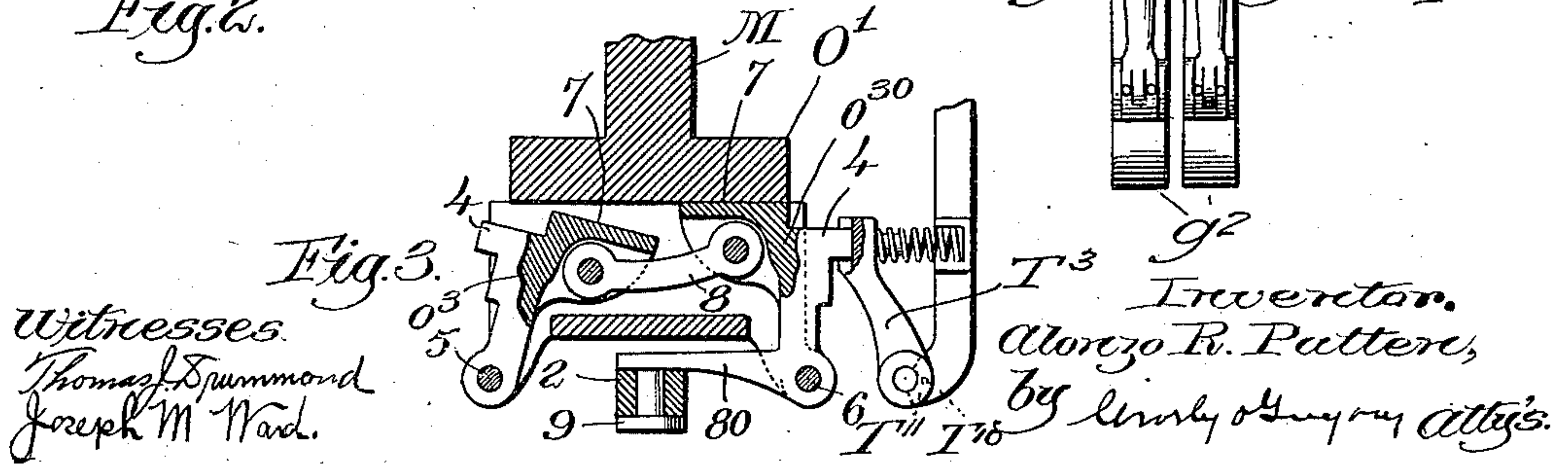
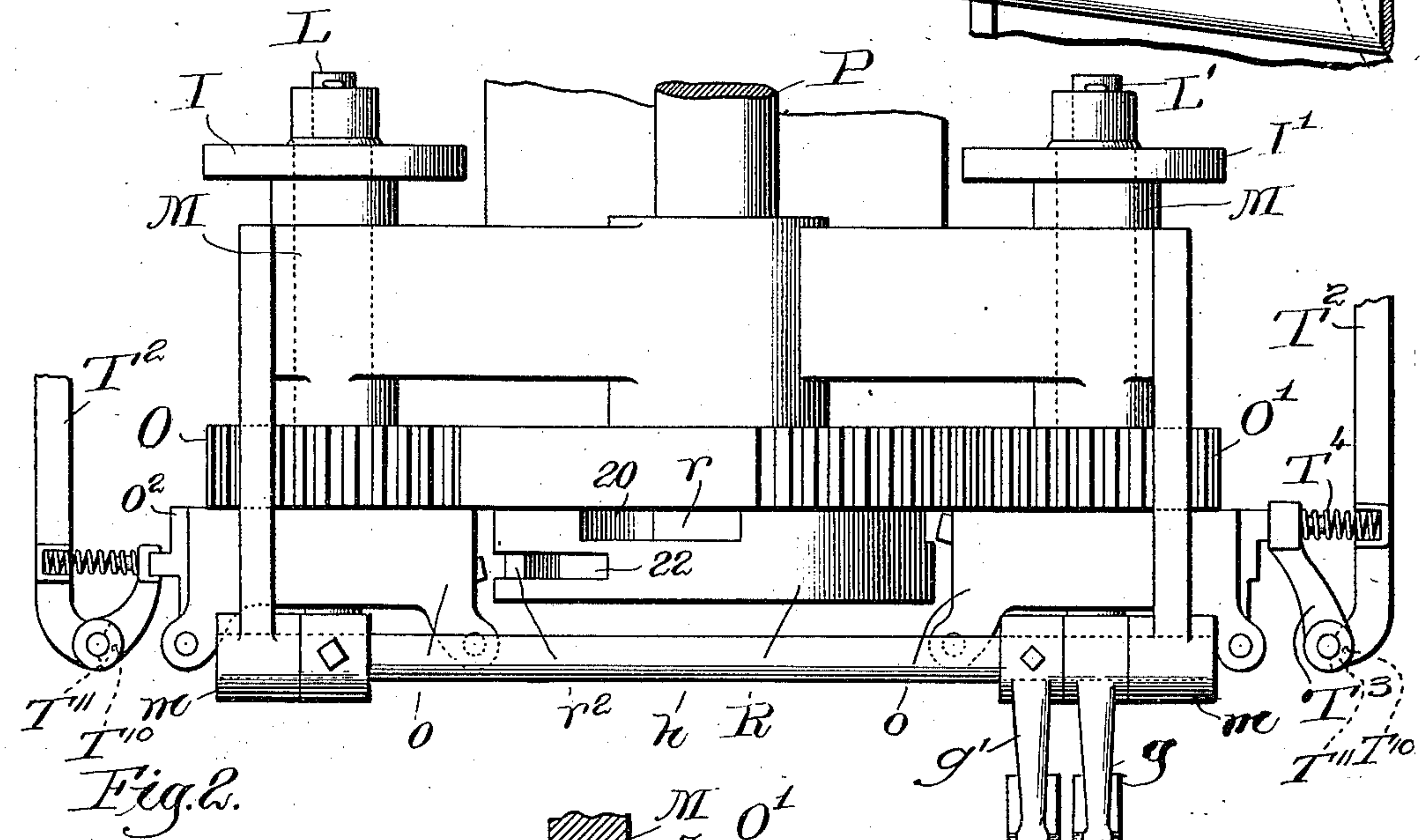
