

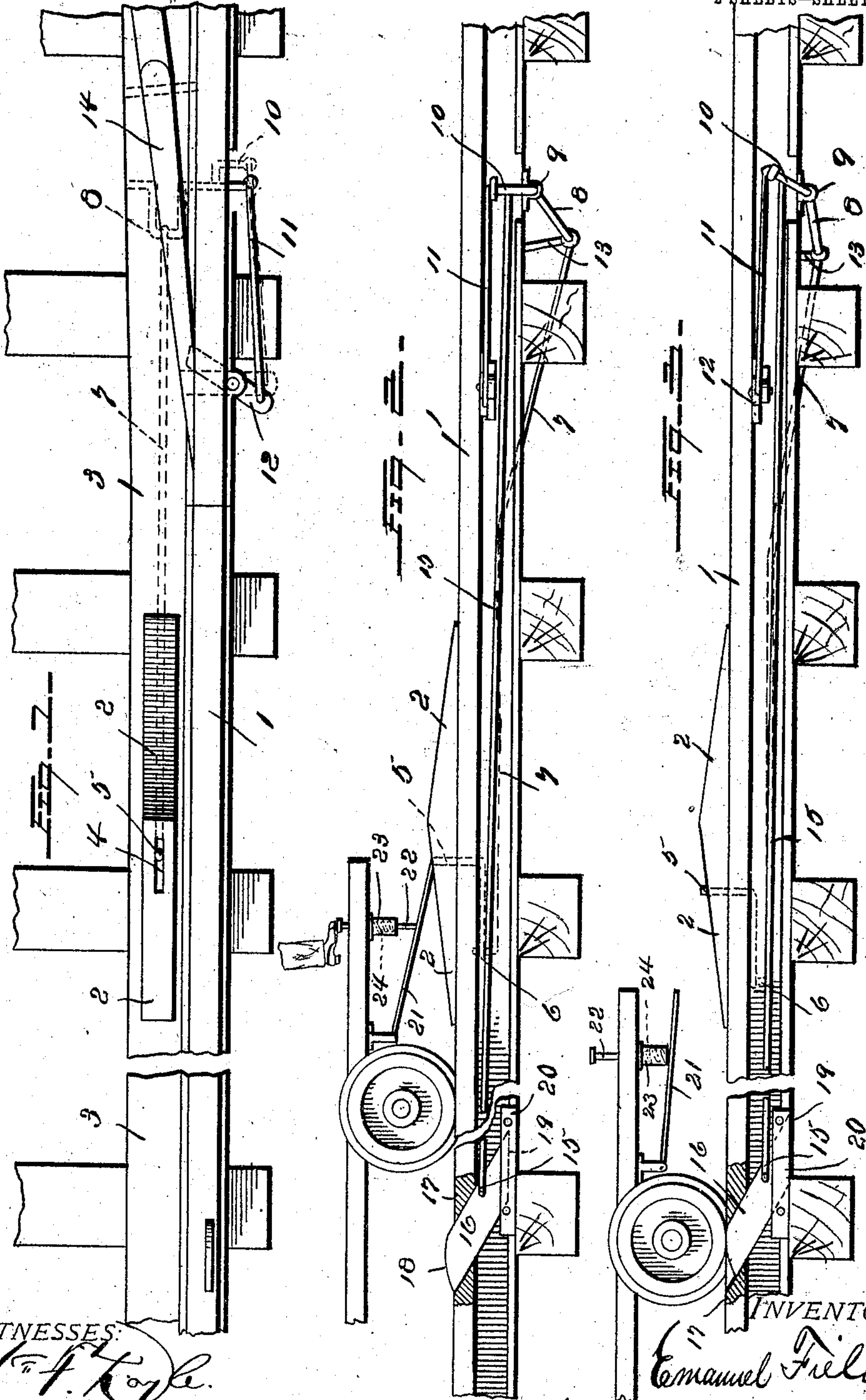
No. 815,693.

PATENTED MAR. 20, 1906.

E. FIELDS.
SWITCH.

APPLICATION FILED AUG. 11, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

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L. O. Langworthy.

