

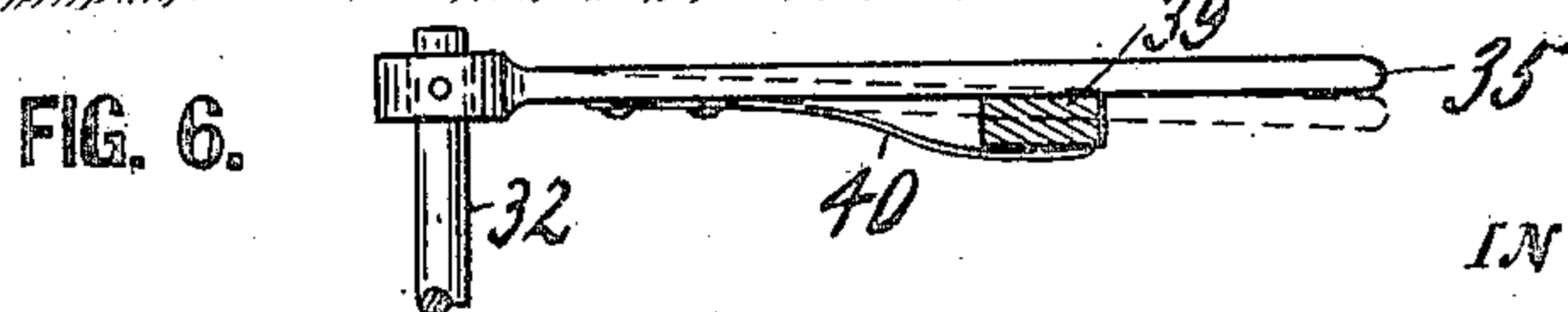
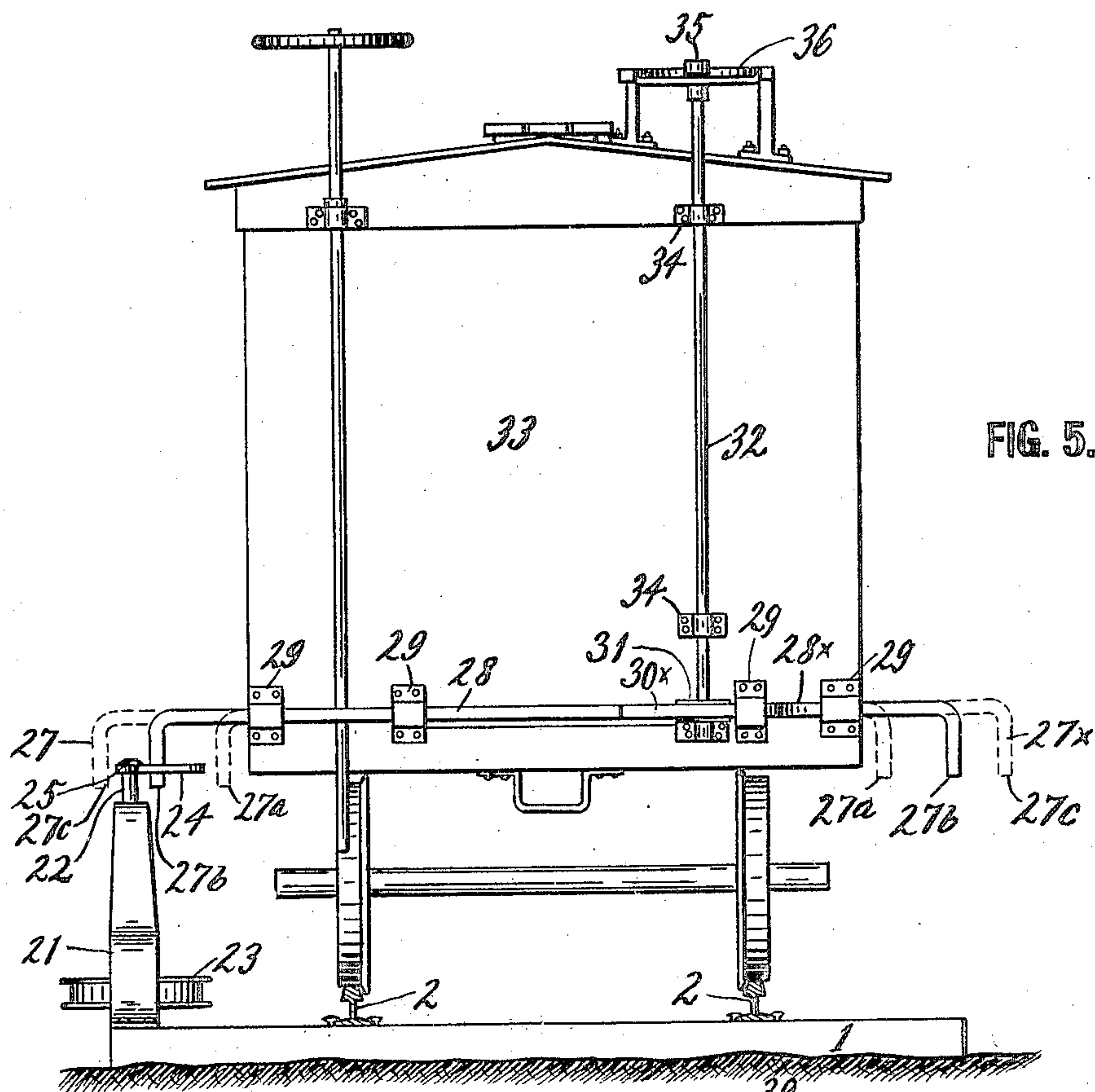
