

(No Model.)

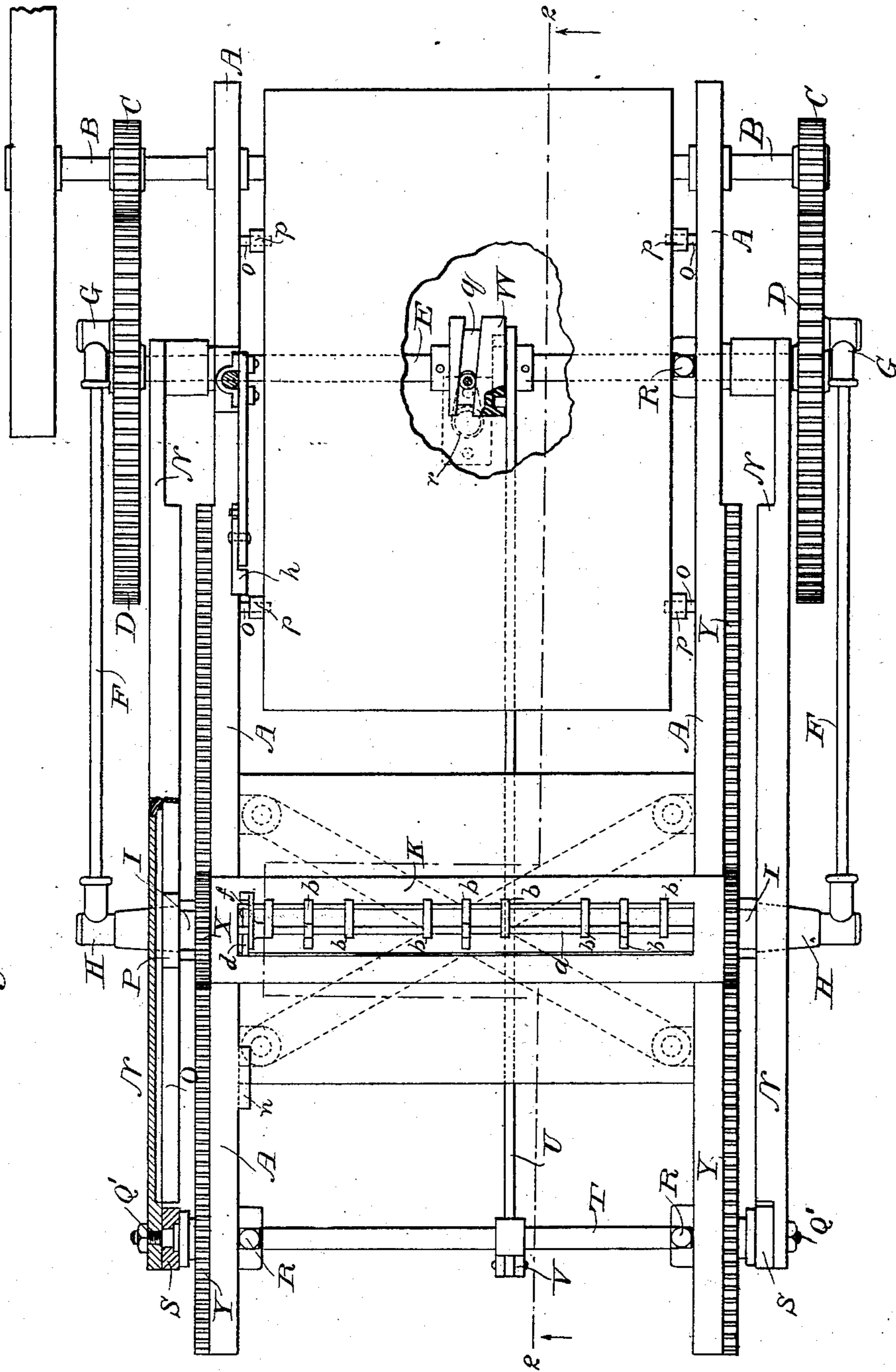
3 Sheets—Sheet 1.

E. PROUTY.
PRINTING MACHINE.

No. 317,470.

Patented May 5, 1885.

Fig. 1.



WITNESSES

Wm A. Shinkle
Geo W Young

INVENTOR

Enoch Prouty.

