

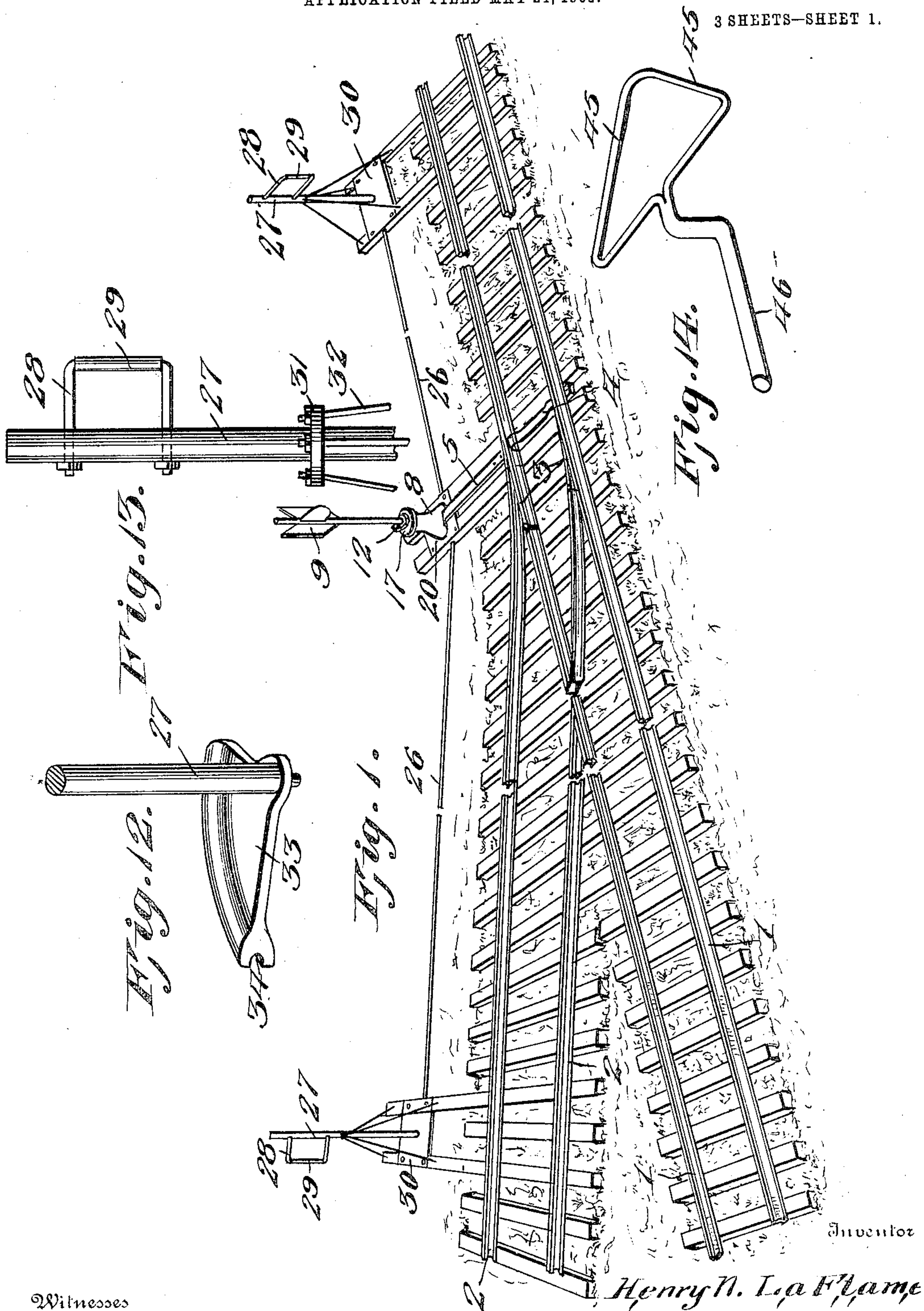
No. 798,515.

PATENTED AUG. 29, 1905.

H. N. LA FLAME.  
RAILWAY SWITCH.

APPLICATION FILED MAY 24, 1905.

3 SHEETS—SHEET 1.



Witnesses

Frank B. Hoffmann  
Katharine Allen.

