No. 817,215. PATENTED APR. 10, 1906.

A. ANDERSON.

RECIPROCATING BED ACTUATING APPARATUS FOR PRINTING PRESSES AND OTHER MACHINES.

APPLICATION FILED FEB. 8, 1905.

3 SHEETS—SHEET 1.

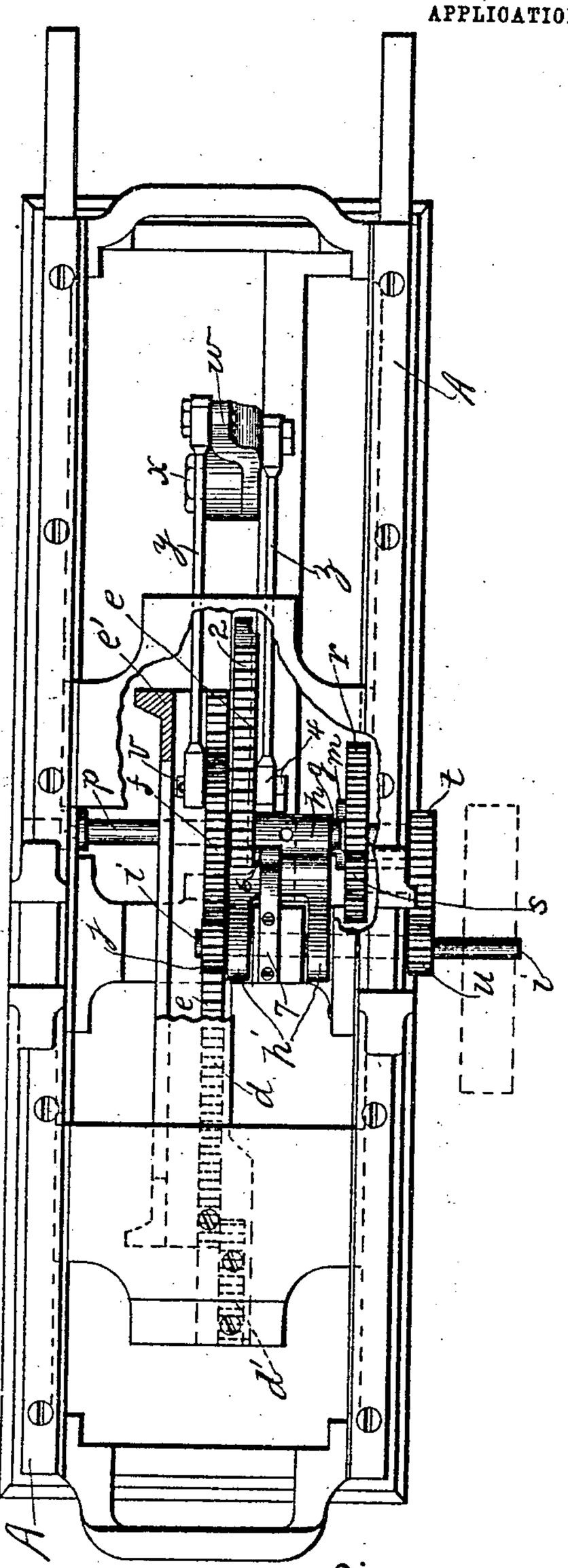

Fig. 2.