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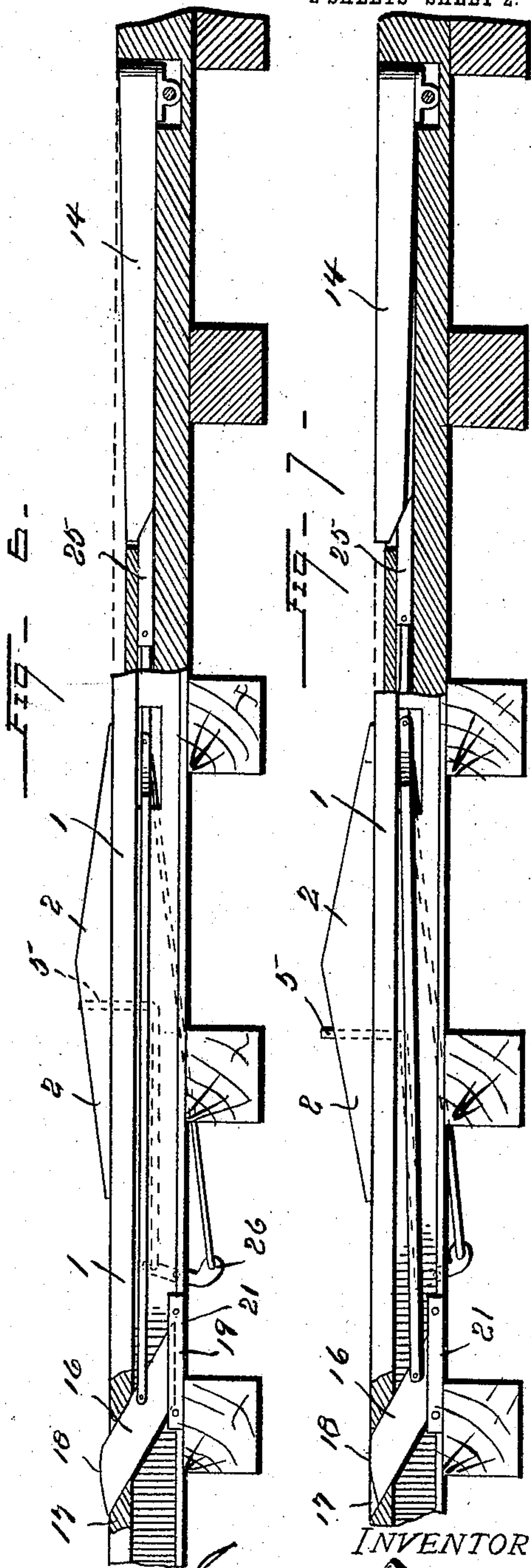
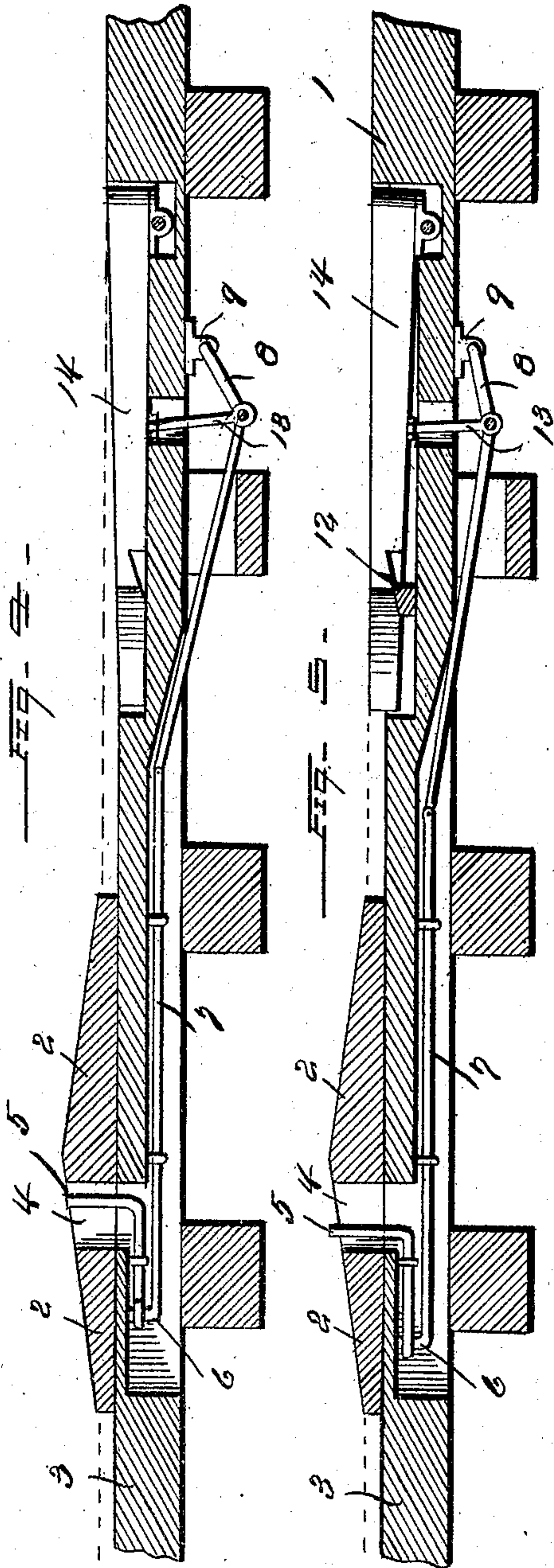
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EMANUEL FIELDS, OF ALLEGHENY, PENNSYLVANIA.

