(No Model.) 4 Sheets—Sheet 1.

G. S. EATON & J. W. LYON.

TYPE RUBBING MACHINE.

No. 300,452. Patented June 17, 1884.

Fig. 1.

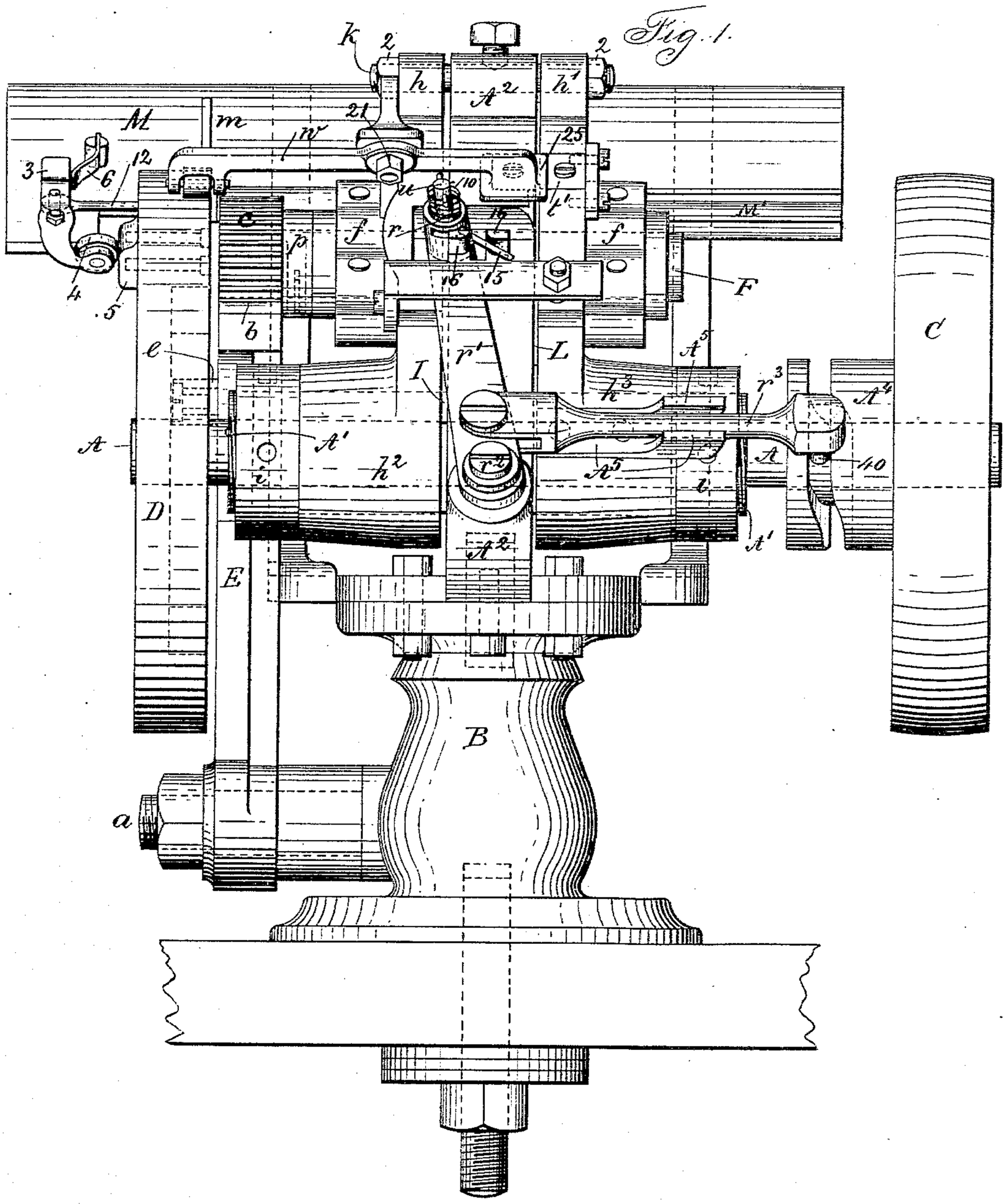

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Fig. 2.

