

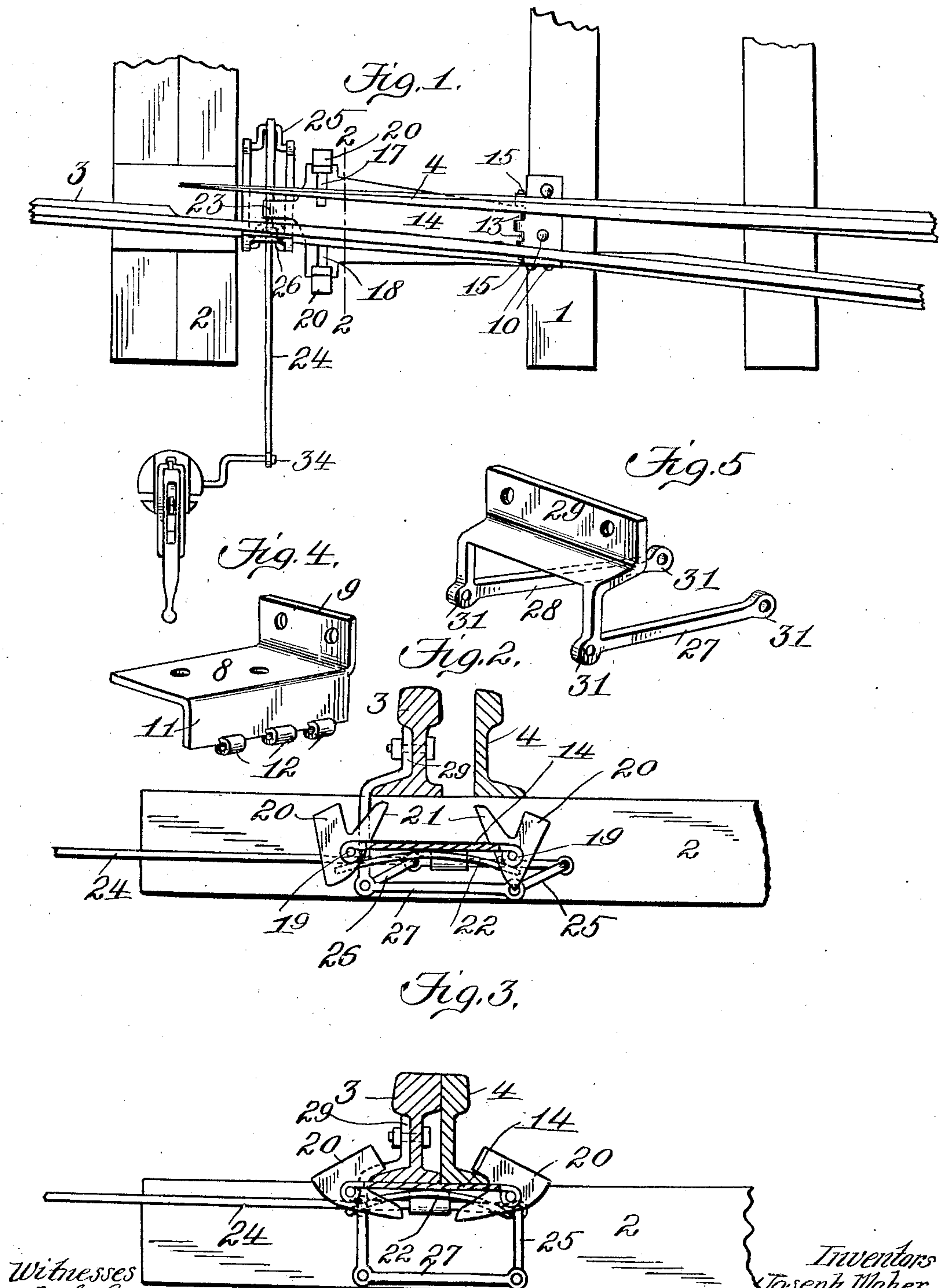
No. 837,860.

PATENTED DEC. 4, 1906.

J. MAHER & C. W. HARBISON.  
LOCKING MECHANISM FOR SWITCH POINTS.

APPLICATION FILED DEC. 18, 1905.