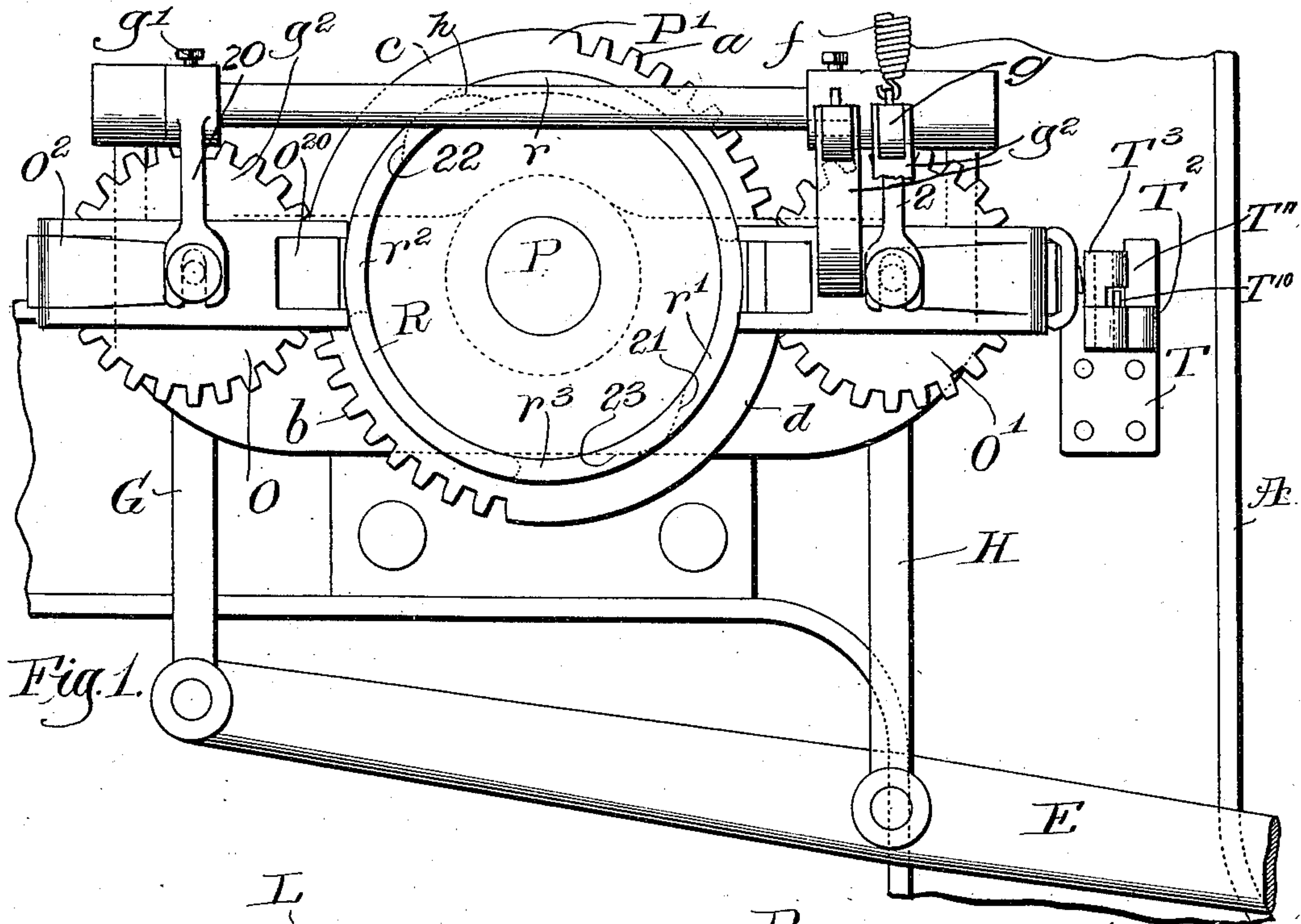


