

No. 751,387.

PATENTED FEB. 2, 1904.

T. ECKARD.  
RAILWAY SWITCH.

APPLICATION FILED SEPT. 10, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

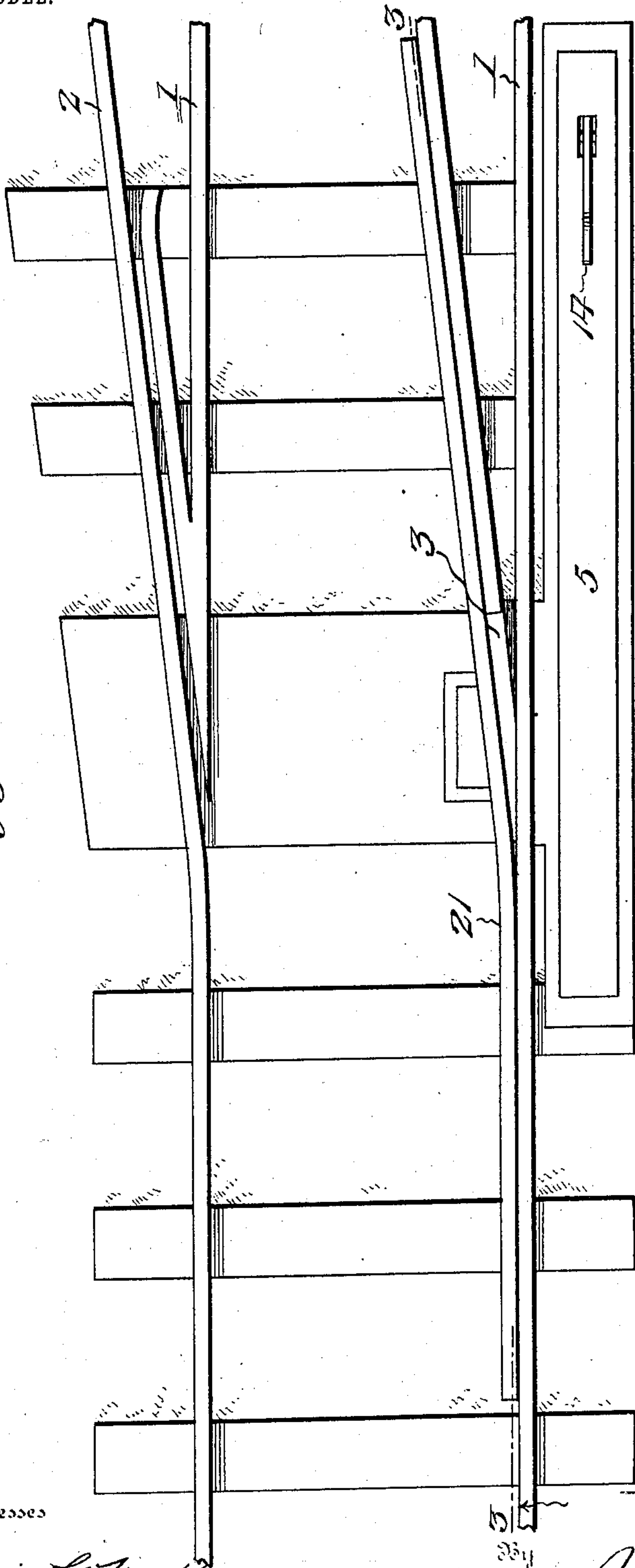
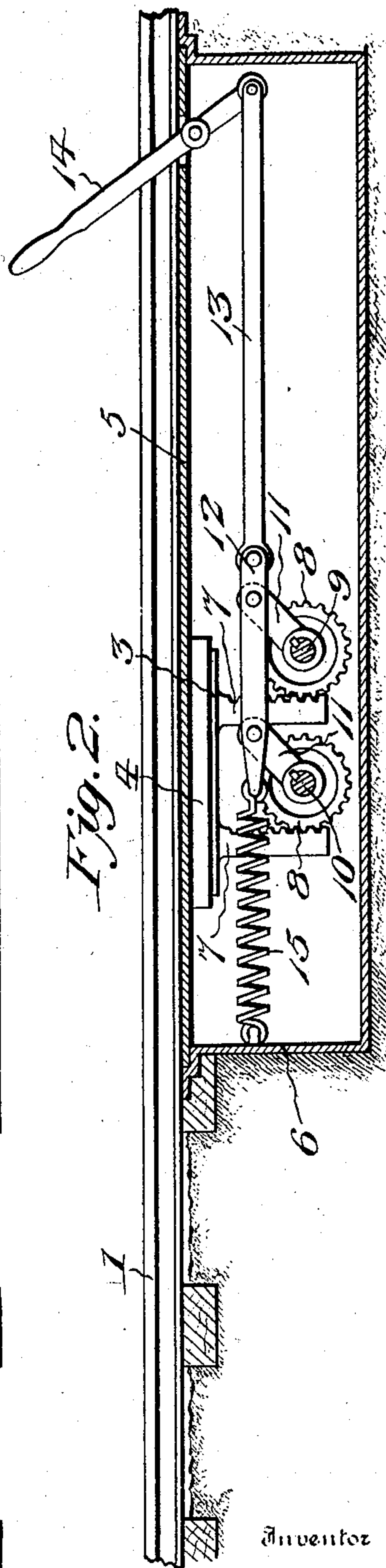


