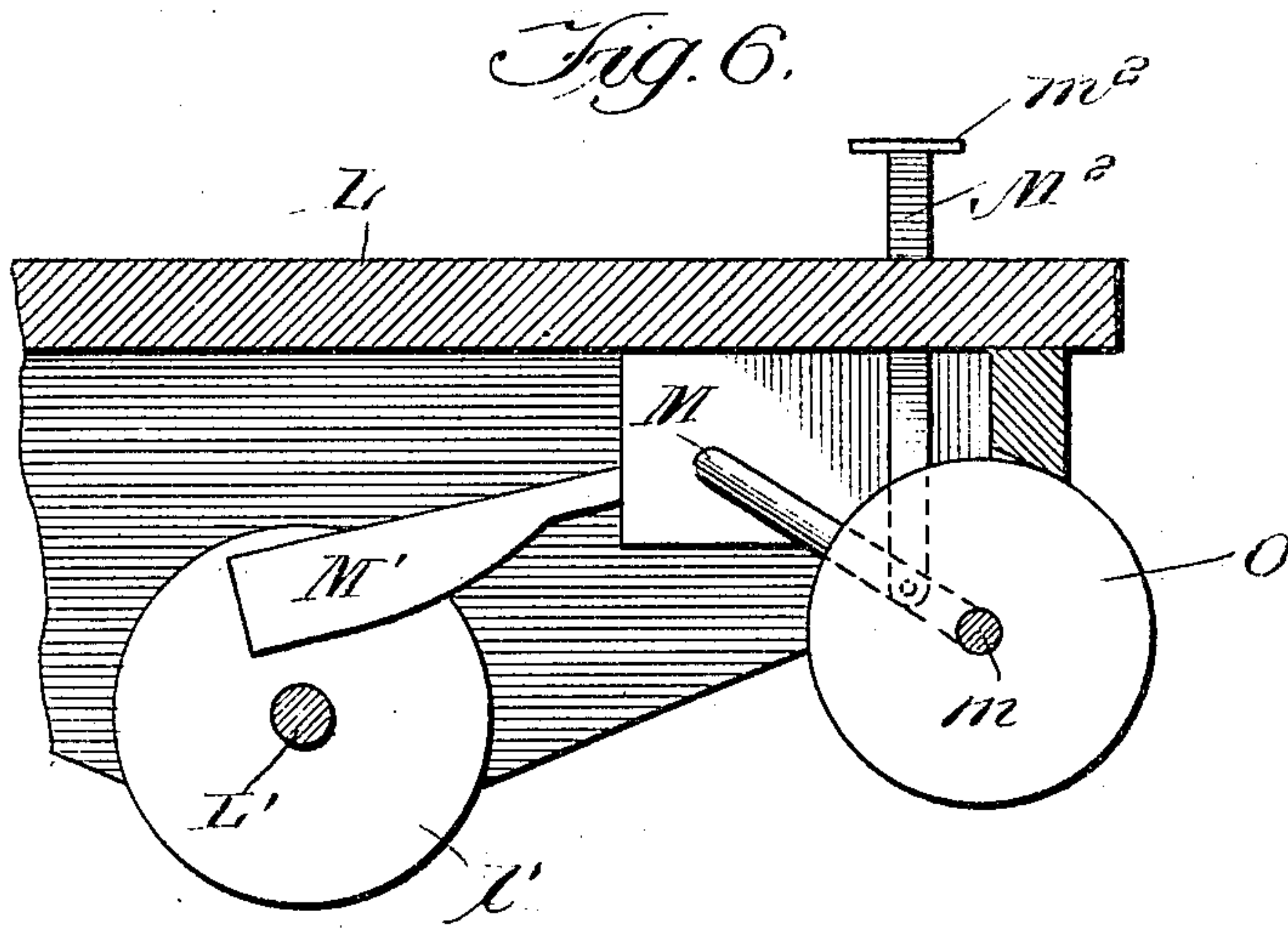