By his Attorneys

Baldwin, Hopkins, & Beaton.

(No Model.)

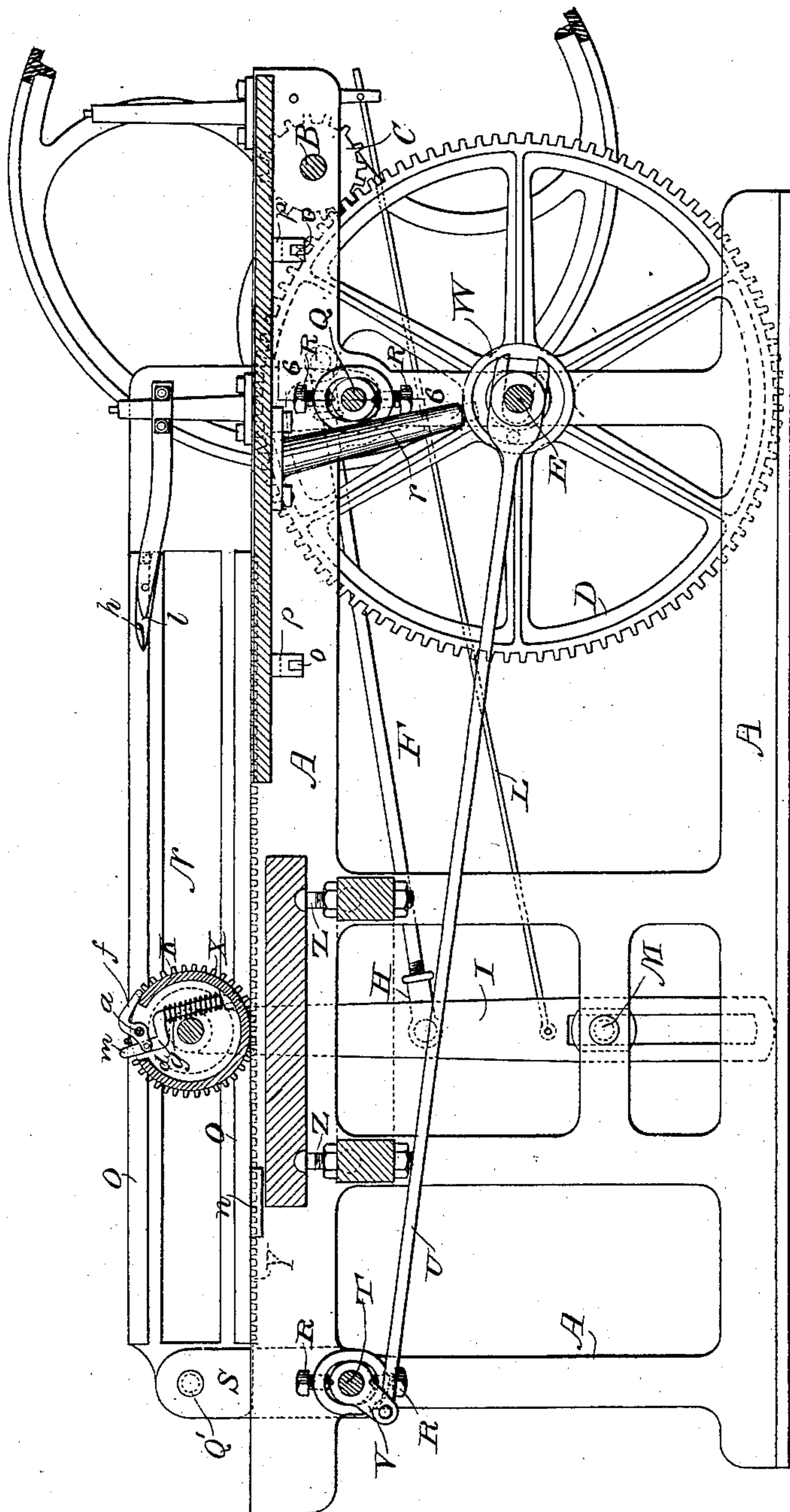
3 Sheets—Sheet 2.

E. PROUTY.
PRINTING MACHINE.

No. 317,470.

Patented May 5, 1885.

