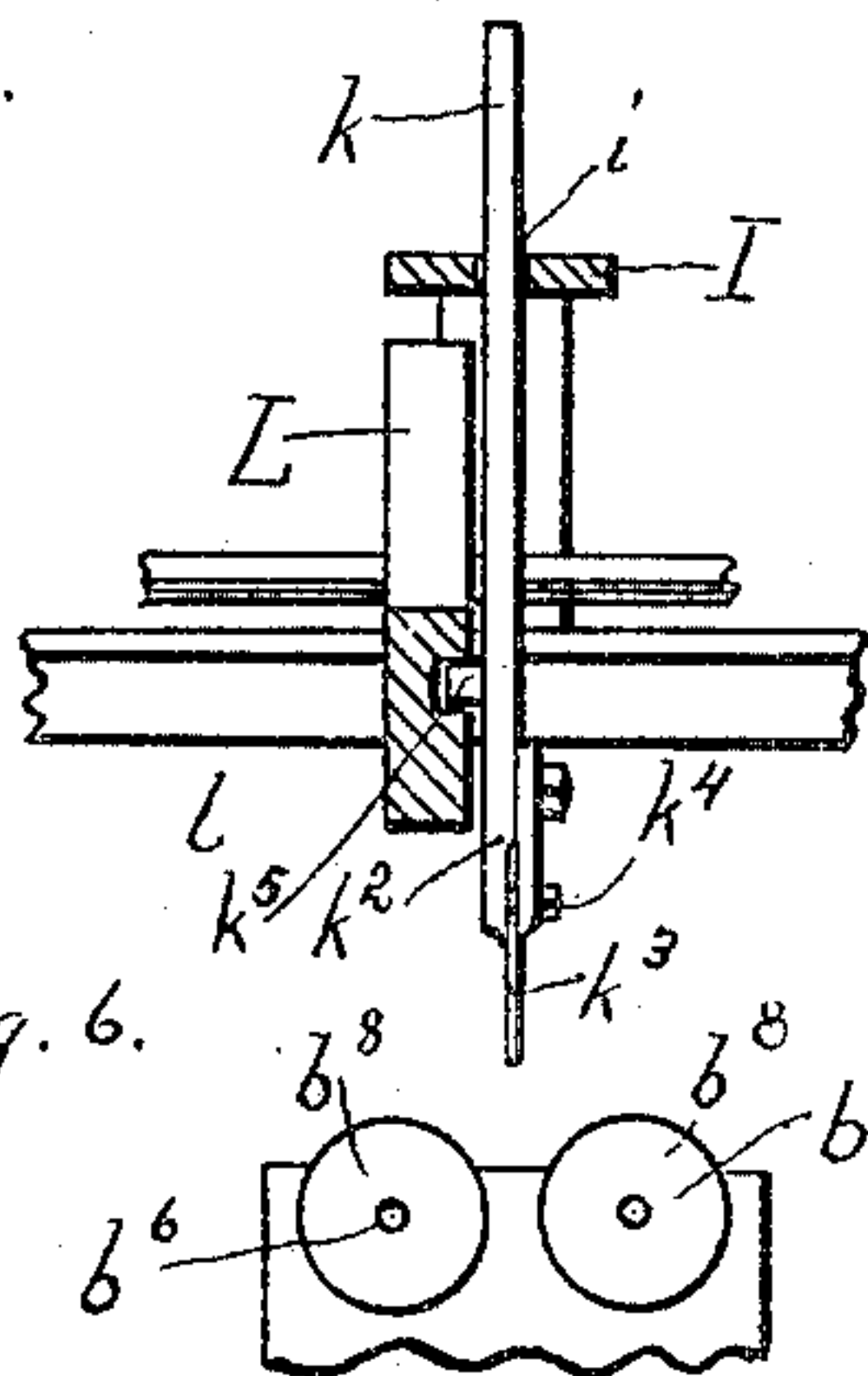


Fig. 5.

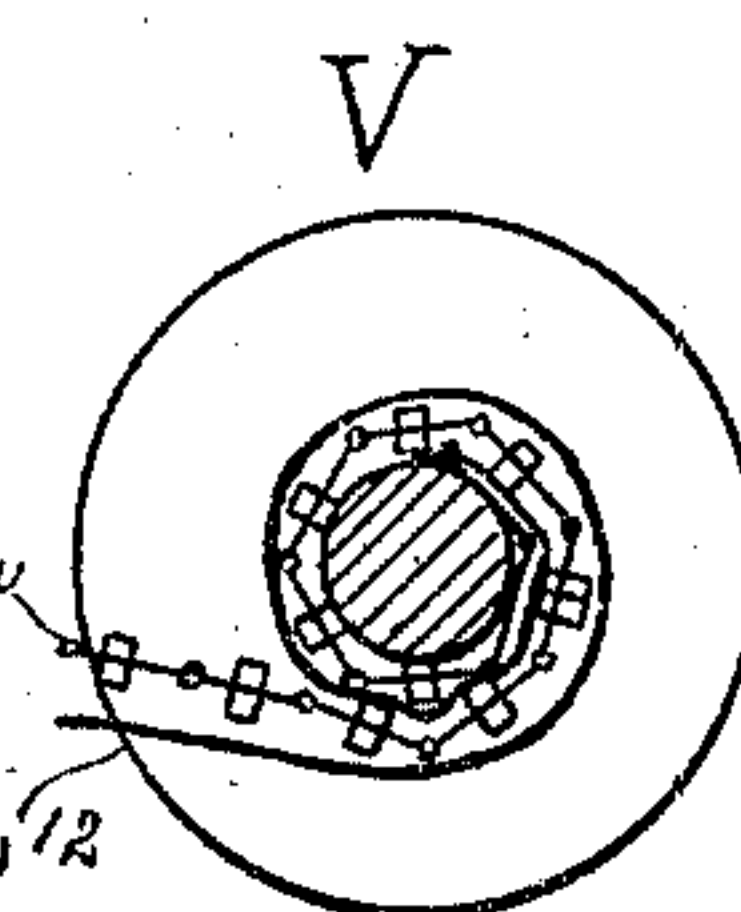


Fig. 10.

