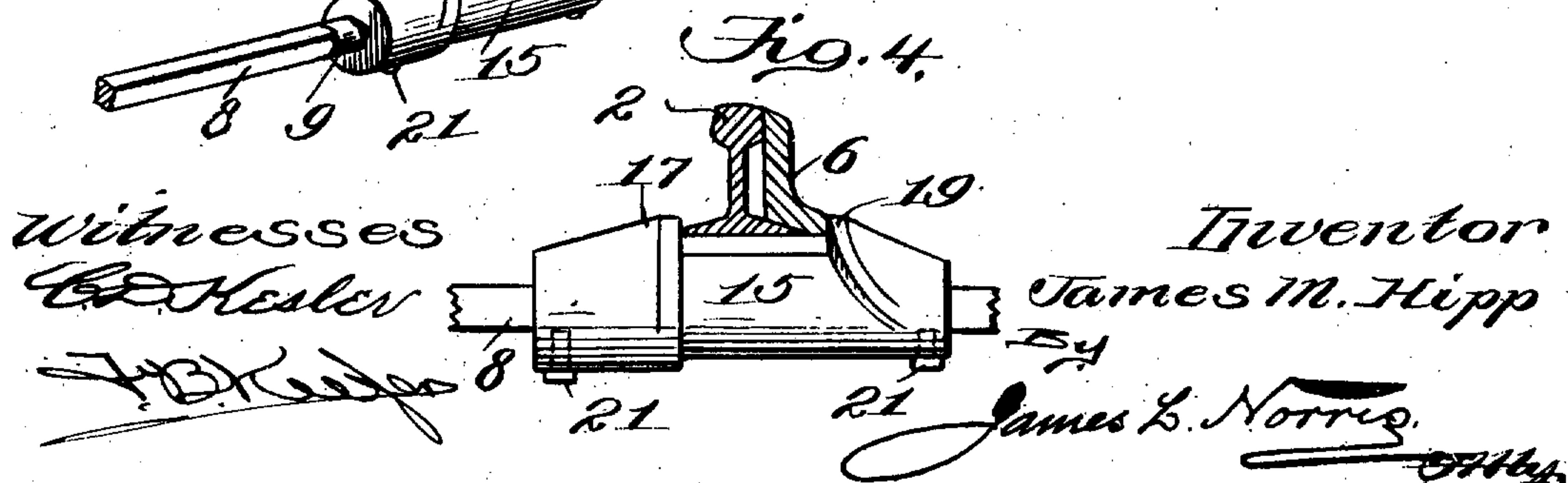
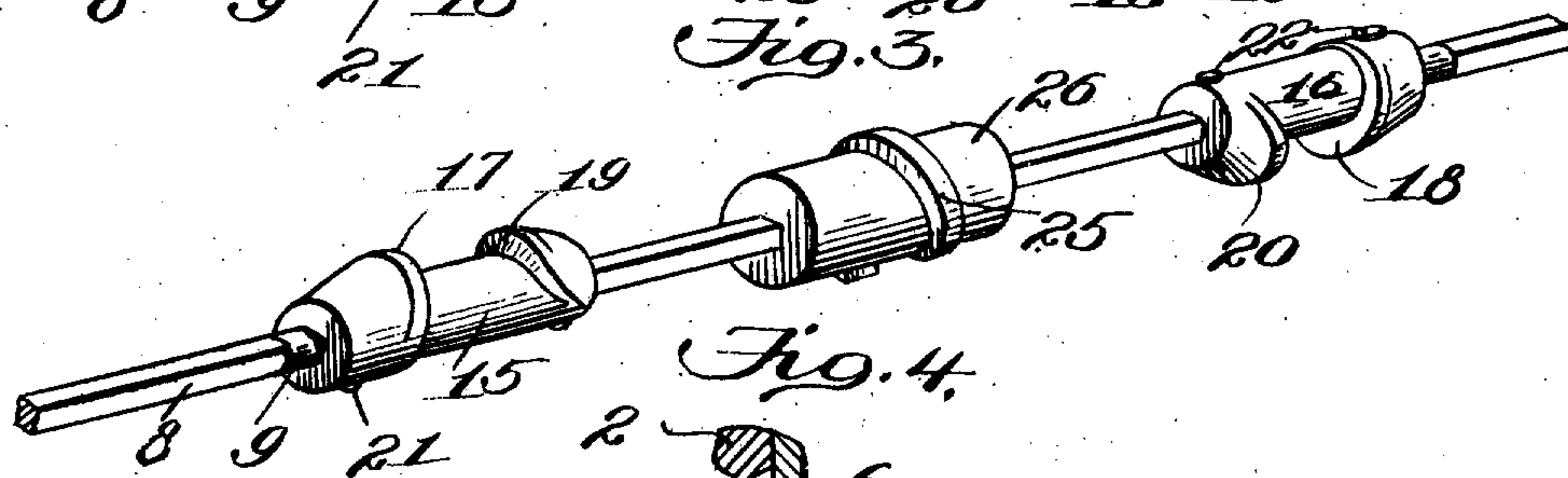