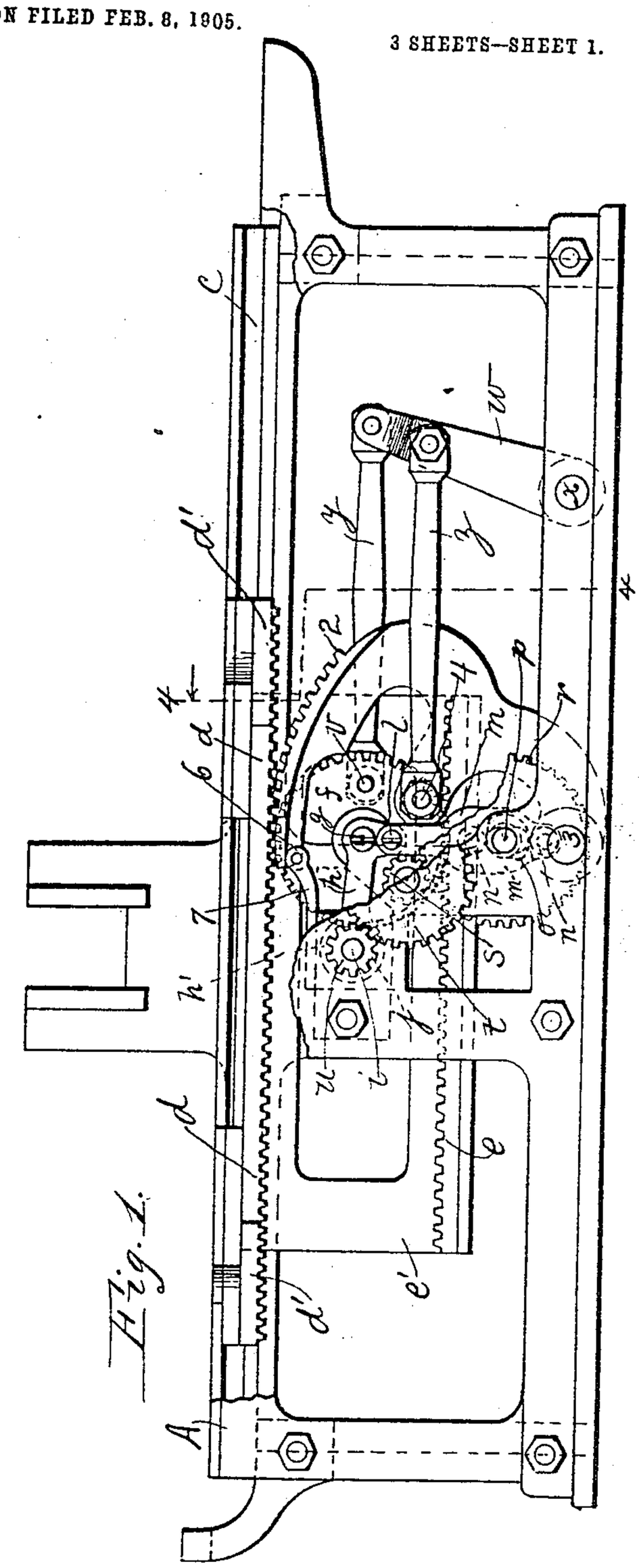

Fig. 1.

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74. MACHINE ELEMENTS AND MECHANISMS.

27

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3 SHEETS—SHEET 2.

Fig. 3.