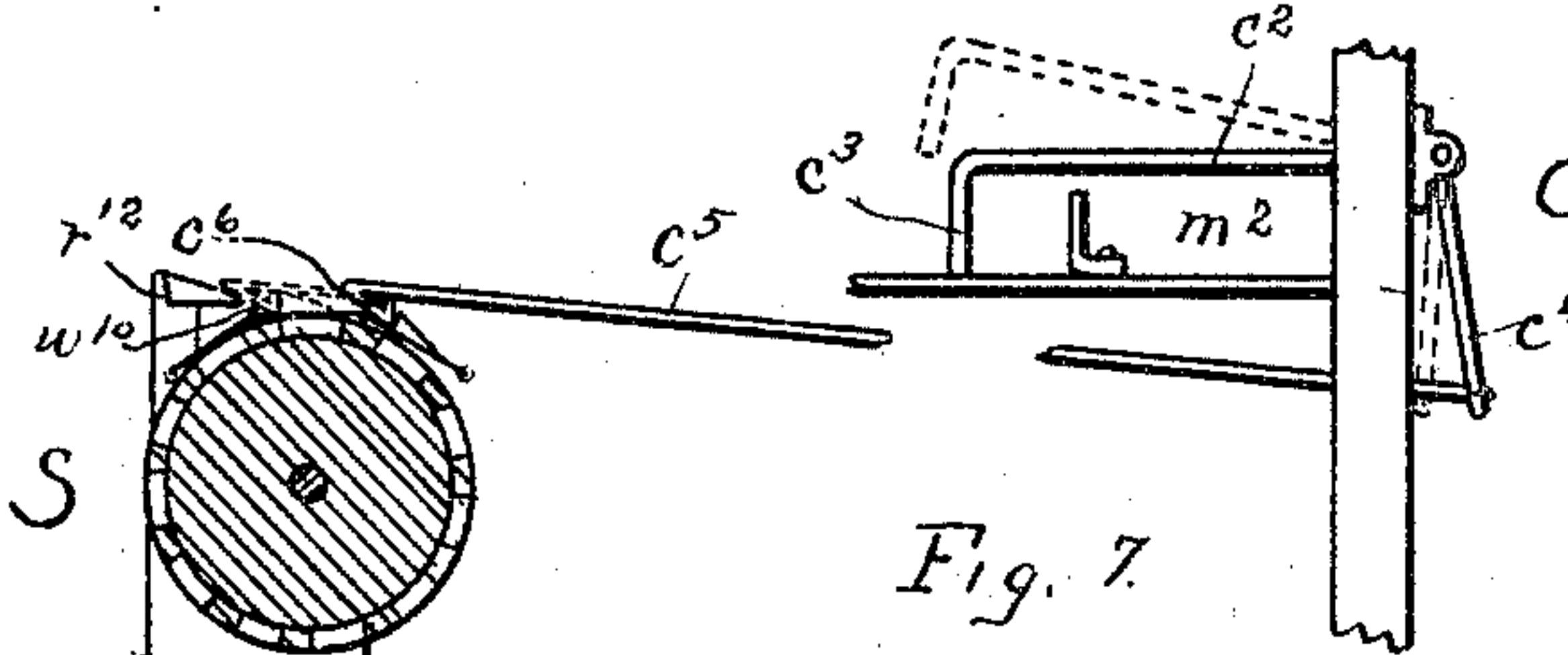


Fig. 7.

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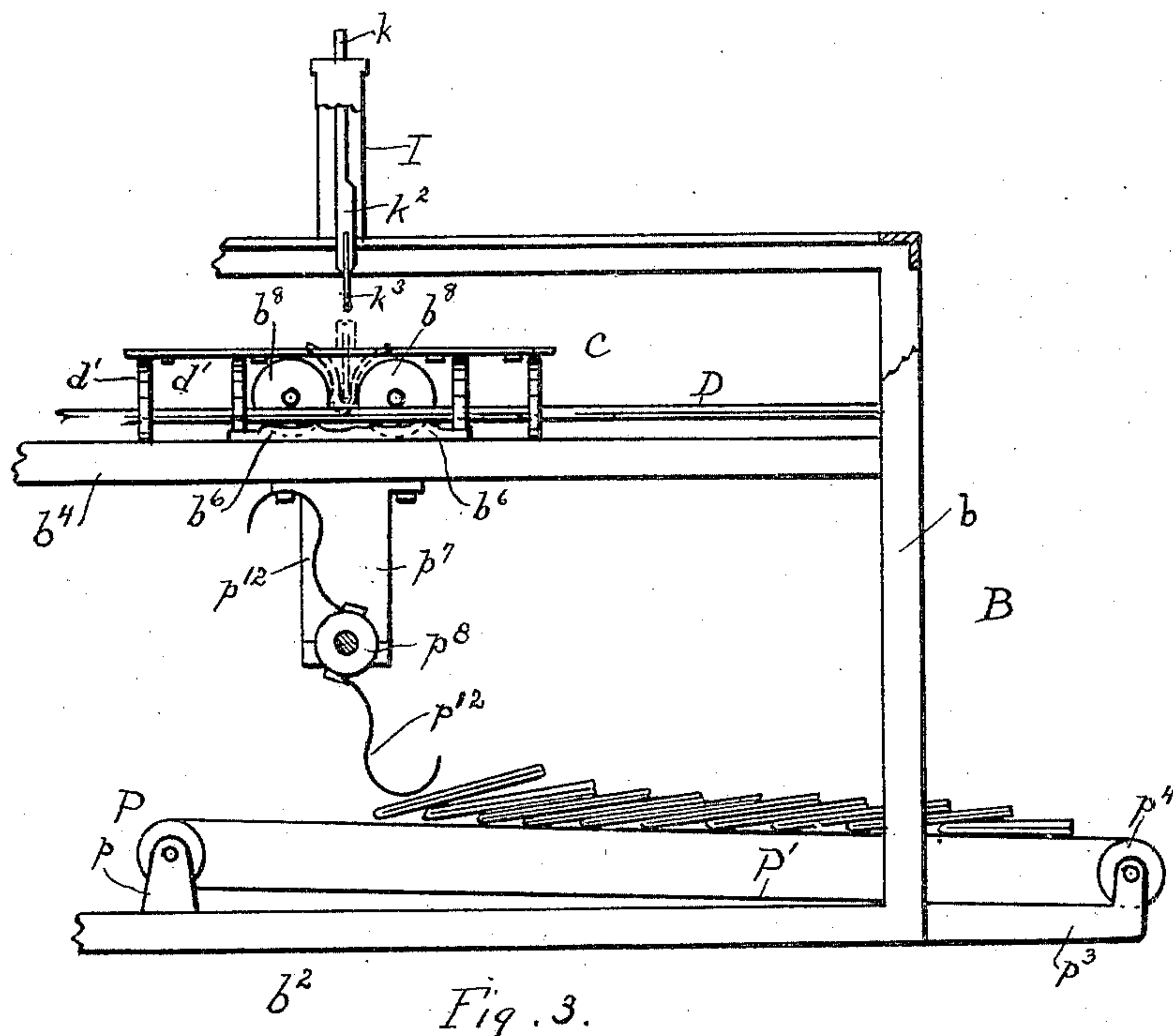