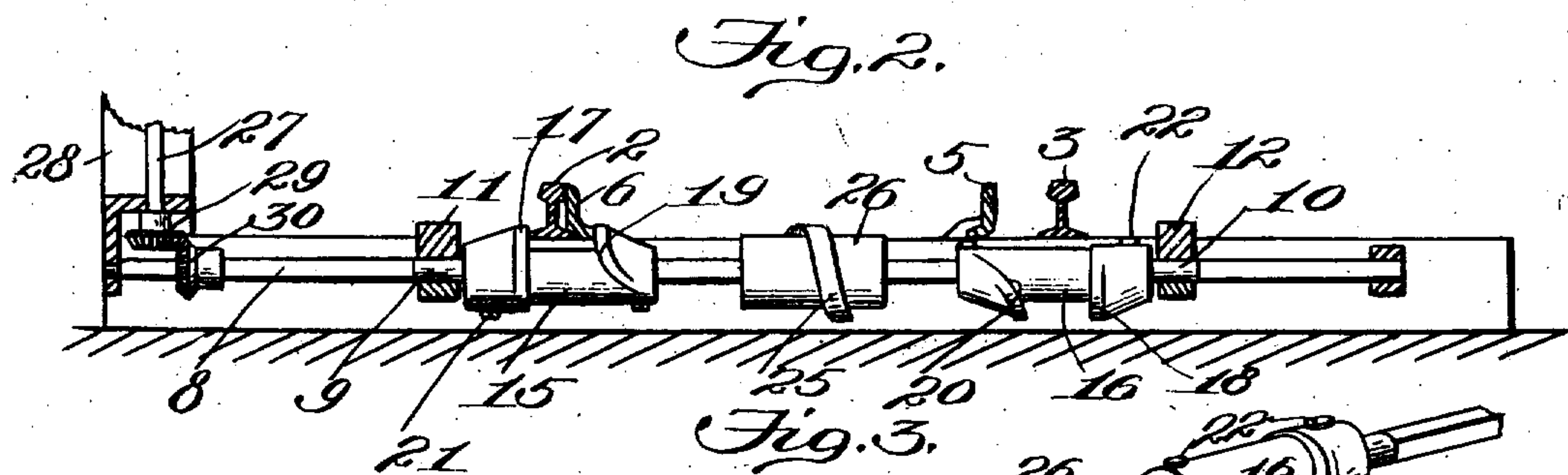
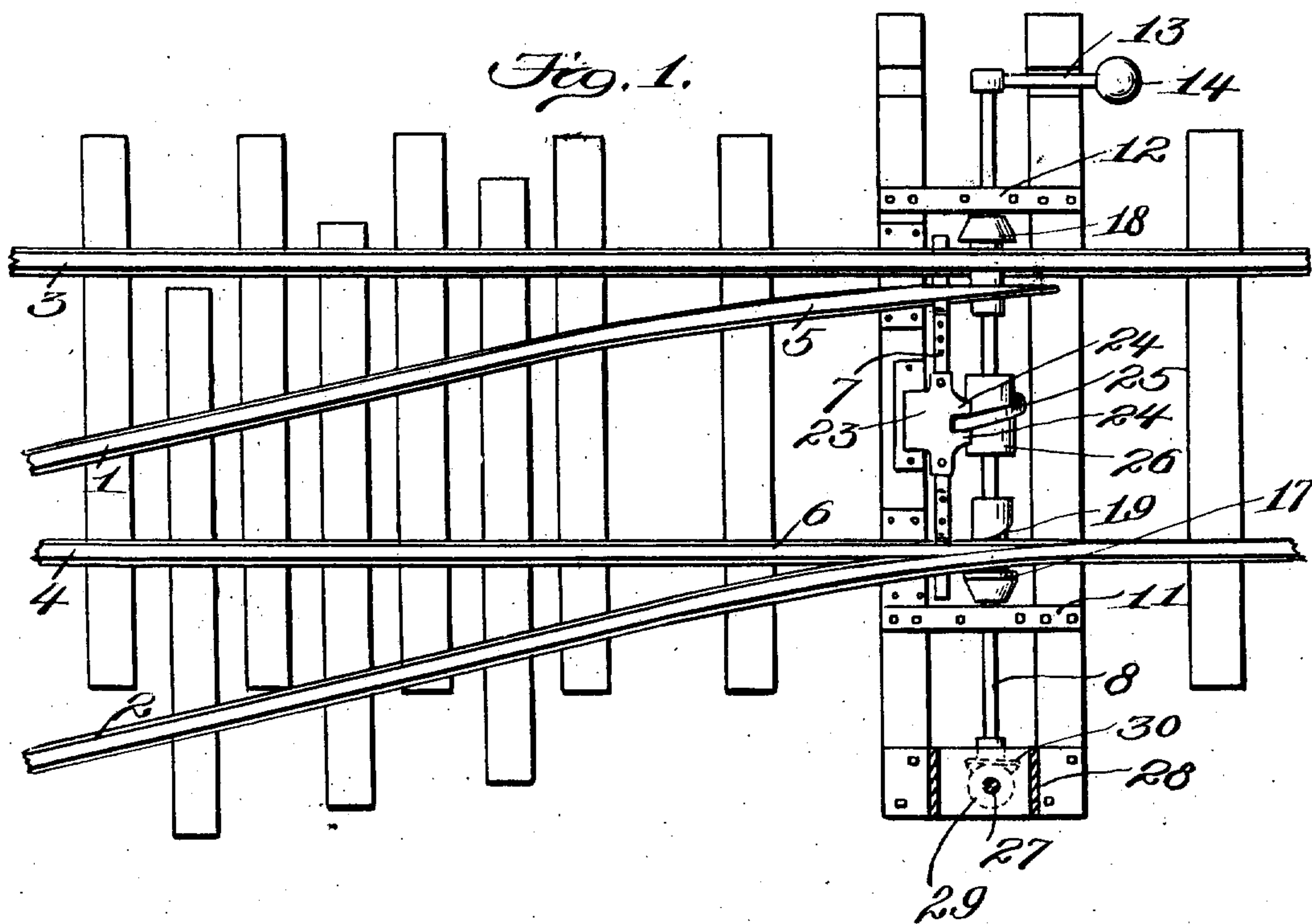