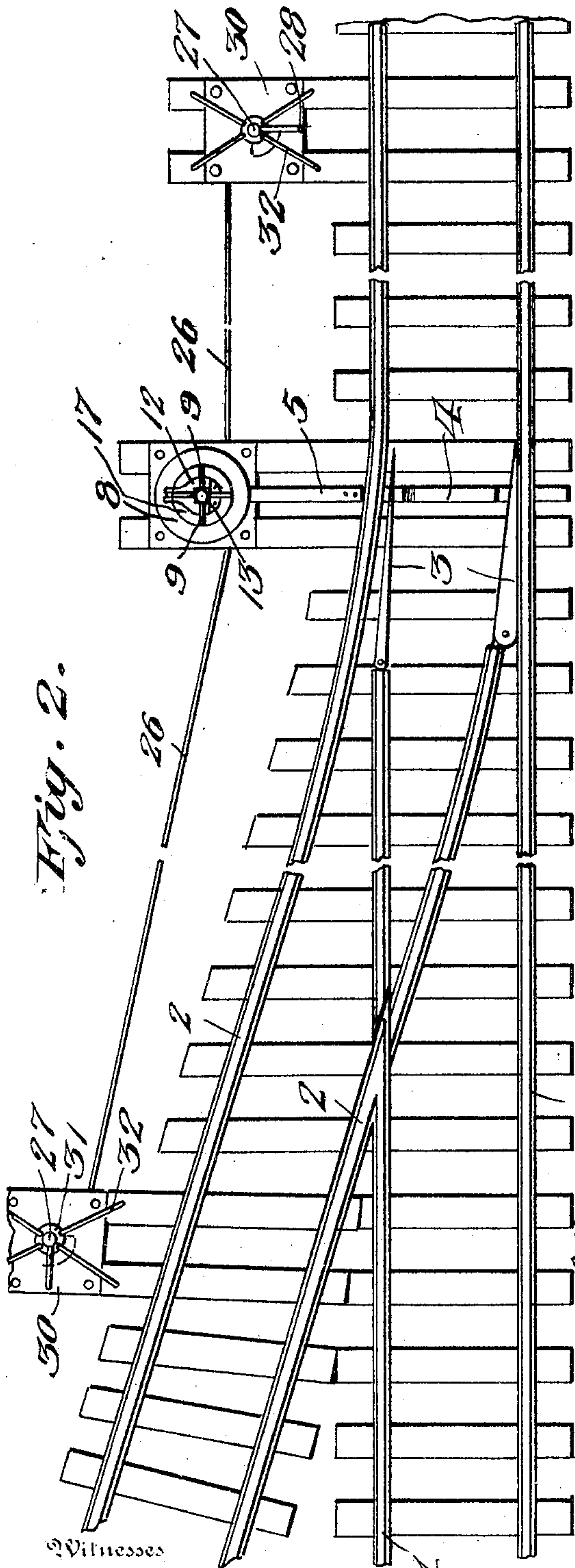
By

Henry N. La Flame  
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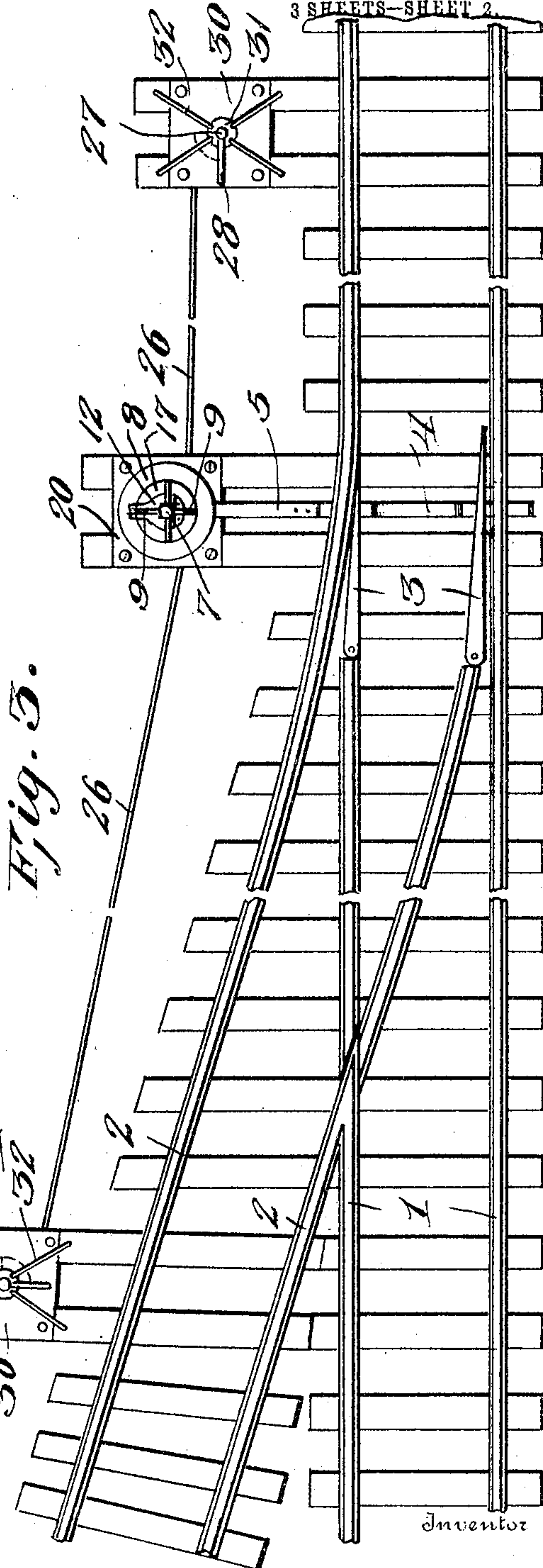
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