

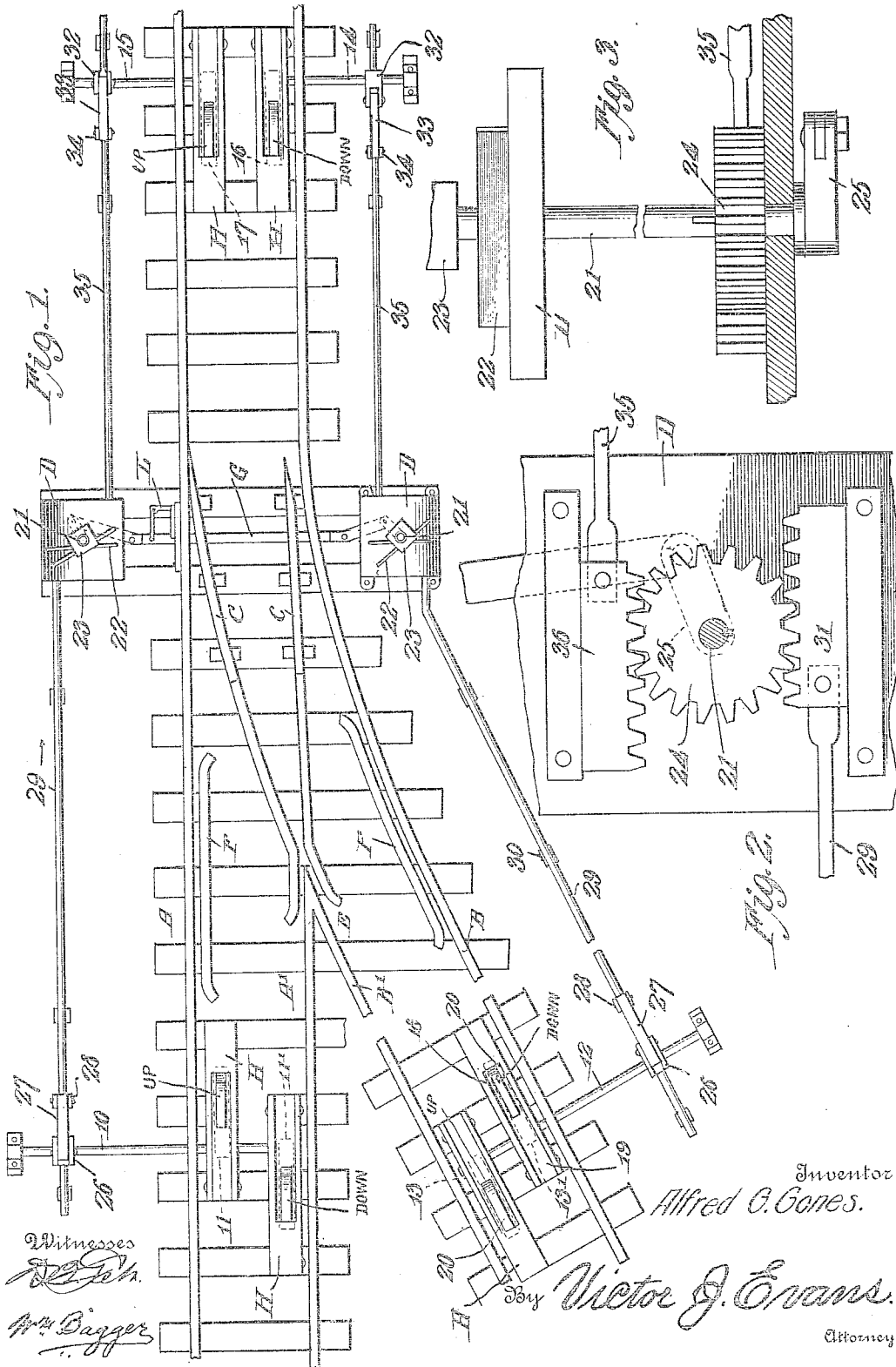
A. G. GONES.
RAILROAD SWITCH.

APPLICATION FILED OCT. 15, 1909.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 1.

953,605.