SWITCH.

No. 815,693.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed August 11, 1905. Serial No. 273,767.

To all whom it may concern:

Be it known that I, EMANUEL FIELDS, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to railway-switches, and more particularly to mechanisms largely automatic in operation, and particularly adapted for use on street-railways and in mining operations where coal and ore cars are used, although not wholly confined to such railways, but practical and useful on all railways where long trains of cars are not used, one of the objects being to provide a means for turning switches automatically by utilizing the car-wheels, and also to provide means whereby a person on the car can turn a switch without leaving the car.

A further object is to provide a device of the character described that shall be simple in construction and effective and practical in operation.

Other objects and advantages of my invention, as well as the structural features by means of which these objects are attained, will be made clear by an examination of the specification, taken in connection with the accompanying drawings, in which the same reference-numerals indicate corresponding portions throughout, and in which—

Figure 1 is a top plan view of a section of track, showing one rail and showing the switch-rail in position to throw a car on a switch and the operating mechanism in dotted lines. Fig. 2 is a side elevation of Fig. 1 and showing a detail of a car and also showing in operative position the spring-actuated lever whereby the switch-rail is returned to its position. Fig. 3 is also a side elevation of Fig. 1 and showing a car-wheel on the operating cam-lever whereby the switch-rail is thrown into the position shown in Fig. 1 and also showing the spring-actuated lever returned to its normal position. Fig. 4 is a longitudinal vertical section taken through the track shown in Fig. 1 and showing the switch-rail lowered. Fig. 5 is a similar view showing the switch-rail raised; and Figs. 6 and 7 are side elevations, partly in section, of a portion of track, and illustrating a modification of parts constructed in accordance with my invention.

1 designates a railway-rail of a main track, and 2 the cam-surfaces of an upwardly-extending block mounted on a platform or bed 3, having a longitudinal opening (not shown) beneath its surface and arranged longitudinal with and adjacent to the rail 1. The block 2 is provided with a longitudinal slot 4, in which travels the vertical arm of an angle-iron 5, the horizontal arm of said iron being connected with an upwardly-extending lug or extension 6 on a horizontally-arranged and slidably-mounted rod or pitman 7, pivotally mounted at one end thereof on a double crank 8, having its shaft suitably journaled in bearings 9, as shown. At one end of the double-crank shaft and preferably integral therewith is formed a single-crank arm 10, which is pivotally connected by means of a rod or pitman 11 with a pivotally-mounted horizontally-arranged arm 12, adapted to be actuated by said crank-arm through the medium of the pitman. Pivotally mounted on the double crank 8 is an upwardly-extending arm or rod 13, which is connected with a switch-rail 14, near one of the ends of said rail, the rail being pivotally mounted on a suitable support near its other end and also resting in an oblong cavity or depression in the platform or bed 3. Connected at one of its ends with the single-crank arm 10 is a horizontally-arranged rod or pitman 15, having its other end pivotally mounted on a cam-plate 16, slidably mounted in a vertical slot 17, preferably formed in the rail 1, the upper end of said plate being rounded, as shown at 18, and the lower end formed or cut at an angle with the sides of the plate to form a flat surface 19, upon which the plate slides on a suitable support, being held in operative position by means of a plate 20 or in any other suitable manner.