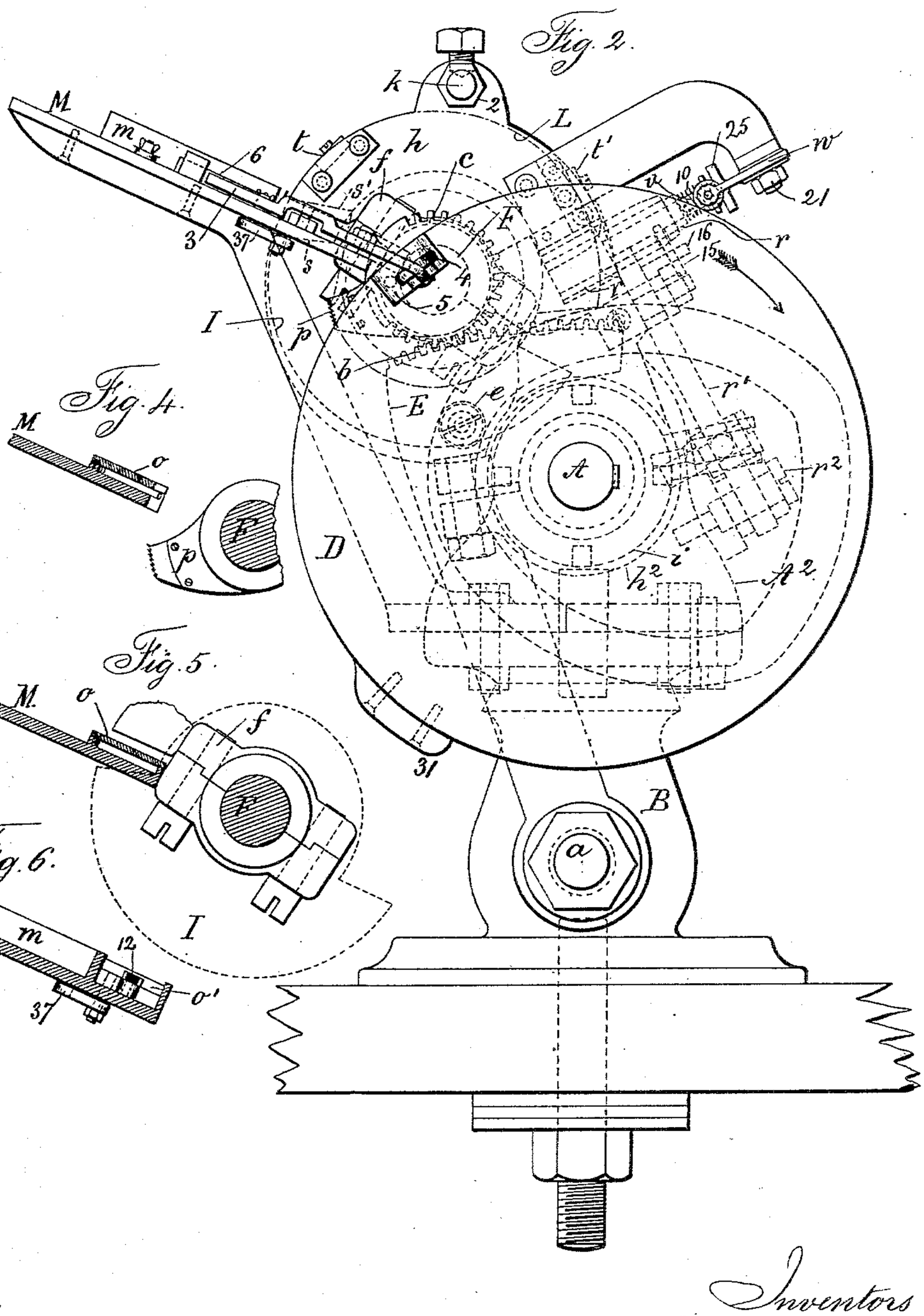

Fig. 4.

Fig. 5.

Fig. 6.

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Fig. 10.