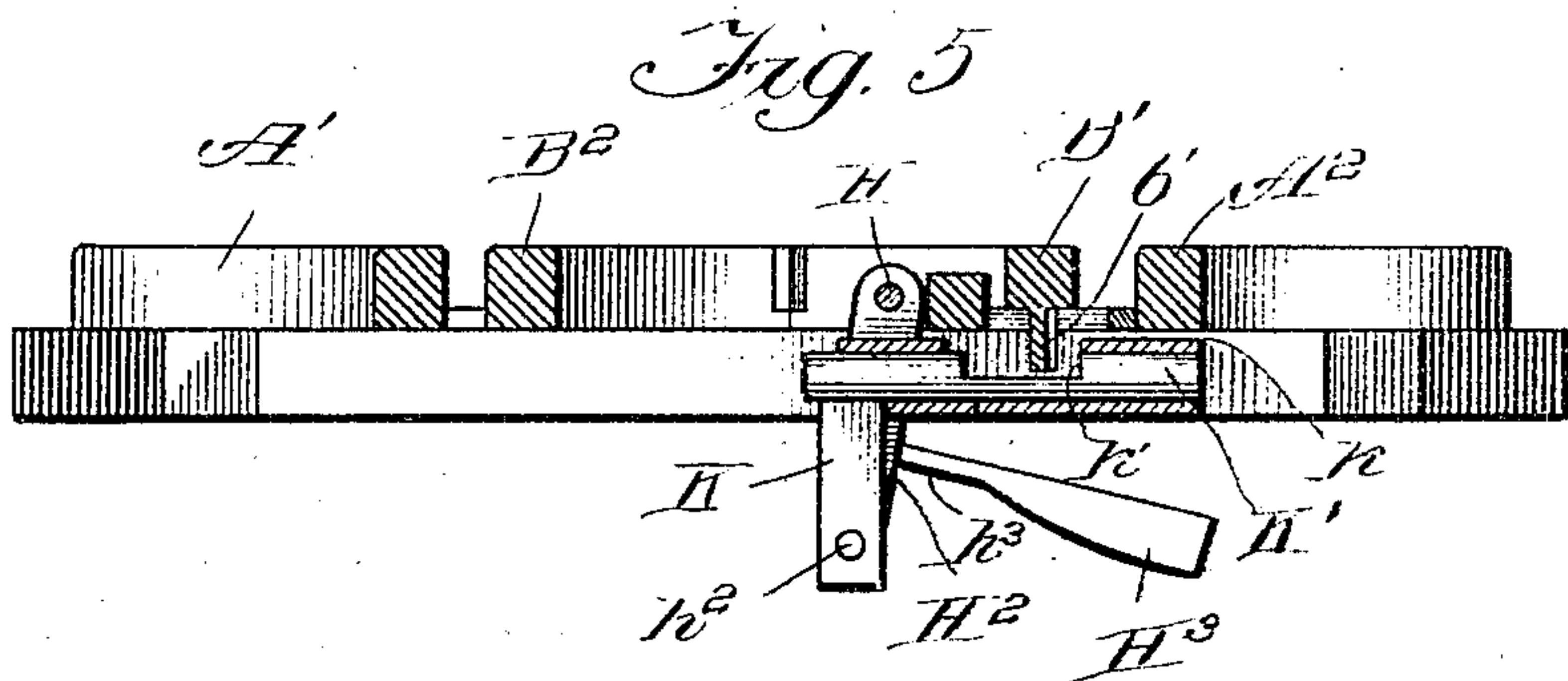