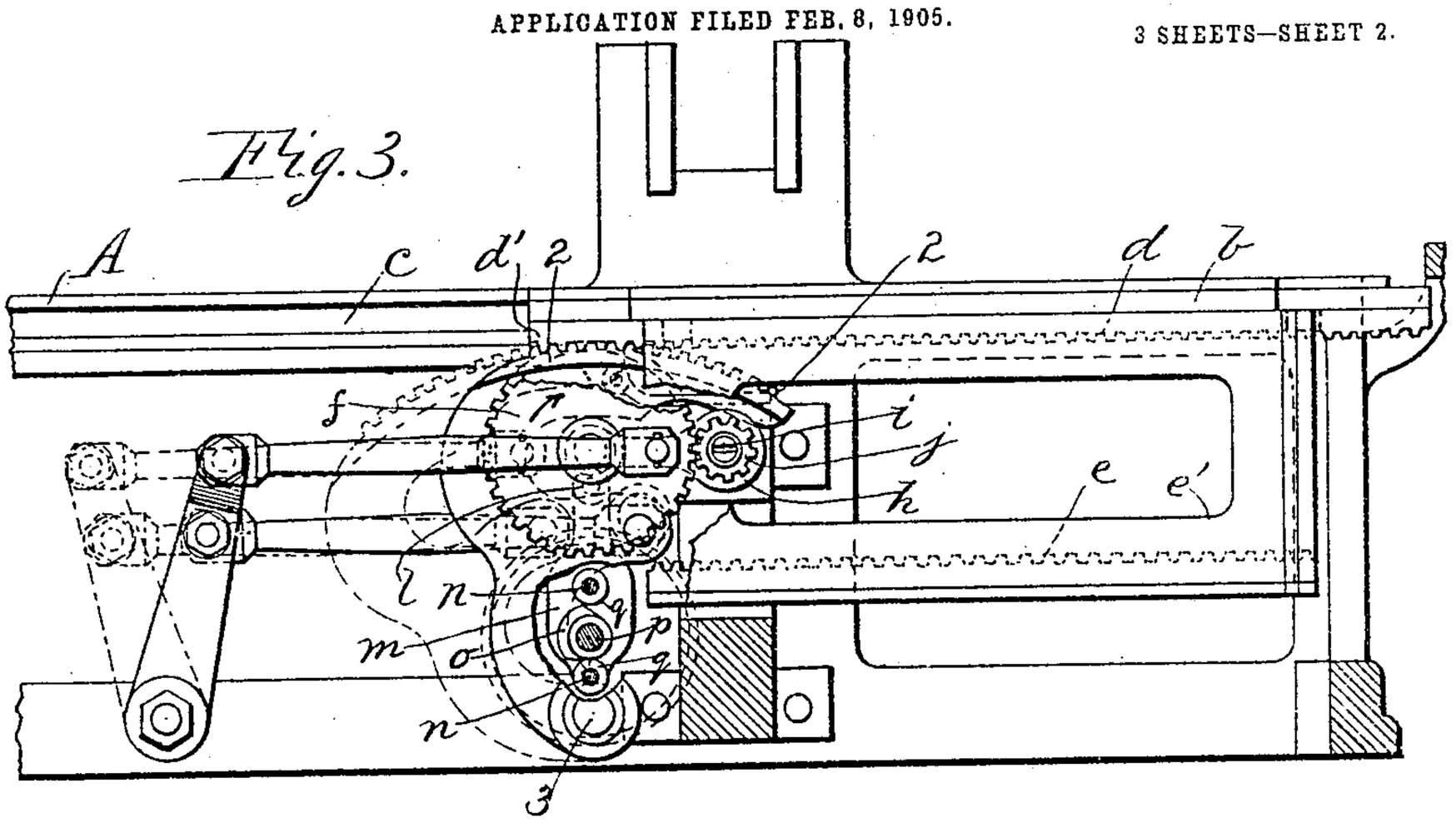
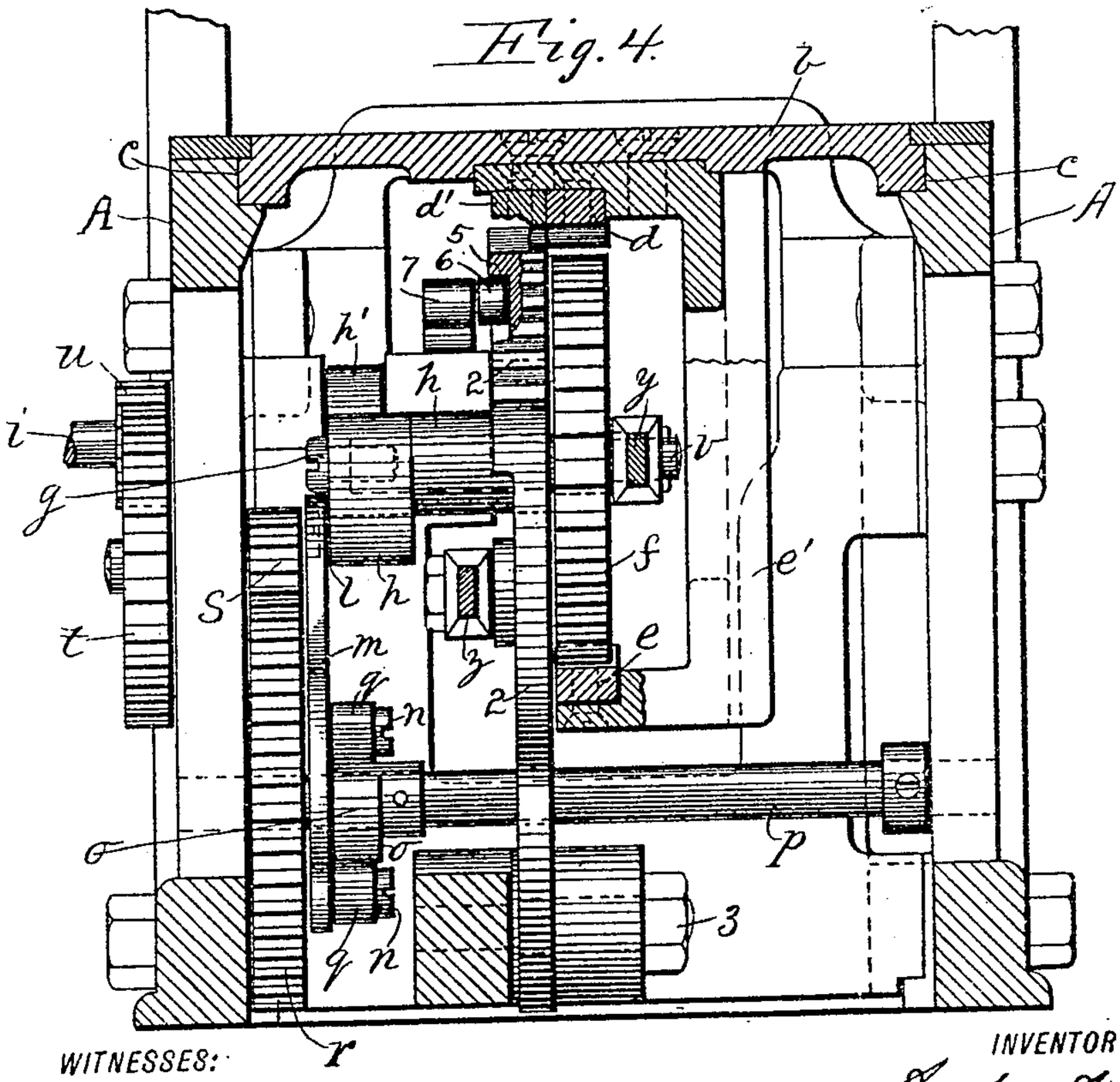