A. R. PATTEN.
BOX MOTION FOR LOOMS.
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996,669.

Patented July 4, 1911.



Witnesses
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UNITED STATES PATENT OFFICE.

ALONZO R. PATTEN, OF FALL RIVER, MASSACHUSETTS.

BOX-MOTION FOR LOOMS.

996,669.

Specification of Letters Patent.

Patented July 4, 1911.

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To all whom it may concern:

Be it known that I, ALONZO R. PATTEN, a citizen of the United States, and resident of Fall River, county of Bristol, State of Massachusetts, have invented an Improvement in Box-Motions for Looms, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object the production of a novel, simple and practical form of mechanical movement adapted for imparting intermitting rotary movement to a shaft and attached parts from a continuously rotated shaft, and is particularly designed and intended for a drop box motion for looms. Such mechanisms broadly considered are shown in the patent to Bardsley, No. 801,503, granted October 10, 1905, and more specifically in Patent No. 901,032, granted to me October 13, 1908. The present invention is herein illustrated as applied to the particular construction of parts illustrated in my aforesaid patent.

The main features of the invention are concerned with the principles of construction and operation of the bolts carried by the mutilated pinion on the shaft to be driven and which are operated at predetermined times to engage suitable notches carried by the master-gear on the driving shaft.

The invention will more fully appear from the accompanying description and drawings, and will be particularly pointed out in the claims.

The drawings illustrate only so much of those parts of the box motion of an ordinary loom as are necessary to set forth the invention and reference may be had to the above mentioned patents for further details.

In the drawings, Figure 1 is a side elevation of a portion of a loom side showing the parts embodying the invention, some of the parts being partially broken away. Fig. 2 is a top plan view of the parts shown in Fig. 1. Fig. 3 is a plan view partially in cross-section of a detail to show the bolts and connected parts.

Referring to the drawings, A represents part of the side of an ordinary loom and E a part of the shuttle box lever which acts in the usual manner through suitable connections to shift the drop boxes of the loom. Since the parts operated by the shuttle box

lever are not specifically involved in this invention it is unnecessary to illustrate or describe them further. The main driven shaft P is supported in the usual manner in bearings on the loom side and may be the cam shaft of the loom. Parallel to it are arranged a plurality of short shafts or hubs M here shown as two in number. These short shafts M are provided respectively with disks I, I' having cranks L, L' respectively connected by links G, H respectively to the end and central portion respectively of the shuttle box lever E. By the construction thus described which is a familiar one upon the turning of one or the other or various combinations of the shafts M the shuttle box lever will be shifted to various positions to move correspondingly the drop boxes of the loom.