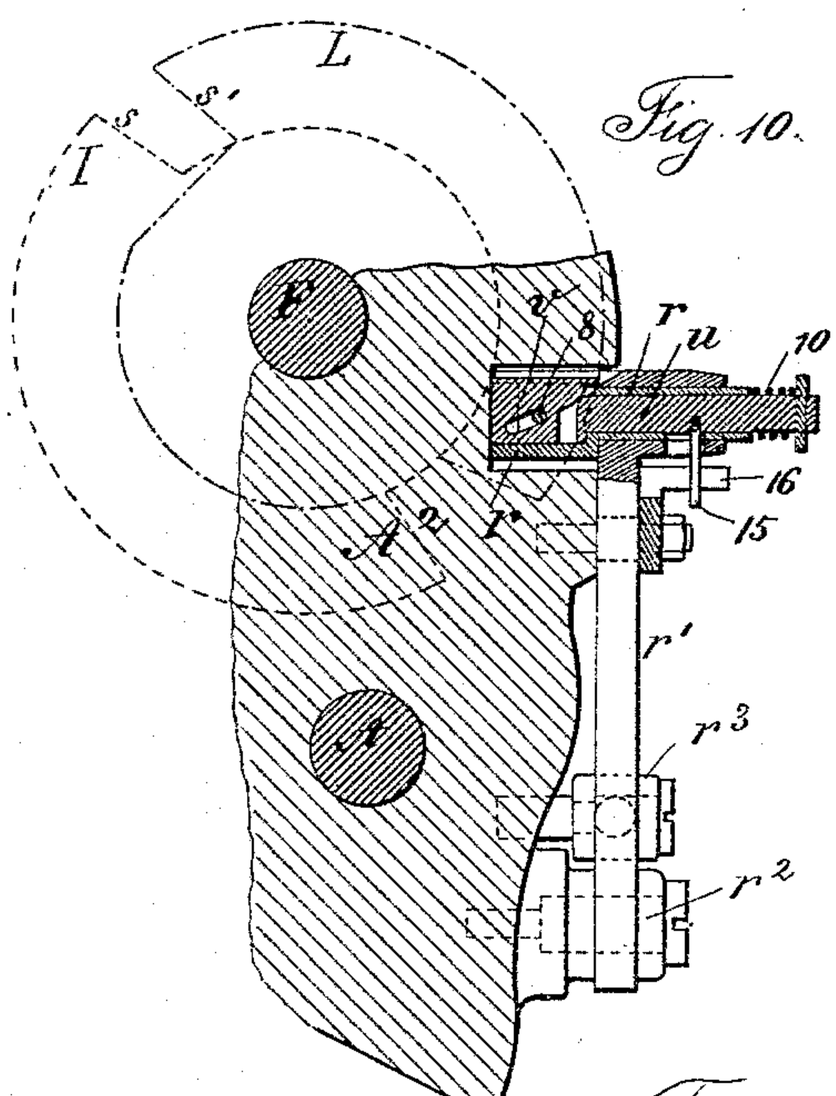

Fig. 9.

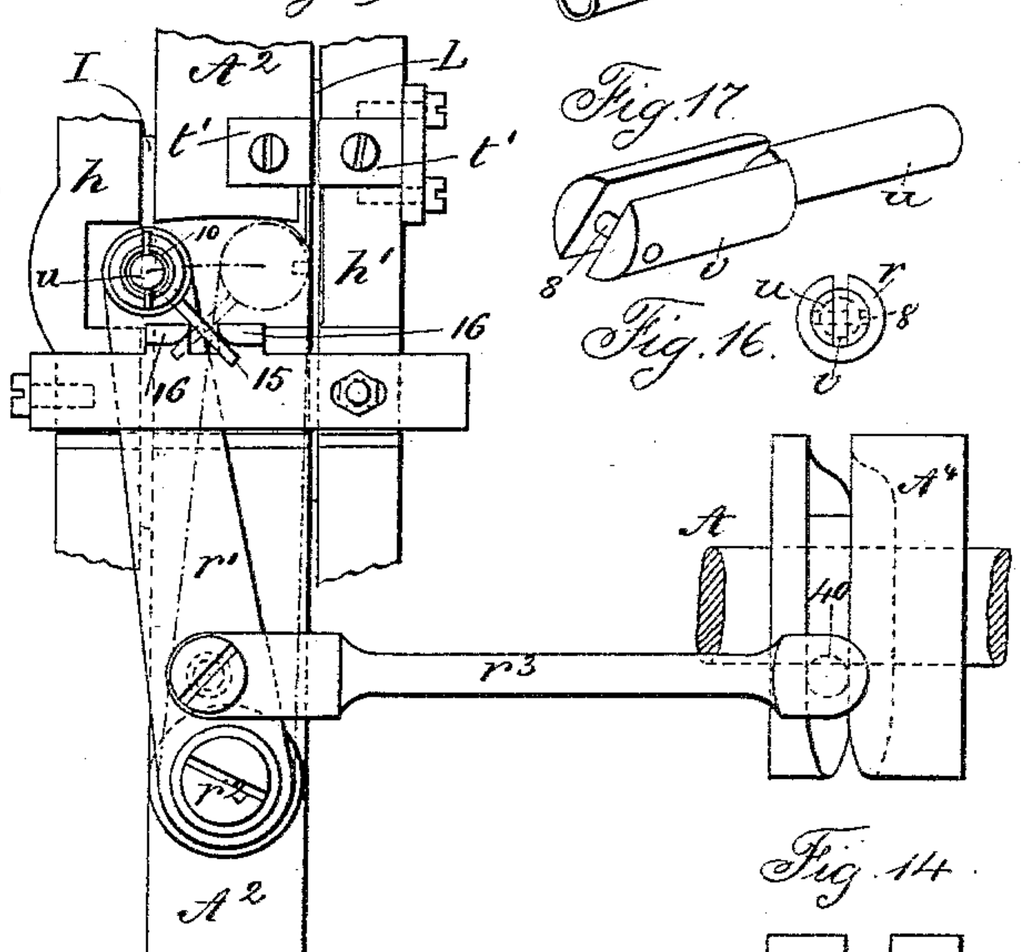

Fig. 15.

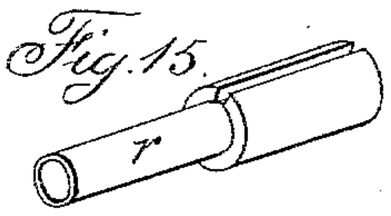

Fig. 17.

Fig. 16.

Fig. 14.

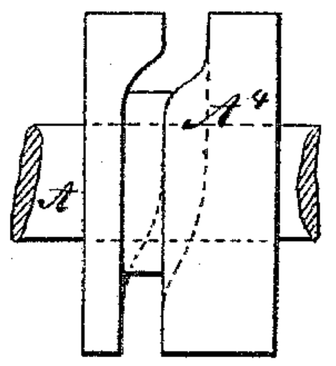

Fig. 3.