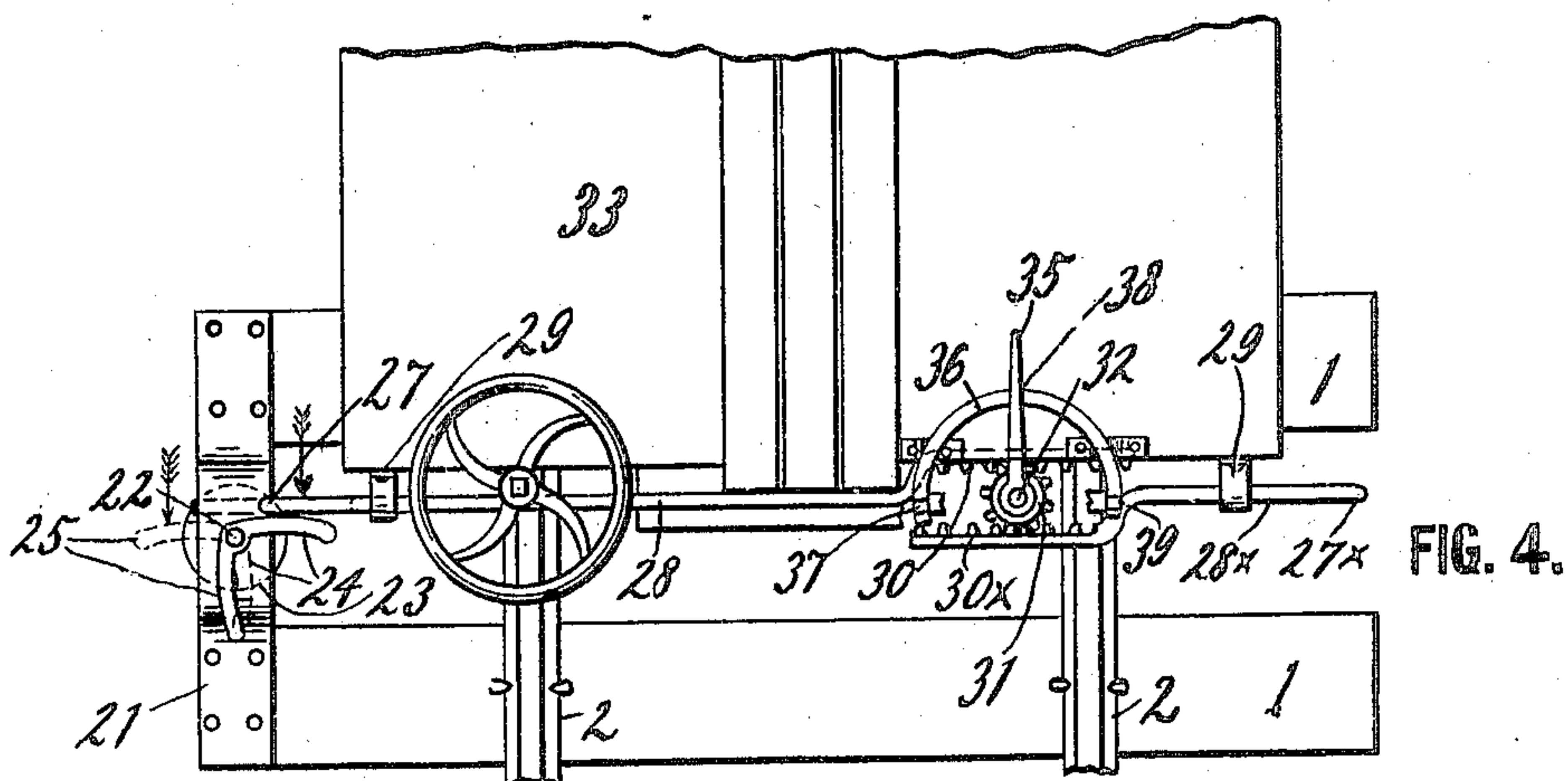


No. 875,110.