Fig. 2.



Witnesses

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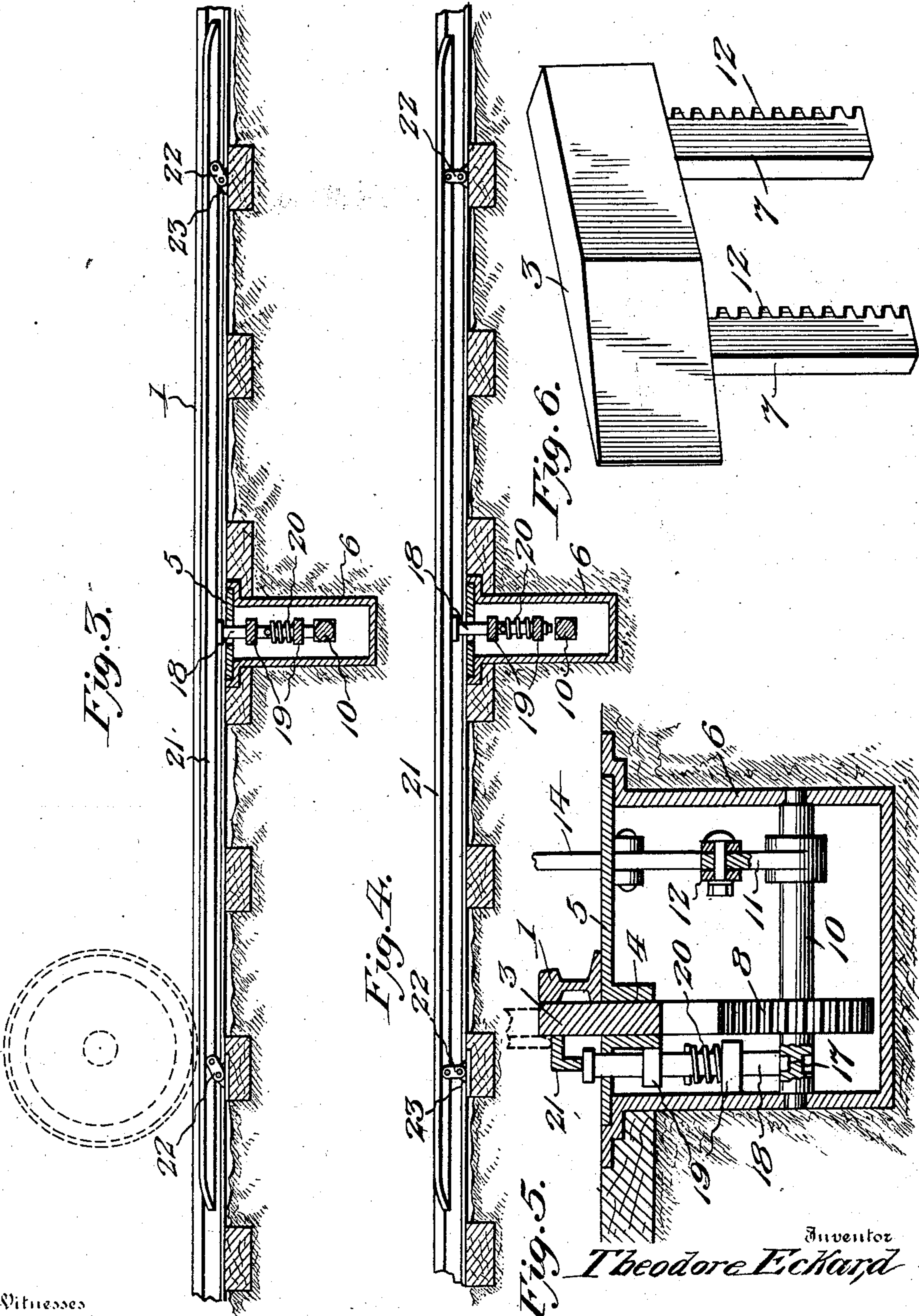
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Witnesses