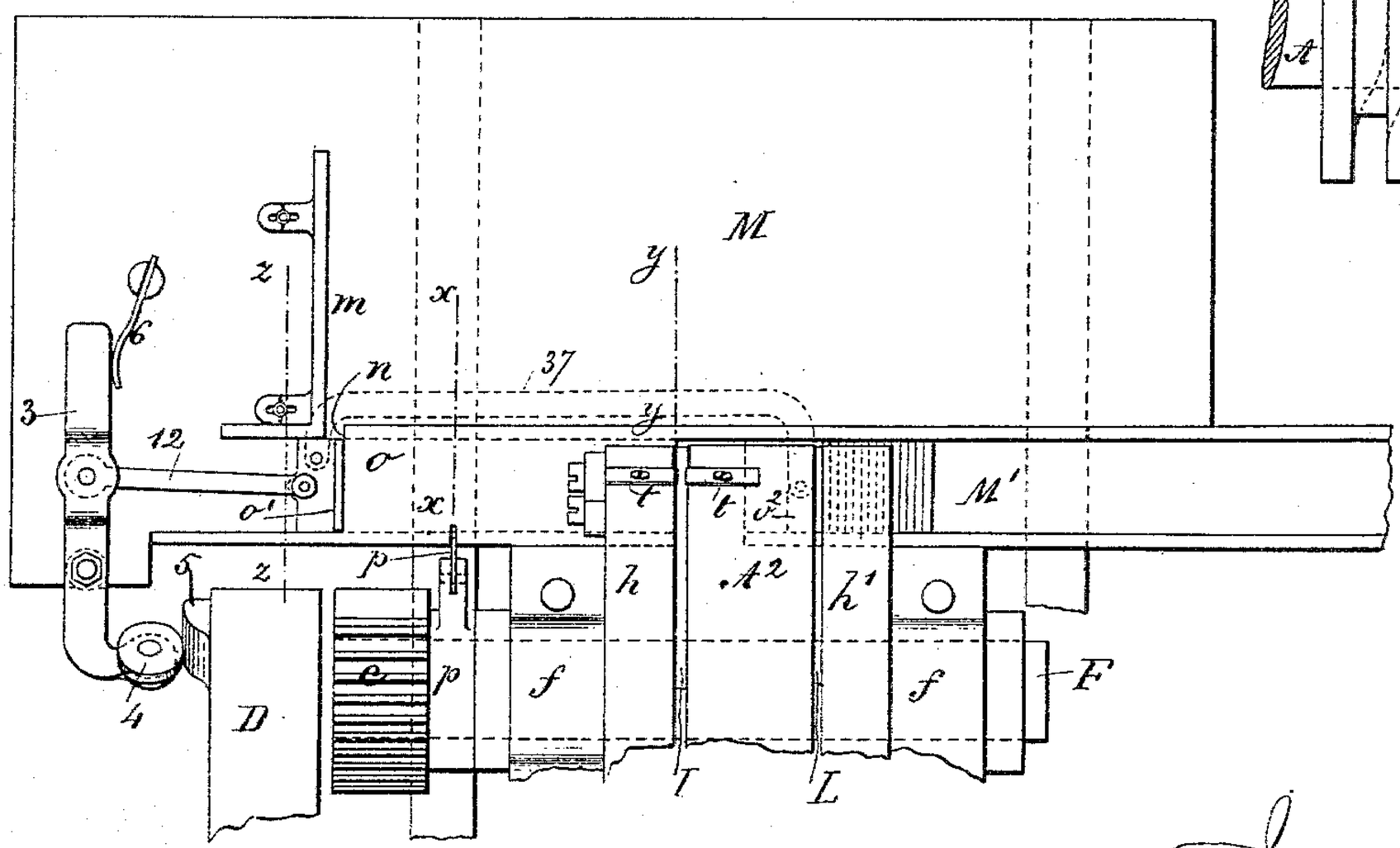

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Fig. 8.