Fig. 2.



WITNESSES

Wm A. Shinkle
Geo W. Young

INVENTOR

Enoch Prouty

By his Attorneys

Bullion, Hopkins, & Beaton.

(No Model.)

3 Sheets—Sheet 3.

E. PROUTY.
PRINTING MACHINE.

No. 317,470.

Patented May 5, 1885.

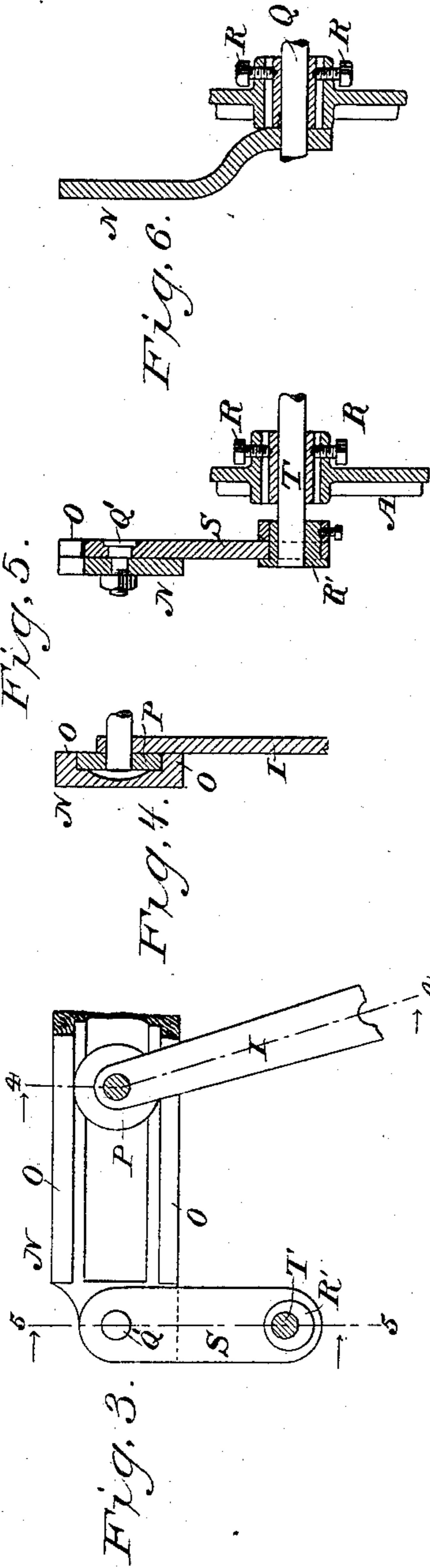


Fig. 9.

