

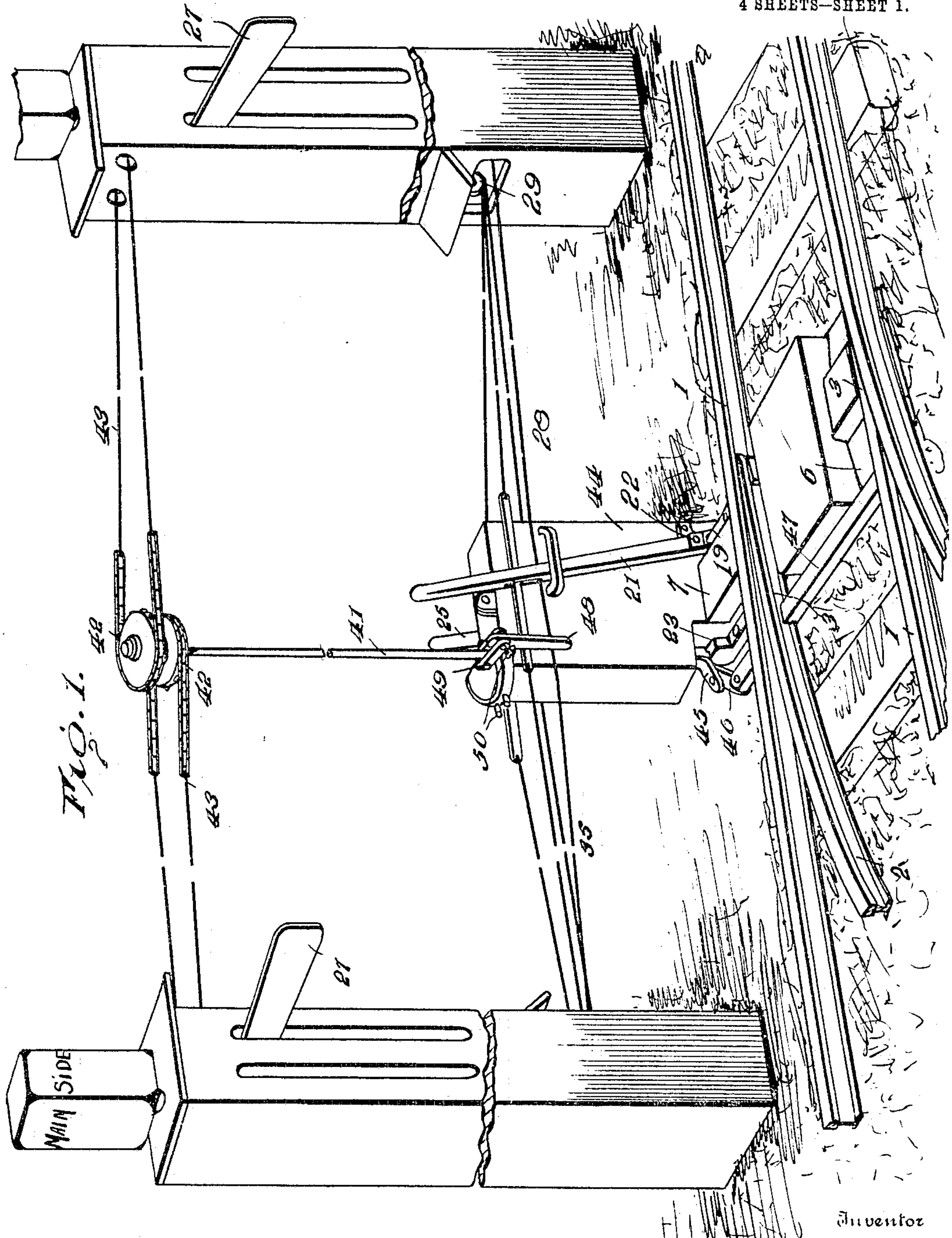
No. 793,369.

PATENTED JUNE 27, 1905.

G. W. GERLACH.
RAILWAY SWITCH, LOCK, AND SEMAPHORE.

APPLICATION FILED MAR. 3, 1905.