2 SHEETS—SHEET 1.



*Witnesses*

M. L. Boyan  
Capt. Kesler

Inventors  
eph Maher

re W. Harbison

Andrew B. Keefe  
Atty.

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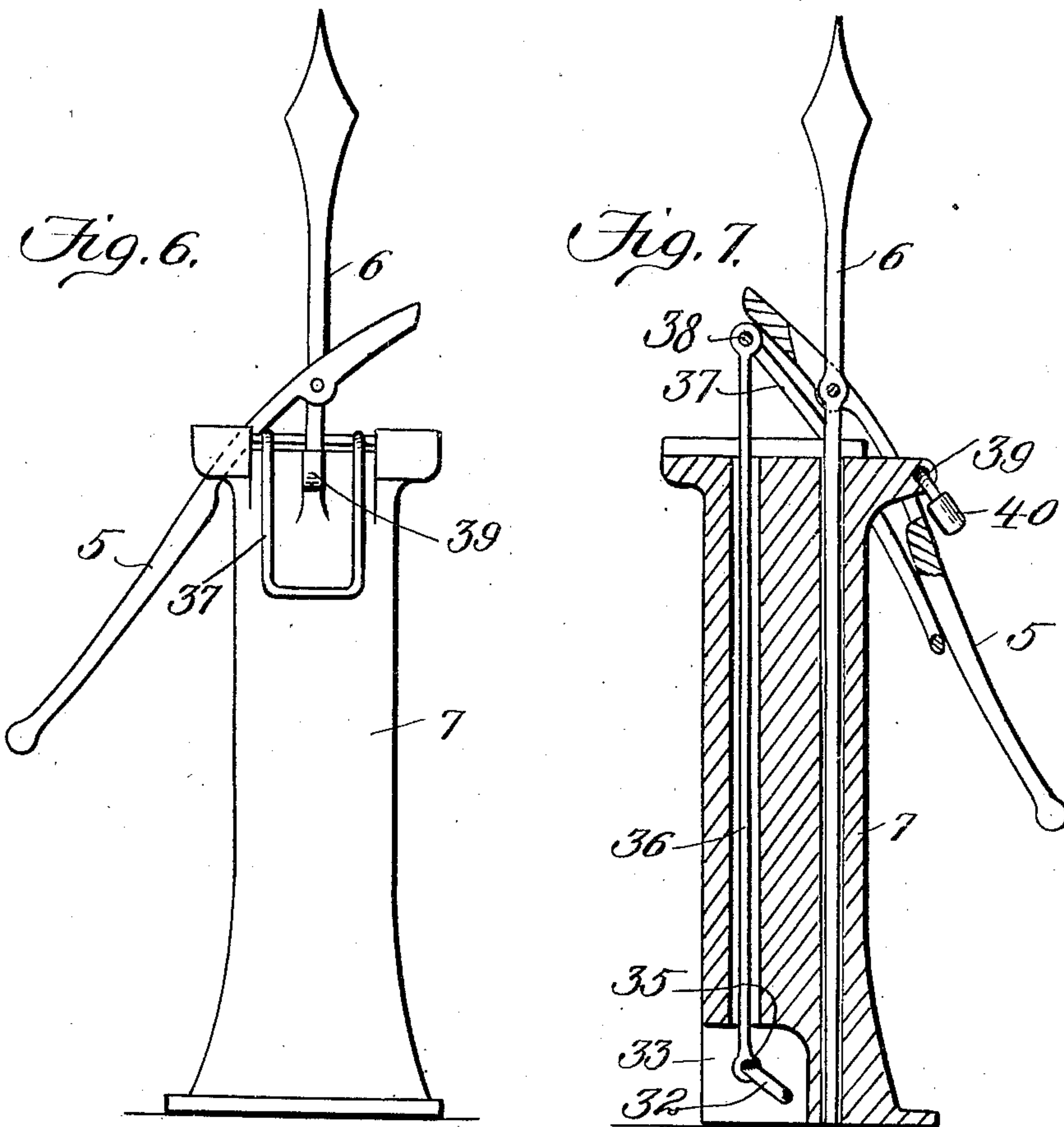
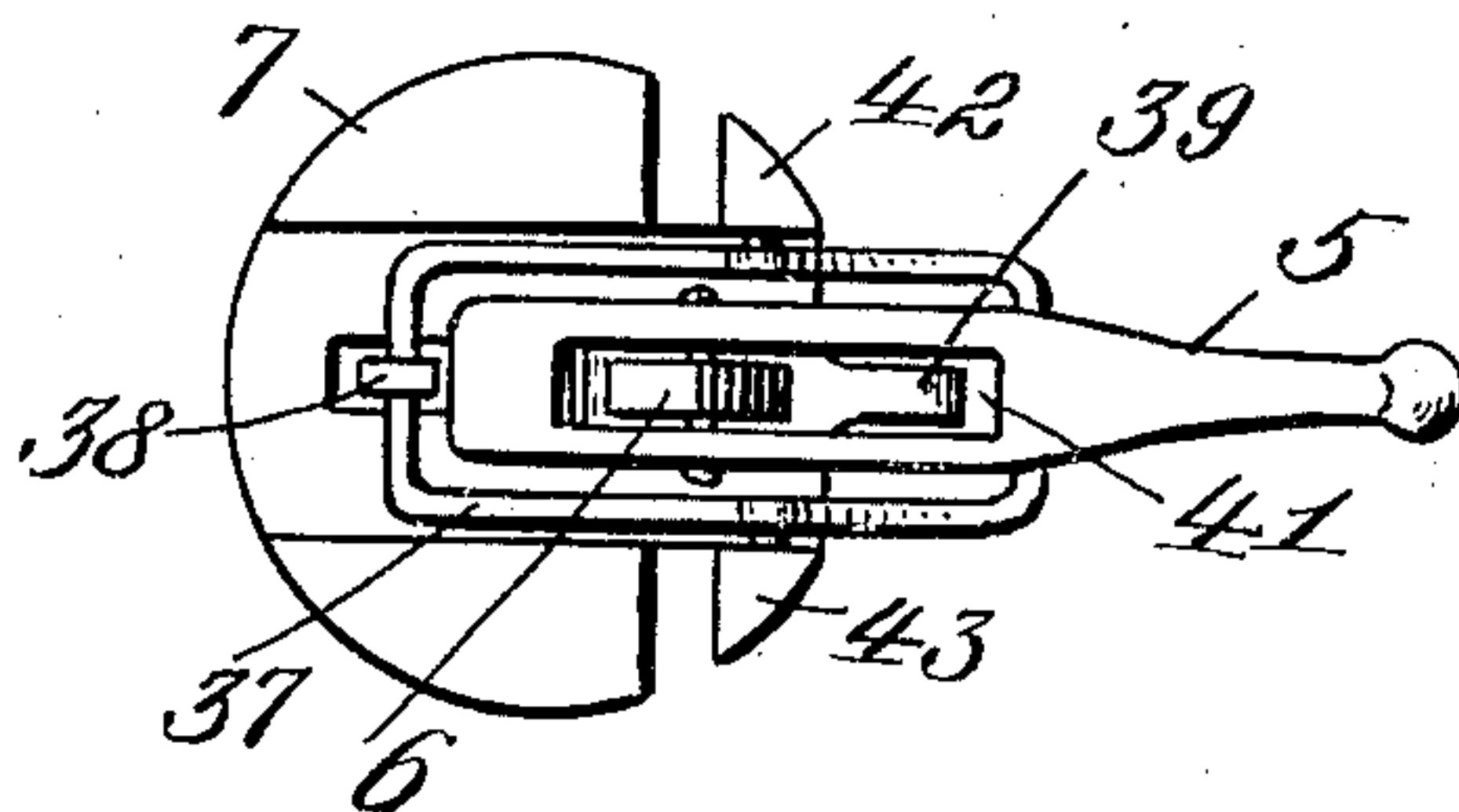


