No. 666,899. Patented Jan. 29, 1901.

J. W. KOCH.

MEANS FOR OPERATING RAILWAY SWITCHES.

(Application filed Sept. 25, 1900.)

(No Model.)

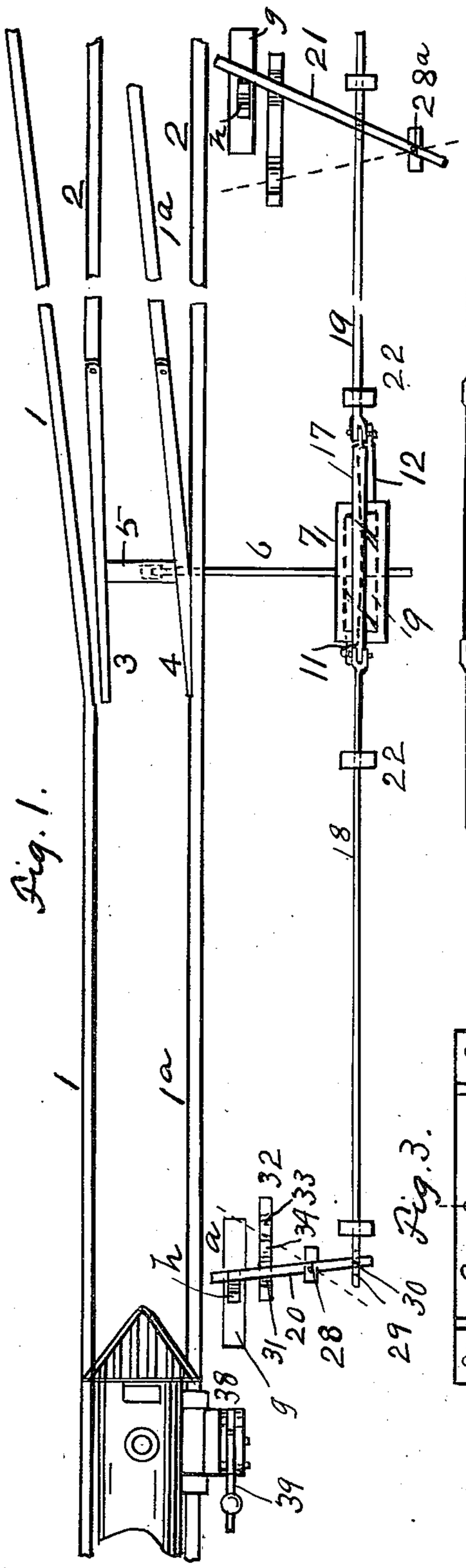


Fig. 1.

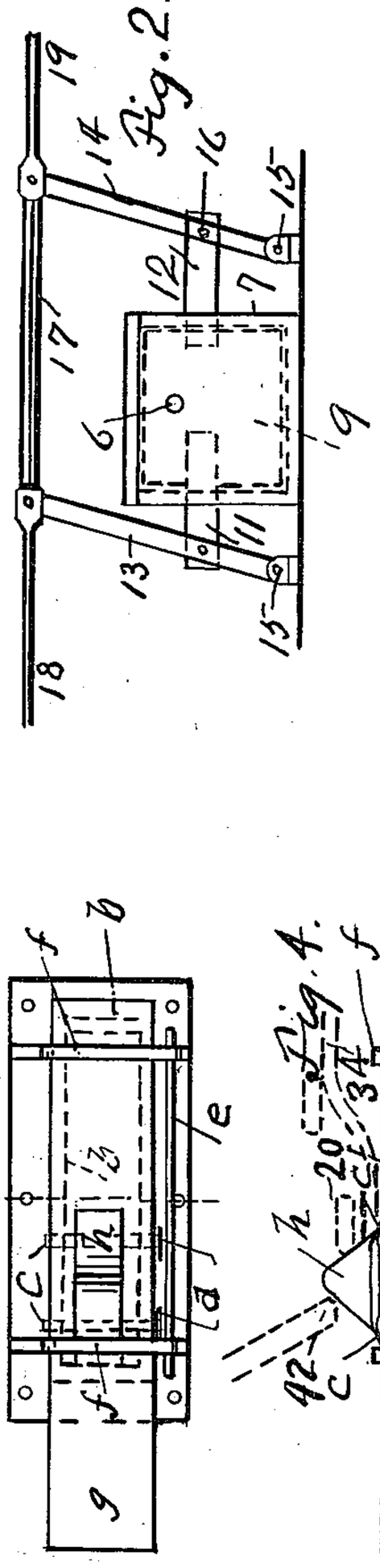


Fig. 2.