4 SHEETS—SHEET 1.



Witnesses

J. H. Hume
W. N. Woodson.

By

G. W. Gerlach
R. H. A. Lacy, Attorneys

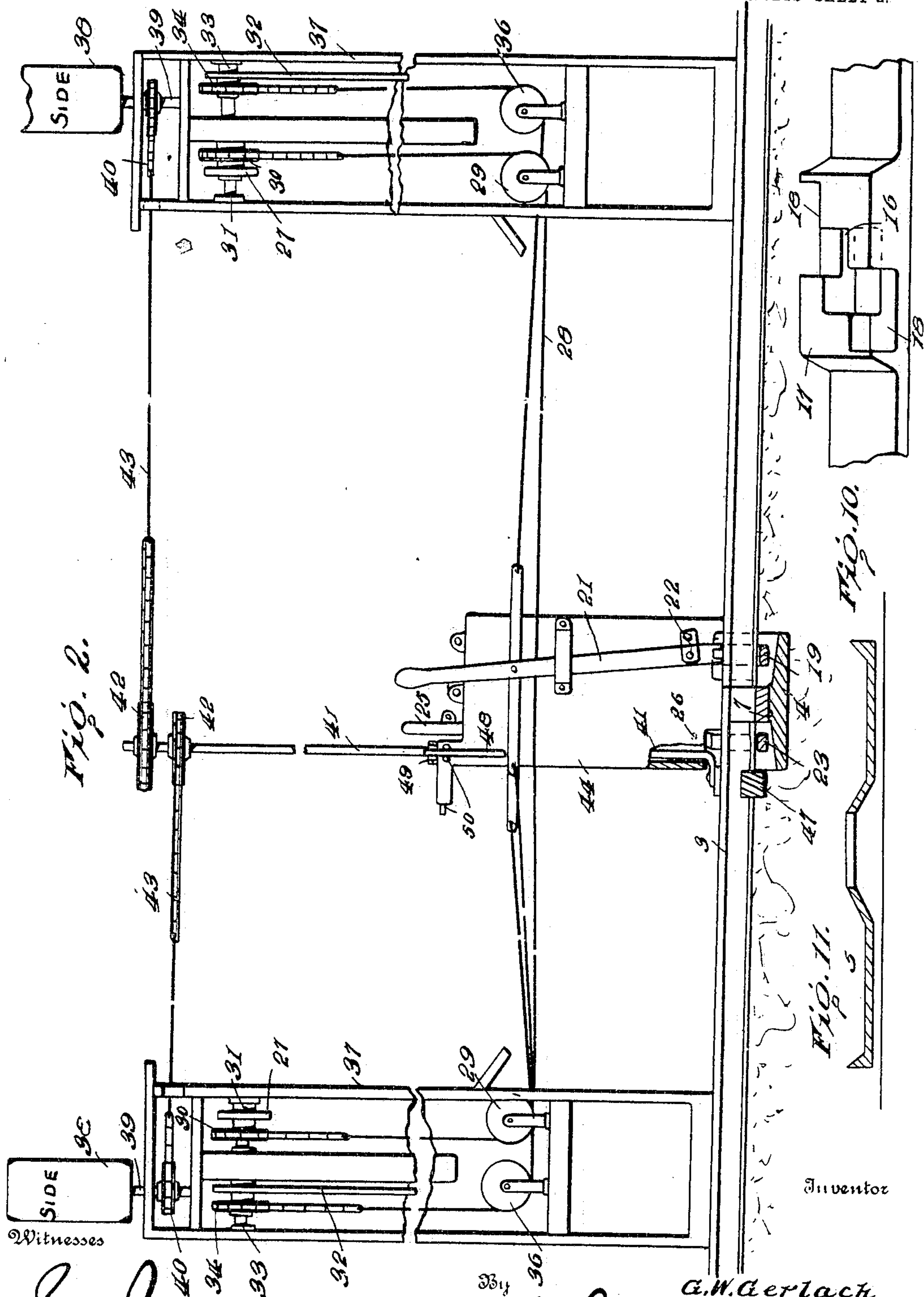
No. 793,369.

PATENTED JUNE 27, 1905.

G. W. GERLACH.
RAILWAY SWITCH, LOCK, AND SEMAPHORE.

APPLICATION FILED MAR. 3, 1905.