Fig. 4.



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RECIPROCATING BED ACTUATING APPARATUS FOR PRINTING PRESSES AND OTHER MACHINES.

APPLICATION FILED FEB. 6, 1905.

3 SHEETS—SHEET 3.

Fig. 5.

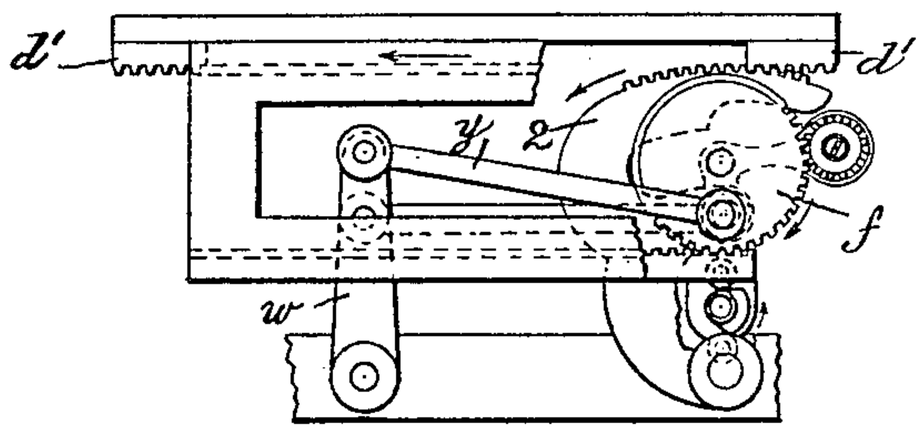


Fig. 6.