No. 891,170.

PATENTED JUNE 16, 1908.

J. M. HIPPI.  
RAILWAY SWITCH.  
APPLICATION FILED DEC. 28, 1907.



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# UNITED STATES PATENT OFFICE.

JAMES M. HIPP, OF GREENVILLE, GEORGIA.

## RAILWAY-SWITCH.

No. 891,170.

Specification of Letters Patent.

Patented June 16, 1908.

Application filed December 28, 1907. Serial No. 408,414.

*To all whom it may concern:*

Be it known that I, JAMES M. HIPP, a citizen of the United States, residing at Greenville, in the county of Meriwether and State of Georgia, have invented new and useful Improvements in Railway-Switches, of which the following is a specification.

My present invention relates to improvements in railway switches, and it has for its object primarily to provide means for directly locking the switch points of a switch in cooperative relation with the adjacent rail sections for the purpose of positively preventing splitting or opening of the switch point relatively to the rail section and thereby insuring a safe passage of a train or vehicle over the switch.

Another object of the invention is to provide locking mechanism of the character described that is capable of adjustment to compensate for wear of the rail and switch point and to enable the locking device to accommodate itself to rails of different sizes, the switch point in either case being positively locked in closed relation to the rail so as to preclude the possibility of the wheel flanges entering the closed side of the switch.

A further object of the invention is to provide improved operating mechanism for effecting the movements of the switch after the unlocking of one switch point and before the locking of the opposite switch point, the locking mechanism and operating devices being connected so that the different operations are performed in proper order.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing—Figure 1 is a plan view of a railway switch provided with locking and operating mechanism constructed in accordance with my present invention; Fig. 2 represents a vertical section taken axially of the operating shaft; Fig. 3 is a perspective view of the operating shaft removed from the track; and Fig. 4 is a transverse section through a rail section and the adjacent switch point showing the corresponding locking member for retaining the switch point and rail in closed or cooperative relation.