4 SHEETS—SHEET 2.



Witnesses

W. H. Hudson

334

R. H. Barry, Attorneys

G. W. Gerlach

Inventor

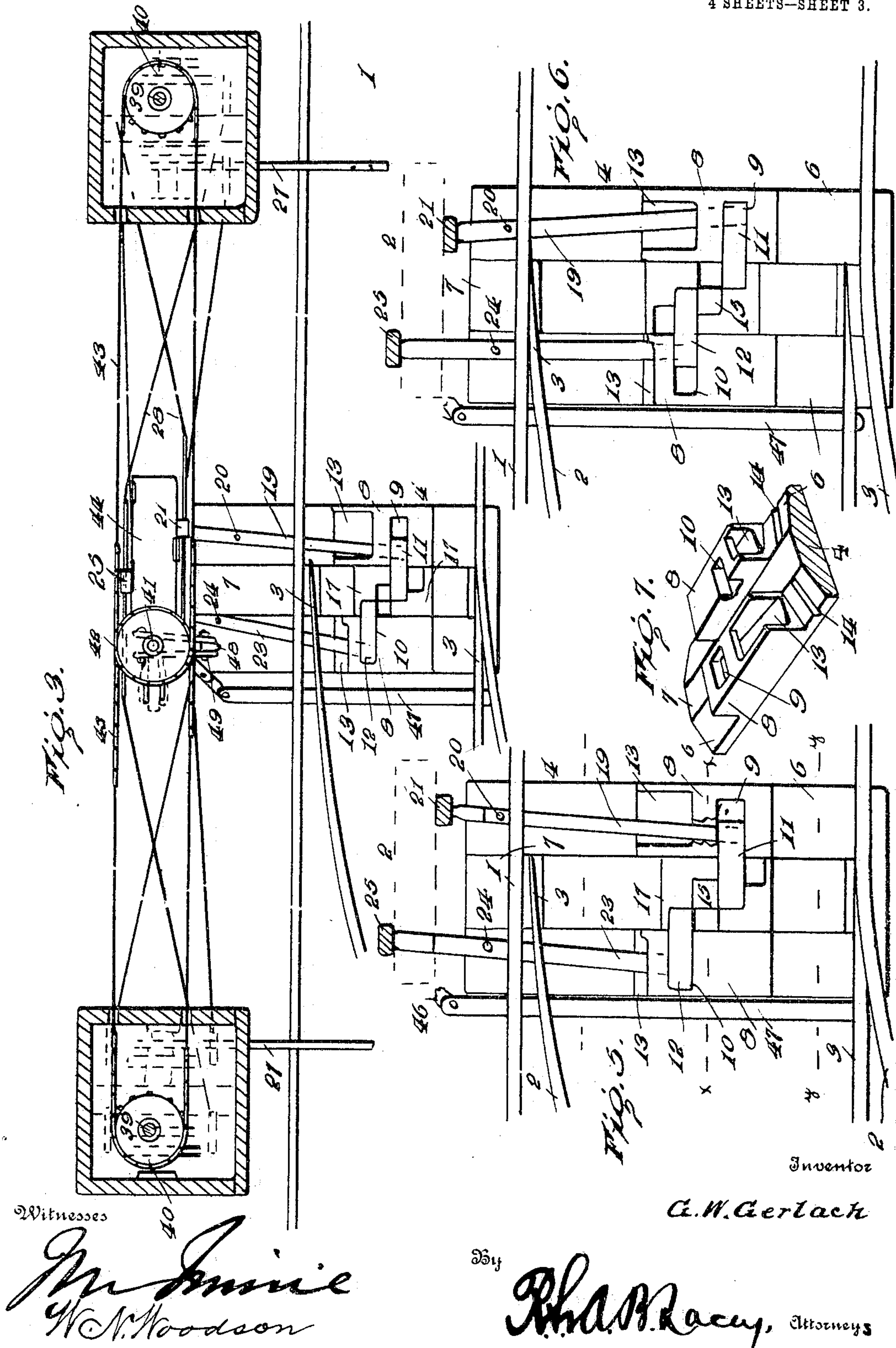
No. 793,369.

PATENTED JUNE 27, 1905.

G. W. GERLACH.
RAILWAY SWITCH, LOCK, AND SEMAPHORE.

APPLICATION FILED MAR. 3, 1905.