Fig. 8.



Witnesses:  
N. L. Rogan  
C. D. Kester

Inventors  
Joseph Maher.  
Clarence W. Harbison.  
By  
Frederick B. Kester  
Atty.



# UNITED STATES PATENT OFFICE.

JOSEPH MAHER AND CLARENCE W. HARBISON, OF COLUMBUS, OHIO.

## LOCKING MECHANISM FOR SWITCH-POINTS.

No. 837,860.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed December 18, 1905. Serial No. 292,389.

*To all whom it may concern:*

Be it known that we, JOSEPH MAHER and CLARENCE W. HARBISON, citizens of the United States of America, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Locking Mechanism for Switch-Points, of which the following is a specification.

10 This invention relates to locking mechanism for switch-points particularly adapted for use for locking a switch-point to a stock-rail; and the object thereof is to improve the construction of the mechanism for such purposes disclosed in Letters Patent No. 775,840, granted to us November 22, 1904.

Primarily the invention resides in the arrangement and construction of the operating mechanism for the locking mechanism, thereby obtaining a better leverage, so as to facilitate the moving of the various parts to operative and inoperative position.

25 The invention further aims to provide an improved means, hereinafter more specifically referred to, for securely locking the switch-point to the stock-rail and retaining the point in such position until said means is released and operated manually to unlock the switch-point.

30 The invention further aims to provide an improved locking mechanism for the switch-point, as well as an operating means for said mechanism, said means and mechanism arranged in such relation with respect to the switch-point-throwing mechanism so they can be operated without interfering in any manner with the switch-point-throwing mechanism; furthermore, to provide an operating means common to the operating means for the switch-point-throwing mechanism and to the operating means for the switch-point-locking mechanism, said common operating means being so arranged and constructed as to enable the operation of the operating means for the switch-point-throwing mechanism and the operating means for the switch-point-locking mechanism independently of each other.

50 The invention further aims to provide a mechanism for the purpose set forth which shall be comparatively simple in its construction and arrangement, readily and easily op-

erated, strong, durable, efficient in its use, and inexpensive to set up.

With the foregoing and other objects in view the invention consists of the novel construction, combination, and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawings, which form a part of this specification, and particularly pointed out in the claims hereunto appended.

In the drawings, wherein like reference characters denote corresponding parts through the several views, Figure 1 is a top plan view of a mechanism for the purpose set forth constructed in accordance with this invention. Fig. 2 is a section on line 2 2, Fig. 1. Fig. 3 is a like view with the switch-point secured to the stock-rail. Fig. 4 is a perspective view of the suspension-plate for the locking mechanism. Fig. 5 is a like view of the suspension-bracket for the shifting means for the locking mechanism. Fig. 6 is a side elevation of the stand for supporting the operating means for the shifting means. Fig. 7 is a vertical sectional view thereof, and Fig. 8 is a top plan view.

Referring to the drawings by reference characters, 1 and 2 denote a pair of railway-ties upon which is secured the stock-rail 3 and on which operates the switch point or tongue 4. The rail 3 and switch-point 4 are broken away at one end, and said switch-point may be thrown, shifted, or set by any suitable lever mechanism operated by the device common to both the lever mechanism and the operating means for the shifting means for the locking mechanism. Said device consists of a lever 5, pivotally connected to a vertically-extending rotatable rod 6, attached at its lower end in any suitable manner to the lever mechanism (not shown) for throwing or shifting the switch-point 4. The rod 6 is mounted in and projects above the top of the stationary stand 7 and has the upper end provided with a suitable signal device. The stand 7 also supports the operating means for the shifting means for the locking mechanism. Said shifting means will be hereinafter referred to.

Secured to the upper face of the tie 1 by suitable holdfast devices is what may be termed a "suspension-plate" 8 for that por-



tion of the mechanism which forms the locking element, and the plate 8 is arranged below the base of the rail 3 and point 4. Said plate 8 at one end is bent at an angle with respect to the body portion so as to form a vertically-extending portion, as at 9, which is secured by holdfast devices, as at 10, to one side of the stock-rail 3. By such an arrangement the stock-rail 3 is not only prevented from moving, but also the plate 8. At one side of the plate 8 a longitudinally-extending depending flange 11 is formed, which abuts against the tie 1 and is provided with a plurality of apertured ears 12, between which extend the apertured ears 13, formed on one end of the locking-element-carrying plate 14. Through the ears 12 and 13 extends a pivot 15 for hinging the plates 8 and 14 together and so that the plate 8 will suspend one end of the plate 14.