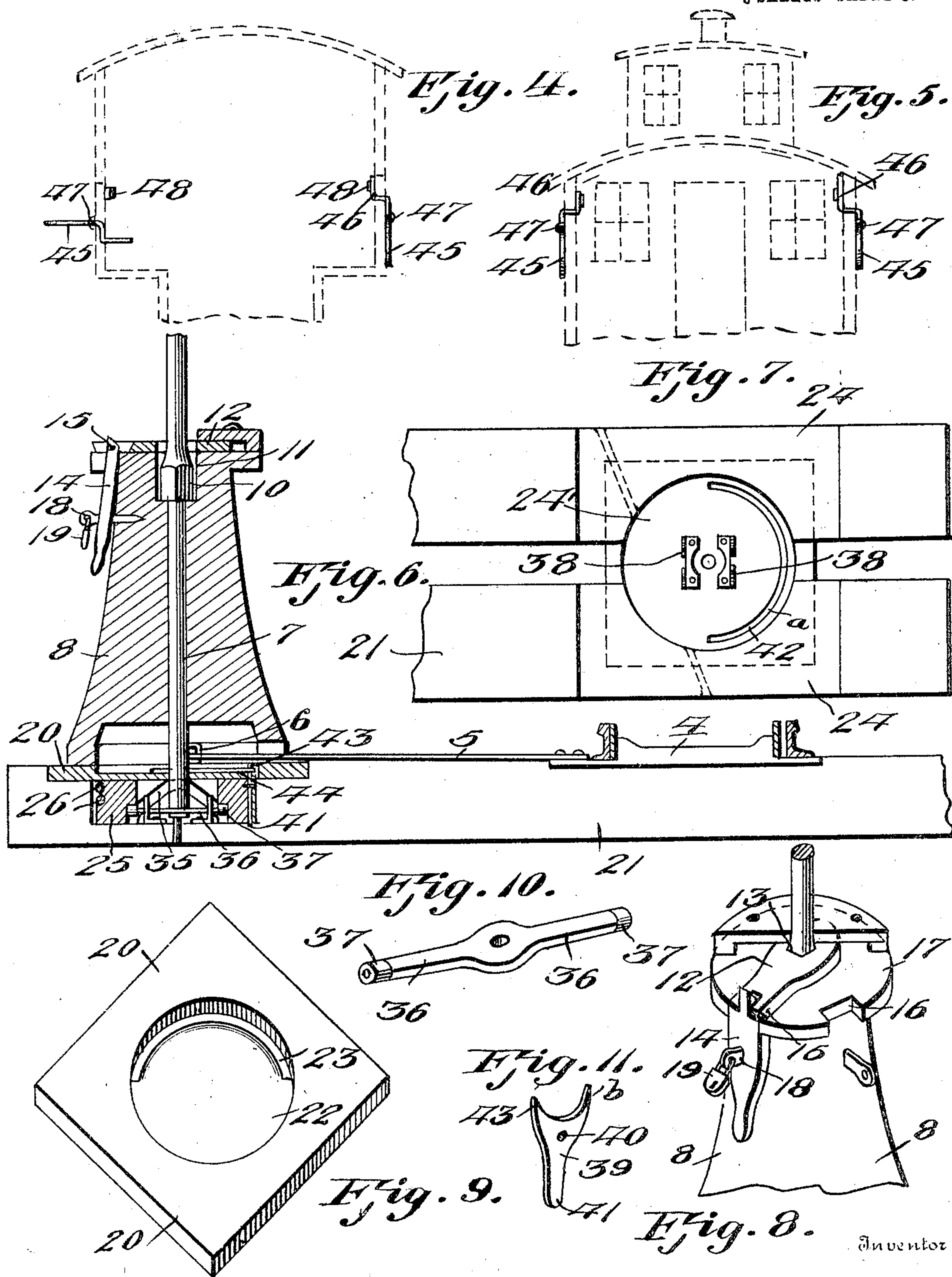
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3 SHEETS—SHEET 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

