No. 892,728. PATENTED JULY 7, 1908

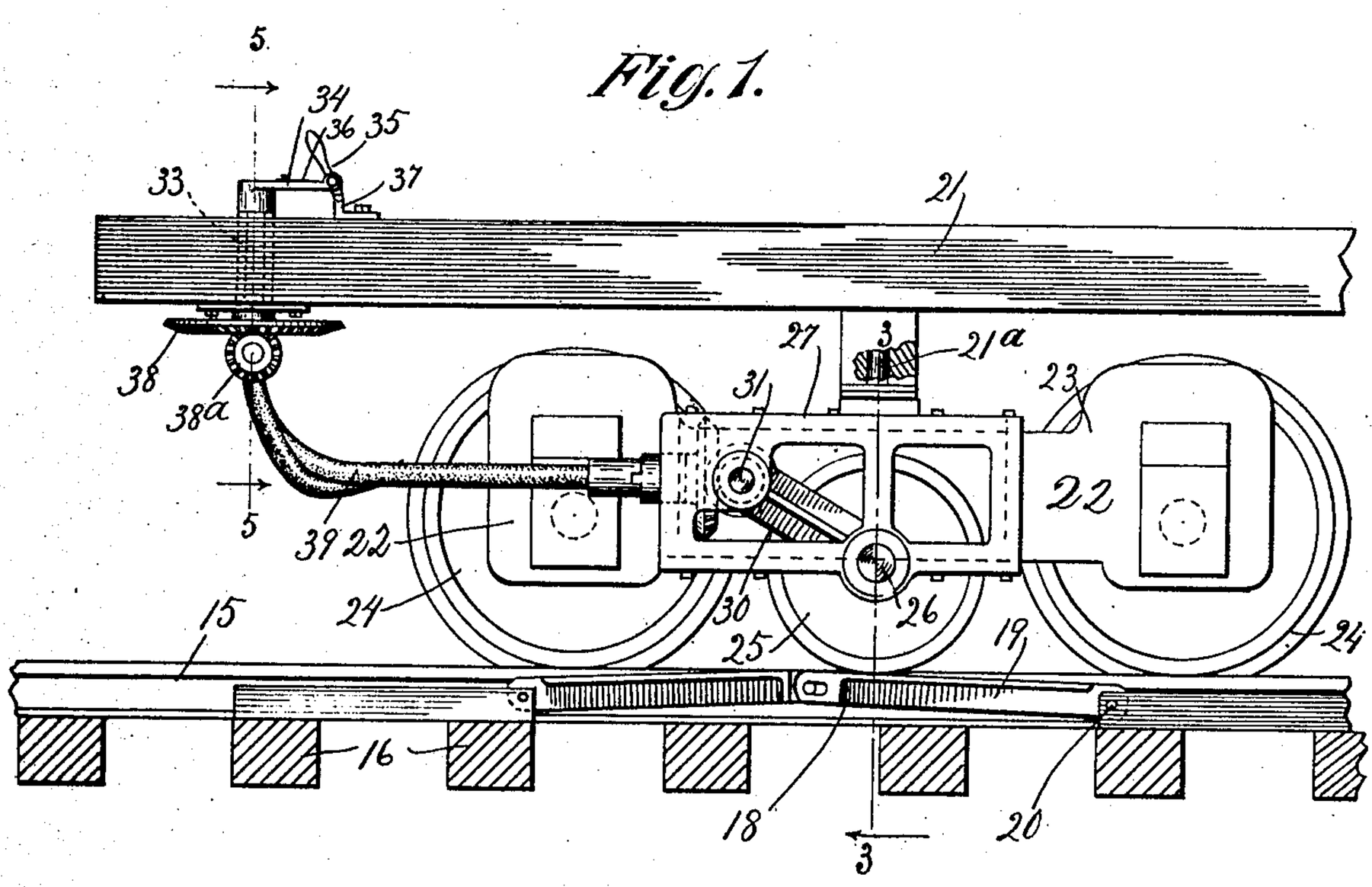
C. M. HURST.

RAILWAY TRIP SHOE.