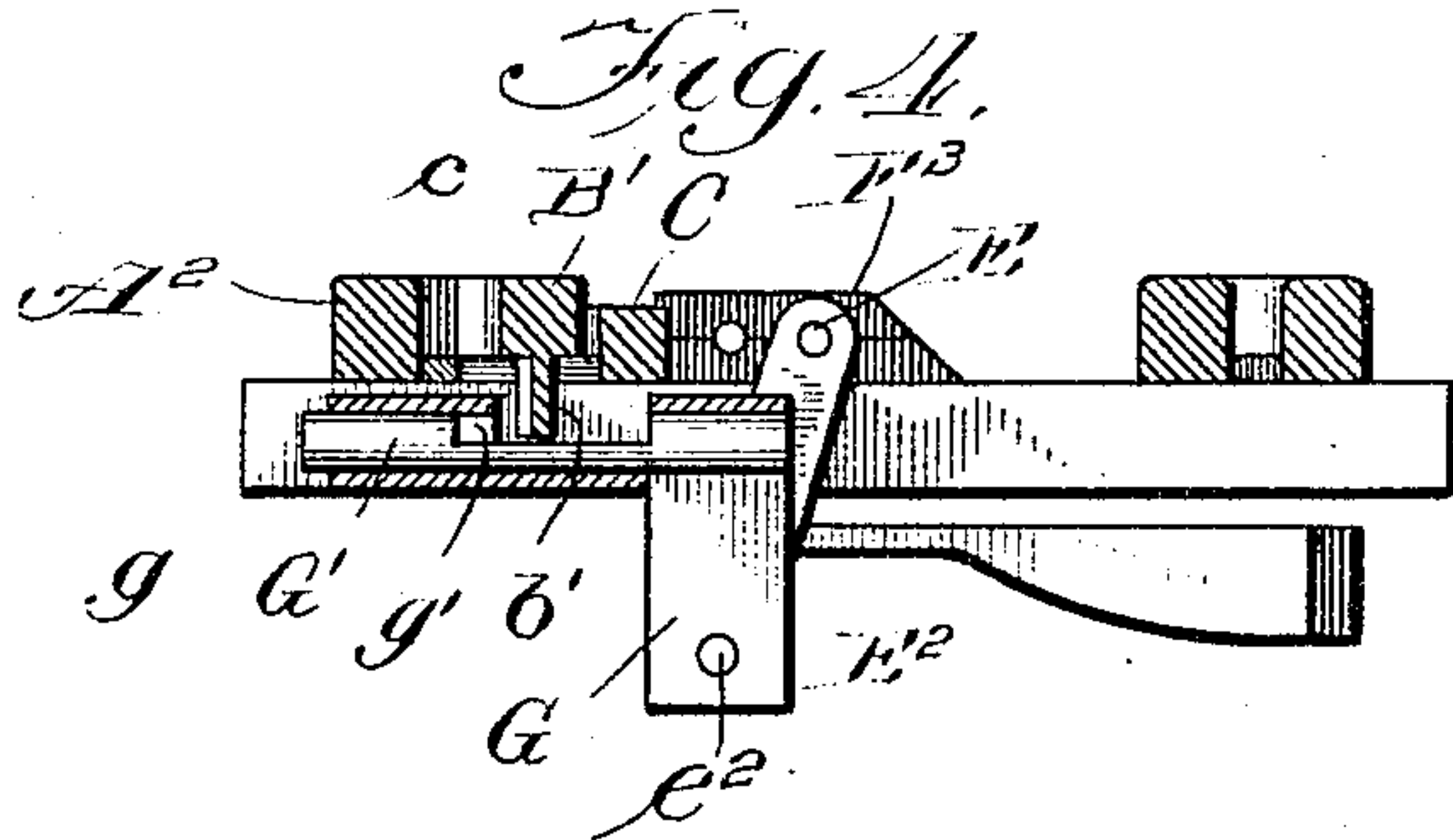