4 SHEETS—SHEET 3.



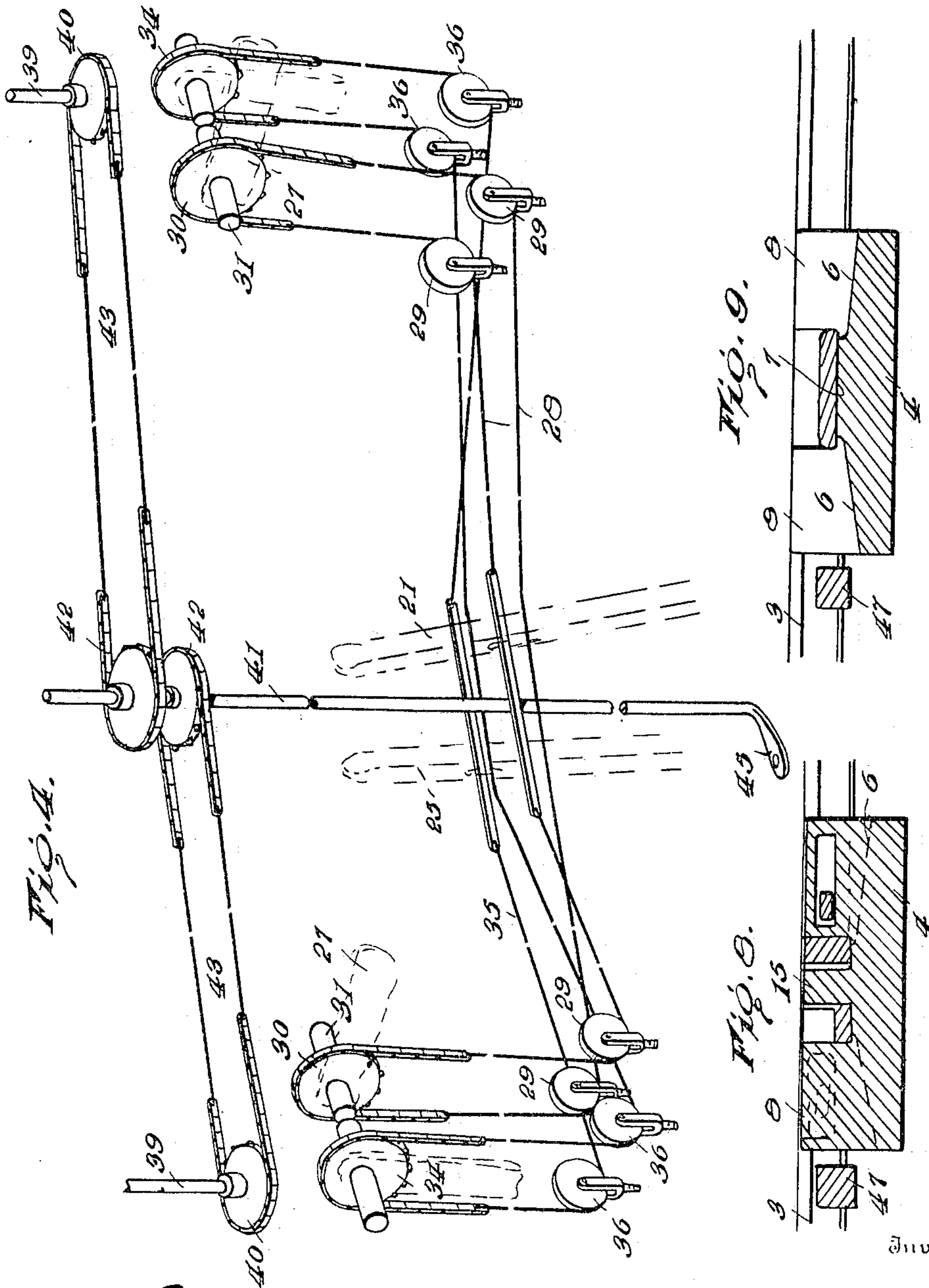
No. 793,369.

PATENTED JUNE 27, 1905.

G. W. GERLACH.
RAILWAY SWITCH, LOCK, AND SEMAPHORE.

APPLICATION FILED MAR. 3, 1905.