Fig. 3.

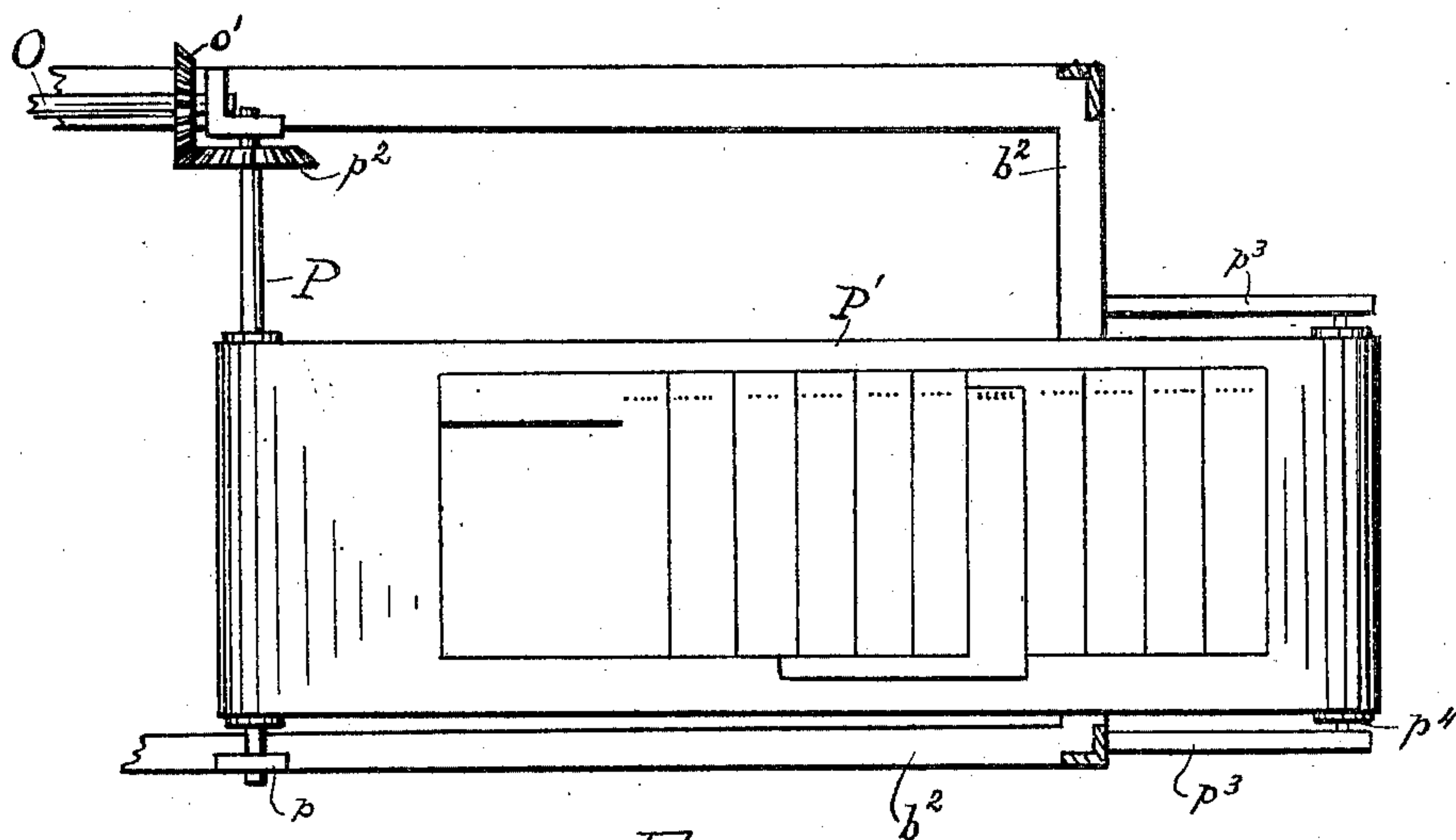


Fig. 4

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per
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UNITED STATES PATENT OFFICE.

ROBERT MAXWELL, OF TOPEKA, KANSAS, ASSIGNOR OF ONE-HALF TO
JOSEPH F. KIRKPATRICK, OF SAME PLACE.

ADDRESS-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 682,216, dated September 10, 1901.