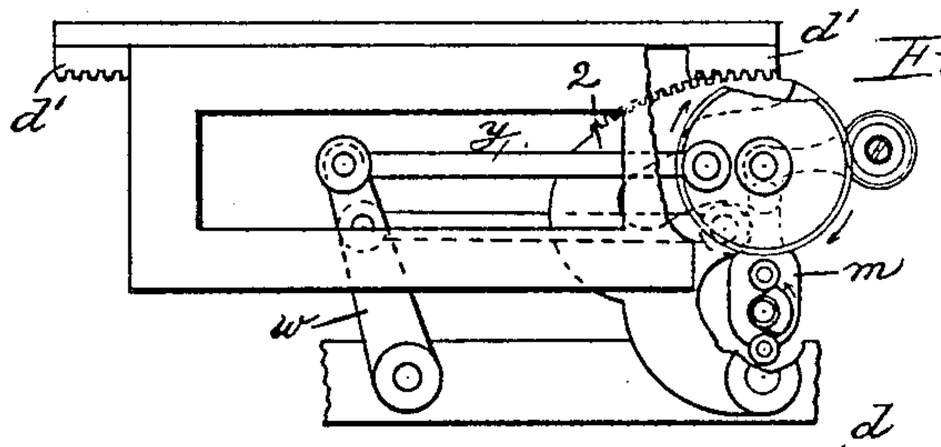


Fig. 7.

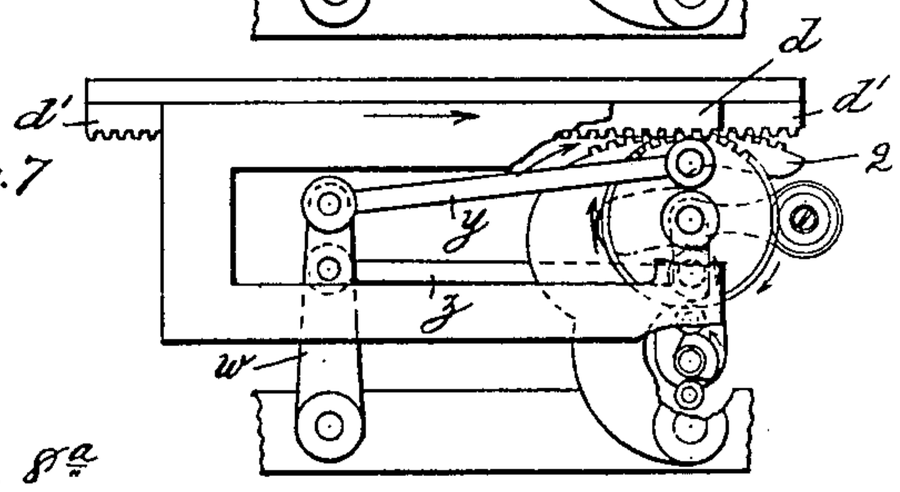


Fig. 8a.

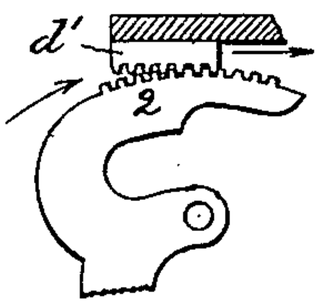


Fig. 8.