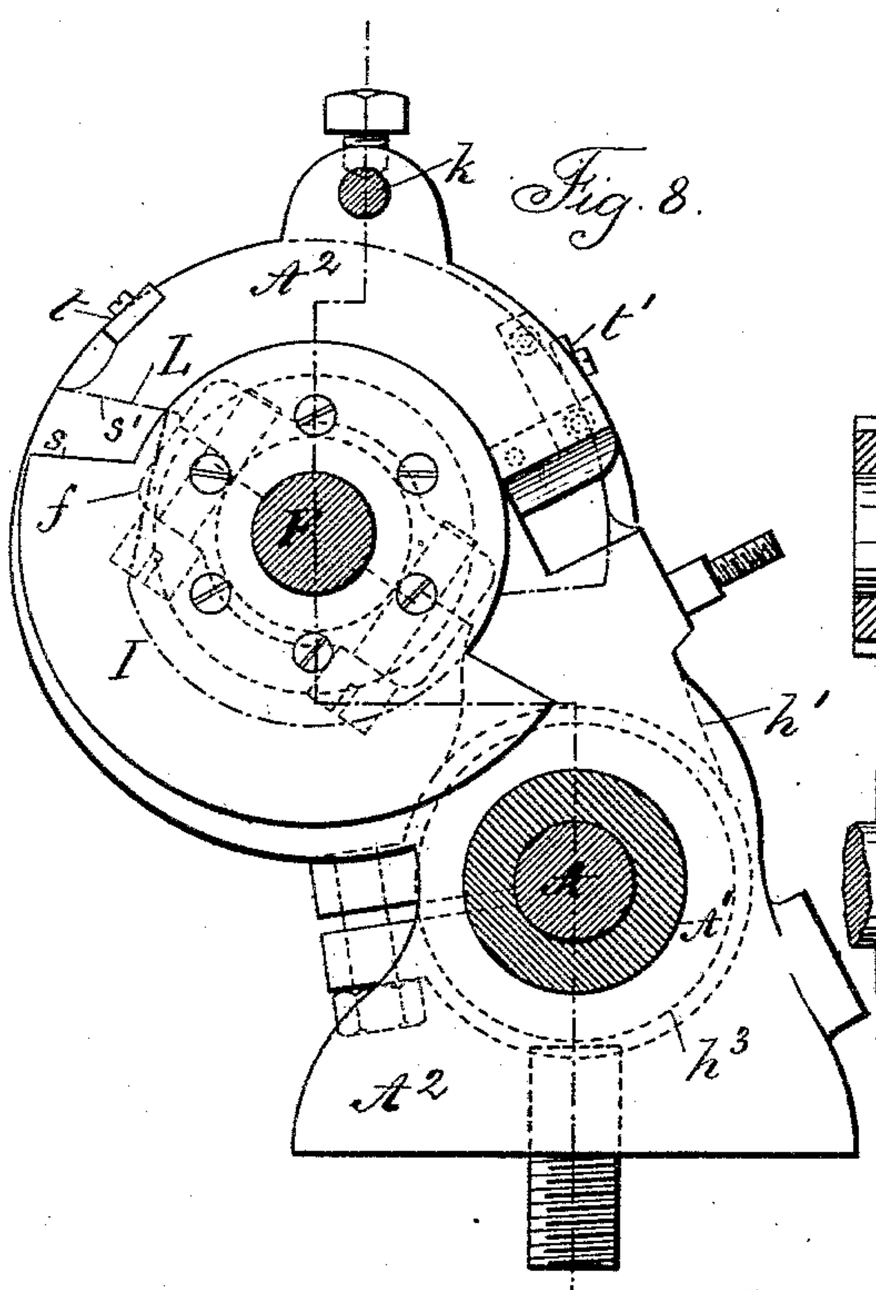


Fig. 7

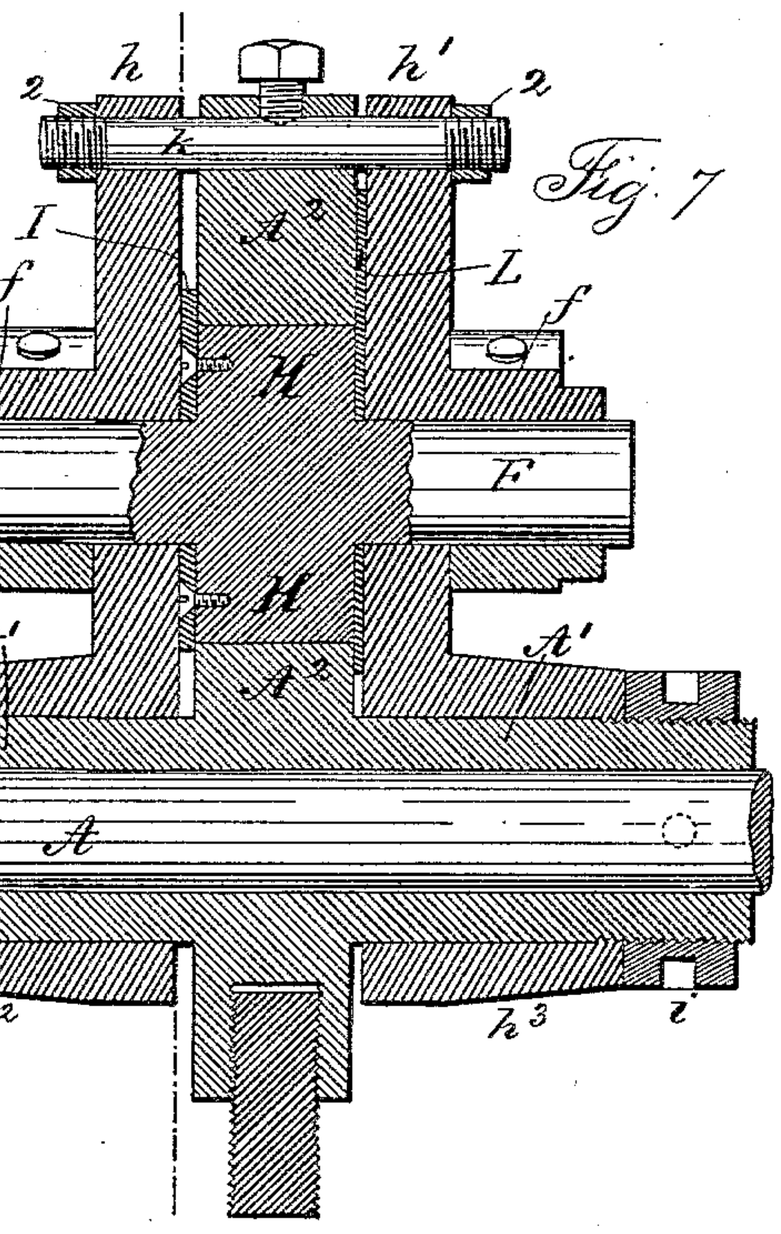


Fig. 11.

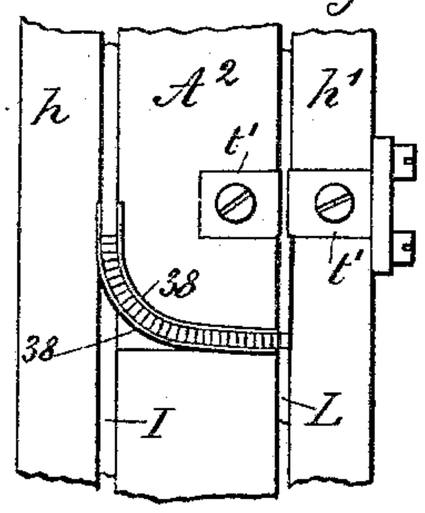
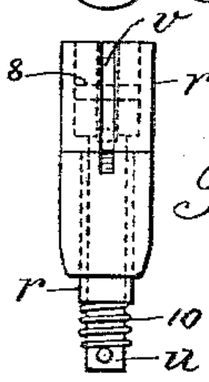


Fig. 12.

Fig. 13



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UNITED STATES PATENT OFFICE.

GEORGE S. EATON AND JAMES W. LYON, OF BROOKLYN, NEW YORK, ASSIGNORS TO SAID EATON.

TYPE-RUBBING MACHINE.

SPECIFICATION forming part of Letters Patent No. 300,452, dated June 17, 1884.

Application filed May 9, 1883. (No model.) Patented in England May 15, 1883, No. 2,439; in Belgium June 15, 1883, No. 61,487; in Austria-Hungary August 17, 1883, No. 33 and No. 1,573; in France September 13, 1883, No. 155,646, and in Germany January 23, 1884, No. 25,584.

To all whom it may concern:

Be it known that we, GEORGE S. EATON and JAMES W. LYON, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Type-Rubbing Machines, of which the following is a specification.

In this machine for rubbing types the types, as they come from the casting-machine, are laid upon a bed, passed into a slide, through which they are moved progressively and the bases nicked, after which one type at a time is taken by an oscillating carrier-plate and moved between smoothing, rubbing, or dressing cutters or surfaces, and delivered, and then turned a quarter-rotation