

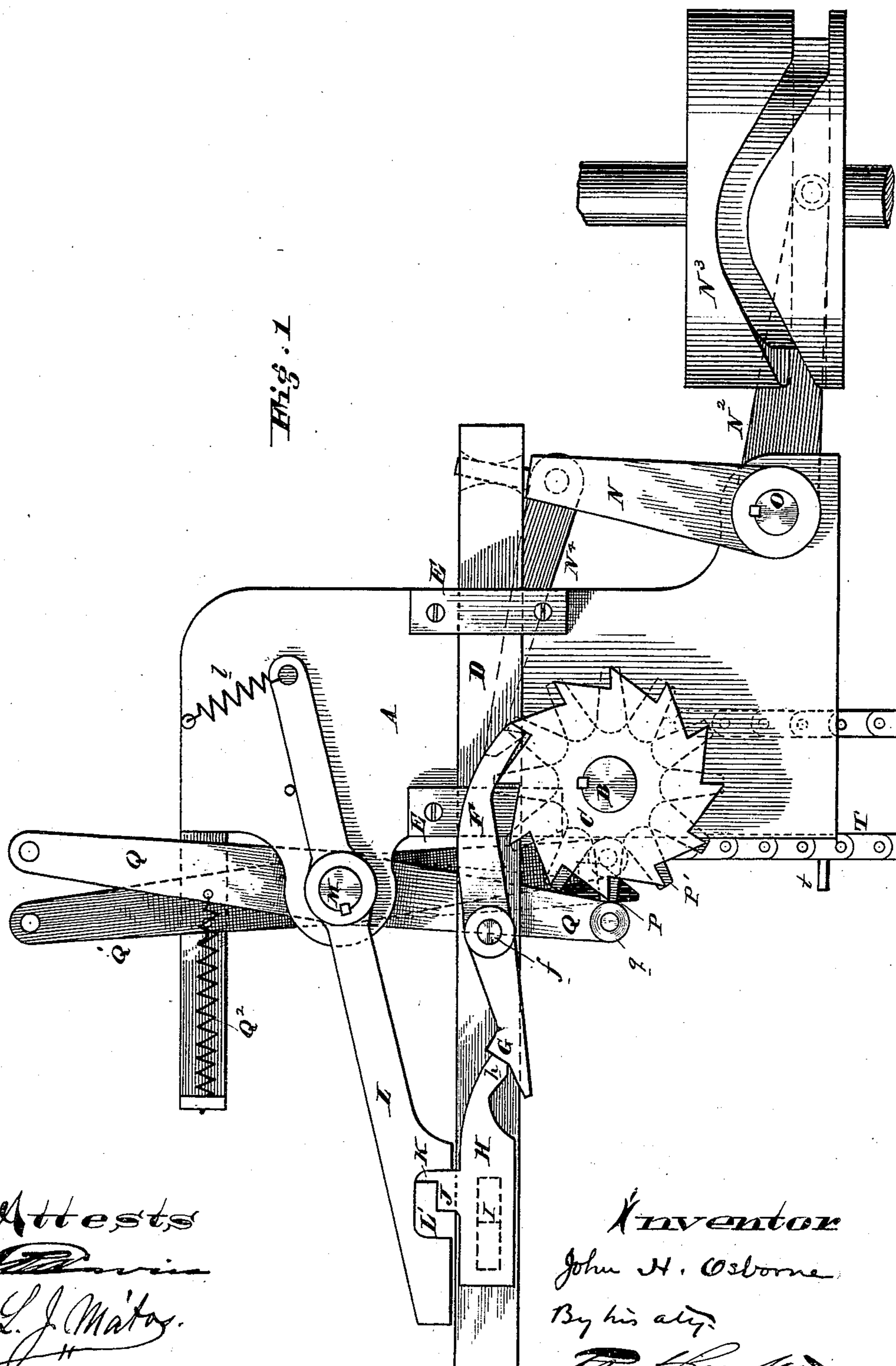
(No Model.)

2 Sheets—Sheet 1.

J. H. OSBORNE.
MECHANICAL MOVEMENT.

No. 258,593.