PATENTED DEC. 31, 1907.

F. J. REILLY,  
RAILWAY SWITCH.  
APPLICATION FILED JULY 1, 1907.

2 SHEETS—SHEET 2.



**WITNESSES:**

D. E. Carlson  
L. C. Carlson.

*INVENTOR:*

Frances J. Reilly.  
BY his ATTORNEY:  
A. M. Carlsson.



# UNITED STATES PATENT OFFICE.

FRANCES J. REILLY, OF JERICO, IOWA.

## RAILWAY-SWITCH.

No. 875,110.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed July 1, 1907. Serial No. 381,609.

*To all whom it may concern:*

Be it known that I, FRANCES J. REILLY, a citizen of the United States, residing at Jerico, in the county of Chickasaw and State of Iowa, have invented a new and useful Railway-Switch, of which the following is a specification.

My invention relates to railway-switches; and the main object of the invention is to provide means whereby any train approaching a switch will automatically throw the switch into a safe and proper position for that train, so that it becomes impossible for any train to get wrecked by running into the switch while it is "open". This object I attain by the novel construction and combination of parts illustrated in the accompanying drawing, in which:—

Figure 1 is a top or plan view of a piece of railroad having a switch embodying my improvements. Fig. 2 is a side elevation of an enlarged portion of Fig. 1 as between the points *a—b*. Fig. 3 is a detail top view of one of the special tie-plates supporting the rails at the switching point. Fig. 4 is a top view of a box car on a track and equipped with means for operating my switch mechanism shown near the sides thereof. Fig. 5 is an end elevation of Fig. 4. Fig. 6 is a detail view of the lever 35 in Fig. 4.

Referring to the drawing by reference numerals, 1 designates the ties and 2 the rails forming the main track or road, while 3 are the rails of a branch line or side track.

4 are the usual switch tongues or ends of the rails which are moved horizontally in throwing the switch. These tongues may be tapered as shown or may be of the common kind running the regular size and form of the rail to its very end and made movable into line with similar ends of the main track and of the side track as may be required. In either case the moving rails are braced together by one or more braces 5 and operated by a switch-bar 5<sup>x</sup>, which by a pitman on link-bar 7 is connected with a wrist-pin 8, which acts as a crank by being fixed beyond the center of a pulley 9, which is secured on an upright shaft 10, journaled in a stand 11, fixed upon the ends of two of the ties of the main track. The shaft carries at its upper end the usual signal lamp 13 and signal plate 14.

Projecting from the base flange of the stand 11 are two arms 15—15<sup>a</sup> for the pitman 7 to stop against when its crank has oscillated

fully half a revolution in either direction and thus either closed or opened the switch. To prevent rebounding of the crank and pitman when striking said stops, I pivot on the crank pin one end of a rod 17, which is guided in a hole at 18 in the lower part of the stand, and upon said rod is guided a coil spring 19, which being compressed between the stand and a collar 20 on the rod causes the latter to hold the pitman against one of the two stops 15—15<sup>a</sup>, except while the crank-pulley 9 is oscillated by a cable as will now be described.

In the "Y" of the main track and the branch track is arranged a stand 21, in which is journaled a vertical rock-shaft 22, having fixed on its lower end a pulley 23, and at its upper end a two-armed lever whose arms 24—25 stand substantially at right angles to each other.

In opposite direction from the signal-stand 11 is arranged near the main track a similar stand 21<sup>x</sup> with shaft 22<sup>x</sup>, pulley 23<sup>x</sup> and rocker arms 24<sup>x</sup> and 25<sup>x</sup>.

26 is a straight cable passing over and being fixed to the pulleys 23 and 23<sup>x</sup> and has its ends passed from said pulleys to the pulley 9, which they partly encircle and are fixed thereto, so that all three pulleys must rock in unison when any one of the rocker arms 24, 24<sup>x</sup> and 25 and 25<sup>x</sup> is acted on by actuators carried by the cars or by the locomotive of the moving train, as will now be described.