In operation when a car passes along the track the wheels contact with the top of the cam-plate 16, pushing it down and causing the lower end to slide along its support. This carries the entire plate forward toward the switch-rail 14. (See Fig. 3.) The rod or pitman 15 being pivotally mounted on the plate is pushed forward, throwing downwardly the upper end of the single-crank arm 9, which action raises the double crank 8, thus raising the arm or rod 13 and causing the switch-rail to rise at the point nearest the rail 1 to a level with the top of said rail to permit the cars to enter the switch. It will be observed that as the single-crank arm 10 is

carried to a horizontal position it moves forward the rod or pitman 11, connected with the outer end of the horizontal arm 13, and causes said arm to turn on its axis and its inner end to be thrown under the switch-rail as it is raised to hold it in elevated position. The switch-rail is returned to its former position in the following manner: Each car is provided with a downwardly-projecting arm 21, having one end pivotally mounted on the lower side of the car-floor and secured near its free end to a vertical rod 22, passing through a sleeve 23, in which is arranged a coil or helical spring 24, having one end secured to said rod, whereby the rod is held in position. As the car approaches the switch the rod 22 is depressed against the tension of the spring 24, as shown in Fig. 2, thus lowering the free end of the arm 22 so it engages the cam-surface 2 and contacts the vertical end of the arm 5 and moves the same forward. This movement causes the rod or pitman 7 to move forward and lower the double crank 8, which carries with it the rod 13, which lowers the switch-rail. As the double crank is lowered the single-crank arm is turned upward and the pivoted arm 13 pushed around on its axis, so that its inwardly-projecting end is brought from beneath the end of the switch-rail, allowing the rail to descend.

In Figs. 6 and 7 is shown a modified form of my invention wherein the horizontal rod or pitman 15 is pivoted on a wedge or cam block 25, which is pushed under the beveled or pointed end of the switch-rail 1 when the cam-plate is lowered by the car-wheels. The horizontal arm of the angle-iron 5 is connected with one arm of a bell-crank lever 26, the other arm of said lever being pivotally connected with one end of the rod or pitman 7, which is also pivoted on the wedge or cam block to pull it from beneath the switch-rail when the vertical arm of the angle-iron is actuated by the rod 22.

While I have shown and described a preferred embodiment of my invention, it is obvious that certain modifications of form and arrangement of parts will suggest themselves to the skilled operator and mechanic, which modifications and arrangements come well within the scope and spirit of my invention, and I do not, therefore, desire to be restricted to the exact arrangement and construction shown.

Having thus described my said invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device of the character described, a pivotally-mounted switch-rail, a crank journaled in a suitable support beneath the rail, means for connecting the crank with the rail, a slidably-mounted cam-plate adapted to be engaged by a car-wheel, a rod or pitman pivotally connecting the cam-plate and the crank whereby the crank is operated to raise or

lower the rail, and means for holding the rail in elevated position.

2. In a device of the character described, a pivotally-mounted switch-rail, a crank journaled in a suitable support beneath the rail, an arm connecting the crank with the rail, a slidably-mounted cam-plate adapted to be engaged by a car-wheel and thereby operated, a rod or pitman pivotally connecting the cam-plate and the crank whereby the crank is operated to raise the rail, a pivotally-mounted arm having one end adapted to extend under the rail, and means connecting the crank and the arm whereby when the rail is raised the arm is thrown thereunder to hold it in elevated position.

3. In a device of the character described, a pivotally-mounted switch-rail, a crank journaled in a suitable support beneath the rail, an arm connecting the crank with the rail whereby the rail is raised or lowered, a cam-block mounted on a suitable support and having a longitudinal slot therein, an angle-iron having its upper arm traveling in the slot, a rod or pitman connecting the crank with the angle-iron, and means connected with a railway-car and engaging the angle-iron whereby the same is caused to travel in the slot and thereby operate the rod or pitman.

4. In a device of the character described, a railway-car, a switch-controlling mechanism comprising an arm having one end pivotally mounted on the car, a spring-controlled rod connected with the arm near its free end, and a sleeve within which said rod is adapted to travel, in combination, with a pivotally-mounted switch-rail, a crank journaled in a suitable support beneath the rail, a rod connecting the crank with the rail, a slidably-mounted cam-plate adapted to be engaged by the wheels on the car, a rod or pitman pivotally connecting the cam-plate and the crank whereby the crank is operated to raise or lower the rail, and means for holding the rail in elevated position.