The main shaft P is provided with a master-gear P' herein shown as having two toothed sections *a, b* with intervening plain or untoothed sections *c, d*. Each of the shafts M is provided with a cooperating mutilated pinion herein shown as the pinions O, O'. These pinions have two toothed portions with intervening untoothed portions and the untoothed portion of the master-gear when the latter is rotated, as well as the toothed portions thereof turn in the untoothed spaces of the mutilated pinion, and prevent the same from being rotated until their rotation is called for by or through the action of the usual pattern mechanism of the loom. The operation of either pinion from the master-gear is secured in the form of the invention illustrated by the following means. The master-gear is provided on its face, projecting therefrom with a rim R and this rim is provided with a series of notches *r, r'* near the face of the master-gear, and having series of notches *r², r³* near the outer edge of the rim, the former being provided respectively with beveled portions 20, 21, and the latter respectively with beveled portions 22, 23. These notches receive the projecting ends of the bolts to be described carried by the pinions and in the construction shown the notches *r, r'* cooperate with the bolt carried by the pinion O' while the notches *r², r³* cooperate with the bolt carried by the pinion O.

Each mutilated pinion has formed on its face a box *o* in which are mounted the bolts which at the proper times are thrown into

engagement with the proper notches in the rim R, the bolts carried by the pinion O being indicated as o^2 , o^{20} , while those carried by the pinion O' are indicated as o^3 , o^{30} , and it will be seen that each of these bolts is parts will be in the reversed position from to engage with their respective notches in the rim R of the master-gear. The construction of the bolts is the same in each pinion, so that it will be necessary to describe but one construction, for example, that carried by the pinion O' and which construction is illustrated in detail in Fig. 3. The bolts are shown as oppositely disposed on the pinion and pivotally mounted at 5 and 6 in lugs projecting from the box so as to swing transversely of the pinion. Each bolt is provided with a stop to limit its outward movement herein shown as a flat surface 7 adapted to come into contact with the face of the pinion, and when the stop is thus in contact with the face of the pinion as indicated at the right hand side of Fig. 3, the tooth 4 will be in position to engage the recess in the end of the master-gear. A link 8 connects the two bolts o^3 , o^{30} , and is of such a length that when one bolt has swung to its outward position, the other bolt will be withdrawn into inoperative position so that its tooth 4 cannot engage the recess in the rim of the master-gear. One of the bolts is provided with an arm 80 presenting a stud 9 engaged by the lower arm 2 of the elbow lever g so that upon movement of the lever g , the bolts are thrown into and out of operation as desired. The operation of the bolts at the proper time is secured in the usual manner through the action of certain pattern mechanism not necessary to illustrate, which in its operation raises connections, such as f running respectively to the elbow lever having the arm g and to the elbow lever which comprises the arm g' , shaft h and lower arm 20. As shown, the elbow lever g is mounted freely on the shaft h . This construction brings the arms g and g' close together so that the connections to the pattern mechanism may extend up vertically therefrom in the usual way. Each arm carries a weight g^2 which acts normally to move the lower arm 2 or 20 inwardly or toward the loom frame.

In the operation of the mechanism when the pattern controlled lever g is moved upwardly by or through the action of the usual pattern mechanism, the arm 80 will be moved outwardly from the position shown in Fig. 3 swinging the bolt o^{30} toward the axis of the pinion and through the connecting link 8 swinging the bolt o^3 outwardly to cause its tooth 4 to come into engagement with the rim R of the master-gear against which it will be yieldingly held by the spring f until the swinging movement can be continued and the surface 7 come into

contact with the face of the pinion m and the tooth 4 enters its proper recess in the rim R. The master-gear will then act in the usual manner through the engagement of a tooth 4 with the rim to turn the pinion until the toothed portion engages the toothed portion of the master-gear and thereupon the pinion will be turned through an angle of 180° during which movement the bolt remains in its projected position, and the parts will be in the reversed position from that illustrated in Fig. 3. In order to shift the parts back to the position shown in Fig. 3 the connection of the pattern mechanism will be lowered allowing the weight g^2 to swing the lever g downwardly and push the arm 80 inwardly. This operation is so obvious from the construction described that it is unnecessary to describe it further.