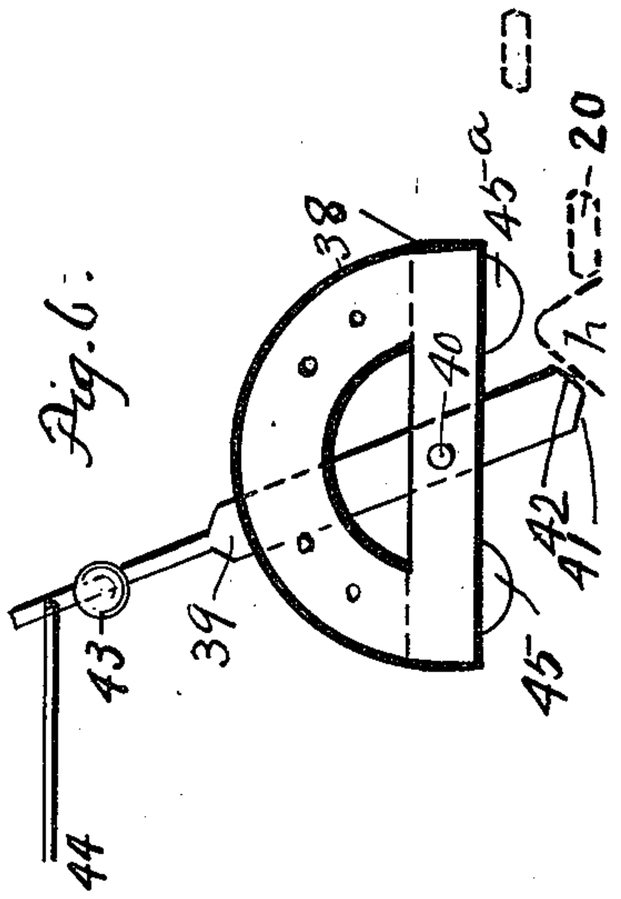


Fig. 6.

Fig. 3.

Fig. 4.

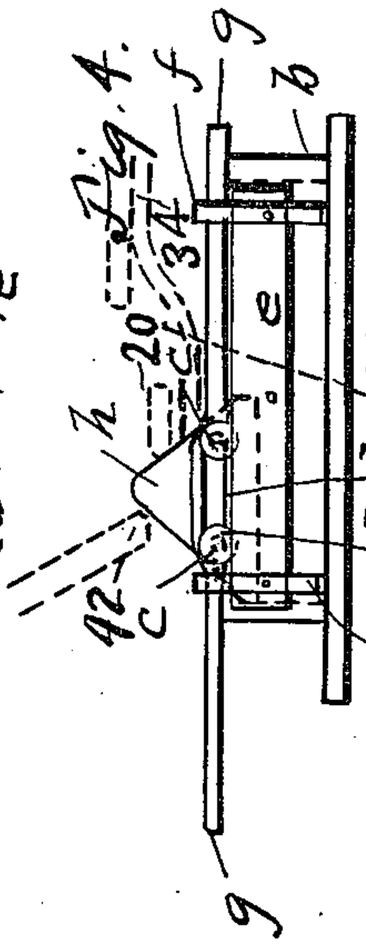
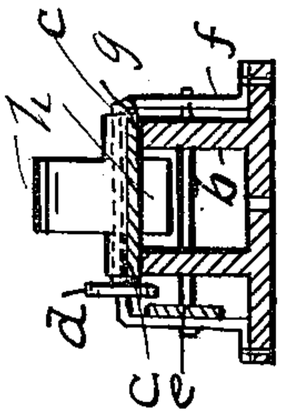


Fig. 5.



Witnesses

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MEANS FOR OPERATING RAILWAY-SWITCHES.

SPECIFICATION forming part of Letters Patent No. 666,899, dated January 29, 1901.

Application filed September 25, 1900. Serial No. 31,062. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. KOCH, a resident of Reynolds, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Means for Operating Railway-Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to the class of railway-switches which are operated by devices carried by a car or engine when the same are set for the purpose.

The main object of this invention is to provide improved means for operating the switch-levers.

In the drawings, Figure 1 is a plan of main and branch tracks and switch devices. Fig. 2 is a side view of the switch-moving wedge device. Figs. 3, 4, and 5 are plan, side, and vertical transverse sectional views of my switch-lever-operating device, and Fig. 6 is a side view of the weighted lever device carried by the engine.