APPLICATION FILED OCT. 9, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



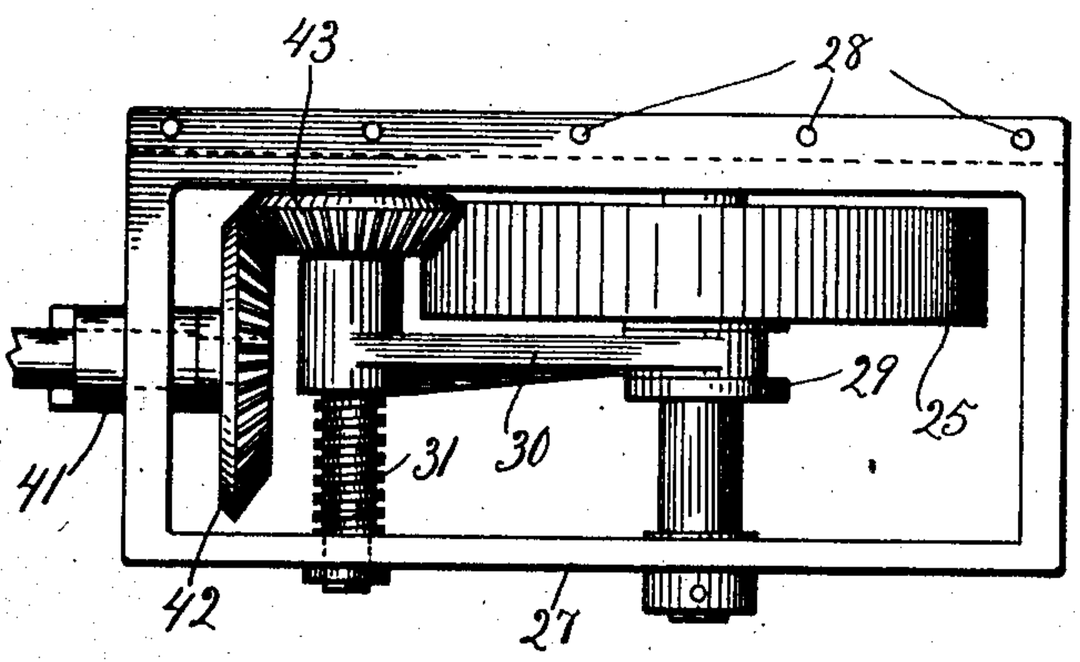


Fig. 2.

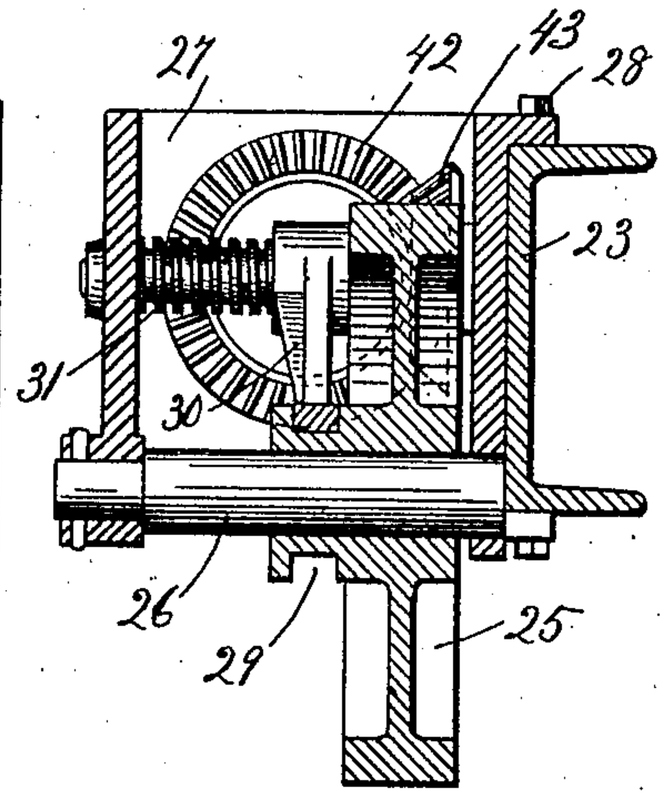


Fig. 3.

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3 SHEETS—SHEET 2.