HENRY N. LA FLAME, OF WATERTVILLE, MASSACHUSETTS.

## RAILWAY-SWITCH.

No. 798,515.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed May 24, 1905. Serial No. 262,001.

*To all whom it may concern:*

Be it known that I, HENRY N. LA FLAME, a citizen of the United States, residing at Watertville, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Railway-Switches, of which the following is a specification.

This invention relates to railway-switches, the main object of the invention being to provide an automatic railway-switch having combined therewith operating mechanism embodying turn-posts located at opposite sides of the switch-stand and at distances sufficiently remote therefrom to enable the train, by means of a suitable tripping device carried thereby, to operate the switch automatically, opening the same to allow the train to leave the main track and pass to the siding and afterward close the switch, all being accomplished without the aid of the usual attendant or switchman.

While the switch is automatic and adapted to be operated by the train, provision is made whereby the switch may also be operated by hand on the part of the switchman standing at the side of the track in the usual manner.

One of the principal objects of the present invention is to provide a construction whereby the semaphore-carrying standard of the switch-operating mechanism is normally locked, so that it cannot be turned accidentally or by an unauthorized person, and to provide train-operated mechanism whereby said standard is automatically unlocked, turned, and again locked automatically by the moving train.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts, as hereinafter fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a perspective view showing the railway-switch of this invention applied to a railway, the switch being shown closed. Fig. 2 is a plan view of the same, showing the switch open. Fig. 3 is a similar view showing the switch closed. Fig. 4 is a diagrammatic view of a cab, showing the tripping devices carried thereby. Fig. 5 is a similar view showing the tripping devices applied to a caboose. Fig. 6 is an enlarged vertical sectional view of the switch-stand and operative parts connected therewith, also showing a section of the railway and switch connections. Fig. 7 is a plan view

showing the bottom plate of the switch-stand, the latter being removed. Fig. 8 is a perspective view of the upper portion of the switch-stand, showing the combined hasp and hand operating-lever. Fig. 9 is a perspective view of the top plate upon which the switch-stand rests. Fig. 10 is a perspective view of the cross-head carried by the switch-standard. Fig. 11 is a detail perspective view of the semaphore-throwing lever and fork. Fig. 12 is a detail perspective view showing the pulley-segment on the lower end of one of the turn-posts. Fig. 13 is a side elevation of the upper portion of one of the turn-posts with its lever-arm and a portion of the stand in which said post is mounted to turn, and Fig. 14 is an enlarged perspective view of one of the tripping devices carried by the cab and caboose.

Like reference-numerals designate corresponding parts in all figures of the drawings.

Referring to the drawings, Figs. 1, 2, and 3 illustrate a portion of a railway road-bed, 1 designating the rails of the main track, and 2 the switch-rails, the pivoted extensions 3 being connected to the shifting-chair 4, by which they are moved laterally to open and close the switch, said chair being operated by means of a connecting bar or rod 5, which is connected to and actuated by a crank-arm 6 on the switch-standard 7, which is mounted to turn in the switch-stand, (shown at 8,) said standard carrying a semaphore or target 9 at its upper end. The standard 7 is provided at a suitable point between its ends with a squared or shouldered portion 10, which is movable up and down in a recess 11 in the upper portion of the stand 8. On the top of the stand is arranged a socket-plate 12, having a squared or shouldered socket 13 adapted to receive and engage the squared or shouldered portion 10 of the standard 7 when the latter is raised, and thus prevent the turning of the standard, an interlocked engagement being thus normally maintained between the standard 7 and the switch-stand 8. The recess 11 is of sufficient size to allow the shouldered portion 10 of the standard to turn freely when said standard is lowered, as shown in Fig. 6.