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# UNITED STATES PATENT OFFICE.

THEODORE ECKARD, OF BALTIMORE, MARYLAND.

## RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 751,387, dated February 2, 1904.

Application filed September 10, 1903. Serial No. 172,674. (No model.)

*To all whom it may concern:*

Be it known that I, THEODORE ECKARD, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented new and useful Improvements in Railway-Switches, of which the following is a specification.

My invention relates to new and useful improvements in railway-switches; and its object is to provide a switch of novel construction employing a vertically-movable switch-tongue which is normally held depressed, so as to keep the main line of the track normally open.

A further object is to employ means whereby by subsequent to the shifting of the switch-tongue the same may be locked in such position by the weight of the car or cars passing over the same.

Another object is to construct switch-operating mechanism which can be unlocked automatically subsequent to the passage of a car or cars onto a siding, so as to keep the main line normally open.

With the above and other objects in view the invention consists in arranging the vertically-movable switch-tongue, which is supported by racks engaging gears which are located at a point below the tongue. These gears are adapted to be simultaneously rotated in any desired manner, so as to raise the tongue, and means are employed for automatically returning the tongue to lowered position when the same is unlocked or released.

The invention also consists in employing an operating-rail, which extends longitudinally of one of the rails of the main line and the siding and is pivotally connected to fixed brackets by means of links. This operating-rail is supported by a suitably-arranged spring and is adapted when depressed to force a plunger into engagement with means for locking the gears and the ratchets, so as to hold the tongue in raised position.

The invention also consists in the novel construction and combination of parts which will be more fully hereinafter described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a plain view of a switch con-

structed in accordance with my invention. Fig. 2 is a section on line 2 2, Fig. 1. Fig. 3 is a section on line 3 3, Fig. 1, and showing the locking-plunger in lowered position. Fig. 4 is a similar view showing the plunger raised. Fig. 5 is an enlarged transverse section through the switch-operating mechanism and showing the locking-plunger in elevation, and Fig. 6 is a detail view of the switch-tongue and its arms.

Referring to the figures by numerals of reference, 1 1 are the rails of the main track of a railway, while 2 2 are the rails of a siding. A switch-tongue 3 is interposed between one of the siding-rails and the inner side of one of the main-line rails, and this tongue is vertically movable in a slot 4, formed within the top plate 5 of a casing 6. The casing is embedded in the ground beneath and alongside the switch, and the tongue 3 has racks 7 projecting downward therefrom into the casing 6, and each rack engages a gear 8. These gears are journaled on shafts 9 and 10, from which project arms 11, which are connected by a bar 12. Extending from this bar is a pitman 13, which is pivoted to the lower end of a lever 14, fulcrumed in the top plate of the casing and extending thereabove. A spring 15 is connected at opposite ends to the bar 12 and one end of the casing 6, respectively, and this spring serves to hold the racks 7 and the tongue 3 normally depressed. The shaft 10 has oppositely-arranged recesses 17 therein, above which is arranged plunger 18, which is slidably mounted in bracket 19, provided therefor, and is held normally raised out of contact with the shaft 10 by means of a spring 20. This plunger projects through the top plate 5 of the casing 6 and serves to support an operating-rail 21, which is arranged along the inner side of one of the main-line rails 1 and the adjoining siding-rail 2. Links 22 are pivoted at opposite ends to this rail 21 and to brackets 23, rigidly fastened to the road-bed adjacent the rails of the track.