No. 784,522.

PATENTED MAR. 7, 1905.

S. R. FLOWERS.
RAILWAY SWITCH.
APPLICATION FILED MAY 20, 1904.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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TO WILLIAM S. HUME AND GEORGE W. NELSON, OF RICHMOND,
KENTUCKY.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 784,522, dated March 7, 1905.

Application filed May 20, 1904. Serial No. 208,970.

To all whom it may concern:

Be it known that I, SAMUEL R. FLOWERS, a citizen of the United States, residing at Richmond, county of Madison, State of Kentucky, have invented a certain new and useful Improvement in Railway-Switches; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the invention, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates in general to railway-switches, and more particularly to mechanism for moving a switch-point upon the approach of a car to connect the main track with either of two branch tracks.

In the operation of street-cars it is customary for the conductor or motorman to run ahead of the car prior to reaching a switch and move the switch-point to connect the track upon which the car is traveling with the desired branch track. Heretofore a number of switch-throwing devices have been invented; but owing to their complicated construction they have not proved satisfactory in use and have been installed only to a limited extent.

The primary object of my invention is to provide a simple and efficient mechanism adapted to be actuated by a car upon approaching a switch to throw the switch-point into the position necessary to direct the car to either of the two communicating tracks, thereby avoiding the necessity of stopping the car while the conductor or motorman goes forward to throw the switch.

A further object of my invention is to provide a switch-operating mechanism by means of which a switch-point may be mechanically operated by an approaching car, but which will not interfere with the free movement of the switch-point by hand.

My invention, generally described, consists in a pivoted switch-point having a rib projecting from its under surface, two transversely-reciprocating bolts, each having shoulders to engage the opposite sides of the rib, the distance between the shoulders on each rib being slightly greater than the range of

movement of the rib when the switch-point is thrown, mechanism adapted to be actuated by the movement of a car toward the switch for separately reciprocating said bolts to throw the switch-point in either direction, and weights secured to said bolts for returning them to their normal positions after the switch-point has been thrown.

My invention will be more fully described hereinafter with reference to the accompanying drawings, in which the same is illustrated as embodied in a convenient and practical form, and in which—

Figure 1 is a plan view; Fig. 2, a longitudinal sectional view on line 2 2, Fig. 1; Fig. 3, a transverse sectional view on line 3 3, Fig. 1; Fig. 4, a cross-sectional view on line 4 4, Fig. 1; Fig. 5, a cross-sectional view on line 5 5, Fig. 1; and Fig. 6, a central sectional view of the front platform of a car equipped with mechanism to throw the switch-point.

Similar reference characters are used to designate similar parts in the several figures of the drawings.

Reference-letter A designates a track composed of rails spaced apart the usual distance, while reference characters A' and A² designate communicating tracks which branch off from the main track A. The rails of the main track A are continued as the outer rails of the two branch tracks A' and A², while the inner rail of the branch track A² is provided with a fixed switch-point B², spaced apart from the outer rail of the track A a distance to permit the passage of the flanges of the car-wheels. The inner rail of the track A' is provided with a movable switch-point B', the latter being pivotally mounted upon a plate c, to which is secured a guard-rail C, against which the switch-point is thrown when the track A² is to communicate with the track A.

Depending from the under side of the movable switch-point B' is a rib b', which projects through an opening in the supporting-plate c. Supported beneath the plate c are two hollow guides g and h, preferably located parallel to each other and transversely with respect to the movable switch-point. The hollow guides g and h are provided with cut-

away portions into which projects the rib b' , such cut-away portions being of a length to permit the movement of the rib when the switch-point is thrown. Located within the guides g and h are bolts G' and K' , respectively, each of which is cut away to form shoulders between which the rib b' extends. The cut-away portions in the bolts are of such a length that the shoulders formed at each end thereof are spaced apart a distance slightly greater than the movement of the rib b' when the switch-point is thrown, thereby permitting the free movement of the switch-point by hand or by a rod should it be necessary to operate the switch independently of the mechanism herein described.

Rigidly secured to and depending from the inner end of the bolt G' is a bar G , to the lower end of which is pivotally connected by a pin e^2 the lower end of a crank E^2 , the upper end of the latter being rigidly secured to a rod E . The rod E is rotatively mounted in bearings formed within blocks F' , F^2 , and F^3 , the latter being located upon a tie adjacent to the movable switch-point, while the former may be conveniently mounted upon a tie a short distance away from the movable switch-point. The end of the rod E which extends through the bearing in the block F' is provided with a crank e , to the free end of which is pivotally secured a lug E' , the latter being rigidly fastened to an axle D . On the ends of the axle D are wheels d , located adjacent to the inner surfaces of the rails of the track A . Depending from the axle D are rods d' , which are guided in sockets D' , supported below the plane of the ties upon a suitable base D^2 .

Depending from and rigidly secured to the inner end of the bolt K' is a bar K , the lower end of which is pivotally secured by a pin h^2 to the lower end of a crank H^2 , the upper end of the latter being rigidly secured to a rotary rod H , which is journaled in bearings formed in the blocks F^2 and F^3 . The block F^2 is mounted upon a tie intermediate of the blocks F' and F^3 . The end of the rod H which projects through the bearing in the block F^2 is provided with a crank h' , to the free end of which is rigidly secured a block H' , the latter preferably having an inclined upper surface.