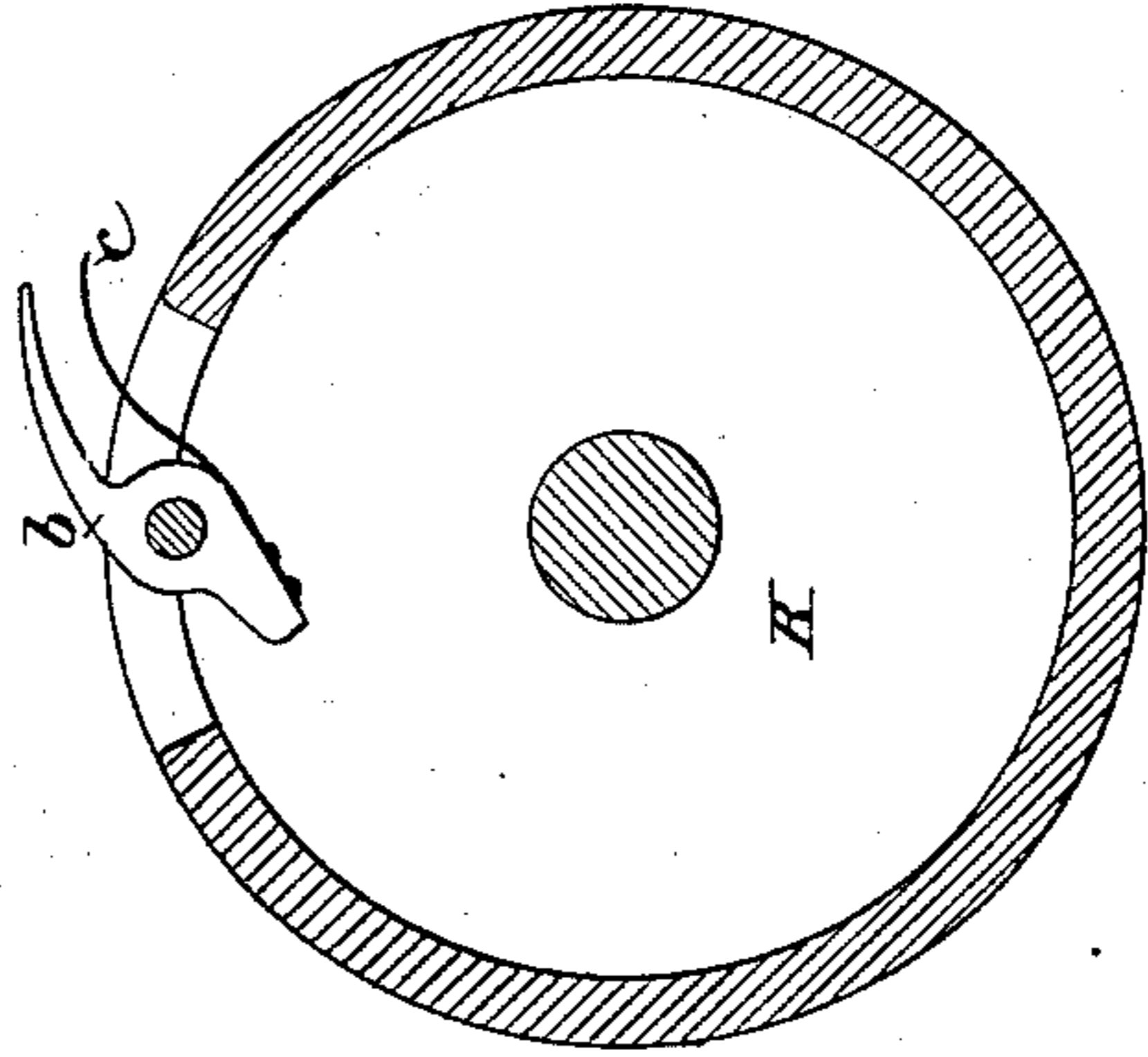


Fig. 8.