and brought back by a second carrier-plate between surfaces and cutters, that smooth or rub the types and remove the burrs at the bases of the letters. Thereby all four sides of the type-bodies are smoothed or rubbed, the type being rubbed on two of the sides during the oscillating movement in one direction and on the other two sides during the movement in the other direction.

In the drawings, Figure 1 is a rear view of the machine. Fig. 2 is an elevation endwise of the shaft. Fig. 3 is a partial plan. Fig. 4 is a section at *x x*. Fig. 5 is a section at *y y*, and Fig. 6 is a section at *z z*. Fig. 7 is a vertical section through the motor-shaft and the oscillating shaft. Fig. 8 is a view endwise of the shafts, showing the type-carrying plates. Fig. 9 is a rear view of the transfer mechanism, and Fig. 10 is a section of the same, and Fig. 11 is a rear view representing a modification of the transfer mechanism. Fig. 12 is a view of the inner end, and Fig. 13 is a detached plan of the transfer-block, and Fig. 14 is a separate view of the cam A^4. Fig. 15 is a perspective view of the transfer-block *r* detached. Fig. 16 is an end view at the inner end of the same; and Fig. 17 is a detached perspective view of the rod *u* and the jaw at its end, represented on a scale considerably larger than that of Figs. 15 and 16.