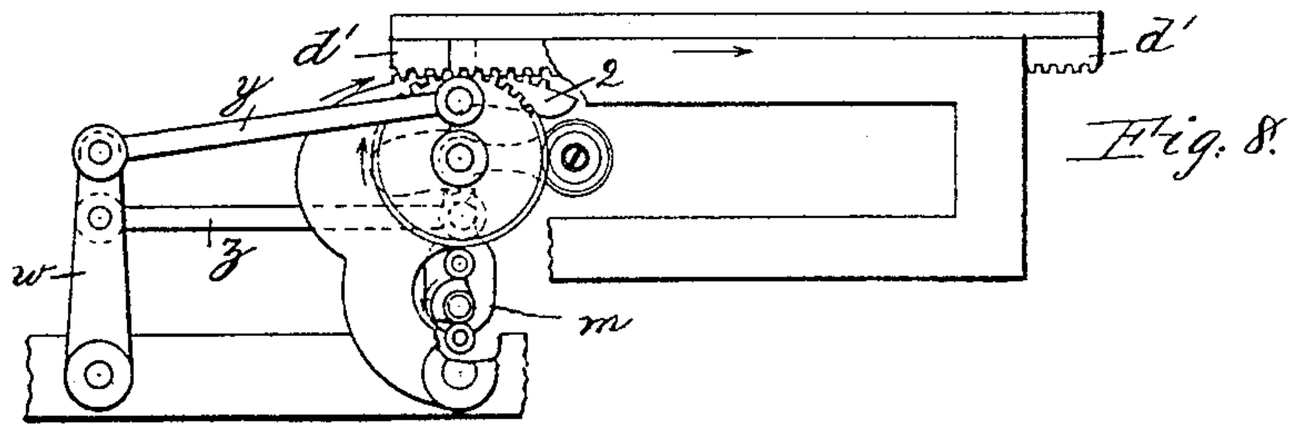


Fig. 9.

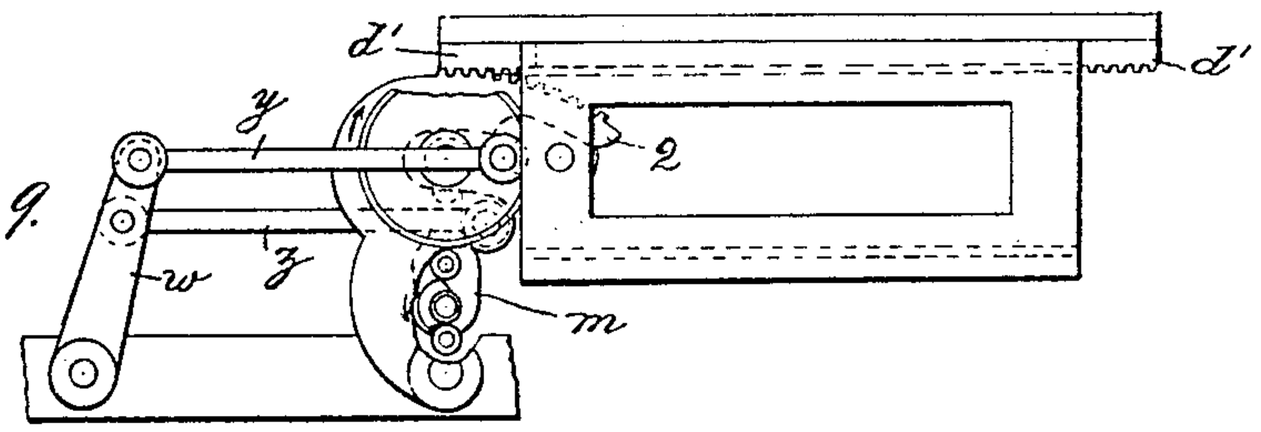


Fig. 10.

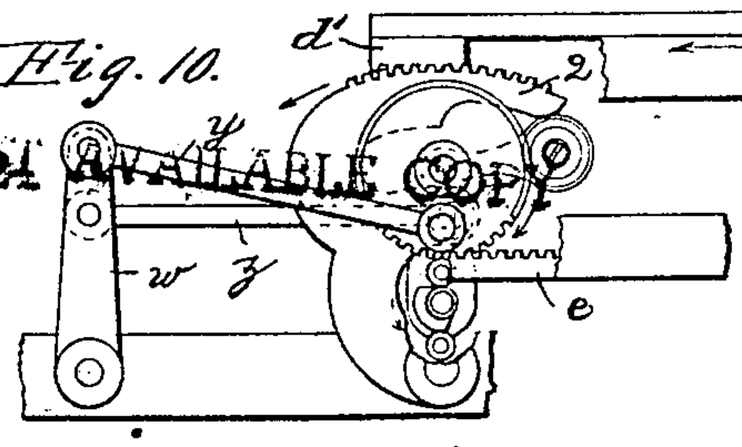


Fig. 11.