Similar parts are designated by the same reference characters in the several views.

Switch mechanism constructed in accord-

ance with the present invention is capable of application to railway switches of various kinds, and is capable of adjustment in order to accommodate it to tracks of various gages. In the present instance, the invention is shown in connection with an ordinary crossover switch for connecting the siding rails 1 and 2 to the rails 3 and 4 of the main track, the switch point 5 forming a continuation of the siding rail 1 and is adapted to cooperate with the rail section 3 of the main track, while the opposite switch point 6 forms a continuation of the main rail section 4 and is adapted to move to and from operative position relatively to the rail section 2, the switch points being connected as usual by one or more connecting members or spacing rods 7 that are rigidly attached to both switch points and insures the engagement of one switch point with the adjacent rail section, while the other switch point is in an opened position in order to permit passage of the wheel flanges between it and the corresponding rail section.

The devices for locking the switch points in cooperative relation with their respective rail sections are mounted on an operating shaft 8, the latter being provided with journals 9 and 10 which cooperate with suitable bearings 11 and 12, respectively, these bearings being bolted or otherwise fastened so as to extend transversely between two adjacent ties, and this shaft may be rotated by any suitable means, a lever 13 being shown in the present instance which is fixed to one end of the shaft opposite the track and swings in a vertical plane, a weight 14 serving to retain it in either of its two positions. The operating shaft passes beneath the rails and is provided with a pair of locking members 15 and 16 which cooperate with the respective switch points. These locking members in the present instance are substantially duplicates arranged in reverse relation on the operating shaft and have outer rail engaging shoulders or flanges 17 and 18 which are arranged parallel to the plane of rotation of its respective member and extends a suitable distance around the periphery of the respective sleeves, these outer shoulders or flanges being arranged to cooperate with the outer side of the continuous rail sections 2 and 3, respectively. These locking members are also provided with cam shoulders which operate with the respective switch points and serve to insure movement of the latter to



closed position and lock them in such position. These cam shoulders 19 and 20, respectively, extend helically on the peripheries of the respective members in the present instance so that a rotation of the corresponding member through an appropriate angle will cause the corresponding cam shoulder to lock its switch point and adjacent rail section in cooperative relation, while a reverse rotation of the corresponding locking member will permit the respective switch point to leave the adjacent rail section and move into an open position. In the present instance the locking and unlocking of each switch point relatively to its adjacent rail section is accomplished by an approximate half revolution of the operating shaft, so that the respective locking members are arranged in diametrically opposite relation on the shaft, and in order to insure the proper angular positioning of the locking members relatively to one another and to prevent subsequent shifting thereof, it is preferable to provide a shaft having an angular cross section which fits a correspondingly shaped aperture in each locking member, the shaft shown in the present instance being substantially square or rectangular in cross section, so that while the members may be slid upon the shaft by a relative longitudinal movement, they cannot rotate, and in fitting the locking mechanism to tracks of different gage, the locking members are spaced a suitable distance longitudinally of the shaft to effect the total closing of one switch point while the opposite switch point is in full open position, and after the members have been properly spaced, they are positively locked by set screws 21 and 22. However, any opening tendency that may be brought to bear upon either of the switch points will be resisted independently of the shaft, as the locking sleeve or member which is preferably composed of a single part of strong metal has one flange or shoulder which directly engages the inner side of the switch point, and another flange or shoulder which directly engages the outer side of the adjacent rail section so that neither the switch point nor the rail section can be displaced laterally until after the locking member has been moved into an unlocked position.

It is preferable to provide suitable means for effecting the shifting movements of the switch rails, these movements being effected after one of the switch points has been unlocked and before the opposite switch point is locked, and the operating mechanism shown in the present instance comprises a bracket 23 rigidly attached to the member 7 connecting the switch points and is provided with a notch forming a pair of teeth or projections 24 that continuously engage the opposite sides of a helical or spiral rib or tooth 25 formed on a sleeve 26, the latter being mounted to rotate with the operating shaft 8. This

helical or spiral gear element just described is so positioned longitudinally of the shaft, that one of the switch points is moved toward open position the moment it is unlocked by its respective locking member that is also mounted upon and rotates with the shaft 8, and while this switch point is moved toward an open position the opposite switch point is being closed, and in the present instance the closing movement of the switch points is assisted by the cam shoulders on the respective locking members, the pitch of these cam shoulders insuring their engagement with the inner sides of the respective switch points during their closing movements.