4 SHEETS-SHEET 4.



Inventor

Witnesses

W. N. Woodson

G. W. Gerlach

By

Pharmacy, Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. GERLACH, OF CUMBERLAND, IOWA.

RAILWAY SWITCH, LOCK, AND SEMAPHORE.

SPECIFICATION forming part of Letters Patent No. 793,369, dated June 27, 1905.

Application filed March 3, 1905. Serial No. 248,284.

To all whom it may concern:

Be it known that I, GEORGE W. GERLACH, a citizen of the United States, residing at Cumberland, in the county of Cass and State of Iowa, have invented certain new and useful Improvements in Railway Switches, Locks, and Semaphores, of which the following is a specification.

This invention provides a switch-operating mechanism of novel formation for minimizing the casualties and loss of property resulting from trains running into open switches and combines therewith a lock mechanism of peculiar structure for securing the switch in either position, the semaphore coöperating with the lock mechanism to indicate to the engineer the position of the switch.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a switch and adjunctive parts embodying the invention. Fig. 2 is a view in elevation of the semaphore, showing the switch-operating and lock mechanisms in section. Fig. 3 is a top plan view of the switch and coöperating parts, the posts supporting the semaphore being in horizontal section. Fig. 4 is a detail perspective view of the semaphore mechanism. Fig. 5 is a plan view of the lock mechanism, on a larger scale, showing the relation of the parts when the switch is open to the main track and locked. Fig. 6 is a view similar to Fig. 5, showing the switch closed to the main track and locked. Fig. 7 is a detail perspective view of the central portion of the bed-plate forming a tie for the main rails and a support for the switch-point tie and lock-bolts. Fig. 8 is a transverse section on the line *xx* of Fig. 5. Fig. 9 is a section on the

line *yy* of Fig. 5. Fig. 10 is a detail perspective view of the middle portion of the switch-point tie. Fig. 11 is a longitudinal section of the switch-point tie.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The main track is indicated at 1 and the siding or branch at 2, the switch-points 3 being connected for simultaneous movement in any well-known manner. A bed-plate 4, preferably of metal, is secured to a tie and has firm connection with the rails of the main track, so as to prevent spreading thereof. The bed-plate forms a support for the tie 5, connecting the extremities of the switch-points 3, and slopes in opposite directions from a central point, as indicated at 6, to shed water. The medial portion is flat upon its top side, as indicated at 7, to form a seat for the tie 5, the latter being wider than the seat 7, so as to overhang the sloping portion 6 to insure shedding of water and preventing the same reaching the seat. Raised portions 8 are formed with or applied to the bed-plate 4 at each side of the seat 7 and are preferably located intermediate of the ends thereof and constitute guides to prevent lateral displacement of the tie 5. Depressions 9 and 10 are formed in the parts 8 at diagonally opposite points and constitute pockets for reception of lock-bolts 11 and 12, which have a parallel relation and are mounted to slide transversely of the bed-plate and switch-point tie 5. Openings 13 extend through corresponding ends of the raised parts 8 and communicate with the depressions or pockets 9 and 10, and their bottoms incline so as to carry off any water that may find its way into the depressions 10. Transverse grooves 14 are formed in the sloping sides of the bed-plate a short distance from the parts 8 and serve to quickly carry off any water that may find its way thereto from the openings 13 or from the space formed between the parts 8. A post 15 projects vertically from the bed-plate 4 and is located centrally of the space formed between the raised parts 8, and its opposite sides are about in line with the inner walls of the depressions or

pockets 9 and 10, so as to engage with the lock-bolts 11 and 12 when projected to secure the switch in the required position.

The tie 5, connecting the switch-points 3, is slidable upon the bed-plate 4 between the raised parts 8 and has a longitudinal slot 16, through which passes the post 15, the length of the slot being such as to admit of opening or closing the switch, as may be required. The tie is provided intermediate of its ends with a raised portion 17, in which is formed depressions 18 for the projecting ends of the lock-bolts 11 and 12 to operate in. These depressions 18 have a diagonal arrangement and are in communication at their inner ends with diagonally opposite end portions of the slot 16 to admit of the lock-bolts 11 and 12 being projected across the path of the post 15 and engage therewith and with an end portion of the slot 16, so as to hold the tie 5 and the switch-points in the desired position.