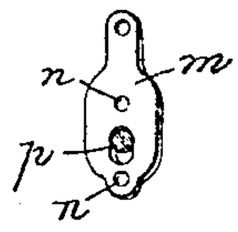
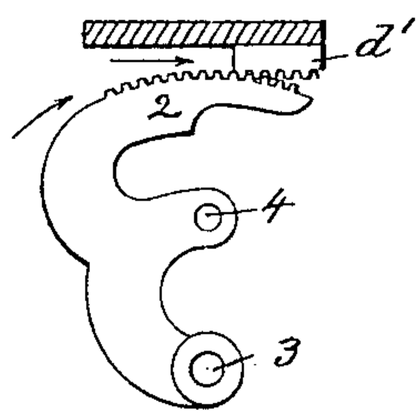


Fig. 7a.



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ANDERS ANDERSON, OF PLAINFIELD, NEW JERSEY.

RECIPROCATING BED-ACTUATING APPARATUS FOR PRINTING-PRESSES AND OTHER MACHINES.

No. 817,215. Specification of Letters Patent. Patented April 10, 1906.

Application filed February 8, 1905. Serial No. 244,705.

To all whom it may concern:

Be it known that I, ANDERS ANDERSON, a citizen of the United States of America, and a resident of Plainfield, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Reciprocating Bed-Actuating Apparatus for Printing-Presses and other Machines, of which the following is a specification.

My invention relates more particularly to printing-presses, but is also applicable to other machines in which reciprocating beds are used—as, for instance, metal-planing machines and the like—and it consists of the improved apparatus for actuating the bed hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of the bed-carrying frame and the actuating apparatus of my invention with a part of the frame broken out. Fig. 2 is a plan view of the same with a part of the frame broken out and a part of the reciprocating-bed structure sectioned horizontally. Fig. 3 is an elevation of part of the machine in reverse of the view of Fig. 1 with some parts broken out and some shown in vertical section. Fig. 4 is a transverse section on line 4 4 of Fig. 1. Figs. 5, 6, 7, 7ª, 8, 8ª, 9, and 10 are diagrams illustrating the positions of various parts corresponding with different positions of the bed. Fig. 11 is a vertical view of the pendent plate detached, showing the cam-shaft in section.

The frame A is of the usual approved form and carries the usual reciprocating bed *b* in ways *c*, and it has the usual upper toothed rack *d* and lower toothed rack *e* for working it forward and backward by the spur-wheel *f*, said wheel being shifted from one rack to the other, according as the bed is to be moved forward or backward. The rack *e* is supported on a pendent flange *e'* of the bed. The spur-wheel *f* is carried on a short rotating shaft *g*, which is mounted in one extremity of a vertically-rocking arm *h*, which is pivoted by its ear-lugs *h'* on the driving-shaft *i*, carrying the pinion *j*, which gears with and drives the said wheel *f*. The free end of arm *h*, carrying said shaft *g* and spur-wheel *f*, is connected at *l* with a pendent plate *m*, carrying upper and lower studs *n*, projecting from one side and between which a cam *o* on the shaft *p* works to shift said wheel up and down, said plate being slotted and the shaft *p* passing through the slot for guiding the plate and the studs *n* being fitted with antifriction-rolls *q* for reducing friction. The shaft *p* is driven by the spur-wheel *r*, and said spur-wheel is driven by a pinion *s*, spur-wheel *t*, and the pinion *u* on the driving-shaft *i*.

The wheel *f* carries a crank-pin *v*, to which a rock-lever *w*, pivoted at *x*, is coupled by a rod *y*, said rock-lever being coupled at 4 by a rod *z* with an auxiliary rocking bed-actuating toothed segment, the support of which is carried on a pivot 3, said segment 2 working in a vertical plane close alongside of the upper rack *d*, but not engaging the teeth of said rack, its purpose being to engage short reversing racks *d'* alongside of and to some extent overlapping each end portion, respectively, of the rack *d* to control the bed, while the wheel *f* is changing from one to the other of the racks *d e*.