5. In a device of the character described, a pivotally-mounted switch-rail, a crank journaled in a suitable support beneath the rail, an arm pivotally connecting the crank with the rail, a block mounted on a suitable support and having a cam-surface, said block being also provided with a longitudinal slot in the cam-surface, an angle-iron having its upper arm traveling in the slot, means for pivotally connecting the crank with the angle-iron whereby, when horizontal motion is imparted thereto, the crank is raised or lowered thereby raising or lowering the rail, a horizontally and pivotally mounted arm, and a rod connecting the crank and one end of the arm whereby the other end of the arm is thrown under the rail when elevated to hold the same in elevated position.

6. In a device of the character described, a pivotally-mounted switch-rail, a crank jour-

naled in a suitable support beneath the rail, an arm pivotally connecting the crank with the rail whereby the rail is raised or lowered, a block mounted on a suitable support, said
 5 block having a cam-surface and a longitudinal slot, an angle-iron having its upper arm traveling in the slot, a rod or pitman connecting the crank with the angle-iron and whereby when horizontal motion is imparted to the
 10 angle-iron the crank is raised or lowered thereby raising or lowering the rail, a horizontally and pivotally mounted arm, and a rod connecting the crank and the arm whereby the other end of the arm may be thrown
 15 into and out of position under the rail when the crank is raised or lowered.

7. In a device of the character described, the combination, with a railway-track, of a pivotally-mounted switch-rail, a crank jour-
 20 naled in a suitable support beneath the rail, an arm pivotally connecting the crank with the rail whereby the rail is raised or lowered, a slidably-mounted cam-plate having its upper end projecting through a slot in one of
 25 the rails of the track and adapted to be engaged by the car-wheels whereby motion is imparted thereto, a rod or pitman pivotally connecting the cam-plate and the crank whereby the crank is raised or lowered there-
 30 by raising or lowering the rail, a pivotally-mounted arm having one end adapted to extend under the rail when the same is raised, and a rod connecting the crank and the other end of the arm whereby said arm is thrown
 35 into and out of position under the rail.

8. In a device of the character described, the combination, with a railway-track, of a pivotally-mounted switch-rail resting in a depression adjacent to one of the rails of said
 40 track and having its free end adapted to engage the track-rail, a crank journaled in a suitable support beneath the switch-rail, an arm pivotally connecting the crank with the switch-rail whereby it is raised or lowered, a
 45 block mounted on a suitable support and having a cam-surface, said block being also provided with a vertical longitudinal slot, an angle-iron having its upper arm traveling in the slot, means for pivotally connecting the
 50 crank with the angle-iron whereby when horizontal motion is imparted to the angle-iron the crank is raised or lowered thereby raising or lowering the switch-rail, a cam-

plate slidably mounted in a slot in the track-rail and having its upper end projecting 55 above the top of said rail, a rod or pitman pivotally connecting the cam-plate and the crank whereby when the cam-plate is depressed by a car-wheel the crank is raised thereby raising the switch-rail, a horizon- 60 tally and pivotally mounted arm having one end adapted to extend under the switch-rail when the same is raised to hold it in elevated position, and a rod connecting the crank and the other end of the arm whereby said arm is 65 actuated.

9. In a device of the character described, the combination, with a railway-track, of a pivotally-mounted switch-rail resting in a depression adjacent to one of the rails of said 70 track and having its free end beveled and adapted to engage said track-rail, a cam-plate slidably mounted in a slot in the track-rail and having its upper end projecting above the top of the rail, a wedge slidably 75 mounted adjacent to the free end of the switch-rail, and a pivotal connection between the cam-plate and the wedge whereby horizontal motion is imparted to the wedge to force it under the switch-rail thereby raising 80 the same.

10. In a device of the character described, the combination, with a railway-track, of a pivotally-mounted switch-rail resting in a depression adjacent to one of the rails of said 85 track and having its free end beveled and adapted to engage the track-rail, a block mounted on a suitable support adjacent to the track-rail and provided with a cam-surface and a longitudinal vertical slot therein, 90 an angle-iron, the upper arm of which is adapted to travel in said slot, a wedge slidably mounted adjacent to the free end of the switch-rail, and means pivotally connecting the wedge with the angle-iron whereby when 95 horizontal motion is imparted to the angle-iron the wedge is forced under the switch-rail thereby raising the same, or is pulled from beneath the rail thereby allowing the rail to descend. 100

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

EMANUEL FIELDS.

Witnesses:

GEORGE R. BOTHWELL,
 CHAS. W. MORROW.