Application filed May 21, 1900. Serial No. 17,457. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MAXWELL, a citizen of the United States of America, residing at Topeka, in the county of Shawnee and State of Kansas, have invented certain new and useful Improvements in Address-Printing Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The objects of my invention are, primarily, to imprint automatically upon the paper in a printing-press the proper mailing-address; second, to change the position of one paper in a series of papers presented to the address-printer automatically and indicate thereby the destination of the remainder in said series; third, to place the type-form addresses into position as each paper is delivered to the folding-machine and simultaneously depress the paper upon the type-form, and, fourth, to utilize the type-form to obtain tension upon the conveyer.

The invention consists in the novel construction and combination of parts, such as will be first fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a view in perspective of a paper-folding machine for printing-presses, showing the invention applied thereto. Fig. 2 is an end view in elevation of the same with portions of the supporting-plate to the address-printer broken away. Fig. 3 is a detail broken view of the side of the folding-machine toward which the paper is conveyed, showing the rollers between which the paper is folded, the folding-blade, the yielding rotary paper-conveying arms beneath the rollers, and the endless conveyer of the folded papers beneath the rotary arms. Fig. 4 is a plan view of the endless conveyer of the folded papers beneath the folding-machine, showing the position of the paper, with the mailing-address and one of said papers extended beyond the others. Fig. 5 is a detail side view of a portion of the paper-folding roller, also showing a portion of the paper-folder, the shaft operating the folder, the yoke and guide-bar for the folder, and the

cam-wheel actuating the folder. Fig. 6 is a view of the paper-folding devices at right angles to that shown in Fig. 5. Fig. 7 is a detail view of the grooved wheel carrying the address-printing-type conveyer, showing one of the address-carrying plates with the rod-tripping lug, the adjustable paper-stop, the crank connected with the stop, and the rod connected with the crank and engaging with the lug. Fig. 8 is an end view of the grooved wheel for the address-printing conveyer. Fig. 9 is a side view, partly in section, of the grooved conveyer-wheel. Fig. 10 is a detail sectional view of the spool carrying the conveyer and the address-printers, showing a portion of the conveyer and the infolded type-protector. Fig. 11 is a detail view in perspective of one of the detachable type-conveying plates, showing the means of connecting one plate with another and the opening for the removal of the type-form. Fig. 12 is a view of one of the detachable type-conveying plates, showing the lug for indicating the change in address of the series of address-printers, also showing an alternative construction of the plate for the removal of the type-form. Fig. 13 is a transverse sectional view of two adjacent type-form-conveying plates. Fig. 14 is a detail side view of the address-printers, showing the side-supporting plate with a part broken away, the sprocket-wheel and shaft, the type-form plates, and the bracket on the inner side of the plate, the lower sprocket-wheel and the pivot, the ink-supplying device, and the roller for the type-protecting band. Fig. 15 is a detail side view of the plate supporting the grooved wheels for the type-forms and the worm and sprocket-wheels. Fig. 16 is a detail view of a portion of the main driving-shaft actuating the address-printer, showing a portion of the clutch.

Similar letters of reference indicate corresponding parts in all the figures.

Referring to the drawings, A represents a paper-folding machine, which may be connected with any power-operated printing-press and in the ordinary newspaper printing-press makes the last fold in the paper. The operative parts of the folding-machine as seen in the drawings are within the frame

B, the ends of which frame are comparatively narrow in width and the sides extended in length a suitable distance to support the folding devices. The frame B consists of the upright angle beams or standards $b\ b$ at each end, which are connected together at their upper ends by the transverse beams $b^x\ b^x$ and by the horizontal upper angle-beams $b' b'$ and the lower ends by the lower beams $b^2\ b^2$, extending in the horizontal direction of the frame. A short distance below the upper beams $b' b'$ and connected with the uprights $b\ b$ are the beams $b^3\ b^3$, and beneath the beams $b^3\ b^3$ are the horizontal beams $b^4\ b^4$, which are also connected with the uprights $b\ b$ at the same distance beneath the said beams $b^3\ b^3$ as between the beams $b^2\ b^2$ and the beams $b' b'$. Upon the upper sides of the beams $b^4\ b^4$ at a point equidistant from the uprights $b\ b$ are the separate journal-boxes $b^5\ b^5$, which are arranged a short distance apart upon each beam and in which journal-boxes are the separate shafts $b^6\ b^6$. Upon the ends of the shafts $b^6\ b^6$, which extend beyond the outer side of the journal-boxes, are the gears $b^7\ b^7$, which mesh together. Upon the shafts $b^6\ b^6$ are the rollers $b^8\ b^8$, between which the fold is made in the paper. Upon the outer side of the frame B is a horizontal rock-shaft C, which is journaled at $c\ c$ upon the outer side of the ends $b\ b$ of said frame at a point a short distance above the plane of the upper side of the beam b^3 . Upon the inner side of the frame B is a shaft D, journaled at $d\ d$ to the inner edge of the angle-beam $b\ b$ a short distance below the plane of the beam b^3 . Upon said shaft are the pulleys $d' d'$ for the endless paper-conveyers, which pulleys are arranged in pairs at equal distances from the rollers $b^8\ b^8$ and the ends of the shaft. A short distance in rear of the frame B and in line with the standards $b\ b$ are the uprights $b^{10}\ b^{10}$, the lower ends of which are connected with a horizontal extension of the standards $b\ b$ in line with the lower beams $b^2\ b^2$. In the standards $b^{10}\ b^{10}$ a short distance downwardly from their upper ends is journaled a horizontal rotary shaft E. A short distance below the shaft E and journaled in the said standards $b^{10}\ b^{10}$ is a rotary shaft F. Upon the shaft F are the pulleys $f f f f$, over which are extended one end of the respective bands or tapes $f' f' f' f'$, the other ends of which bands are extended over the pulleys $d' d' d' d'$ on the shaft D and the ends of said bands connected together in the usual manner. Upon the rear outer side of the frame B a short distance below the plane of the upper ends of the standards $b\ b$ is a rotary shaft G, journaled at $g\ g$ upon said standards. Upon said shaft G are pulleys $g g g g$, over which extend the bands $g' g' g' g'$, the other ends of which bands extend over the pulleys $e e e e$ on shaft E and the ends of said bands connected together in the usual manner. Upon the upper transverse beams $b^x\ b^x$ at each end of frame B is journaled at $h\ h$ the longitudinal shaft H for operating the