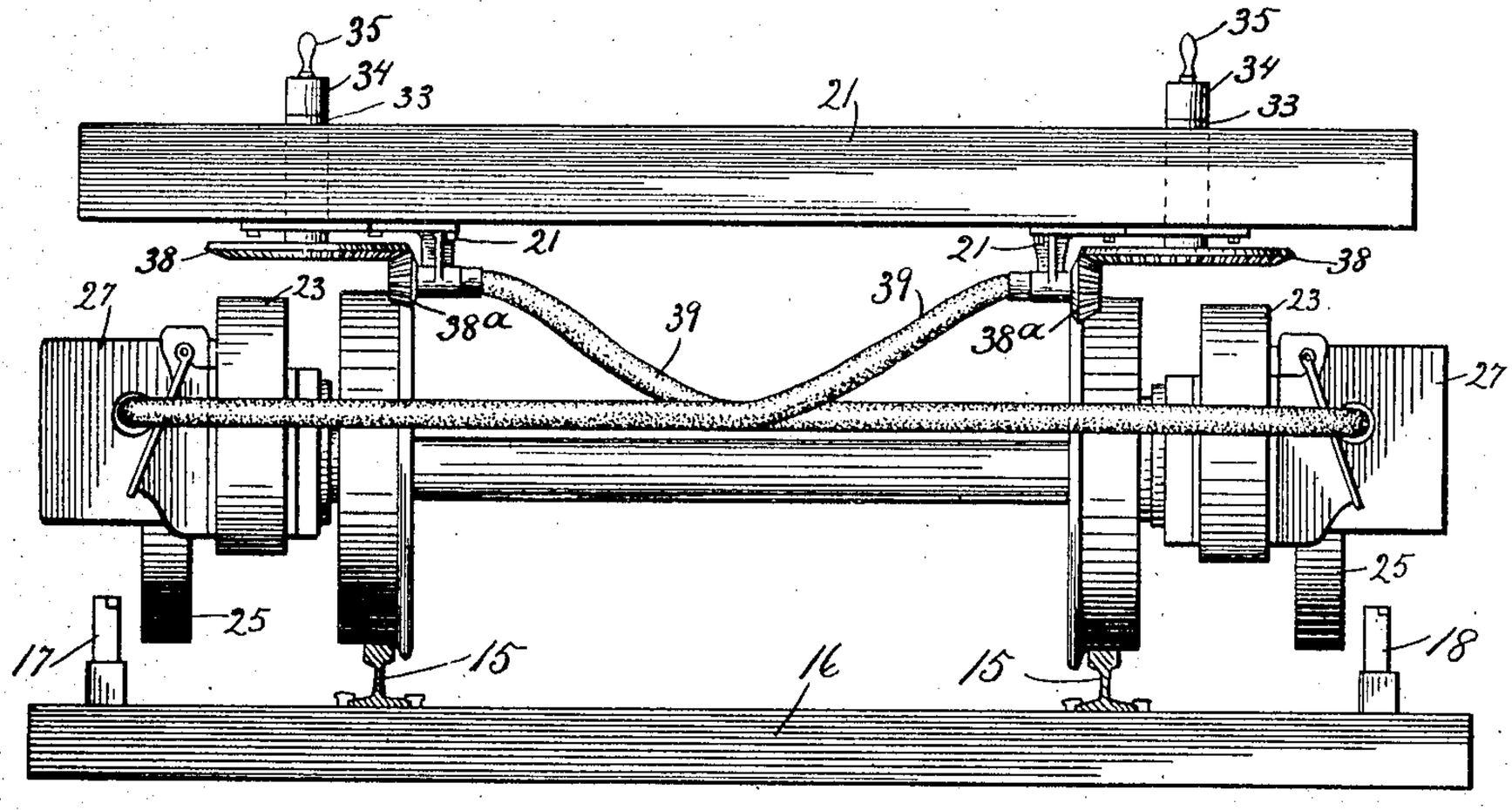

Fig. 4.