Patented May 30, 1882.



Attests
L. J. Mayo.

Inventor
John H. Osborne
By his atty
[Signature]

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2

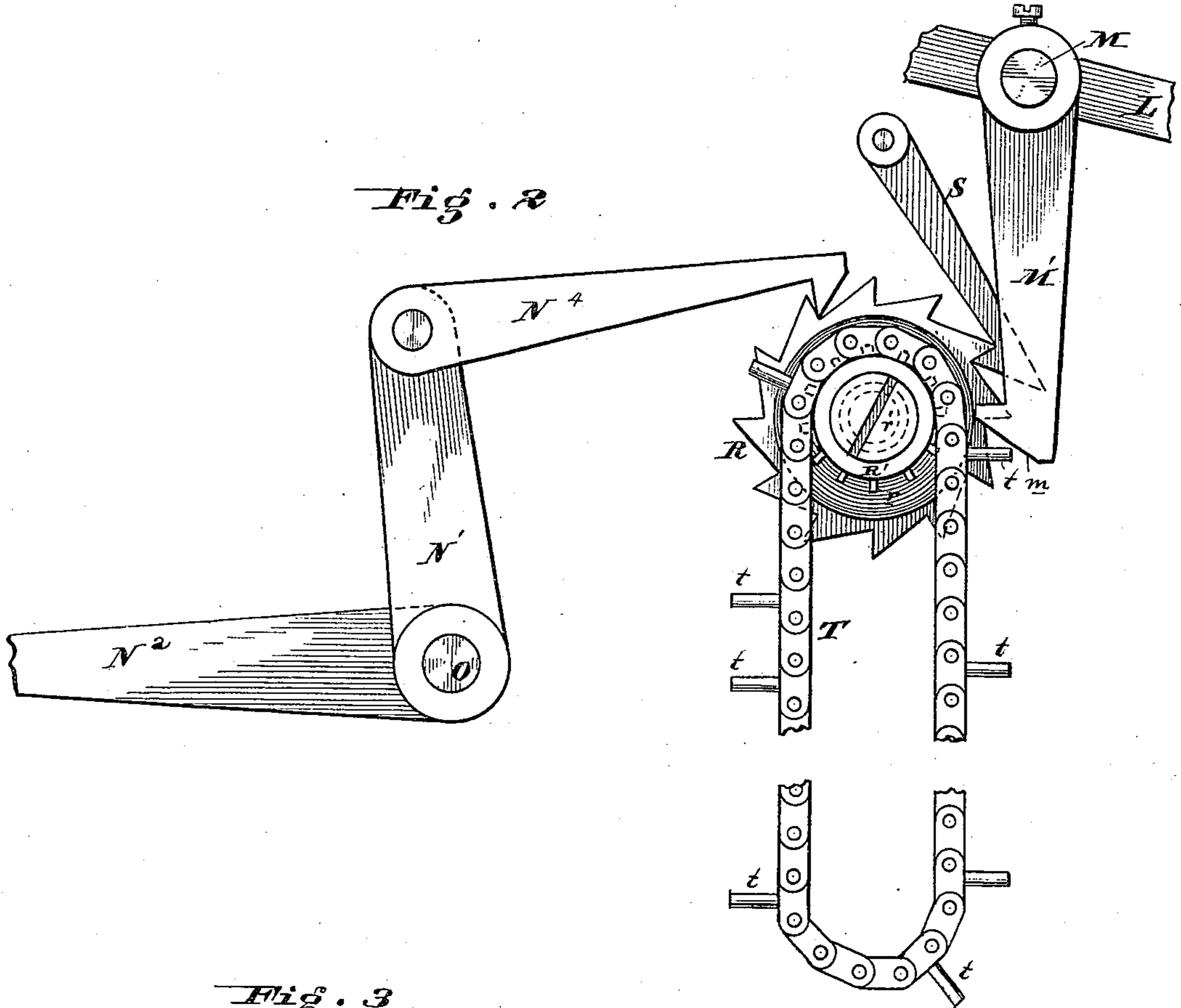