folding-blade. The positions of the ends of shaft H are equidistant from the longitudinal beams $b' b'$. Connected with the beams $b' b'$ at a point equidistant from the end is a guide-plate I, which extends from one plate to the other in an upwardly and outwardly curved line. In said plate I is a slot i . In the slot i is the vertically-movable upper end k of the paper-folding-blade support or bar K, the lower end of which bar is forked at $k' k'$ and extends downwardly upon both sides of the shaft H, and with the lower ends of the forked portions $k' k'$ is connected a horizontal plate k^3 , which extends downwardly and in the corresponding direction of the rollers $b^8\ b^8$. Upon the rear sides of the plate k^2 is secured by the bolts $k^4\ k^4$ the paper-folding blade k^3 , which is adapted to move downwardly between said rollers $b^8\ b^8$. Upon the shaft H, close in position to the supporting-bar K, is a cam-wheel L, in the face of which wheel is the cam-groove l . Upon the side of the supporting-plate K, toward the cam b and near the plate k^2 , is a pin k^5 , which enters the cam-groove l . With the inner sides of the beams $b^3\ b^3$ are connected the series of horizontal flat bars $m\ m\ m\ m$, which are arranged near the respective pulleys $d' d' d' d'$. Upon each bar m is a fixed lug or stop m^2 , which is located a short distance from the forward beam b^3 , so as to check the forward movement of the paper. Upon the rock-shaft C are the series of arms $c^2\ c^2\ c^2\ c^2$, which extend in the direction of and a short distance past the upper end of said lugs above the bars $m\ m\ m\ m$, and the outer ends of said arms bent downwardly at c^3 in the direction of the said bars, so as to form an automatic stop to the paper, as hereinafter described.

N represents the main driving rotary shaft of the paper-folding machine, which is journaled at $n\ n$ upon the inner side and at one end of the frame B a short distance above, and extends in a transverse direction to said beams and is driven by any suitable power. In ordinary printing-presses the shaft obtains the power direct from the engine. The power is transmitted from shaft N as follows: Upon the shaft N, near the outer side of the standard b toward the standards b^{10} , is a bevel-gear n' . Directly above the gear n' is a vertical rotary shaft n^2 , journaled at $n^3\ n^3$ upon the standard b , upon the lower end of which shaft is a bevel-gear n^4 , which meshes with the bevel-gear n' on the shaft N. Upon the upper end of shaft n^2 is a bevel-gear n^5 . Upon the upper side of the beam b' , near the gear n^5 , is a short portion of a rotary shaft n^6 , which is journaled at n^7 to said beam at one end and the other end supported within a journal-bearing n^8 , extending inwardly from the upper beam b^x . Upon one end of the shaft n^8 is a bevel-gear n^9 , which meshes with the gear n^5 in the shaft n^2 . Upon the other end of shaft n^6 is a bevel-gear n^{10} , which meshes with a bevel-gear n^2 on the shaft H.

Extending from the bevel-gear n' , a short distance above and in the plane of the lower beam b^2 , is a rotary shaft O, journaled at one end in the support o on the beam b^2 at one end and in the upright standard b at the other end of the frame B at o' . (See Fig. 4.) Upon one end of said shaft is a bevel-gear o^2 , which meshes with the bevel-gear n' , and upon the other end a bevel-gear o' .

P represents a shaft in the lower part of the frame B for transmitting power to the endless-conveyer of the folded papers, which shaft is journaled at one end upon a short upright p on the beam b^2 upon the forward side of the frame B at a point directly below the shaft b^6 , carrying the paper-folding rollers b^8 b^8 . The other end of the shaft P is supported in the standard upon the other beam b^2 at a point near the longitudinal shaft O, and upon said shaft P is a bevel-gear p^2 , which meshes with a bevel-gear o' on the shaft O. (See Fig. 4.) On shaft P is a roller p' . At the other end of the frame B from that having the shaft N and extending from the beams b^3 b^2 beyond said end of the frame in an upwardly-inclined direction are the supports p^3 p^3 , in which is journaled the end of the roller p^4 . Over the roller p is extended one end of paper-conveying belt P' , of considerable width, the other end of which belt is extended over the roller p^4 and the two ends connected together in the usual manner.

R represents the novel automatic address-printer, the main support for the operative parts of which consists of an upright side bar or plate r , which is arranged within the frame B near the end of said frame having shaft N and equidistant from the standards b b . The upper end of the plate r extends upwardly to a position a short distance below the plane of the bar m , adjacent to the standards b b , and extend flatwise at right angles, as at r' , and thence extended downwardly a short distance at a slight angle of inclination to the plate r , as at r^2 , and is rigidly connected with a horizontal plate r^3 , the outer end of which plate is connected by bolts with the upper edge of the rear beam b^4 . The lower end portion of the plate r is bent at an angle to the plate r , and with said bent portion is connected a brace-bar r^5 , which forms a part of the plate r , the upper end of which bar extends upward at an angle of inclination toward the forward beam b^4 and is bolted at r^6 to said beam. Through the portion r^2 of the plate r , near the plate r^3 , extends the transverse rotary shaft r^7 , one end of which shaft extends from the side of plate r^2 to a position a short distance beyond a vertical line extending through shaft N, and upon said end is a sprocket-wheel r^8 . The other end of shaft r is supported by a bracket r^{10} in the rear side of plate r . On the end of shaft r^7 is the grooved pulley S, carrying the type-forms, which pulley is considerably larger than the sprocket-wheel r^8 and is of the proper width to support said forms. The grooves s