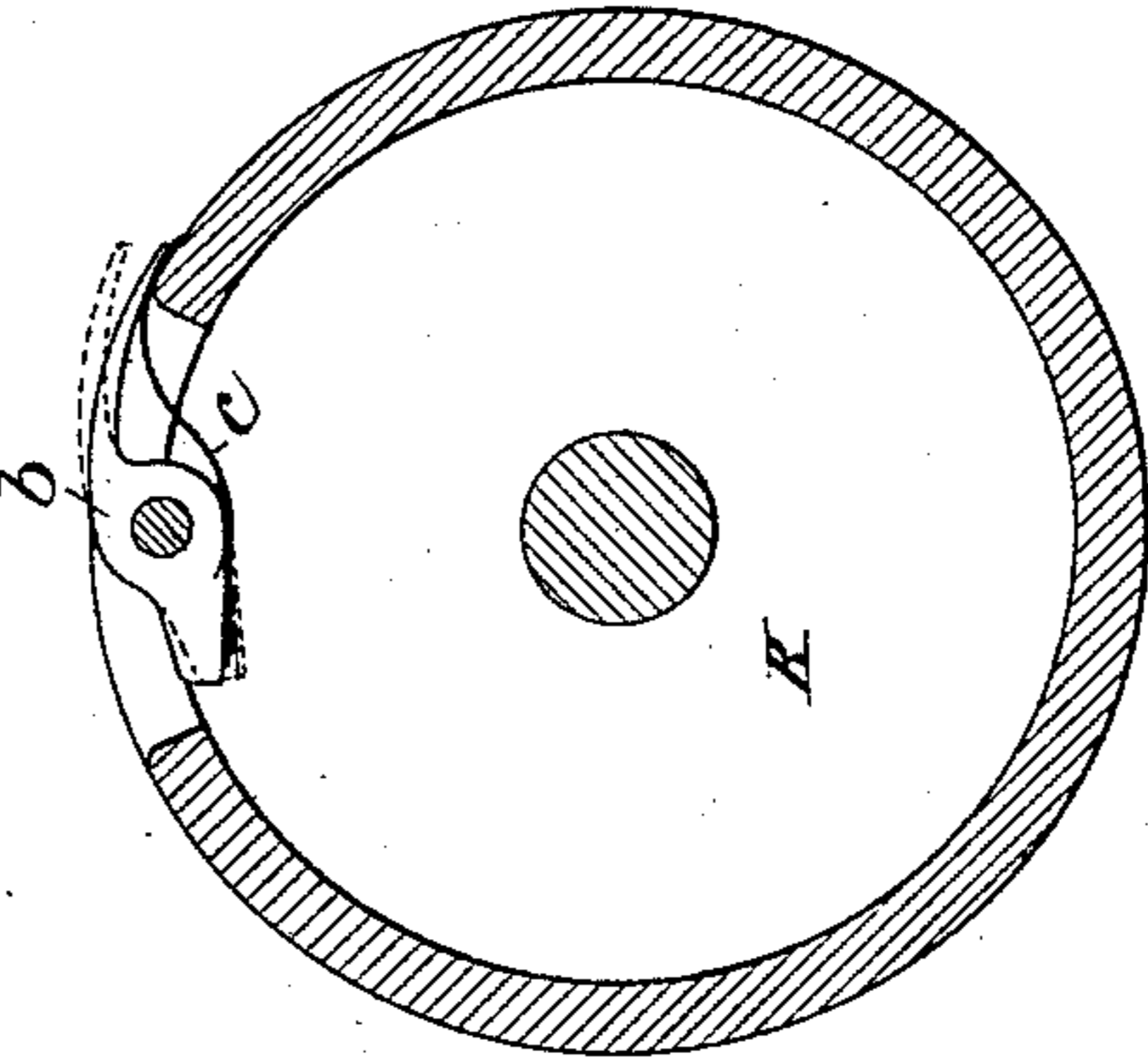
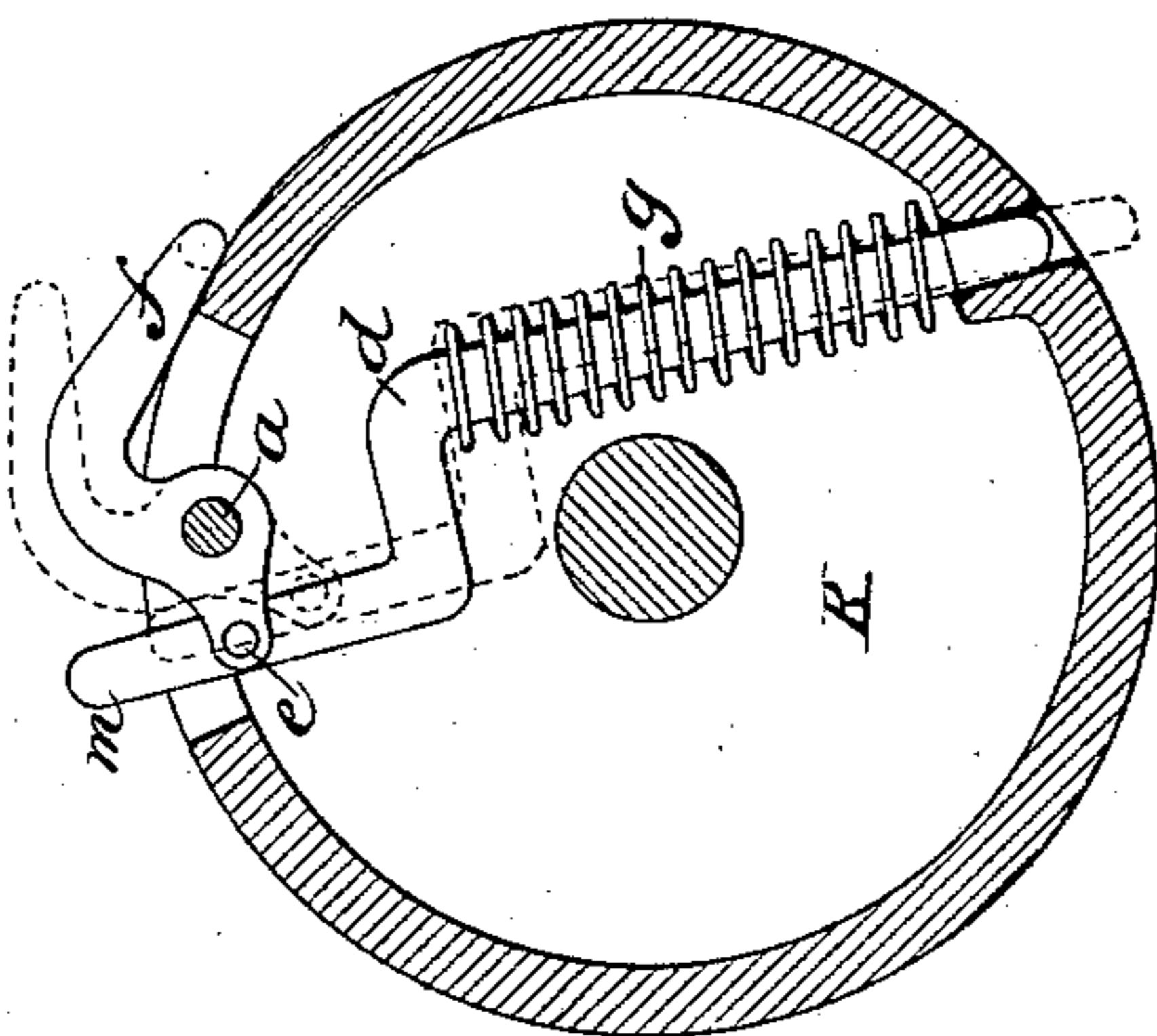