The usual target for indicating the position of the switch may be employed if so desired, the target being mounted on the vertical shaft 27 mounted in a suitable stand 28, and the target carrying shaft is operatively connected to the main operating shaft by means of suitable gearing such for instance as bevel gears 29 and 30.

Switches equipped with locking devices constructed in accordance with my present invention insure safety to the trains passing thereover, as the appropriate switch point is firmly forced into and positively locked in closed relation with the adjacent rail by a locking member which directly engages the switch point and rail, and this locking member sustains all effort tending to separate the switch point and rail by a relatively lateral movement. Moreover, the switch is secure from displacement due to malicious tampering therewith, for, after the operating lever has been locked in the usual way, the switch point that is in closed position will be held in such position by the locking member.

The operating device for shifting the switch points may, if desired, be omitted, the locking members in that case effecting the necessary movements of the switch points, but it is generally preferable to use the operating device in connection with the locking devices, as it facilitates the movements of the switch points and also assists the locking members in securing the switch points in fully closed position, the locking action, however, being primarily effected by the locking members.

What I claim is—

1. Locking mechanism for railway switches, comprising a shaft, a locking member adjustable axially thereon and having permanently fixed portions thereon adapted to cooperate with a switch point and adjacent rail to prevent relative lateral movement thereof, and means for moving said member into locked and unlocked positions.

2. In a railway switch, means for locking a switch point in closed position relatively to an adjacent rail, comprising a shaft, a rotatable locking member thereon having permanently fixed peripherally arranged lock-



ing shoulders thereon arranged to cooperate respectively with a switch point and adjacent rail, said member and its shoulders being bodily adjustable axially and means for rotating said member into locked and unlocked positions.

3. In a railway switch, a rotatably locking member having integrally formed peripheral shoulders arranged to cooperate respectively with a switch point and adjacent rail, the switch point engaging shoulder having a cam surface for moving the switch point into engagement with said rail, said shoulders being incapable of movement with respect to one another and means for rotating said member.

4. In a railway switch, a rotatable locking member having a pair of peripheral locking shoulders, both formed integrally with the locking member, one of said shoulders extending helically of the axis of said member and arranged to cooperate with the switch point to force the latter into closed position relatively to the adjacent rail, said shoulders being incapable of movement with respect to one another.

5. In a railway switch, means for locking a switch point in closed relation to its cooperating rail, comprising a shaft extending transversely of the rail, and a sleeve adjustable axially on the shaft and having a pair of peripheral locking shoulders permanently fixed on said sleeve and arranged to engage respectively the switch point and rail when the latter are in closed relation, and means for rotating the shaft.

6. In a railway switch, an operating shaft extending transversely of the rails, a pair of locking sleeves rotatable with the shaft, each sleeve having a pair of locking shoulders formed integrally thereon and adapted to cooperate respectively with a switch point

and rail, one of said shoulders having a cam surface for effecting a proximate movement of the switch point and rail, the shoulders on one sleeve being arranged diametrically opposite to those on the opposite sleeve, and means for rotating the shaft to effect the simultaneous rotation of both sleeves.

7. In a railway switch, means for locking the switch points in closed position comprising a pair of locking members having integrally connected portions arranged to directly engage the respective switch points and their cooperating rail sections, and means connected to the switch points for shifting them while one locking member is being unlocked and the other member is being locked.

8. In a railway switch, means for operating and locking the switch points in closed position, comprising a shaft extending transversely of the rails, a pair of locking members arranged on the shaft and having portions arranged to directly engage the switch points and adjacent rail sections, a helical gear element rotatable with the shaft, and a connecting member extending between the switch points and having a bracket cooperating with the helical gear element, the locking members being arranged on the shaft in diametrically opposite relation so that one member is in locked position while the other member is in unlocked position, the helical gear element being arranged to shift the switch while one member is being unlocked and the other member is being locked.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES M. HIPP.

Witnesses:

W. R. JONES,

W. C. CULPEPPER.