in the pulley S extend nearly to the outer edges of the pulley. From the outer side of the upwardly-extended portion of the plate r extends a stud-shaft t , one end of which stud-shaft extends to a position a short distance outwardly from the plate r beyond a vertical line extending through the shaft N, and upon said stud-shaft adjacent to the plate r is a worm-wheel T of the proper size to communicate the requisite degree of speed to the shaft r^7 and to the type-form printer. Upon the outer end of the shaft is a sprocket-wheel t^2 of the same size as the sprocket-wheel r^8 in the shaft r^7 . Over the sprocket-wheel r^8 extends one end of a sprocket-chain r^9 , the other end of which chain extends over the sprocket-wheel t^2 on the pivot t and the two ends of the sprocket-chain connected together in the usual manner. Upon the shaft N, beneath the worm gear-wheel T, is a sleeve n^{12} , upon which is a worm n^{13} , which worm engages with the worm-wheel T on the stud-shaft t . Upon the shaft N, bearing against one end of the loose sleeve n^2 , is a fixed stop or ring n^{14} . In the end of the sleeve opposite the stop n^{14} is a portion n^{15} of a hollow sleeve or clutch, which is keyed to shaft N, and upon the inner edge of said sleeve is a projection n^{16} , which enters a notch n^{17} in the adjacent edge of the sleeve. In the outer surface of the portion n^{15} of the clutch is a groove n^{18} , extending around the sleeve.

U is a clutch-operating lever which is pivoted at its lower end to the outer side of the lower beam at the end of the frame having shaft N and which extends a considerable distance above the plane of shaft N. Upon the inner side of the lever U, which enters the groove n^{18} in the portion n^{15} of the clutch, is a pin u . Between the respective shafts P and N and adjacent to the forward side of the frame B are the supports v v for the spools V V', upon which the type-form conveyor is reeled or wound. The journals of the upper spool V are seated in the grooves v' in the upper edges of the supports v v and near the rear ends of said supports. The lower spool V', which is of the same size as the spool V, is journaled in the supports v v a convenient distance beneath the spool V, so as to permit of the winding of the type-form conveyor W, which forms the subject-matter of a separate application filed September 25, 1900, Serial No. 31,091. The said type-form conveyor consists of a series of flat plates w w' , which are narrow in width and of suitable length. Upon the forward edge of each plate w are separate outwardly-extended hooks or strips w^0 w^0 , which are bent in the arc of a circle, and near the rear edge of each plate are narrow slots or openings w^2 w^2 , which receive the hooks w^0 w^0 , as seen in Figs. 12 and 13, and by means of which hooks the separate plates w are flexibly connected one with another. w^3 designate the longitudinal type-forms, such as are commonly made in a linotype-machine, the thin strip of metal hav-

ing the name of the address to whom the newspaper is to be delivered upon its upper edge, as shown at w^x in Fig. 11. In the sides of the strip w^3 are longitudinal grooves w^4 at a point midway the upper and lower edges of the strip, which are of the proper width to admit the thickness of the plate w . The forms w^3 are shorter than the plates w , and in order to attach the forms to the plate a slot w^5 is made longitudinally in the said plate, extending to within a short distance of each end, and at one end of the plate, at the termination of the slot, is a circular opening w^6 communicating therewith. In order to connect the type-form and plate, the end of the plate having the opening w^6 is bent downward a short distance upon a line transverse to point of communication of the slot w^5 and the said opening w^6 and one end of the type-form inserted within the slot w^5 , with the edges of the plate w in the grooves w^4 , and then pushed into place, after which the end of the plate admitting the type-form is bent upwardly in the plane of the said plate. In Fig. 12 are shown two type-forms in a parallel position, the one as seen in Fig. 11 being supplemented by a form, upon the upper edge of which are letters indicating the destination or post-office address of a series of names, following which post-office address a large number of addresses may be alike. In this arrangement the longitudinal slot in the flat plate w' is made wider, as at w^7 , and so as to accommodate the parallel type-forms w^3 , one having the name of the addresses in type and the other with the post-office address. In order to insert the parallel type-forms, a transverse opening w^8 is made at one end of the plate w at the end of the groove w^7 . In the plate w' , extending in the longitudinal direction of the said plate on each side of the type-form and also from the ends of the transverse opening w^8 , are the openings or slots w^9 . In order to insert the type-forms, the end of the plate w' having the longitudinal openings w^9 is bent downwardly, as indicated in dotted lines in Fig. 12, and the forms inserted in the slot w^7 , the edge of the slot entering the groove in the outer sides of each form, and thus binding the inner sides of the form close to each other in position as seen in Fig. 13. The portions of the type-forms beneath the plates w w' are of the proper length to extend within the grooves s of the wheel S, said grooves being made wide enough to admit the lower ends of parallel forms and so spaced as to be equal to the distance between the separate type-forms upon which the address-names are placed. In this manner the weight of the series of plates w keeps the type-form in position, and the type-forms with the post-office addresses will occupy the space in each groove in advance of the first-named form. Upon the plate w' and at the end opposite to that having the opening w^8 is a lug w^{10} , for the purpose hereinafter described, the rear end

of which is inclined. Upon the face of the type is a strip w^{12} , preferably made of felt, which is of the same width as the type-frame and extends in length as far as the series of type-forms. This felt protector is wound with the type-forms at one end upon the spool V and the other end extended over the roller w^{14} , which is pivotally connected with the inner side of the plate r , and thence to the spool V' and wound upon the said spool as the type-form is rotated. The rotation of the spool V' is effected in the following manner: Upon the journal of the spool V, which extends through one of the supports v , is a band-pulley X, and upon the shaft O on the rear side of the frame B is a pulley X'. Over the pulley X' extends one end of a belt x^2 , the other end of which belt extends over the pulley X' on the journal of the spool V', and the two ends are connected together in the usual manner.