Fig. 7.



WITNESSES

Wm A. Sinkler
Geo W. Young

INVENTOR

Enoch Prouty.

By his Attorneys

Baldwin, Hopkins, & Peyton

UNITED STATES PATENT OFFICE.

ENOCH PROUTY, OF BELOIT, WISCONSIN.

PRINTING - MACHINE.

SPECIFICATION forming part of Letters Patent No. 317,470, dated May 5, 1885.

Application filed May 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, ENOCH PROUTY, of Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification, reference being had to the accompanying drawings.

My improvements relate to printing-presses of the kind in which a fixed type-bed is employed, over which a cylinder is caused to pass to and fro, but not in the same horizontal plane, it being carried forward in contact with the type-bed for printing and then raised and returned upon a different plane while the type-bed remains fixed.

My invention relates to mechanism for causing such movements of the cylinder to the gripping mechanism applied to the cylinder, and to other mechanism hereinafter described in detail by reference to the accompanying drawings, and then succinctly stated in substance in my appended claims.

In the drawings, Figure 1 is a plan view, partly in section, of my new press. Fig. 2 is a vertical longitudinal section on the line 2 2 of Fig. 1. Figs. 3 to 9, inclusive, are detail views on an enlarged scale of detached parts which will be specified further on.

A indicates the main frame; B, the driving-shaft, to which motion may be communicated by power in any usual manner. This shaft is geared by means of pinions C to gear-wheels D upon the cylinder-operating shaft E, which is the means mediately or immediately of communicating all the motions to the moving parts of the press.

Pitmen F on either side of the machine are connected in the usual manner at one end to wrist-pins G on the gear-wheels D; and at the other end to wrist-pins H on pivoted arms or bars I, which at their upper ends form or carry the bearings of the cylinder K. The usual inking-rollers (not shown) are so connected in any usual manner to these pivoted bars I as to move back and forth over the type-bed with the motions of the cylinder and ink the type in the usual way, which forms no part of my invention. The inking trough and knife are also so connected with these arms by means of rods L as to be operated properly in the usual manner. The arms I are pivoted to the frame by means of longitudinal

slots, as shown, near their lower ends, so that as the cylinder is advanced and returned over the type-bed the arms will slide to and fro upon their pivot-fastenings M, as will be obvious from the drawings.