A weight E^3 is rigidly secured to the crank E^2 by means of a rod e^3 , the effect of which is to normally retain the bolt G' in the position shown in Fig. 4, in which the shoulders at either side of the cut-away portion are spaced apart from the rib b' of the movable switch-point. The crank H^2 is also provided with a weight, such as H^3 , which is rigidly connected thereto by a rod h^3 . The effect of the weight is to retain the bolt K' in the position shown in Fig. 5, in which the shoulders at either side of the cut-away portion h' therein are spaced apart from the rib b' , as clearly shown in Fig. 5.

Referring to Fig. 6, L designates the front platform of a car, while L' indicates the front

axle of the car, upon each end of which is secured a wheel l' . Journaled beneath the front platform of the car is a shaft M , provided with a crank m , upon which is journaled a wheel O . M' designates a weight rigidly secured to the shaft M , which retains the wheel O in the elevated position. (Shown in Fig. 6.) Pivotally secured to the shaft M , adjacent to the crank m , is a plunger M^2 , which extends through the platform L of the car and is provided with a head m^2 .

The operation of my invention is as follows: The flanges of the front wheels of a car approaching the switch-point from the left in Fig. 1 engage the wheels d and force the same downwardly, thereby lowering the free end of the crank e and oscillating the rod E . The oscillation of the rod E swings the crank E^2 toward the right, (see Fig. 4,) thereby moving the bolt G' to the right such a distance that the shoulder at the left of the cut-away portion g' engages the rib b' and swings the switch-point against the guard-rail C , thereby placing the branch track A^2 in communication with the track A . Immediately upon the wheels of the car passing over the wheels d the weight E^3 returns the bolt G' to its normal position and also elevates the wheels d to their normal position. Should it be desired to switch the car onto the branch track A' , the motorman forces downwardly the plunger M^2 by applying his foot to the upper end thereof, which lowers the wheel O into the position indicated in Fig. 2, so that when the block H' is reached it will be depressed by the wheel O and the rod H thereby oscillated. The oscillation of the rod H swings the crank H^2 toward the right, (see Fig. 5,) thereby moving the bolt K' in the same direction and causing the shoulder at the left of the cut-away portion h' to engage the rib b' , thereby throwing the switch-point B' into the position shown in Fig. 1, so that the car will be guided upon the branch track A' . Immediately upon the wheel O passing beyond the block H' the weight H^3 returns the bolt K' to its normal position (shown in Fig. 5) and also elevates the block H' to its normal position. (Shown in Fig. 2.)

It will be observed that the normal positions of the bolts G' and K' are such that the shoulders formed thereon for engaging the rib to throw the switch-point are out of contact with the rib b' and at such a distance therefrom as to permit the switch-point to be moved by applying power directly thereto should it at any time be desired to throw the same independently of the mechanism—as, for instance, should a car which is to continue from the track A to the track A' pass the block H' without the motorman forcing downwardly the wheel O .

From the foregoing description it will be observed that I have invented an improved switch-operating mechanism by means of

which a switch-point may be thrown into position to connect the main track with either of two branch tracks without the necessity of the conductor or motorman leaving the car and which in no wise interferes with the movement of the switch-point by the direct application of power thereto independently of the actuating mechanism.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form, the proportion of parts, and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit of my invention.

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

1. In a railway-switch, the combination with a movable switch-point, of a reciprocating bolt located beneath the switch-point, means interposed between said bolt and switch-point for throwing the latter upon the reciprocation of the bolt, and means adapted to be actuated by a car approaching the switch for reciprocating said bolt.

2. In a railway-switch, the combination with a movable switch-point, of a reciprocating bolt located beneath the switch-point, means interposed between said bolt and switch-point for throwing the latter upon the reciprocation of the bolt, means adapted to be actuated by a car approaching the switch for reciprocating said bolt, and means for automatically returning said bolt to its normal position after it has thrown the switch.