For the purpose of inking the type on the type-forms an automatic inking apparatus Z is connected with the type-form printer in the following manner: With the inner edge of the plate r , a short distance beneath the bracket supporting the wheel S, is connected the ink-well z , which consists of a small box, of the proper depth, with which are a series of feeding-rollers z' z' z' , the journals of which extend through the ends of the box z . Above the series of rollers z' is a single ink-distributing roller z^2 , which is in contact with one of the rollers z' , and also in the path of the face of the type on the type-forms upon each conveyer-plate w and w' , as the plates pass, in succession, said roller in the rotation of the wheel S.

For the purpose of making the imprint upon the paper a vibrating arm Y is pivotally connected at one end with the inner side of the upper beam b' , on the forward side of the frame B, at a point y , a short distance from the upright b . The other end of said arm extends beneath the shaft H, toward the rear side of frame B, to a position above the grooved wheel S and is then bent at right angles and a portion y' extended downwardly to a point a short distance above the type-form upon the wheel S, and upon said end is a transverse bar y^3 , upon the under side of which is a felt pad y^4 . The vibrating end of the arm Y is supported in position by a spring y^5 , one end of which spring is connected with the bent portion y' of the said arm and the other end connected with the under side of a bar y^6 , which bar extends from the upper side of the upper beam b' on the rear side of frame B. Upon the shaft H, directly above the arm Y, is a cam-wheel h^3 , and upon the upper side of the arm Y is a block y^7 , the upper edge of which block is inclined in the direction of said bar. With the shaft C, at a point near the standard b , is connected one end of a crank c^4 , which extends downwardly a short distance. With the lower end of the crank c^4 is pivotally connected one end of a rod c^5 , the other end of which rod extends to a position upon the

upper side of the conveyer-plate w upon the groove-wheel S , and upon the outer end of said rod is a triangular-shaped barb c^6 , which lies in the path of the lug w^{10} on the plate w' as said plate comes into position beneath the pad y^4 in the arm Y in the rotation of the grooved wheel S . In order to disengage the barb c^6 upon the change of position of the type-form having the lug w^{10} with rapidity, upon the upper end of the bracket r^{10} , supporting the shaft r^7 , is a plate r^{12} , which is bent at right angles, as seen in Fig. 14, and extended to a position above the grooved wheel S , the upper surface of which bent portion forms an inclined plane, as seen in Fig. 7, which is met by the barb c^6 and rides upwardly upon said inclined plane and is then raised from its position in engagement with the lug w^{10} . Upon the end of the main driving-shaft N is a sprocket-wheel n^{19} . Directly above the apron P' and journaled in the journal-box p^5 in the under side of the beam b^4 at one end and in the bracket p^7 in the under side of the beam b^4 on the other side of beam B at the other end is a rotary shaft p^8 . On the shaft p^8 is a sprocket-wheel p^9 . Over the sprocket-wheel p^9 is extended one end of a sprocket-chain p^{10} , the other end of which chain is extended over the sprocket-wheel n^{19} on the shaft N and the two ends of the chain connected together in the usual manner. Upon the shaft p^8 are the curved arms p^{12} , of the usual construction, which extend downwardly to the apron or belt P' , and made from suitable flexible material, so as to separate the paper upon the apron P' with the least friction.

In the operation of the invention power is transmitted from the power-shaft N to the shaft n^2 , through the gear $n^5 n^9$ to shaft n^6 , and thence through the bevel-gear $n^{10} n^{12}$ to shaft H , which movement is communicated to the paper-folding blade k^3 through the cam-wheel L and a vertical reciprocating movement imparted to said plate p^3 . In the same movement of the rotary shaft H the cam h^3 comes into contact with the inclined upper edge of the lug y^7 in the vibrating bar Y and the said bar is imparted a rapid vibration, the return movement of said bar being caused by the recoil of the spring y^5 on the bar y^6 . In the same movement of the rotary shaft H power is communicated therefrom to the longitudinal shaft O through the bevel-gear n' and o^2 and thence through the bevel-gear o' and p^2 to the shaft P , carrying the endless belt or apron P' , and thence to the shaft p^8 , actuating the paper-laying spring-arm p^{12} , through the chain p^{10} .

The newspapers upon which the addresses are to be printed and which have received one fold are inserted one after another between the rollers e and f on the respective shafts E and F , with the folded portion toward the bands or tapes $e' f'$ and the title of the paper toward the lower bands f' . The lever U is then operated to throw the sliding por-

tion n^{15} of the clutch, which is keyed to said shaft by the key or spline n^x , toward the sleeve n^{12} , the projecting portion n^{16} entering the notch n^7 in said sleeve n^{12} , having the worm-gear n^{13} , and motion is communicated to the sprocket-wheels t^2 and r^8 through the sprocket-chain r^9 , and in the rotation of the wheel S the type-forms are drawn from the upper spool V , the end of the series of conveyers being first secured to the grooved wheel S by the insertion of the lower portion of the type-forms on one of the grooves s uppermost in position. The folded paper between the traveling tapes $e' f'$ is carried by said tapes to the stop c^3 on the arm c^2 and with the outer edge portion of said paper in position above the type-form w^3 , and in the rotation of the shaft H the pad y^4 on the arm Y strikes the upper side of the folded paper and the type-form prints the name of the addressee upon the paper. Following the downward movement of the arm Y the paper-folding blade k^3 above the paper descends and carries the paper between the rollers $b^8 b^8$, as seen in Fig. 3, and to a position in the path of the yielding arms p^{12} , one of which arms carries the folded paper forward and deposits the same upon the endless belt P' . When, however, one of the plates w' reaches the uppermost point of the grooved wheel S , the lug w^{10} meets the barb c^6 , and in the forward movement of the plate w' the draft upon the rod c^5 acts upon the crank c^4 on the crank-shaft C to raise the series of arms c^2 in an upward position, as seen in dotted lines in Fig. 7. In this position of the stop c^3 the paper carried upon the tapes $e' f'$ passes beneath the stop c^3 and is checked by the lug m^2 . The imprint of the name and the post-office address is instantly made upon the paper and the fold given to the paper carried by the blade k^3 and the paper carried by the arm p^{12} on the shaft p^8 and laid upon the traveling apron P' . In this instance, however, the raising of the stop c^3 permits the paper to be carried forward a short distance, and when the paper is laid upon the apron P' one end is extended beyond the other papers in the series, as seen in Fig. 4. In this manner the series of papers following the one whose end is extended beyond the others and also bears the name of the subscriber and the post-office address will indicate that all the papers upon the apron following said paper and said extended paper and the one next extended are to be sent to the one post-office address. The mail-man then gathers with the papers extended all the papers on the apron P' up to the next extended paper, folds said papers, and as the post-office address is upward in position the roll of papers are at once tied and ready for delivery to their destination. The instant the post-office address is imprinted upon the paper the barb c^6 on the rod c^5 meets the inclined surface of the plate r^{12} on the bracket r^{10} and instantly is raised in position and freeing the barb from the lug