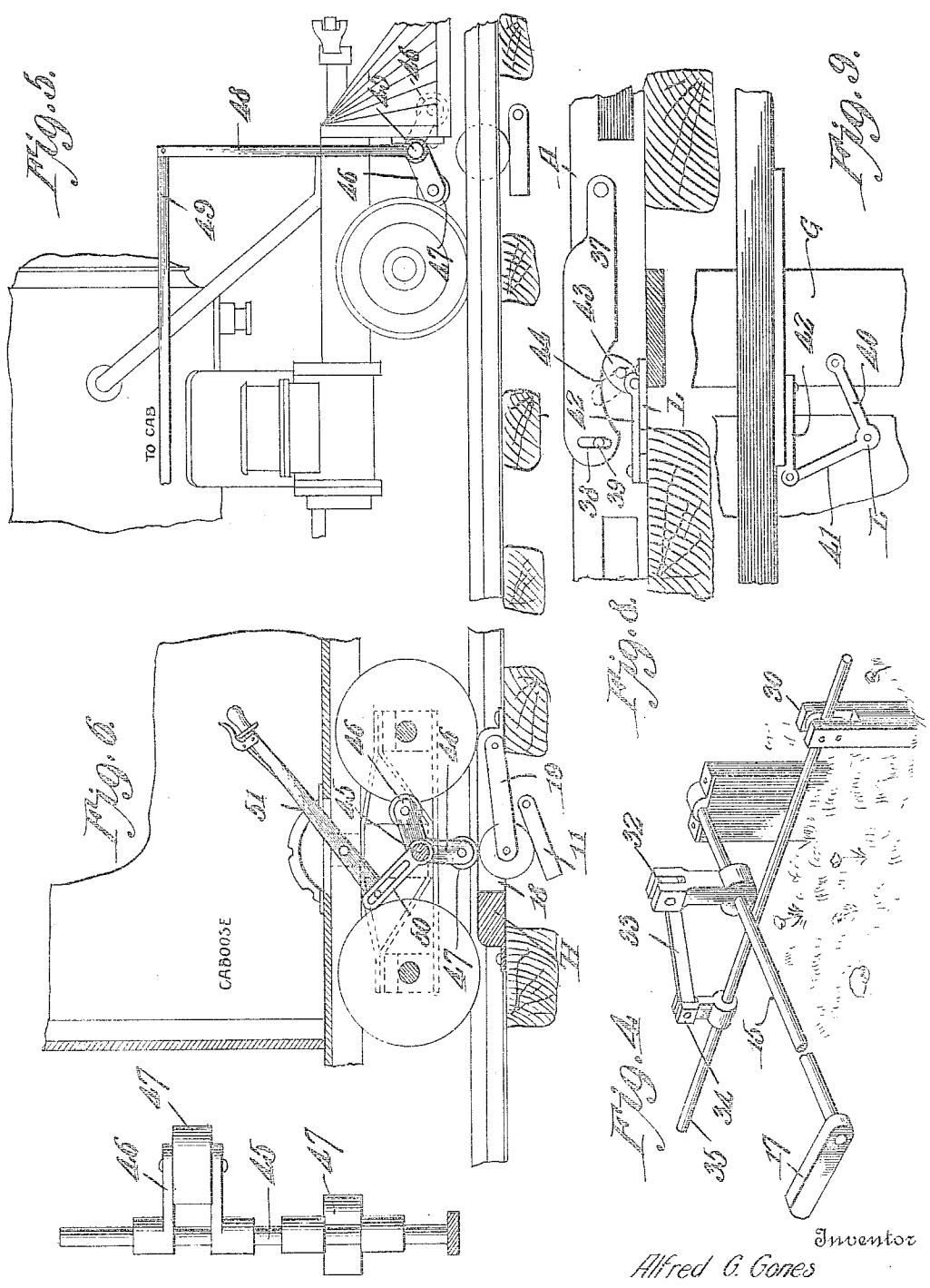
A. G. GONES.
RAILROAD SWITCH.

APPLICATION FILED OCT. 15, 1909.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 2.

953,605.



Witnesses
Wm. Bagger

Fig. 7

Inventor
Alfred G. Gones

334 *Victor J. Evans.*
Attorney

UNITED STATES PATENT OFFICE.

ALFRED G. GONES, OF HANNIBAL, MISSOURI.

RAILROAD-SWITCH.

953,605.

Specification of Letters Patent.

Patented Mar. 29, 1910.

Application filed October 15, 1908. Serial No. 522,868.

To all whom it may concern:

Be it known that I, ALFRED G. GONES, a citizen of the United States, residing at Hannibal, in the county of Marion and State of Missouri, have invented new and useful Improvements in Railroad-Switches, of which the following is a specification.

This invention relates to that class of railroad switches which are set or actuated by means of mechanism carried by a train approaching from either direction and it has among its objects to construct a switch which may be operated with ease and with positive certainty to move the switch points to the desired position by mechanism connected with a train approaching from the siding or in either direction on the main line.

A further object of the invention is to provide means whereby the switch points shall be positively prevented from jumping or shifting their position while a train is passing from the main line to the siding or vice versa.

Still further objects of the invention are to simplify and improve the general construction and operation of this class of devices.

With these and other ends in view which will readily appear as the nature of the invention is better understood the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention; it being however understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention, may be resorted to when desired.