3. In a railway-switch, the combination with a movable switch-point, of two reciprocating bolts located beneath the switch-point for throwing the latter in one direction upon the reciprocation of one bolt and in the opposite direction upon reciprocation of the other bolt, and means adapted to be actuated by a car approaching the switch for separately reciprocating said bolts.

4. In a railway-switch, the combination with a movable switch-point, of two reciprocating bolts located beneath the switch-point for throwing the latter in one direction upon the reciprocation of one bolt and in the opposite direction upon reciprocation of the other bolt, means adapted to be actuated by a car approaching the switch for separately reciprocating said bolts, and weights operatively connected to said bolts for returning the same to their normal positions after the switch has been thrown.

5. In a railway-switch, the combination with a movable switch-point, of a rib rigidly secured to and projecting from the under side of the switch-point, a reciprocating bolt located beneath the switch-point, a shoulder on said bolt adapted when the latter is reciprocated to engage said rib and throw the switch-point.

6. In a railway-switch, the combination with a movable switch-point, of a rib rigidly secured to and projecting from the under side of the switch-point, a reciprocating bolt located beneath the switch-point, a shoulder on said bolt adapted when the latter is reciprocated to engage said rib and throw the switch-point, and means for automatically returning said bolt to its normal position and removing said shoulder away from said rib after the switch-point has been thrown.

7. In a railway-switch, the combination with a movable switch-point, of a rib rigidly secured to and depending from the switch-point, two reciprocating bolts located beneath the switch-point, a shoulder on one of said bolts adapted when the latter is reciprocated to engage said rib and throw the switch-point in one direction, a shoulder on the other of said bolts adapted when the latter is reciprocated to engage the opposite side of said rib and throw the switch-point in an opposite direction.

8. In a railway-switch, the combination with a movable switch-point, of a rib rigidly secured to and depending from the switch-point, two reciprocating bolts located beneath the switch-point, a shoulder on one of said bolts adapted when the latter is reciprocated to engage said rib and throw the switch-point in one direction, a shoulder on the other of said bolts adapted when the latter is reciprocated to engage the opposite side of said rib and throw the switch-point in an opposite direction, and means for automatically returning said bolts to their normal position and removing the shoulders thereon away from said rib after the switch-point has been thrown.

9. In a railway-switch, the combination with a movable switch-point, of a reciprocating bolt located beneath the switch-point, means interposed between the bolt and switch-point for throwing the latter in one direction upon the reciprocation of the bolt, a crank operatively connected to said bolt for reciprocating the same, a rotary rod extending longitudinally with respect to the track and rigidly connected to said crank, and means for oscillating said rod projecting into the path of the car-wheels.

10. In a railway-switch, the combination with a movable switch-point, of two reciprocating bolts located beneath the switch-point, separate means interposed between each of said bolts and the switch-point for throwing the latter in opposite directions upon the reciprocating of the bolts, separate cranks operatively connected to said bolts for reciprocating the same, rotary rods extending longitudinally with respect to the track and rigidly connected to said cranks, means for oscillating one of said rods projecting into the path of movement of the car-wheels, and means for oscillating the other of said rods adapted to be actuated when desired from a car approaching the switch.

11. In a railway-switch, the combination

with a movable switch-point, of a rib rigidly secured to and depending from the switch-point, transverse guides located beneath the switch-point into which said rib projects, reciprocating bolts within said guides, shoulders on said bolts adapted to engage the opposite sides of said rib to throw the switch-point in opposite directions, means for separately reciprocating said bolts adapted to be actuated
10 by a car approaching the switch, and means for automatically returning said bolts to their normal positions and moving the shoulders thereon away from said rib after the switch has been thrown.

15 12. In a railway-switch, the combination

with a movable switch-point, of means adapted to be actuated by a car approaching the switch to engage and throw the switch-points in either direction, and means for automatically returning said actuating means to their normal positions out of contact with the switch-point after the switch has been thrown whereby the switch may be thrown by hand independently of the actuating mechanism. 20

In testimony whereof I sign this specification in the presence of two witnesses. 25

SAMUEL R. FLOWERS.

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WILLIAM B. BRIGHT.