The socket-plate 12 is provided with a combined hasp and hand-lever extension 14, pivotally connected thereto at 15 and adapted when swung downward, as shown in Figs. 6 and 8, to engage either one of a pair of lock-notches 16, formed in the projecting edge of



a cap or flange 17 at the top of the switch-stand. The part 14 is provided with an opening adapting it to pass over a staple 18, said staple being adapted to receive a suitable  
 5 padlock 19 to prevent unauthorized tampering with the switch-locking mechanism. By removing the padlock 19 the extension 14 may be raised into line with the socket-plate 12 and used as a lever for turning the switch-  
 10 standard and operating the switch by hand.

17' designates a keeper extending across the cap 17 and over the socket-plate 12 to keep the socket-plate from moving upward when the standard 7 is being elevated.

15 The means for automatically locking and unlocking and raising and lowering the switch-standard may be described as follows: Beneath the switch-stand 8 is arranged a top plate 20, upon which the stand rests and which  
 20 is secured to the projecting ends of ties 21 or any other suitable foundation provided for that purpose. The plate 20 is provided with a circular opening 22, and within said opening is a semicircular flange 23, adapted to co-  
 25 operate with the semaphore-throwing lever hereinafter described. Beneath the plate 20 and at a suitable distance therefrom is a bottom plate 24, having a circular recess 24', in which is mounted an oscillatory head or pul-  
 30 ley 25, said head being adapted to operate between the top and bottom plates, the means for turning said head consisting of a pair of operating-cables 26, leading in opposite di-  
 35 cables being so wound upon the head 25 that as one cable is unwound from the head the other cable is wound thereon. At suitable distances from the switch-stand and on op-  
 40 posite sides thereof are arranged turn-posts 27, provided with laterally-projecting lever-arms 28, preferably bail-shaped and provided with antifriction-rollers 29, adapted to be  
 45 struck by suitable means carried by a moving train, which thereby operates to partially turn the posts 27. Each of the posts 27 is mounted  
 50 in a suitable stand comprising a base 30 and a superimposed bearing-head 31, connected to the posts by braces 32. Each of the turn-  
 55 posts 27 is also provided on its lower end with a rigidly-attached pulley-segment 33, having a peripheral groove 34, in which one end of the cable 26 is received and fastened. It will  
 60 thus be seen that as one turn-post 27 is operated it draws on one of the cables 26, thus partially turning the oscillatory head 25, the  
 65 latter acting in turn to wind up the other cable 26 and partially turn the turn-post at the opposite side of the switch-stand, thus setting the lever-arm 28 of the last-named  
 turn-post in readiness to be operated by the train after passing the switch in order to close the switch after the train has passed to the siding. The oscillatory head 25 is provided with a large central opening, and  
 the wall of said opening is provided with

a cam-groove 35, in which are received the opposite ends of a cross-head 36, fitted upon the lower end of the switch-standard 7, as shown in Fig. 6. By preference the oppositely-projecting arms of the cross-head 36 are provided with antifriction-rollers 37, which work in the cam-groove 35. The cam-groove 35 is so shaped that as the head 25 turns the rollers 37 work up and down, the cross-head being thus alternately raised and  
 75 lowered and serving to impart a corresponding movement to the standard 7, the effect of which is to move the shouldered portion 10 of said standard into and out of interlocked engagement with the socket-plate 12, the  
 80 standard being normally raised, so as to effect a locking of the same against axial movement. The arms of the cross-head 36 rest and work up and down in slotted brackets 38, projecting upward from the bottom plate 24,  
 85 said brackets permitting the cross-head to rise and fall without turning. Thus as the oscillatory head 25 is turned in one direction the standard 7 is elevated, and as said head is turned in the opposite direction the standard  
 90 is lowered.

In order to turn the standard 7 and work the semaphore after the standard is lowered to the position shown in Fig. 6 and thereby  
 95 unlocked, a semaphore-throwing lever 39 is pivotally mounted intermediate its ends at 40 on the head 25. Said lever extends vertically, and its lower extremity 41 traverses an arcuate slot 42 in the bottom plate 24, said slot  
 100 permitting the head 25 to turn without operating the lever 39, the arrangement being such that when the lever reaches either end of said slot the end wall of the slot operates on the lower extremity of said lever to throw  
 105 the same one way or the other. The upper end of said lever is made in the form of a fork 43, one or the other branches of which is adapted to engage a tappet-arm 44, project-  
 110 ing laterally from the standard 7 and having a rigid connection therewith. The tappet-arm 44 works above the flange 23 of the top plate 20, the ends of said flange serving to throw the lever 39 out of engagement with  
 115 the tappet-arm when said lever comes in contact with the extremities of said flange.