N indicates ways upon either side of the frame of the press, having flanges O above and below, which extend over and embrace loose wheels P upon opposite ends of the cylinder-shaft. These guideways project downward and bear upon or are pivoted to the rod Q on either side of the machine, and the bearings are made delicately adjustable by means of set-screws R. (See Fig. 2.) At the opposite end of the machine these guideways are pivoted at Q' to bars S, which are connected to rock-shaft T adjustably by means of other bearings and set-screws R. The rock-shaft is provided with cams R', which, as the shaft rocks slightly, raise and lower the bars S and with them the guideways. The rock-shaft is caused to rock by means of an arm or rod, U, extending preferably under the center of the machine, pivoted to the crank-arm V, and slotted or boxed at the opposite end, so as to be moved to and fro by means of a cam, W, on the shaft E.

The details of construction of the parts just described are well shown detached in Figs. 3, 4, 5, and 6, by reference to which they will be clearly understood. The movements are so timed and the cams R' and W so adjusted that the guideways, and with them the cylinder, will begin to be elevated the instant the cylinder commences its return over the type-bed, and the arms and ways will continue to be raised until the cylinder has passed entirely over the type-bed, when they will immediately descend again to the plane of forward or printing movement of the cylinder, so that it will come in proper contact with the type-bed for printing. The extreme vertical movement of the bars S need not be in practice more than about three-eighths of an inch. As this movement is made very gradual by the cam action described, it avoids all shock or jar, and the gradual raising clears the cylinder from the type-bed first at the start of its return movement, and gradually along until the type-bed is passed, at which point the extreme elevation of the bars and the ends of the guideways pivoted to them will be reached.

The cylinder, however, is at no time, during its return movement raised more than just sufficient to enable it to clear the type-bed—say, for example, one-sixteenth of an inch—5 and not sufficient to disengage its gears X with the rack-bars or tracks Y. The result is that the cylinder is always under positive control, and the action, on account of the arms I being slotted at the bottom instead of at the 10 top, as has heretofore been done, is always positive, smooth, and certain, and without backlash on the type.

The loose wheels P are made of a diameter slightly less than the distance between the two 15 flanges which embrace them, and the adjustments are such that while the cylinder is moving forward to print these wheels are in contact with the upper flanges of the guideways, and thus the cylinder is held down firmly to 20 make the proper impression upon the type-bed; but as soon as the guideways are elevated by the cam-action described, the loose wheels rest upon the lower flange and carry the weight of the cylinder, which, as already 25 stated, however, is not disengaged from the rack-bars or tracks. The purpose of the upper flanges of the guideways is to keep the cylinder in place, and they are adjusted so as to prevent the cylinder from jumping or jolting 30 or moving unsteadily, thus securing an accurate and even impression.

The adjustments by means of the set-screws above described not only enable the parts to be set exactly at first in the proper relations, 35 but to be set to compensate for any wear that may in time occur.

The type-bed rests upon proper supports in the frame by means of set-screws Z, which enable it to be trued and set to place with 40 great nicety; but I claim no novelty in such means of adjustment, truing, and fixing of the type-bed in place.

a indicates a small rod or rock-shaft within the cylinder, to which the grippers *b* and *c* for 45 seizing, holding, and at the proper time releasing the sheets of paper are fixed. These grippers project out of the cylinder through an opening, and are arranged, most of them, to bear upon one edge of the opening in the cyl- 50 nder between which and a part of the grippers the paper is clamped or gripped.

b indicates what I call the "rigid grippers," and *c* are spring-grippers attached to the elongated or heel portions of a part of the grippers 55 *b*. The paper is always gripped between the elongated grippers *b* and *c*, so that the spring-grippers *c* shall be between it and the edge or surface of the cylinder to which the shorter grippers *b* clamp the paper directly.

d indicates an angle-bar within the cylinder, but projecting slightly from it, and pivotally 60 connected by a pin, *e*, to the heel end of an arm, *f*, rigidly fixed to one end of the gripper rock-shaft *a*, and projecting from the cylinder opening. A coiled spring, *g*, around the angle- 65 bar *d* tends to cause it to project from the cylinder and to keep the grippers in the grip-

ping position, as shown, for example, in Figs. 2 and 7.

The construction and operative positions of 70 the parts of the gripping mechanism just described are well illustrated in detail in Figs. 7, 8, and 9.