Fig. 3

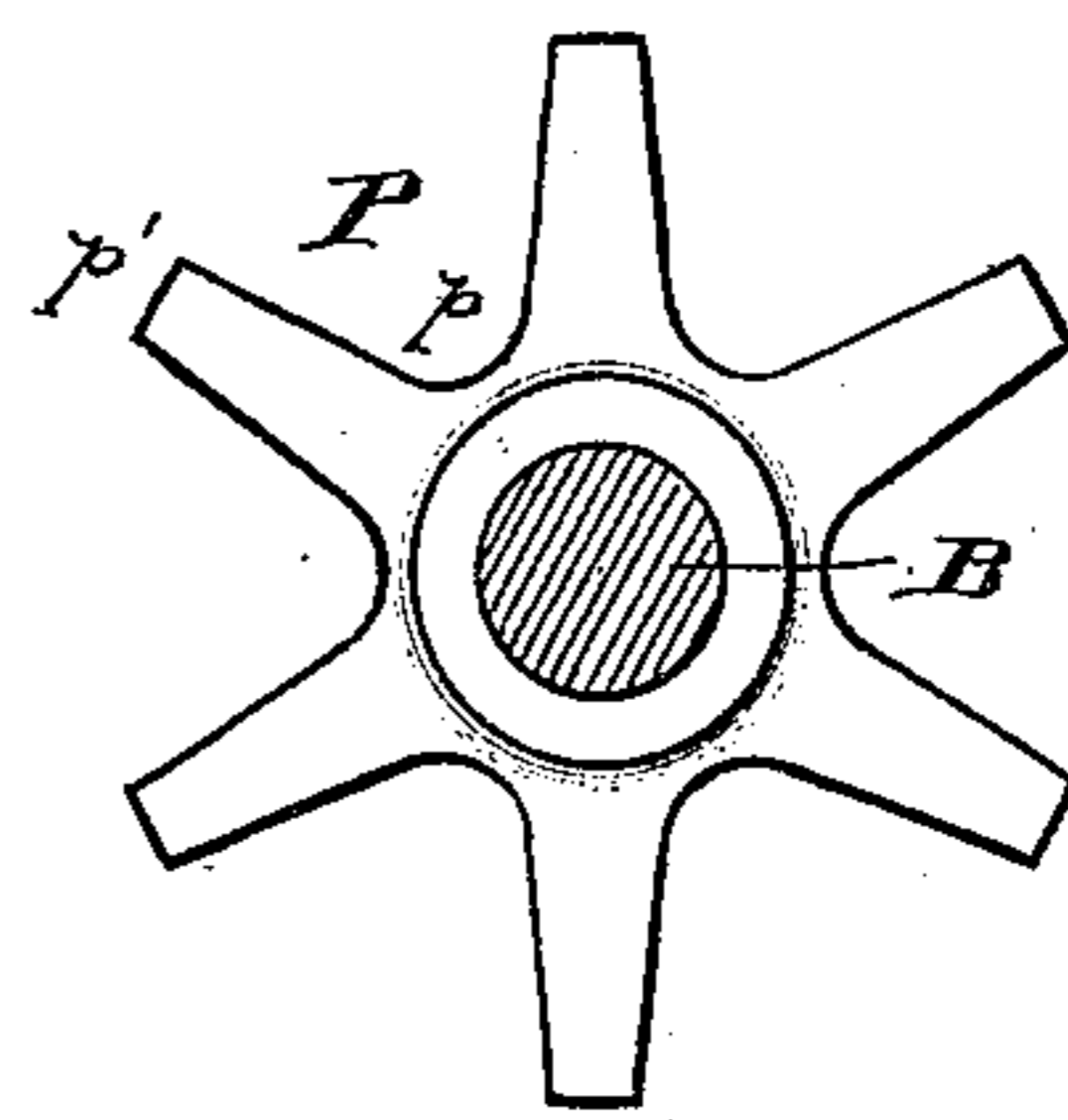
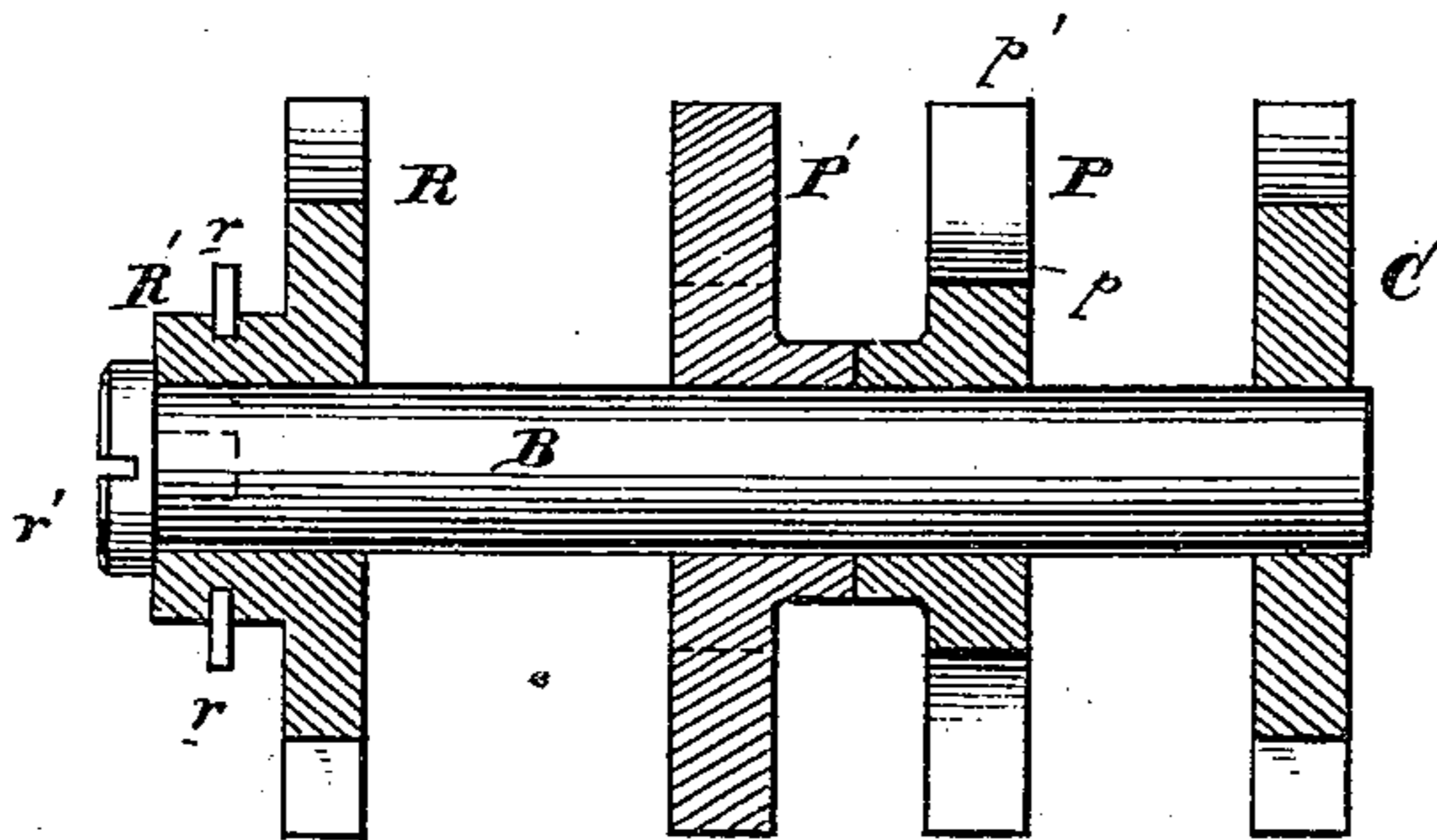