The lock-bolts 11 and 12 may be of any formation and are snugly fitted for sliding movement in the respective depressions or pockets 9 and 10. These lock-bolts are of a length to project over the switch-point tie 5 at their inner ends and enter the depressions 18 and when shot outward from their respective pockets 9 and 10 they come between the post 15 and the extremities of the slot 16, as indicated most clearly in Figs. 5 and 6, thereby securing the switch-point tie and connected parts against casual movement. A lever 19, pivoted at 20 to the bed-plate, has one end in engagement with the lock-bolt 11 and its opposite end in engagement with an operating-lever 21, pivoted at 22. A companion lever 23, pivoted at 24 to the bed-plate, has one end connected with the lock-bolt 12 and its opposite end in connection with a lever 25, pivoted at 26. The levers 21 and 25 are adapted to operate the lock mechanism, so as to secure the switch in proper position. The levers 21 and 25, after being operated to actuate the lock mechanism, are in turn secured, by means of a padlock or other lock mechanism, in the accustomed way to prevent tampering therewith. A semaphore coöperates with each of the operating-levers 21 and 25 to indicate to the engineer the conditions of the switch and that the same has been fully operated when moved in either direction. Semaphore-arms 27 are connected with the operating-lever 21 for movement therewith. When the switch is thrown so as to open it with reference to the main track, so that the latter is unobstructed, the semaphore-arms 27 stand outward to indicate to the engineer that the main track is clear. When the semaphore-arms 27 are exposed, the switch is locked, as indicated in Fig. 5, and the lever 21 is likewise locked, thereby preventing tampering with the switch. A cable, chain, or like connection 28 is connected to the lever 21 and passes around guide-pulleys 29 and

wheels 30, the latter being fast upon shafts 31, to which the semaphore-arms 27 are attached. The wheels 30 are provided with teeth to make positive engagement with links in the length of the connection 28, so as to prevent possible slipping and insure a correspondence of movement of the semaphore-arms when actuating the lever 21. Semaphore-arms 32 are connected with the operating-lever 25 and when exposed indicate to the engineer that the switch is moved so as to open the siding or branch to the main track, thereby admitting of a train passing either from the main track onto the siding or branch or from the latter onto the main track. Under these conditions the lever 25 is moved so as to throw the lock-bolt 12 into operative position, as indicated in Fig. 6. The semaphore-arms 32 are fast upon shafts 33, to which wheels 34 are attached. A cable, chain, or analogous connection 35 is attached to the lever 25 and passes around guide-pulleys 36 and the wheels 34, the latter being toothed for coöperation with links of the connection 35 to insure synchronize movement of the semaphore-arms 32 with operation of the lever 25.

At some distance from the switch, upon each side thereof, is located a post 37, which is preferably made hollow, so as to inclose and house the guide-pulleys 29 and 36, the wheels 30 and 34, the shafts 31 and 39, and the semaphore-arms. These posts 37 likewise support signals 38, which may consist of lanterns, blocks, or other semaphore. Vertical shafts 39 support the signals 38 and are provided with sprocket-wheels 40. The switch-operating shaft 41 is provided with sprocket-wheels 42, which are connected by sprocket-chains 43 with the sprocket-wheels 40, so as to transmit movement from the shaft 41 to the shafts 39. The signals 38 indicate the condition of the switch, so that the engineer may know whether the siding or the main line is open.

The switch-operating shaft 41 is journaled to the switch-stand 44 in any determinate manner and is provided at its lower end with a crank-arm 45, connected by link 46 with the switch-operating bar 47, connected in any manner to the switch-points. A handle 48 is connected with the shaft 41 to admit of turning the latter, so as to operate the switch when required. As indicated, the handle 48 is pivoted to an arm 49, attached to the shaft 41, thereby admitting of utilizing the handle 48 to secure the switch when moved. Pins project from a segment over which the arm 49 sweeps, and the handle 48 is adapted to be turned into engagement with said pins to fix the position of the shaft 41 when turned either to the right or to the left to throw the switch in the desired position.