The carrying-plate 14 is arranged between the ties 1 and 2 and beneath the stock-rail 3 and below the path of the switch-point 4, and that end opposite to that which is hinged to the plate 8 is preferably of greater width than said hinged end and is provided with a pair of transversely-alining slots 17 18, in which is pivoted, as at 19, the rockable locking-knuckles. Each of the locking-knuckles consists of two arms 20 21, connected together at their lower ends. The arms 20 are what may be termed the "shifting arms," and the arms 21 the "locking-arms." Normally the arms 20 extend in a vertical manner within the slots 17 18, while the arms 21 extend at an angle with respect to the arms 20. The function of the arms 20 is to cause, in a manner as hereinafter set forth, the arms 21 to engage the base of the switch-point 4 and stock-rail 3 and securely lock the switch-point to the stock-rail. The plate 14 has connected thereto a spring 22, engaging with the arms 20 for retaining the knuckles in their inoperative position when the locking mechanism is out of engagement with the switch-point and stock-rail, and said plate 14 is further provided with an apertured protuberance 23, through which extends one of the elements of the shifting mechanism for the locking mechanism, said element when operated adapted to cause the moving of one end of the plate 14 in a vertical manner, thereby rocking the knuckles to operative position and to permit of the knuckles returning to inoperative position.

The shifting mechanism comprises an elongated rod 24, which extends through the protuberance 23, said rod 24 being shiftable transversely in both directions of the track-bed, so that when moved inwardly it will cause the free end of the plate 14 to lower and when moved in the opposite direction it will raise the free end of said plate 14. The rod 24 is supported upon a pair of crank-

shafts 25 26, journaled in a pair of L-shaped depending arms 27 28, carried by a suspension plate or bracket 29, secured to one side of the stock-rail 3, as at 30. The arms 27 28 are provided with sockets 31 to receive the ends of the shafts 25 26.

The operating mechanism for the shifting mechanism comprises a crank-shaft 32, journaled in the lower end of the stand 7, a recess 33 being provided to enable the operation of said shaft 32, said shaft 32 being connected to the end of the rod 24, as at 34. The shaft 32 is attached, as at 35, to the lower end of a vertically-movable rod 36, mounted within the stand 7, and to the said rod 36 at a point above the upper end of the stand 7 is pivoted an operating-lever 37, as at 38, said lever 37 finding its fulcrum upon the stand 7 and is of skeleton shape, so as to straddle an apertured protuberance 39, through which is adapted to extend a lock 40 to retain the lever 37 in the position set. The lever 37 is operated through the medium of the lever 5, and for such purpose the lever 37 is arranged below said lever 5. The latter is formed with an opening 41 to allow it to straddle the protuberance 39, so it can be locked in the position set, and said lever 5 is also adapted to straddle the protuberance 42 or 43, formed on the stand 7, so that said lever 5 can be locked after the switch-point throwing or shifting mechanism has been operated. A suitable lock is provided to extend through either of the protuberances 42 or 43.

When the locking mechanism is adapted to secure the switch-point to the stock-rail, the plate 14 is elevated by shifting the rod 24 outwardly by moving upwardly the rod 36 through the medium of elevating that end of the lever 37 which is connected to the rod 36. When the plate 14 causes the arms 20 of the knuckles to contact with the underneath face of the base of the switch-point and stock-rail, such engagement, as the plate 14 is elevated, will cause the knuckles to rock and the arms 21 will be swung around and over one side of the base of the switch-point and stock-rail, and when the lever 37 is locked the knuckles will securely connect and lock together the switch-point and stock-rail. When it is desired to relieve the switch-point, the lever 37 is unlocked, the rod 36 lowered, which shifts the rod 24 in an opposite direction, causing the lowering of the plate 14, and the action of the spring 22 will cause the knuckles to assume an inoperative position—that is, out of engagement with the switch-point and stock-rail.

The locking elements, as well as the shifting means therefor, are arranged between the ties and are down so low that the said elements and means cannot be injured or knocked out of place if a car is derailed or if anything is dragging.



Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A device of the character described comprising means for locking a switch-point to a stock-rail, and means suspended from the stock-rail for shifting said locking means to and from operative position.

2. A device of the character described, comprising a pair of rockable locking-knuckles for connecting a switch-point to a stock-rail, and means suspended from the stock-rail for shifting said knuckles to and from operative position.