The arm *f* projecting out of the cylinder is adapted to impinge against the upper surface 75 of the cam *h*, secured upon the frame, as illustrated, or in any suitable manner. The effect of the action of this cam upon the arm is to slightly turn the rock-shaft so as to raise the rigid grippers, as illustrated in dotted lines, 80 Fig. 8, but not to raise the spring-grippers out of contact with the edge or surface of the cylinder, thereby making an opening for the reception of the paper to be gripped. The paper 85 is at this point fed from the usual table (not shown) into the bite of the grippers under all of the rigid grippers, but over the spring-grippers. This should be done before the arm *f* passes the cam *h* and drops down upon the 90 short incline *l*, which lets the grippers close gradually upon the paper at the instant the cylinder begins to advance for printing the sheet.

When the cylinder has advanced and re- 95 volved to accomplish the printing, the projecting end *m* of the angle-bar will impinge upon the stump or block *n*, retract the coiled spring *g*, and open all the grippers, as illustrated in Fig. 9. The spring-grippers being under the 100 edge of the paper to be delivered printed serve to free it from the cylinder and clear it, thus overcoming any tendency to stick and fail to deliver perfectly.

Two angle-bars with coiled springs may be employed, if desired, one near either end of 105 the cylinder. Only one, however, is illustrated, which is sufficient, as both should be constructed and arranged to operate alike if two are used.

It is desirable, as is well known, that the 110 inking-table which spreads the ink upon the rolls to be distributed over the type-bed should have a movement from side to side while the rollers are passing over it and in contact with it from end to end. Accordingly, I provide 115 inwardly-projecting pin supports or slides, *o*, upon which are bearings *p* connected with the table, so as to admit of a vibratory lateral sliding movement of the table in a horizontal plane. This movement I communicate to the 120 table by means of a cam, *q*, upon the shaft E, which engages with a rigid downwardly-projecting arm, *r*, secured to the under side of the table. The result is that the ink will be better distributed upon the rollers, and they in turn 125 will better distribute it upon the type-bed. Figs. 1 and 2 illustrate the mechanism just last described.

I have demonstrated in practice that my present press is capable of running at the rate 130 of about two thousand complete movements of the cylinder per hour, and on account of the longitudinal slots near the lower ends of the arms I and the cam-moved guideways, it works

with perfect smoothness, and not only with greater rapidity, but more satisfactorily than the printing-presses in which the type-beds are raised and lowered with each movement of the cylinder for printing and returning in the same plane.

I do not limit myself to the precise forms of actuating mechanism herein described and shown, because divers formal mechanical modifications may be made without departing from the substance of my invention as briefly stated in my claims.

Having thus described my invention, what I claim to be new in the matter set forth, and for which I desire to secure Letters Patent of the United States, is—

1. In a printing-press, the combination, with the fixed type-bed, of the cylinder, the pivoted slotted arms I, the vertically-movable guide-ways, their vertically-moving supports, and the cam mechanism for operating them, substantially as set forth.

2. In a printing-press, the combination, with the fixed type-bed, of the cylinder, the pivoted slotted arms I, the vertically-movable guideways, their vertically-moving supports, the rock-shaft T, the cams R', the crank-arm

V, the rod U, the shaft E, and the cam W, all constructed, arranged, and operating substantially as and for the purpose set forth.

3. In a printing-press, the combination, with the cylinder, of the rigid grippers *b*, secured to the gripper rock-shaft *a*, the spring grippers *c*, secured to the elongated heel portions of part of the grippers *b*, the shorter grippers *b*, bearing upon the edge of the opening in the cylinder and clamping the paper, and the elongated grippers *b*, bearing over the spring-grippers and gripping the paper against them, and the projecting angle-bar *d*, provided with coil spring *g*, all constructed, arranged, and operated substantially as set forth.

4. In a printing-press, the combination, with the cylinder, of the grippers *b* and *c*, the gripper rock-shaft *a*, the projecting angle-bar *d*, provided with coiled spring *g*, the arm *f*, the stump *n*, the cam *h*, and the incline *i*, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

ENOCH PROUTY.

Witnesses:

LEWIS B. HILLES,
BERNARD J. DOWNEY.