In the drawings: Figure 1 is a plan view showing portions of a railway track and a siding equipped with the improved switch. Fig. 2 is a horizontal sectional view taken through one of the switch signal stands and showing part of the operating mechanism. Fig. 3 is a sectional elevation of one of the switch signal stands, the casing having been broken away. Fig. 4 is a perspective detail view of one of the rock shafts which are actuated by passing trains to operate the switch mechanism. Fig. 5 is a side elevation showing a portion of an engine

equipped with switch actuating mechanism. Fig. 6 is a sectional elevation of a portion of a railroad car or caboose equipped with switch actuating mechanism. Fig. 7 is a plan view of a train carried rock shaft having the switch actuating mechanism. Fig. 8 is a sectional elevation of the mechanism for preventing the switch points from jumping. Fig. 9 is a top plan view of the mechanism shown in Fig. 8.

Corresponding parts in the several figures are denoted by like characters of reference.

Referring to the drawings A and A' designate respectively the outer and the inner main line rails with reference to the siding; B and B' are the outer and inner siding rails with reference to the main line; C—C represent the switch points, D—D, the switch signal stands, E, the frog at the point where the inner siding rails cross the inner main line rail; and F—F are the guard rails. These parts are constructed and arranged in the usual or in any well known and approved manner, the switch points being pivotally mounted so that they may be moved simultaneously by means of a cross bar G with which both switch points are connected to open or to close the siding for the passage of trains approaching upon the main line.

Supported for oscillation in suitable bearings, transversely of the main line rails and at a suitable distance from the switch, is a rock shaft 10 having arms 11 and 11' that extend in opposite directions from said rock shaft, said arms being arranged in such relative position with reference to the rock shaft that by the oscillation of the latter, one of said arms will be raised while the other is depressed, the construction and arrangement of said rock shaft and arms being best seen by reference to Fig. 4 of the drawings while in Fig. 1 the arms are indicated in dotted lines. A similar rock shaft 12 carrying oppositely extending arms 13 and 13' is arranged transversely of the siding rails at a suitable distance from the switch. Upon that portion of the main line which approaches the switch are provided bearings for two rock shafts 14 and 15 disposed transversely beneath the main line rails and in axial alinement with each other, said rock shafts being equipped with arms 16 and 17, both extending in the same direction as will be clearly seen by reference to

Fig. 1 where said arms have been shown as extending in the direction of the switch.

Suitably mounted upon the cross ties or sleepers of the track are casings or housings H, one for each of the arms extending from the several rock shafts, said housings being provided with slots 18 wherein levers 19 are pivotally mounted; said levers being provided adjacent to their free ends with anti-friction members such as wheels or rollers 20 that rest upon the upper sides or faces of the several arms 11—11', 13—13', 16 and 17 for the purpose of actuating the latter to oscillate the rock shafts when said wheel carrying levers are themselves actuated by mechanism carried by trains passing over the line as will be hereinafter described.

The switch signal stands D—D are supported adjacent to opposite sides of the track in proximity to the ends of the bar G whereby the switch points C—C are connected. Each of the switch stands is provided with bearings for a vertically disposed shaft 21 carrying signals 22 and 23, the latter being preferably a lamp of the construction usually employed in this class of devices. The switch stands constitute housings within which the operating mechanism is arranged. Each of the shafts 21 carries a spur wheel 24 and a crank 25.

Each of the rock shafts 10 and 12 is equipped with a crank 26 which is connected by a link 27 with a collar 28 upon a rod 29 mounted for longitudinal sliding movement in suitable supports as best seen at 30 in Fig. 4. The rods 29 are guided to the switch stands at opposite sides of the track, and each is pivotally connected with a rack bar 31 meshing with the outer side of the spur wheel 24. In like manner the rock shafts 14 and 15 are provided with cranks 32 connected by links 33 with collars 34 upon suitably supported and guided sliding rods 35 which are guided to the switch stands at opposite sides of the track, each being pivotally connected with a rack bar 36, said rack bars meshing with the inner sides of the spur wheels 24.

Pivotally supported upon or adjacent to the outer side of one of the main line rails A, is a lever 37 having a slot 38 engaging a stud 39 whereby the movement of said lever is limited. Supported for movement in an approximately horizontal plane adjacent to the outer side of the rail A is a bell crank L one arm of which 40 is pivotally connected with the connecting bar G, while the other arm 41 of said bell crank is connected by means of a link 42 with a pivotally supported cam shaped disk 43 which serves as a support for the lever 37, the latter being provided with an arcuate recess or cavity 44 upon its under side which rides upon the cam 43. The lever 37 is normally supported in a plane very slightly above

the upper face of the head of the rail A so as to lie in the path of the treads of the wheels of passing rolling stock.

The relative positions of the arms 11—11', 13—13', 16 and 17 are indicated by the words "up" and "down" in Fig. 1 of the drawings where the switch points or tongues C—C have been shown in position to leave the siding open to trains approaching the main line.