The shaft A is supported by the tubular bearing A′ upon the upper part of the frame or column B, which column rests upon a suitable table or bench. The shaft A is revolved continuously by a belt and pulley, C, and upon said shaft A there is a cam-wheel, D, having a cam-groove, (shown by dotted lines in Fig. 2,) into which passes the stud *e* upon the rocking lever E. This lever E has at its lower end an eye for the pivot-bolt *a*, and at its upper end a segmental rack, *b*, that acts upon the pinion *c* at the end of the rocker-shaft F. The rocker-shaft F is supported in bearings *f*, that are upon the adjustable cheek-pieces *h h′*. These cheek-pieces *h h′* are provided with tubular supports h^2 h^3, that surround the tubular bearing A′ A′ of the motor-shaft A, and there are adjusting-nuts *i* upon such tubular bearing, by which the cheek-pieces *h h′* can be moved along upon the said bearings A′, and the cheek-pieces are tied together at their upper portions by the bolt *k* and nuts 2 2 at its ends.

Upon the rocker-shaft F there is a stock, H, upon the sides of which are fastened the movable carrier-plates I L. The plate I is to be of a thickness slightly less than the width of the types that are to be dressed or rubbed, and the plate L is to be of a thickness slightly less than the thickness of the type. These plates I L are changed to suit the font of types or the respective letters that are being rubbed, and the cheek-pieces *h h′*, being movable, allow for the introduction of these carrier-plates and for varying the spaces between the respective cheek-pieces and the central body-piece, A^2, that extends up from the tubular bearing A′, and in which the stock H of the shaft F oscillates with such shaft F. It will now be understood that the extent of oscillating motion given to the shaft F, stock H, and carrier-plates I and L will depend upon the size of the cam D, which acts upon the stud *e*, lever E, rack *b*, and pinion *c*, and that if the carrier-plates have to pause at the ends of the reciprocations for receiving or delivering the types the portions of the cam-groove that act at these parts of the movement are to be arcs of circles from the center of the motor-shaft, as shown. The types to be rubbed are placed upon the table M, and by hand they are laid down upon their sides and passed in with the

base end first between the fence *m* and the guide *n*, and they are pressed in beneath the plate *o* by the reciprocating pusher *o'*, that receives motion from the link 12, lever 3, roller 4, and cam 5 upon the cam-wheel D, the spring 6 returning the pusher to its normal position in line with the fence *m*. The types as they lie in line upon the table and beneath the plate *o* are moved along progressively by the pusher *o'* as one type after another is introduced between the line of types and the pusher.

Upon the shaft F there is a cutter, *p*, of a width adapted to the notching or nicking of the bases of the types. This cutter is moved by and with the rock-shaft F, and it is operative at a time when the line of types is stationary. It passes through a notch at the edge of the table and slide, and, if desired, the type that is being operated on is held by a cam acting upon a movable section of the plate *o*, so as to keep the type firm while the cutter is removing the central rough portion of the base, where the casting-sprue had been broken off. This cutter *p* may be in the form of a lever upon the shaft F and be moved at the proper time by a cam upon the wheel D. The carrier-plates I L have offsets *s s'*, that are slightly inclined to the radial line and form type-rests, the other portions of the edges of the carrier-plates being nearly semicircles, as seen in Fig. 8, and by dotted lines in Figs. 2 and 10. The parts are so proportioned and timed that the pusher *o'* moves the line of types along when the rest *s* of the carrier I is below the end type, and just as the carrier begins to move upwardly; hence the end type is carried off upon the rest *s*, and passes up between the cheek-piece *h* and the body A^2, and is kept in proper position by the same, and there are cutters at *t* that remove any burrs that may exist at the bases of the letters, or at the angles of the type-bodies, and at the same time the surfaces of the bodies of the types are smoothed or polished by contact with the metallic surfaces between which they are carried. The transfer-block *r* is circular, with a slot in one side. It is placed upon the arm *r'*, which arm is pivoted at r^2, and the connecting-rod r^3 is pivoted to the arm *r'* and provided with a pin, 40, in the grooved cam A^4 upon the motor-shaft A. This connecting-rod r^3 is kept from dropping by the jaws of the support A^5, which is screwed to the tubular support h^3 of the cheek-plate *h'*. The cheek-plate *h* and body A^2 are notched to allow the transfer-block *r* to be moved freely across from one position to the other, as seen in Fig. 9, and this transfer-block has a tubular shank through an eye at the upper end of the arm *r'*, and a pin, 15, extends out through the tubular shank and passes in between the stationary fingers 16 16, so that as the arm *r'* is moved from one position to the other the pin 15 will give to the shank and transfer-block a quarter of a rotation, and in so doing the slot in the side of the transfer-block occupies the position shown by dotted lines, and is at the side next to the cheek *h'*, instead of being upon the top, as seen by the full lines. It is now to be understood that the slot in the transfer-block is at the top and that it is in line with the opening between the body A^2 and cheek-piece *h* at the time the type-carrier I brings over the type; and hence the type is delivered into the slot of the transfer-block *r*, and as soon as this takes place the transfer-block is moved across by the cam A^4, link r^3, and lever *r'*, and receives a quarter-rotation, and the type is in a position to be delivered upon the carrier-plate L as it commences to oscillate in the reverse direction simultaneously with the carrier-plate I, as this latter is moved back to take another type.