3. A device of the character described having a suspension-plate for a locking element, said plate having a vertically-extending portion adapted to be secured to a stock-rail and a longitudinally-extending flange adapted to be connected with the locking element.

4. A device of the character described having a suspension-bracket for a shifting means for a locking element, said means secured to a stock-rail and comprising a body portion and a pair of L-shaped arms, each of said arms provided with a pair of sockets.

5. A device of the character described, comprising a locking element for connecting a switch-point to a stock-rail, a shifting element for the locking element, means secured to the stock-rail for suspending said shifting element therefrom, and an operating means for said shifting element.

6. A device of the character described comprising a flanged suspension-plate, a locking-element-carrying plate hinged to the flange of the suspension-plate, locking elements pivoted to the carrying-plate, a suspension-bracket, a shifting means for the locking elements connected with the carrying-plate and the bracket, and means for operating said shifting means.

7. A device of the character described comprising a flanged suspension-plate, a locking-element-carrying plate hinged to the flange of the suspension-plate, locking elements pivoted to the carrying-plate, a shifting means for the locking elements connected with the carrying-plate and the bracket, a crank-shaft connected with and adapted to operate said shifting means, a vertically-movable rod connected with and adapted to operate the crank-shaft, and a lever connected with and adapted to operate said rod.

8. A device of the character described comprising a flanged suspension-plate, a locking-element-carrying plate hinged to the flange of the suspension-plate, locking elements pivoted to the carrying-plate, a suspension-bracket, a shifting means for the locking elements connected with the carrying-plate and the bracket, a crank-shaft connected with and adapted to operate said shifting means,

a vertically-movable rod connected with and adapted to operate the crank-shaft, a lever connected with and adapted to operate said rod, and means for locking the lever to prevent the shifting thereof.

9. A device of the character described, comprising a flanged suspension-plate, a locking-element-carrying plate hinged to the flange of the suspension-plate, locking elements pivoted to the carrying-plate, a suspension-bracket, a shifting means for the locking elements connected with the carrying-plate and the bracket, a crank-shaft connected with and adapted to operate said shifting means, a vertically-movable rod connected with and adapted to operate the crank-shaft, a lever connected with and adapted to operate said rod, a switch-point-throwing lever adapted to operate the first-mentioned lever, and means for locking the levers to prevent the shifting thereof.

10. A device of the character described, comprising a locking-element-carrying plate, locking elements carried thereby and adapted to couple a switch-point to a stock-rail, a suspension-plate having a vertically-extending portion secured to the stock-rail and a longitudinally-extending flange hinged to the locking-element-carrying plate, a bracket suspended from the stock-rail, and means engaging in the bracket and the carrying-plate for shifting the latter, thereby moving the locking elements to and from operative position.

11. A device of the character described, comprising a locking-element-carrying plate, locking elements carried thereby and adapted to couple a switch-point to a stock-rail, a suspension-plate having a vertically-extending portion secured to the stock-rail and a longitudinally-extending flange hinged to the locking-element-carrying plate, a bracket suspended from the stock-rail, means engaging in the bracket and carrying-plate for shifting the latter, thereby moving the locking elements to and from operative position, and operating means for said shifting means.

12. A device of the character described, comprising a locking-element-carrying plate, locking elements carried thereby and adapted to couple a switch-point to a stock-rail, a suspension-plate having a vertically-extending portion secured to the stock-rail and a longitudinally-extending flange hinged to the locking-element-carrying plate, a bracket suspended from the stock-rail, means engaging in the bracket and carrying-plate for shifting the latter, thereby moving the locking elements to and from operative position, operating means for said shifting means, and means for retaining said operating means in the position set.

13. In a device of the character described, the combination with a locking element for connecting a switch-point with a stock-rail,



and a shifting element for the locking element,  
of an operating means for said shifting ele-  
ment, said means consisting of a crank-shaft  
connected with the shifting element, a verti-  
5 cally-movable rod attached to the crank-  
shaft, a lever pivoted at one end to the upper  
end of said rod, and a support for the lever,  
said support acting as a fulcrum for the lever.

In testimony whereof we have hereunto set  
our hands in presence of two subscribing wit-  
nesses.

JOSEPH MAHER.  
C. W. HARBISON.

Witnesses:

F. SIEGEL,  
F. A. SIEGEL.