In the event that an approaching train should desire to continue on the main line under these conditions, it would be necessary to depress the arm 17 connected with the rock shaft 15. This being done the movement of the rod 35 connected with said rock shaft by the intermediate mechanism hereinbefore described will serve to oscillate the shaft 21 of the switch stand to which said rod is guided, and the rod 29 will thereby be moved in a direction opposite to that of the rod 35, thereby rocking the shaft 10 and shifting the relative positions of the arms 11 and 11'. At the same time the crank 25 of the shaft 21 will transmit a sliding movement to the connecting bar G whereby the position of the switch points is shifted to open the main line, and motion will at the same time be transmitted to the shaft 21 of the offset switch stand which, being oscillated will through the medium of the spur wheel 24 and racks 36 and 31 actuate the sliding rods 30 and 35 whereby the motion is transmitted to the rock shafts 12 and 14 to reverse the relative positions of the arms 13—13' and 16 extending from said rock shafts.

For the purpose of actuating the arms extending from the several rock shafts passing trains, said mechanism including a suitably supported rock shaft 45 having arms 46 radiating therefrom, said arms being suitably spaced apart and which carry anti-friction members such as rollers 47 adjacent to their free ends; the relative arrangement being such that by properly setting or adjusting the rock shaft 45 any one of the arms 11—11', 13—13', 16 and 17 may be depressed by the action thereof. One of these rock shafts is preferably mounted upon the engine, said rock shaft being provided with an arm or lever 48 connected at its free end with an operating rod 49 leading to the cab; another of these rock shafts similarly equipped is preferably carried by the last car of each train or by the caboose, said rock shaft being equipped with a slotted arm or lever 50 which may be actuated to oscillate the rock shaft by means of a suitable hand lever 51. It is obvious that the arms 46 extending from each rock shaft must be relatively so arranged that when one is depressed to an engaging position the other will be elevated and it is also pre-

ferred to so arrange the said arms that by proper adjustment of the rock shaft both of said arms may be supported in a non-engaging position as will be seen by reference to Fig. 5.

It will be readily understood from the foregoing description taken in connection with the drawings hereto annexed that by the simple mechanism herein described, the switch may be actuated and properly set by the mechanism upon the engine of a train approaching the switch from either direction upon the main line or upon the siding and it will further be seen that by properly manipulating the actuating mechanism connected with the last car or the caboose of the train, the switch may be reset so as to leave it in the condition in which it was found by the approaching train. It will also be seen that as the rolling stock passes the switch points, the lever 37 will be engaged by the treads of the wheels, thus holding the cam 43, the bell crank L and the bar G connecting the switch tongues securely in position while the switch is being passed by the rolling stock, and thereby preventing any expense that might result from the accidental jumping and displacement of the switch points.

Having thus described the invention, what is claimed is—

1. In a device of the character described, the combination with the main line rails, the siding rails, and the pivotally supported switch tongues, of a connecting bar, vertically disposed rock shafts adjacent to the sides of the track in proximity to the ends of the connecting bar, cranks upon said rock shafts, links connecting said cranks with the ends of the connecting bar, spur wheels upon the rock shafts, slidably supported racks engaging said spur wheels, rock shafts supported transversely of the track and having radially extending arms arranged in the path of train carried actuating mechanism, housings supported adjacent to and inclosing the radially extending arms, said housings

having slots in their upper sides, levers supported pivotally in the housings and having anti-friction members engaging the arms extending radially from the rock shafts, said anti-friction members being adapted to extend through slots in the housings, and means for transmitting motion from said rock shafts to the slidably supported rack bar.

2. In a switch operating mechanism of the character described, rock shafts supported transversely of the track, means for transmitting motion between said rock shafts and the switch tongues, arms extending radially from the rock shafts, slotted housings supported adjacent to and inclosing said arms, levers supported pivotally in the housings and having wheels engaging the radially extending arms and adapted to project through the slots in the housings, and actuating mechanism carried by a train and including a rock shaft having arms carrying anti-friction rollers adapted to engage the wheels carried by the levers supported in the housings, and means for oscillating said rock shaft.

3. In a device of the character described, pivotally supported switch points, a cross bar connecting the same, train actuated shifting mechanism connected with said cross bar, a main line rail, a lever fulcrumed upon the latter in the path of the wheel treads of passing rolling stock and having an arcuate recess in its underside, a pivotally supported cam engaging the arcuate recess and supporting said lever, a bell crank supported for movement in a horizontal plane and having one arm connected with the connecting bar of the switch tongues, and a link connecting the other arm of the bell crank with the lever supporting cam.

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

ALFRED G. GONES.

Witnesses:

BERRYMAN HEMROOD,
L. H. TUTT.