In order to retain the bolts accurately in position at the end of each rotation through 180° , a yielding locking device is provided and is herein shown as comprising a bracket T mounted on the frame A and carrying an arm T^2 projecting out past the pinion. This arm is provided at its end with a pivotally mounted catch T^3 adapted to engage the tooth 4. A spring T^4 between the arm and the catch tends to throw the catch into the path of the tooth, the forward movement of the catch T^3 being limited by a pin T^{10} extending up from the bracket T^2 into a recess T^{11} in the hub of the catch. It will be seen, therefore, that as the pinion revolves and reaches its position where it is to stop the tooth 4 will come into engagement with the catch T^3 and be there held so that the pinion cannot be moved accidentally. The swinging of the bolts to throw the opposite bolt into engagement with the master-gear will withdraw the other bolt from engagement with the catch.

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

1. In a shuttle box motion for looms provided with a master gear in combination, a mutilated pinion, two oppositely disposed bolts pivotally mounted upon said pinion to swing transversely thereof, and pattern controlled means for swinging said bolts to retract one and project the other into engagement with the master-gear to occasion when required the turning of the mutilated pinion.

2. In a shuttle box motion for looms provided with a master gear in combination, a mutilated pinion, two oppositely disposed bolts pivotally mounted upon said pinion to swing transversely thereof, and a locking device to catch the projected bolt and hold it at the end of a half rotation of said pinion.

3. In a shuttle box motion for looms provided with a master gear in combination, a mutilated pinion, two oppositely disposed bolts pivotally mounted upon said pinion to

swing transversely thereof, a link connecting said bolts, pattern controlled means connected with one of said bolts for swinging the same whereby upon the swinging of said bolt it is moved into retracted or projected position while the other bolt is correspondingly moved into projected or retracted position so that the bolt moved into projected position will engage the master-gear to occasion the turning of the mutilated pinion.

4. In a shuttle box motion for looms provided with a master gear in combination, a mutilated pinion, two oppositely disposed bolts pivotally mounted upon said pinion to swing transversely thereof, a link connecting said bolts, pattern controlled means connected with one of said bolts for swinging the same whereby upon the swinging of said bolt it is moved into retracted or projected position while the other bolt is correspondingly moved into projected or retracted position so that the bolt moved into projected position will engage the master-gear to occasion the turning of the mutilated pinion, and a locking device to catch the projected bolt and hold it at the end of a half rotation of said pinion.

5. In a shuttle box motion for looms provided with a master gear in combination, a mutilated pinion, two oppositely disposed bolts pivotally mounted upon said pinion to swing transversely thereof, pattern controlled means for swinging said bolts to retract one and project the other and a yielding catch mounted at the side of the pinion opposite to the master-gear and adapted to catch the projected bolt at the end of a half rotation of the pinion and hold it until it is swung out of engagement therewith.

6. In a shuttle box motion for looms in combination, a mutilated pinion, a box carried on the face of said pinion and presenting oppositely disposed bearings, a bolt pivotally mounted in each of said bearings, said bolts adapted to swing transversely of the pinion in opposite directions and means for causing the retraction of one bolt upon the projection of the other and vice versa.

7. In a shuttle box motion for looms in combination, a mutilated pinion, a box carried on the face of said pinion and presenting oppositely disposed bearings, a bolt pivotally mounted in each of said bearings, said bolts adapted to swing transversely of the pinion in opposite directions and means for causing the retraction of one bolt upon the projection of the other and vice versa, and a stop for limiting the projected position of each bolt.

8. In a shuttle box motion for looms in combination, a mutilated pinion, a box carried on the face of said pinion and presenting oppositely disposed bearings, bolts pivotally mounted in said bearings to swing in opposite directions transversely of said pinion, a link connecting said bolts whereby when one is projected the other will be retracted, an arm carried by one of said bolts and adapted for connection with the usual pattern mechanism of the loom.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALONZO R. PATTEN.

Witnesses:

FRANK MULVENY,
JAMES F. KEILTZ.