The operation is as follows: Starting with the bed moving toward the left and the rocker-arm *w* in vertical position, as illustrated in Fig. 5, the spur-wheel, moving always in the direction of the contiguous arrow, is then in engagement with the lower rack, and the segment 2 coming into engagement with the supplemental rack on the right. As the movement proceeds from this point the spur-wheel commences to leave the lower rack and the segment becomes further engaged with the supplemental rack, carrying the latter and the bed to the limit of travel toward the left, as indicated in Fig. 6. Then the movement of the segment is reversed by its connection with the rocker-arm, and the segment forces the bed in the opposite direction to the position indicated in Fig. 7, where the rocker-arm is again vertical. At this point the supplemental rack will be leaving the segment, Fig. 7ª, and the spur-wheel be coming into engagement with the upper rack. Continuing the movement in the same direction, the bed is forced to the right until the supplemental rack leaves the segment, when the bed is moved then only by the spur-wheel. When the bed nearly reaches its limit of travel to the right, the parts are in the position indicated in Fig. 8, the segment engaging the supplemental rack at the left, Fig. 8ª, and the spur-wheel commences to leave the upper rack. The bed continues its travel to the right until the parts are in position to reverse the movement of the segment, as in Fig. 9. Then the segment moves the bed to the left until the spur-wheel comes fully into engagement with the lower rack, as in Fig. 10. Thus the movements are con-

tinued, the segment always coming into engagement with one of the supplemental racks prior to the disengagement of the spur-wheel from either the upper or lower rack. The segment effects the reversal of the bed without shock or jar, the bed moving in connection with the spur-wheel and segment for a short interval, and therefore without changing its rate of travel, while one or the other is being moved out of operative relation with respect to it.

Under an internal flange 5 of the segment 2 a supporting-roller 6 is mounted on a supporting-bracket 7 to hold the segment up to its work in case any slack may occur by wear.

What I claim as my invention is—

1. The combination with the reciprocating bed, toothed racks for operating it, spur-wheel for alternately engaging said racks and driving the bed in opposite directions, and means for shifting said wheel from one to the other of said racks, of the reversing toothed racks overlapping the end portions respectively of the upper bed-actuating rack, and the toothed segment arranged to engage said reversing rack prior to the escape of said spur-wheel from the said upper and lower racks, and means for rocking said segment.

2. The combination with the reciprocating bed having the upper and lower toothed racks for moving it in opposite directions, the wheel for operating the bed and means for shifting said wheel for alternately engaging said racks, of the short reversing racks along the respective end portions of the upper bed-shifting rack, the toothed segment for coacting therewith for reversing the bed at each end of its range of movement, and means for rocking the said segment in unison with the movements of the bed, said bed-actuating wheel running out of engagement of the racks respectively, and said segment engaging the short racks before such disengagement of said driving-wheel and said segment controlling the bed while said driving-wheel is disengaged therefrom.

3. The combination with the reciprocating bed, toothed racks for operating it, spur-wheel for automatically engaging said racks and driving the bed in opposite directions, said wheel running onto and off the racks at their ends, and means for shifting said wheel from one to the other of said racks, of the reversing toothed racks overlapping the end portions respectively of the upper bed-actuating rack, and the toothed segment arranged to engage said reversing racks prior to the escape of said spur-wheel from the said upper and lower racks and means for rocking said segment.

4. The combination with the reciprocating bed, toothed wheel for operating it, spur-wheel for automatically engaging said racks and driving the bed in opposite directions, means for shifting said wheel from one to the other of said racks, of the reversing toothed racks overlapping the end portions respectively of the upper bed-actuating rack, the toothed segment engaging said reversing racks prior to the escape of said spur-wheel from the said upper and lower racks, and means for rocking said segment, said means for shifting said rack-driving spur-wheel consisting of the vibrating arm carrying the shaft of the spur-wheel, slotted plate pendent from said arm, cam-shaft engaging the slot of said plate and controlling it, and the cam on said shaft actuating said pendent plate.

Signed at New York this 27th day of January, 1905.

ANDERS ANDERSON.

Witnesses:

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J. M. HOWARD.