When a train approaches the switch, the flanges of the wheels will come in contact with the rails 21 and will swing them forward and downward upon the links 22, thereby causing the plunger 18 to be depressed and to move into



one of the recesses 17. As the switch-tongue is normally depressed out of the path of the flanges of the car-wheels, it will be seen that the cars will pass thereover and continue along the rails 1 of the main line. However, should the lever 14 be swung upon its fulcrum before the cars arrive in position over the operating-rail 21 the shafts 9 will be partly rotated, so as to bring the other recess 17 into position under the plunger 18, and at the same time the gears 8 will force the racks 7 upward, thereby bringing the tongue 3 into alinement with the siding and main-line rails between which it is interposed. This movement of the lever 14 tensions the spring 15, and it is therefore necessary to hold the lever until the wheels of the cars come in contact with the operating-rail 21, when said rail will be swung downward thereby and will force the plunger 18 into engagement with the recess alining therewith. The shaft 10 will thus be prevented from rotating until the entire train has passed over the rail 21, and as said shaft cannot rotate the switch will be held securely in position between the siding and main rails and will direct the cars passing thereover onto the siding. After the car or cars have left the operating-rail the same will be moved back to its normal position (illustrated in Fig. 4) by the spring-pressed plunger 18, and the shaft 10 will be simultaneously released and all of the parts returned to their normal positions by the spring 15.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I therefore reserve the right to make such changes and alterations as may fairly fall within the scope of my invention.

Having thus 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 casing; of a vertically-movable switch-tongue therein, racks depending from the tongue, gears engaging the racks, means for simultaneously rotating the gears in the same direction, and mechanism for holding the tongue normally in lowered position.

2. In a railway-switch, the combination with the main and siding rails; of a vertically-movable switch-tongue, arms depending therefrom, gears engaging the arms, means for simultaneously rotating the gears, a lock for preventing rotation of the gears, and an op-

erating-rail adjacent the first-mentioned rails for operating the lock.

3. In a railway-switch, the combination with a main and a siding rail; of a casing thereunder, a switch-tongue vertically movable within the casing, a revoluble shaft within the casing having a recess, mechanism operated by the shaft for imparting vertical movement to the switch-tongue, an operating-rail adjacent the main and siding rails, and a spring-pressed plunger supporting said rail and adapted to engage the recess.

4. In a railway-switch, the combination with a main and a siding rail; of a casing under the switch, a vertically-movable switch-tongue within the casing, a revoluble shaft journaled within the casing and having recesses therein, mechanism operated by the shaft for imparting movement to the switch-tongue, a spring-pressed plunger slidably mounted within and extending from the casing, an operating-rail adjacent the main and siding rails and supported by the plunger, fixed brackets adjacent the rails, and link connections between the brackets and the operating-rail.

5. In a railway-switch, the combination with a main and a siding rail; of a casing below the rails, a vertically-movable switch-tongue arranged within the casing, racks depending from the tongue, gears engaging the racks, means for simultaneously rotating the gears, a shaft revoluble with one of the gears and having recesses therein, a spring-pressed plunger in vertical alinement with the recesses, and an operating-rail adjacent the main and siding rails and supported by the plunger.

6. In a railway-switch the combination with a main and a siding rail, of a casing under said rails, a switch-tongue vertically movable within the casing, racks depending from the tongue, gears engaging the racks, an operating-lever fulcrumed within the casing, shafts revoluble within the gears, one of said shafts having recesses therein, arms extending from the shafts, rods connecting the arms with the lever, a spring-supported plunger slidably mounted within the casing and adapted to engage one of the recesses, an operating-rail adjacent the main and siding rails and supported by the plunger, fixed brackets, and links connecting the brackets and operating-wheel.

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

THEODORE ECKARD.

Witnesses:

THOS. KELL BRADFORD,  
JULIUS H. WYMAN.