Fig. 4

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UNITED STATES PATENT OFFICE.

JOHN H. OSBORNE, OF PHILADELPHIA, PENNSYLVANIA.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 258,593, dated May 30, 1882.

Application filed April 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. OSBORNE, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Mechanical Movements, of which the following is a specification.

My invention has reference to mechanical movements; and it consists in mechanism by which one or more levers or their equivalent may be actuated at regular or irregular intervals of time by a rotating cam or its equivalent whose motion is uniform and regular, all of which is fully described hereinafter, and shown in the accompanying drawings, which form part of this specification.

The object of my invention is to construct a mechanical movement adapted to the general uses of knitting and weaving machinery as well as textile-fabric machinery in general. In another application I have shown this mechanical movement arranged upon a knitting-machine and adapted to throw various-colored yarns into and out of the needles, as desired.

In the drawings, Figure 1 is a side elevation of my improved mechanical movement. Fig. 2 is an elevation of controlling or pattern mechanism. Fig. 3 is a sectional elevation of the cams and ratchet-wheels upon their shaft; and Fig. 4 is a cross-section of same, showing a side elevation of one of the cams.

A is the frame, and carries a shaft, B, upon which are secured one or more cam-wheels, two of which, P P', are shown, having depressions *p* and teeth *p'*, which latter may be set alternately, as shown, or in line. Working against the faces of these cam-wheels are the friction-wheels *q'*, secured to the ends of levers Q Q', having their fulcrum upon the shaft M, and said friction-wheels are kept against the cams by springs Q², as shown.

Upon one end of the shaft B, and rigidly secured thereon, is a ratchet-wheel, C, having twice as many teeth as the cam-wheels.

Sliding in bearings E on the frame A is a bar, D, which carries a pawl, F, pivoted to it at *f*, said pawl being adapted to actuate the ratchet-wheel C. The rear end of the pawl is provided with an extending arm furnished with a cam-projection, G. In its normal position the weight of the pawl keeps it in contact with the ratchet-wheel.

A sliding block, H, provided with the curved arm *h* and lug J with extension K, is arranged to slide upon the bar D at I, said block being actuated by means of said bar. This bar D is reciprocated by lever-arm N, secured to rock-shaft O, which latter is rocked by means of an arm, N², and cam N³, or other uniformly-actuated mechanism on the machine to which the mechanical movement is applied. Secured to one end of the shaft M is a lever, L, provided on its lower end with a slot or recess, L', in which the lug J and extension K on block H slides. The slotted end of this lever L is kept down by a spring, *l*. Upon the other end of this shaft M is secured an arm, M', having an inclined or cam face, *m*, at the bottom, against which the pins *t* on chain T press as said chain is fed over wheel R', furnished with teeth or sprockets *r* to catch and positively feed said chain. This wheel or hub R' is secured to or forms part of the ratchet-wheel R, which has the same number of teeth as the ratchet-wheel C; but it and the hub R' are loose upon the shaft B, and are held on by cap-screw *r'* or other means. It is not necessary that this chain-wheel and its ratchet-wheel be journaled upon the shaft B; but it is cheaper to make it so. This chain-wheel is intermittently rotated by the pawl N⁴, which acts upon ratchet-wheel R, and is reciprocated by an arm, N', secured to the rock-shaft O, and moves at the same time and in the same direction as bar D. Another pawl, S, prevents any backward movement to the chain-wheel and chain.

The chain T is made endless, and each of its links is provided with a screw-hole, into which pins *t* may be screwed. This pattern-chain may be of any ordinary construction, only each link must be provided with means for securing a pin or projection thereon.

The operation is as follows: The pattern desired having been set up by the pins *t* on the chain T, the cam N³ is uniformly rotated, rocking the shaft O and its arms N N' regularly. With every rocking motion of the shaft O the bar D and pawl N⁴ are reciprocated. As the bar D moves back the lug J on block H strikes the end of slot L' in lever L, thereby arresting the backward movement of the block, but not the bar. Now, the block H being stationary, as the pawl F is carried back by the