n^{10} and another address-form takes its place, and the draft on rod c^5 being released the stop c^3 instantly falls, and the next paper to receive the printed address comes into contact with said stop and when deposited upon the apron P' is in alinement with the other papers which follow in the series. In this manner the edition of a newspaper is completely addressed and at once distributed to the proper post-office for delivery to the subscribers or addressees. The plates w , containing the post-office address, may be introduced prior to the list or series of names under one post-office designation or subsequent, as may be preferred. Combined with a printing-machine the paper-conveying-tapes and rollers $e e' f' f'$ will be close in position to those on the printing-press, so that the paper will receive its printed matter and be transmitted to the address-printer and then folded and laid upon the endless traveling apron automatically. When the editions of a newspaper require extended form-conveying plates, (unwieldy bulk when wound upon the spools,) a number of spools may be employed and the ends of the plates connected from the terminals of the spools. Instead of being connected with the folding-machine the address-printer may be employed independently for the addressing of circulars, letters, and envelops and in the latter instance with the name and post-office address in each imprint. In connecting the first plate in a series of plates w with the grooved wheel S the lower ends of the type-form inserted in one of the grooves s of the wheel hold the others linked together and contract the others until the last of the plates are drawn from the wheel V' . In some cases a series of blanks or plates w with the type-form removed are connected with the series of plates with the forms and these blank forms made to extend to the spool V' , and the winding of said blank plates will be followed by the plates with the forms.

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

1. In an address-printer, a rotary shaft, a grooved wheel on said shaft, separate flexible, longitudinally-slotted plates, having transverse openings in said plates, and a grooved type-body adapted to be inserted within the slot in each plate extending below the plane of the under side of said plates and within the grooves in said wheel.

2. In an address-printer, a side-supporting plate having a bracket at its upper end, a transverse, rotary shaft supported by said plate and bracket, a wheel upon said shaft upon the side of said plate, having said bracket, a sprocket-wheel upon the other end of said shaft, a stud-shaft upon the lower end of said plate, a sprocket-wheel upon said stud-shaft, a sprocket-chain extending over the sprocket-wheel on said stud-shaft and

also over the sprocket-wheel on said rotary shaft, means upon said plate-carrying wheel and said plate for preventing loose motion, a main driving-shaft, a worm on said shaft, and a worm-wheel stud-shaft engaging with the worm on said main shaft.

3. The combination in a paper-folding machine, with its main driving-shaft, of movable address-printing devices, separate fixed and movable stops in the path of the paper to be folded upon the folding-machine, and mechanism upon the folding-machine substantially as described, actuated by the movable address-printing devices, and moving one of said stops from the path of the paper.

4. The combination in a paper-folding machine with its main driving-shaft, of a rotary shaft upon said machine, a wheel upon said shaft, printing devices upon said wheel, power-conveying devices upon the main driving-shaft connected with and actuating the shaft having said wheel, separate fixed and movable stops upon said folding-machine, in the path of the paper to be folded, and mechanism substantially as described upon the folding-machine actuated by the movable address-printing device, and moving one of said stops from the path of the paper.

5. An address-printer comprising separate plates hinged together in series, printing devices upon said plates, a power-actuated rotary shaft, a wheel upon said shaft supporting said series of plates, means for supplying the printing substance to the printing-plates, a compression device for obtaining the imprint, separate fixed and movable stops in the path of the material to receive the imprint, a rock-shaft, an arm upon said shaft connected with said movable stop, a crank upon said shaft, a draft-rod connected with said crank and a projection upon said rod, with which one or more of the series of printing-plates automatically engage.

6. In an address-printing machine comprising a rotary shaft and a bracket supporting one end of said shaft, a rotary wheel upon said shaft, a series of printing-plates supported by said wheel, separate fixed and movable stops in the path of the material to receive the imprint, a compressing device for obtaining the imprint, a rock-shaft upon said machine, an arm upon said shaft connected with said movable stop, a crank upon said shaft, a rod connected at one end with said crank, a lug upon one or more of said printing-plates and a barb upon the other end of said rod and an inclined plane upon the bracket supporting the rotary shaft and in the path of said barb.

7. The combination in a paper-folding machine with the main driving-shaft, of paper-folding devices, a separate longitudinal rotary shaft actuating said paper-folding devices, suitable power connections connecting the latter shaft with the main shaft, separate printing-plates hinged together in series, a

rotary wheel supporting said series of plates, a vibrating arm pivotally connected with the said machine at one end and having a pad at the other end adapted to compress the paper to receive the imprint upon the printing-plate, a spring supporting the vibrating end of said arm and a cam upon the rotary shaft actuating the paper-folding devices adapted to come into contact with the said vibrating arm, substantially as described.

ROBERT MAXWELL.

Witnesses:

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