We now describe the means for pressing the type out of the slot in the transfer-block and delivering it upon the said carrier-plate L. The stem of the transfer-block is hollow, and in it there is a rod, *u*, that is made as a jaw at the end within the transfer-block, and said jaw receives within it an ejector-plate, *v*, having an inclined slot, and the pin 8 in the jaw of *u* passes through this slot. A spring, 10, serves to project the end of the rod *u*, and the lever *w*, pivoted at 21, is acted upon by the projection 31 on the cam-wheel D, and the broad end 25 of the lever *w* allows the end of the rod *u* to pass beneath it when the transfer-block has been moved into the position shown by dotted lines in Fig. 9, and at this moment the cam 31, acting on the lever *w*, causes the end 25 to press in the rod *u* and move the pin 8 in the inclined slot, and thus project the ejector laterally and deliver the type from the slot in the transfer-block upon the nearly radial surface of the carrier-plate L, by which it is carried upwardly between the cheek-piece *h'* and the body A^2, and the projections at the sides of the letter-base are removed by the cutters *t'*. These cutters are made to shear off the projections perfectly smooth and in line with the sides of the type. This is done with the greatest accuracy, because the type is kept in its proper position as it rests upon the carrier, and is between the cheek-piece *h'* and the body A^2. The type is carried back upon the table M, where it is laid into a slide or composing-stick, M', and there is to be a pusher, o^2, that pushes each type as it is laid down, moving it and the line of types along out of the way of the next type. This pusher may be actuated in any convenient manner. We have represented by dotted lines the rod 37 below the table M, connecting the pusher *o'* to the pusher o^2, so that they move together.

In Fig. 11 we have shown a modification of the transfer mechanism by which the transfer-block is dispensed with. In this case a quadrant-slide, 38, is provided, into which types are delivered by the carrier-plate I. These are allowed to accummulate until the quadrant-slide is entirely full, and this is to be proportioned in such a manner, according to the

thickness of the types, that when one type is added by the carrier-plate at one end of the quadrant-slide another type at the other end of the line of types is in position to be taken off by the other type-carrier as the carriers are oscillated the other way.

It will be apparent that the types are presented to the second carrier, L, with the bodies in position for the two unrubbed sides to be acted upon by the cutters t'.

It will be apparent that the cheek-pieces having the tubular supports h^2 h^3 upon the tubular bearings of the rocker-shaft, the surfaces of the cheek-pieces can be turned or ground off in a lathe with the greatest accuracy, and they will always occupy a plane that is perpendicular to the axis of the oscillating shaft; hence there is no risk of the parts becoming inaccurate when adjusted, and the bodies of the types as dressed will always be perfectly parallel, and risk of inaccuracy in adjusting the parts is prevented. The surfaces of the cheek-pieces and body with which the types come into contact are subject to wear. They may therefore be of chilled iron and ground off with great accuracy; or they may be made with movable plates of steel or other suitable metal that can be changed from time to time, as necessary. In cases where the bases of the letters overhang at opposite sides of the types, and these bases are to remain—as in script letters—the faces of the cheek-pieces and body are to be grooved concentrically to allow these bases to pass through the machine. If only two sides of the type-body are to be dressed, it will only be necessary to pass the types through between the body and the cheek-plate h and deliver them upon a suitable rule or holder.

We claim as our invention—

1. The bed M upon which the types are placed, the plate o, and pusher o', in combination with the type-carrier, means, substantially as specified, for giving to the same an oscillating motion, and the type dressing or rubbing devices, substantially as set forth.

2. In a type rubbing or dressing machine, the combination, with two type-carriers upon one shaft, and mechanism for giving to the same an oscillating movement, of means, substantially as specified, for feeding the types, and a transfer mechanism for receiving the types from one carrier and delivering the same to the other carrier, substantially as set forth.

3. The combination, with the oscillating shaft, type-carrier, and rubbing devices, of a bed upon which the types are received, a pusher to move along the line of types to the carrier, and a cutter for nicking the bases of the types, substantially as set forth.

4. The combination, with the oscillating type-carriers and the body A^2 and cheek-pieces h h', of the slotted transfer-block, and the mechanism, substantially as specified, for moving, partially rotating the same, and transferring the type from one carrier to the other, substantially as set forth.

5. In combination with the type-carriers, a slotted transfer-block, a sliding plate in the same, and mechanism, substantially as specified, for moving the said plate and ejecting the type, substantially as set forth.

6. The combination, with the body A^2, the shaft, and type-carriers, of the cheek-pieces and cutters, the motor-shaft, revolving cam, the rack, and the pinion for giving to the shaft an oscillating motion, substantially as set forth.

7. The combination, with the oscillating shaft and the type-carriers, of the cheek-pieces, the body A^2, and cutters for dressing the types, and the rule or receptacle into which the types as rubbed are received, substantially as set forth.

8. The combination, with the oscillating type-carriers, the body A^2, and shaft, of cheek-pieces having tubular bearings, and means for supporting and adjusting such cheek-pieces, substantially as set forth.

Signed by us this 30th day of April, A. D. 1883.

GEO. S. EATON.
JAMES W. LYON.

Witnesses:
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