bar D the cam-projection G rides under the curved arm *h* on block H, thereby raising the end of the pawl clear of the teeth of the ratchet-wheel C. Now, as the shaft O rocks in the other direction the bar D slides forward and the chain-wheel R' is moved forward one tooth, raising one link of the chain T. If no pin *t* is upon the link which passes under the end of the arm M', the lever L is not raised, and as the bar D is moved forward the block H moves with it, and just as soon as the pawl F has passed over the next tooth of the ratchet-wheel C the lug J on block H strikes the other end of slot L', arresting the movement of the block, and as the pawl is carried on by the bar D the cam-projection G is drawn from under the arm *h* and the pawl falls upon the ratchet-wheel, but too late to catch the tooth to actuate it. This movement continues until a link with a pin, *t*, passes under the arm M', which raises the arm and rocks the shaft M, lifting the slotted end of the lever L, and holds it up during the backward movement of the bar D. Now, the lug J passes under the lever L and free of the slot L'. Consequently the pawl is not raised, as in the previous cases; and as the bar D moves forward the pawl catches in the next tooth of the ratchet-wheel C and turns it slightly, so as to force the lever Q' out of its cam-depression *p* to the face of the tooth *p'* and allow the roller of the lever Q to descend from the tooth-face of its cam-wheel to the depression. Now, as the pin *t* has passed the end of the lever-arm M', the lever L is again lowered, and the pawl F again continually misses catching the ratchet-tooth until another pin comes into play.

By properly setting the pins on the chain T, and by having the necessary number of links, any desired movement may be obtained, and the levers Q Q' may be actuated at every reciprocation of bar D, or one in every hundred reciprocations, as may be desired.

Any number of cam-wheels P may be used, and, if desired, the levers Q may be dispensed with, and the bar D and pawl N⁴ may be actuated directly, and the general construction altered without departing from my invention.

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

1. The combination of ratchet-wheel C, sliding or reciprocating bar D, carrying sliding block H, pawl F, and means to arrest the movement of the sliding block in either direction after it has traveled some distance.

2. The combination of ratchet-wheel C, sliding or reciprocating bar D, carrying sliding block H, furnished with lug J, pawl F, means on said block to raise said pawl free of the teeth of said ratchet-wheel, and lever L, or its equivalent, provided with slot L', substantially as described.

3. The combination, with ratchet-wheel C, of reciprocating bar D, carrying pawl F and sliding block H, furnished with projection J and arm *h*, lever L, having slot L', and pattern mechanism to automatically raise or lower said lever at stated intervals, substantially as specified.

4. The combination, with ratchet-wheel C, of reciprocating bar D, carrying pawl F, having cam-projection G, and sliding block having projection J and arm *h*, lever L, shaft M, arm M', chain-wheel R', and chain T, provided with pins *t*, substantially as described.

5. The combination of sliding or reciprocating bar D, carrying pawl F, provided with a cam-projection, G, sliding block provided with arm *h*, and means to arrest the movement of the sliding block as it is carried in either direction by the reciprocating bar, substantially as set forth.

6. The combination of shaft B, having secured thereon one or more cam-wheels and a ratchet-wheel, C, reciprocating bar D, carrying a pawl, F, provided with cam-projection G, and sliding block H, carrying arm *h*, and means to arrest the movement of the sliding block as it is carried in either direction by the reciprocating bar, substantially as set forth.

7. The combination of shaft B, having secured thereon one or more cam-wheels and a ratchet-wheel, C, reciprocating bar D, carrying pawl F and sliding block H, lever L, having slot L', shaft M, arm M', and chain mechanism to actuate said arm, substantially as set forth.

8. The combination of shaft B, having secured thereon one or more cam-wheels and ratchet-wheel C, reciprocating bar D, carrying pawl F and sliding block H, lever L, shaft M, arm M', chain-wheel R', having ratchet-wheel R, chain T, having pins *t*, rock-shaft O, arms N N', pawl N⁴, arm N², and cam N³, substantially as described.

9. The combination of shaft B, having secured thereon one or more cam-wheels, P P', and ratchet-wheel C, reciprocating bar D, pawl F, pivoted thereto, sliding block H, means to arrest the movement of said sliding block in either direction after it has moved some distance, and one or more levers, Q Q', with springs Q², substantially as described.

10. The combination of the ratchet-wheel with the reciprocating bar carrying a pawl and automatic pattern mechanism to raise said pawl up clear of said ratchet-wheel except at stated intervals, substantially as set forth.

In testimony of which invention I hereunto set my hand.

JOHN H. OSBORNE.

Witnesses:

R. S. CHILD, Jr.,
R. A. CAVIN.