In my application, Serial No. 18,597, filed May 31, 1900, I have described a railway-switch set and reset at will by weighted lever devices carried by a car or engine acting on switch setting and resetting levers, rods, and wedge devices.

In the drawings, 1 1^a are the rails of a main line of track, and 2 2 the rails of a right branch track, 3 4 being switch points or rails, one, 4, normally lying against rail 1^a to maintain the main track closed, the other, 3, being separated from rail 1 to hold the branch open. The switch-rails are connected by a cross-bar 5, so as to be moved together by switch-rod 6. Rod 6 also extends through a strong firmly-supported box or casing 7. Within the casing, fixed to the rod against rotary or longitudinal movement on the rod, is a block or plate 9, the ends of which are beveled. The casing has at one end a hole 10 and at the other end a hole 10′ for two oppositely beveled or wedge plungers 11 12, which are not in line with each other, but are in lines separated by the thickness of plate 9. The beveled end of one of the plungers is in line with plate 9 and bears against a beveled end thereof, while the other plunger is at one side and slightly overlaps the plate. The space within the casing must be at least as wide as the combined thicknesses of plate 9 and plungers 11 12 to give sufficient play to plate 9.

13 14 are upright or nearly-upright levers, pivoted at 15 to fixed pivots and pivoted at 16 to the plungers. Pivoted to their upper ends is a connecting-rod 17 and also the rods 18 19, 18 extending backward along the main line and 19 forward along the branch to switch-setting and switch-resetting levers 20 21, respectively.

22 represents standards and guides for the rods.

20 is the switch-setting lever at a distance in advance of a switch, pivoted at 28 to a bracket and passing through slot 29 in rod 18, being connected to the rod by a pivot 30, sufficient play being provided to allow the lever to turn on its pivot to move rod 18 as required. The end of lever 20 nearest the track normally rests in the bottom of the first notch 31 in a bracket 32 near the track.

33 is a second notch in the bracket, into which the end of the lever 20 can be moved.

34 is a level intermediate section of the top.

The resetting-lever 21 is similarly mounted to lever 20, but has its pivot 28^a on the opposite side of the rod operated thereby, so as to move oppositely. The lever 20 normally rests in the first notch and the resetting-lever in the last notch of their brackets. The distance apart of the notches 31 33 in the first bracket and the corresponding notches in the second bracket depends on the length of the switch-levers between their pivots and notched brackets.

a is a reciprocatory body or slide fixed in position between the track and the notched bracket supporting the track end of switch-lever 20. The slide has a strong box-like base *b*, the upper edge of which forms a track or way on which the rods *c* have a sliding or rolling bearing.

d represents disk-like heads which move along between box *b* and a side plate *e*, being thereby held from working out.

f represents brackets fixed to the base and

extending over to the box and its cover-plate *g*, which is longer than the box and moves with the extending slide-block *h*, which has inclined sides and is in position to be struck by the weighted lever 39 on the engine when the lever has been set. The lower side of block *h* extends into the box, so that when the slide is moved by lever 39 it will strike one end of the box, being thereby arrested suddenly, and reverse lever 39.

The track part of the switch-operating mechanism having been described I will now describe the coöperating devices on an engine, car, or train.

At a suitable point on each vehicle extending beyond the wheels is a strong metal frame 38, supported by which is a lever 39, pivoted at 40 between two curved lugs 45 45ª. The lower end of lever 39 is beveled or slightly curved on each edge at 41 42. Lever 39 is normally thrown to one side, so that its lower end will clear the setting and resetting levers. When a switch-operating lever is to be moved, the upper end of lever 39 is raised to depress the lower end, so that it will strike the next block *h*. Lever 39 is not locked in said position, but it is movably held against a pin placed behind the lever by a weight 43, preferably adjustable, on the upper part of the lever. Other means than the pin may be used to hold the lever in set position, provided such means leave the lever free to swing forward.

44 is a rod for adjusting lever 39 from a rear part of the engine.