When the semaphore-arms 27 and 32 are out of sight, it indicates to the engineer that danger is ahead, and he must instantly bring

his train to a standstill. The switch must be moved fully in either direction before either one of the levers 21 and 25 can be operated to throw the lock-bolt connected therewith and to expose the corresponding semaphore-arm. This precludes improper operation of the switch, as will be readily comprehended. When the siding or branch is closed to the main track, the same is made known to the engineer by means of the signals 38, and it is necessary to operate the lever 25 to lock the switch in this position and to expose the semaphore-arms 32. Before the switch can again be operated it is necessary that the lever 25 be actuated to withdraw the lock-bolt 12. This movement restricts the semaphore-arms 32 and indicates "danger." When the switch is moved to a position to open the branch or siding to the main line, it is locked by operating the lever 21, which movement at the same time throws the semaphore-arms 27 into position to indicate that the main line is required.

A switch constructed as herein set forth enables the interlocking blocks to be unlocked in the event of an engine or train breaking down or becoming stalled on the switch and the semaphore-arms lowered, thereby indicating "danger" at both blocks, the switch-points being held firmly in place by means of the handle 48 being locked to the switch-stand. This arrangement of the parts enables the signals to be operated without moving the switch, whereby accidents may be averted under the conditions mentioned. When the train or engine is ready to leave the switch, the interlocking block can be placed in the lock and the semaphore-arm raised to its previous position.

As shown in Fig. 11, the central portion of the switch-point tie, provided with the slot 16, is hollowed upon the under side to provide clearance for cinders, snow, and other matter that may tend to interfere with the full throw of the switch.

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

1. In a railway-switch and in combination with the switch-operating mechanism, separate lock mechanisms independently operable, each adapted to secure the switch in a predetermined position, and a semaphore for each lock mechanism connected with and actuated thereby to indicate the condition of the track and switch.

2. In a railroad-switch and in combination with the switch-operating mechanism, separate lock devices independently operable, each adapted to secure the switch in a predetermined position, independent operating means for each lock device, and a semaphore for each lock mechanism connected with the respective lock-operating means for simultaneous movement therewith.

3. In a railroad-switch and in combination with the switch-operating mechanism, separate lock mechanisms independently operable,

each adapted to secure the switch in a predetermined position, means for preventing simultaneous movement of the lock mechanisms, and a semaphore for each lock mechanism connected with and actuated thereby to indicate the condition of the track and switch.

4. In a railroad-switch, the combination of switch-operating mechanism, signals connected with said mechanism for simultaneous movement therewith, and independent lock mechanisms for securing the switch and signals in proper position, and prevented from simultaneous movement and operable only when the switch is fully thrown in either direction.

5. In a railroad-switch, the combination of switch-operating mechanism, signals connected with said mechanism for simultaneous movement therewith, independently-operable lock mechanisms for the switch-operating mechanism and signals, and a semaphore for each lock mechanism connected with and actuated thereby.

6. In a railroad-switch, the combination of a bed-plate having a raised seat intermediate of its longitudinal edges, a tie for the switch-points mounted on said seat, and operating means for said tie to effect throwing of the switch.

7. In a railroad-switch, the combination of a bed-plate having opposite edge portions outwardly and downwardly sloped, a tie for the switch-points mounted upon the portion intermediate of the sloping edges, and actuating means for said tie.

8. In a railroad-switch, the combination of a bed-plate, a post projected upward therefrom, a tie for the switch-points slidable upon said bed-plates and having a slot for reception of said post, and lock-bolts coöperating with said post and shoulder portions of the tie to secure the latter in desired position.

9. In a railroad-switch, the combination of a bed-plate, a tie for the switch-points longitudinally movable thereon, guides extended upward from the bed-plate at the sides of the switch-point tie, and independently-operable lock-bolts coöperating with said guides and tie to secure the latter and the switch in proper position.

10. In a railroad-switch, the combination of a bed-plate having spaced projecting portions and a post, a tie movable longitudinally upon the bed-plate between the projecting portions and having a longitudinal slot to receive said post, and lock-bolts mounted in said projecting portions of the bed-plate and adapted to coöperate with said post and the tie to secure the latter in desired position.

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

GEORGE W. GERLACH. [L. s.]

Witnesses:

C. P. SHEARER,
BURTON LAIRD.