By means of the construction above de-  
 120 scribed the first operation is to turn the oscillatory head 25 and cause it, through the medium of the cam-groove 35 and cross-head 36, to lower the standard 7 and unlock the same.  
 The continued movement of the head 25 throws the lever 39 into operation, causing it to act upon the tappet-arm 44 and turn the standard  
 125 axially, thus effecting a proper turning and display of the semaphore or target to indicate the opening of the switch. Thus the stand-  
 130 ard is first unlocked and then turned and again locked, all of said operations being entirely automatic. After the train has passed the switch the tripping device thereon operates



the second turn-post, thus unlocking and turning the standard in a reverse direction, restoring the semaphore to a position indicating that the switch is closed and again locking the standard.

The device for tripping the switch-operating mechanism hereinabove described consists of a trip-lever, (best shown in Fig. 14,) said lever comprising a triangularly-shaped head having the reversely-inclined impact portions 45 and the shank or handle portion 46, said lever being pivotally connected intermediate its ends to the cab or caboose, as shown at 47, the handle 46 extending within the cab or caboose for convenience in setting the trip, while the head projects outward from the side of the cab or caboose when the trip is in operative position sufficiently to strike against the lever-arms 28 of the turn-posts 27, and thus operate said turn-posts in the manner above described. When the trip-lever is folded to its inoperative position, as shown at Fig. 5, the same may be held in such position by means of a sliding latch 48 or other suitable retaining device.

It will be apparent that the construction hereinabove described is susceptible of various changes in the form, proportion, and minor details of construction, which may accordingly be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new is—

1. In a railway-switch, a switch-stand, a semaphore-standard operatively connected to throw the switch, a train-operated turn-post located at a distance therefrom, and operating connections between the turn-post and switch-standard by means of which the standard is unlocked and turned and again locked.

2. In a railway-switch, a switch-stand, a semaphore-standard connected to throw the switch, a train-operated turn-post at a distance therefrom, interlocking means between the switch-stand and semaphore-standard, and operative connections between the turn-post and standard for locking and unlocking and turning said standard.

3. In a railway-switch, a switch-stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, and means operable from a distance for throwing the standard into and out of interlocked engagement with said socket and also turning the standard and its semaphore.

4. In a railway-switch, a switch-stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, and means operable from a distance for moving the standard endwise into and out of inter-

locked engagement with said socket and also turning the standard and its semaphore.

5. In a railway-switch, a switch-stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, an oscillatory head having means to raise and lower and turn the standard, and means for operating said head.

6. In a railway-switch, a switch-stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, an oscillatory head having means to raise and lower and turn the standard, a train-operated turn-post at a distance from the switch-stand, and an operating-cable connecting the turn-post and standard.

7. In a railway-switch, a switch-stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, and means operable from a distance for imparting a stepped movement to the standard, imparting both vertical and axial motion thereto.

8. In a railway-switch, a switch-operating stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, a cross-head connected with said standard, an oscillatory head at the lower end of the standard provided with a cam-groove in which the cross-head works, and means on the oscillatory head for turning the standard axially.

9. In a railway-switch, a switch-stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, an oscillatory head surrounding the lower portion of the standard and provided with a cam-groove, a cross-head on the standard and working in said groove, a tappet-arm projecting from the standard, and a throw-lever carried by the oscillatory head and cooperating with said tappet-arm.

10. In a railway-switch, a switch-stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, an oscillatory head encircling said standard and provided with a cam-groove, a cross-head on the standard engaging said groove, a tappet-arm projecting from the standard, a throw-lever carried by the oscillatory head and cooperating with said tappet-arm, and means for tripping the throw-lever at certain points in the movement of the oscillatory head while the standard is unlocked.

11. In a railway-switch, a switch-stand having a shouldered socket-plate, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket-

plate, and a combined hasp-and-lever extension having a pivotal connection with said socket-plate.

12. In a railway-switch, a switch-stand having a shouldered socket, a semaphore-carrying and switch-shifting standard shouldered to engage and interlock with said socket, turn-posts at a distance from the switch-stand, cables forming operating connections between

the turn-posts and standard, and one or more trip-levers carried by the train for operating said turn-posts.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY N. LA FLAME.

Witnesses:

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WILLIAM JOHNSON.