In operation when the vehicle is moving forward lever 39 is set at an inclination, and pointing forward the bevel 41 strikes the slide-block *h*, and the weight 43 is sufficient to enable lever 39 to move the switch-setting lever 20 to or nearly to the upper central flat section of its bracket. At this instant the slide strikes the stop, which may be the box end 37, which reverses the inclination of lever 39, raising its lower end above the plane of the slide-block and of the inner end of following switch-levers, after which it must be again set before it will operate another switch-lever. At the same instant the rigid rear downward-curved extension 45 on the engine or car strikes the lever 20, which has been raised into its path by its initial movement, carrying it along until it falls into the second notch. This movement of lever 20 moves lever 21 reversely to lever 20 and also plungers 11 12, one of which, 12, by its wedge action against plate 9 operates the switch, at the same time moving plate 9 and the other plunger into coöperative relation for resetting the switch. After the lever 39 on the engine or train has passed lever 20 lever 39 may be set to operate the resetting-lever 21. In case there are also left branch tracks switch-levers and coöperating parts, as above described, will be placed on the opposite side of the track, for which the engine or car must have an operating-lever like 39 on its other side.

Preferably the cover-plate *g*, which may or may not be integral with the block *h*, and the tops of brackets *f* are below the path of movement of levers 20 21, as indicated in dotted lines at 20, Fig. 4.

If at any time the engine has to run in the opposite direction on the track by a switch, lever 39 should be reversely inclined and lug 45ª would operate instead of lug 45, as above described. In this case switch-lever 21 must be thrown to the opposite side of block *h*.

I do not limit myself to the form of brackets shown for confining and guiding the cover-plate, nor to the particular means described for supporting block *h*, and other parts may be modified in form and arrangement without departing from my invention. Evidently the mechanism between levers 20 21 for throwing the switch-rails can be largely varied without destroying the utility of the improved switch-lever-operating device described.

I claim—

1. The combination of a pivoted switch-lever at one side of a railway-track, means operated thereby for throwing a railway-switch, a reciprocatory body parallel with the track and having an extending block at the end of said lever which is nearest the track, the reciprocatory body being adapted to operate the switch-lever, and itself adapted to be struck and moved by an operating device on a car or engine.

2. The combination of a pivoted switch-setting lever in advance of a switch, a pivoted switch-resetting lever beyond the switch, means moved by said setting and resetting levers for operating a railway-switch, reciprocatory bodies, one at each lever, parallel with the track and having extending blocks adapted to operate the switch setting and resetting levers, and said blocks being adapted to be struck and moved by an operating device on a car or engine.

3. The combination of a pivoted switch-lever, means operated thereby for throwing a railway-switch, a reciprocatory body parallel with the track and having an extending block, adapted to operate the switch-lever, and itself adapted to be struck and moved by an operating device on a car or engine, said operating device being free when set for operation to turn on its pivot to inoperative position means for arresting the reciprocatory body and the lower end of the operating device for reversing the latter, and means on the car or engine for completing the movement of the switch-lever.

4. The combination with a switch setting or resetting pivoted lever, of a reciprocatory lever-moving body parallel with the track-rails, and a way guiding and supporting said body in position to be operated by a device on

a car or engine, transverse rods bearing on said way and supporting said body, disks on the rods, and a plate parallel with the way and in position to limit transverse movement of the disks and rods.

5. The combination, in switch-operating mechanism, of the support with a way at its top, a reciprocating cover longer than said support so as to always cover it, said cover being guided parallel with the track-rails, a block extending above the cover and adapted to be struck and moved by a device on a car and having bearings on said way.

6. The combination, in switch-operating mechanism, of the box-like support with a way at its top, a reciprocating cover longer than said support so as to always cover it, said cover being guided parallel with the track-rails, a block extending above the cover and adapted to be struck and moved by a device on a car and having bearings on said way, and means for suddenly arresting said block.

7. The combination, in switch-operating mechanism, of the box-like support, the cover, the extending block or body with inclined sides, and the switch-lever operated thereby.

8. The combination, in switch-operating mechanism, of the box-like support, the cover, the brackets extending over the cover, the bearings supporting said body, and the side plate supported by the brackets.

9. The combination, in switch-operating mechanism, of the pivoted switch setting or resetting lever, means operated thereby for moving the switch-rails, a bracket therefor having two notches in one of which the lever normally stands, and an intermediate portion higher than the notches across which the switch-lever swings, a reciprocating body having inclined sides, a lever carried by a car or engine adapted to strike one inclined side, the other side of which bears against the switch-lever, thereby advancing it and raising it by a wedge action to the intermediate part of the bracket, and means on the car or engine for completing the movement of the switch-lever.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES W. KOCH.

Witnesses:
L. F. FRITSCH,
C. F. SHINDEL.