In Figs. 4 and 5 the actuating mechanism is shown as mounted on a car 33. The pulleys 21 and 21<sup>x</sup> being about twice as large in diameter as the pulley 9, it will be understood that one-fourth of a turn of the former imparts one-half of a turn or revolution of the latter, and such one-fourth revolution of the shafts 22 and 22<sup>x</sup> and their pulleys is imparted by arms or actuators 27—27<sup>x</sup> projecting downward from the outer ends of two bars 28—28<sup>x</sup> supported in bearings 29 fixed to the car and in which they are guided to slide without rotating, and they are provided with racks 30—30<sup>x</sup>, engaging opposite sides of a pinion 31, fixed on an oscillating shaft 32 journaled in bearings 34 fixed on the car. To the upper end of the shaft is secured a hand-lever 35 having a slight vertical play with its free end and swinging upon a horse-shoe-shaped bracket or sector 36 having three notches 37—38—39 in which the lever is alternately placed and held against accidental disengagements by having a spring



arm 40 (see Fig. 6) engaging the lower side of the sector.

In the operation or use of the device if the hand lever 35 is placed in notch 39 the actuators 27—27<sup>x</sup> will be drawn close to the car and in the position 27<sup>a</sup> remain idle as they can not reach any of the rocker arms at the tops of the shafts 22 and 23<sup>x</sup>, but if the lever be placed in notch 38, the actuators will be in the position 27<sup>b</sup> and thus engage the rocker arm 24 or the arm 24<sup>x</sup>, as indicated by the arrows near said arms in Fig. 1 and to the left in Fig. 4, according to the direction the train moves in, and will thus close the switch for any train passing from the main track to the side track or vice versa, and if the lever 35 be placed in notch 37 the actuators will get into the outermost position 27<sup>c</sup>, and then act on the arms 25, or 25<sup>x</sup> and thereby throw the switch open so that trains using the main track only may pass the switch safely. Should such a train, however, see by the automatic signal 13—14 that the switch is closed, it needs only bring a pair of its actuators into the outer position 27<sup>c</sup>, and one of them will act as arrow 41, or the other as arrow 42 in Fig. 1, and thus open the switch. To close it again is the duty of the train having use for its closed position; and either train operator operating the switch without leaving the train or stopping it, though it may be proper to run at a slower speed over the switch than on a plain track.

To prevent accumulation of sand pebbles or other dirt between the main rails and the switch tongues I provide pits or clearings 43 below said points of the track and cover the pits by extra large tie-plates 44 (best shown in Fig. 3), having each a slot 45 for the snow, sand, rocks or dirt to drop down through so as to leave the space clear between the rail and the switch tongue.

The pulleys and cables and all other mechanism is protected against the effect of the weather as much as possible, but as it is old to cover up such or similar parts I have not shown or described same.

What I claim is:—

1. In a railway switch, the combination with the moving ends or switch tongues of the rails and a switch bar connecting them in parallel position, of a link-rod or pitman controlling the switch tongues, a switch stand near the track, an oscillating upright shaft therein, a pulley fixed on the lower end of the shaft, a crank-pin fixed in the pulley and engaging the pitman, two operating stands near the main track in opposite directions from the switch stand, one of the operating stands being operable by cars moving on the main track the other being operable also

from the side track or branch track by being positioned in the "Y" of the two tracks, a vertical rock-shaft in each operating stand, a pulley fixed on each of said shafts, a cable engaging said pulleys and the pulley of the switch stand, a pair of rocker-arms fixed on each shaft of the operating stands and means carried by the trains for engaging the rocker-arms so as to close and open the switch by the approaching trains.

2. In a railway switch, the combination with the moving ends or switch tongues of the rails and a switch bar connecting them in parallel position, of a link-rod or pitman controlling the switch tongues, a switch stand near the track, an oscillating upright shaft therein, a pulley fixed on the lower end of the shaft, a crank pin fixed in the pulley and engaging the pitman, two operating stands near the main track in opposite directions from the switch stand, one of the operating stands being operable by cars moving on the main track the other being operable also from the side track or branch track by being positioned in the "Y" of the two tracks, a vertical rock shaft in each operating stand, a pulley fixed on each of said shafts, a cable engaging said pulleys and the pulley of the switch stand, a pair of rocker-arms fixed on each shaft of the operating stands, and means carried by the trains for engaging the rocker arms so as to close and open the switch by the approaching trains, and signaling means mounted on the top of the shaft of the signal stand to indicate when the switch is open and when it is closed.

3. An automatic switching device comprising a switching stand acting on the switch and two operating stands some distance in opposite directions therefrom and operatively connected with the switch stand, said operating stands having each a rock shaft with two rocker arms projecting therefrom, a touching device carried by the train and having at each side of the train a finger adapted to engage the rocker-arms, a hand lever on the train and means operated thereby for shifting and holding said fingers simultaneously at both sides of the train in the same one of three positions, namely in position to pass clear of the rocker-arms, or to engage the arm closing the switch, or the arm opening the switch, and means for holding said hand lever against accidental motion.

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

FRANCES J. REILLY.

Witnesses:

A. M. CARLSEN,  
D. E. CARLSEN.