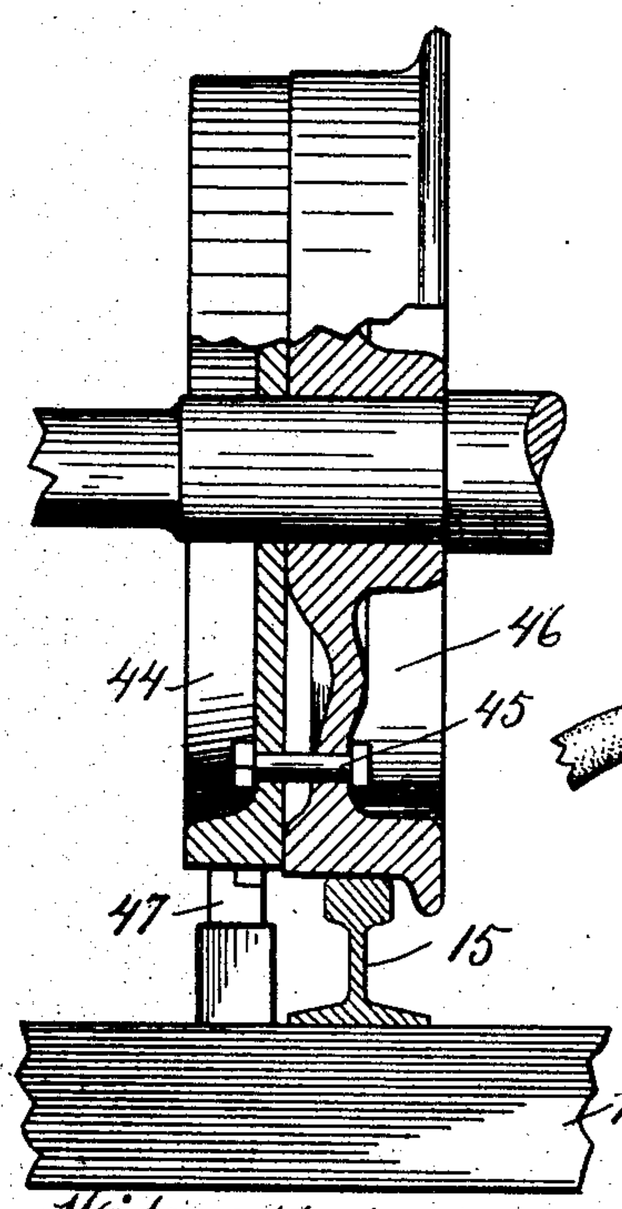

Fig. 6.

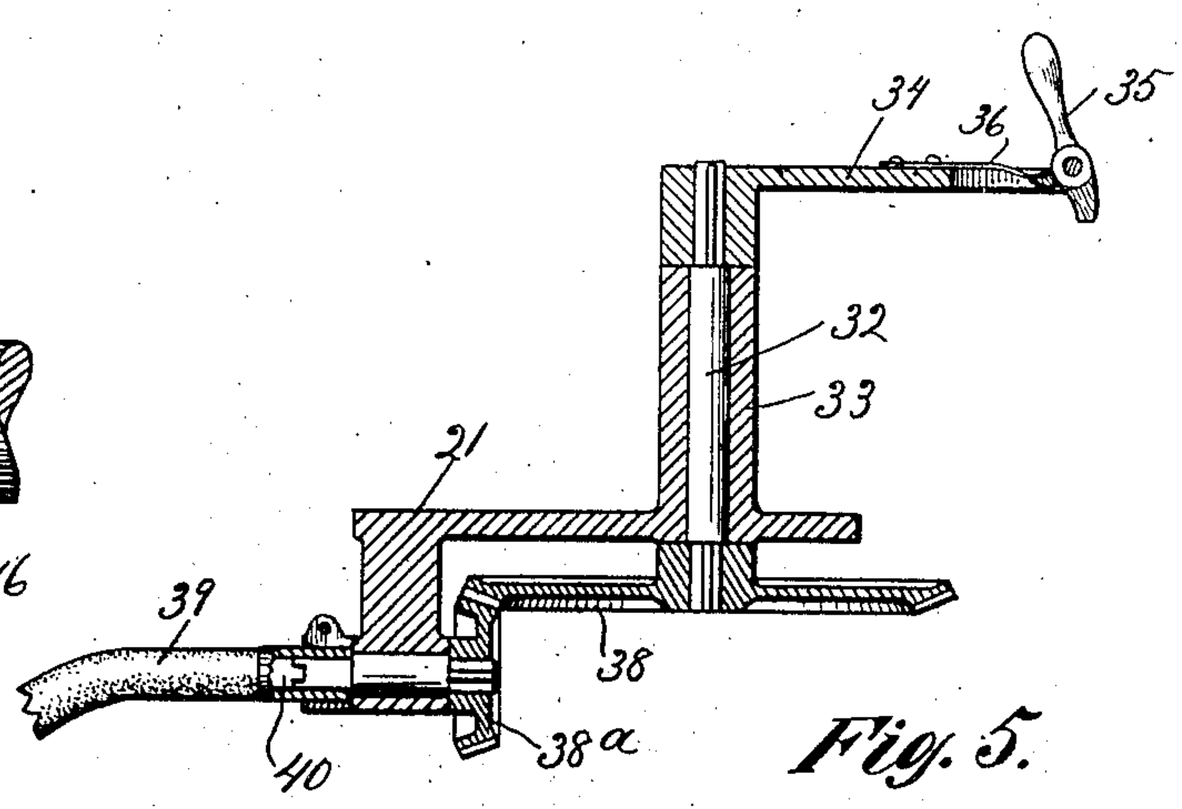

Fig. 5.

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3 SHEETS—SHEET 3.

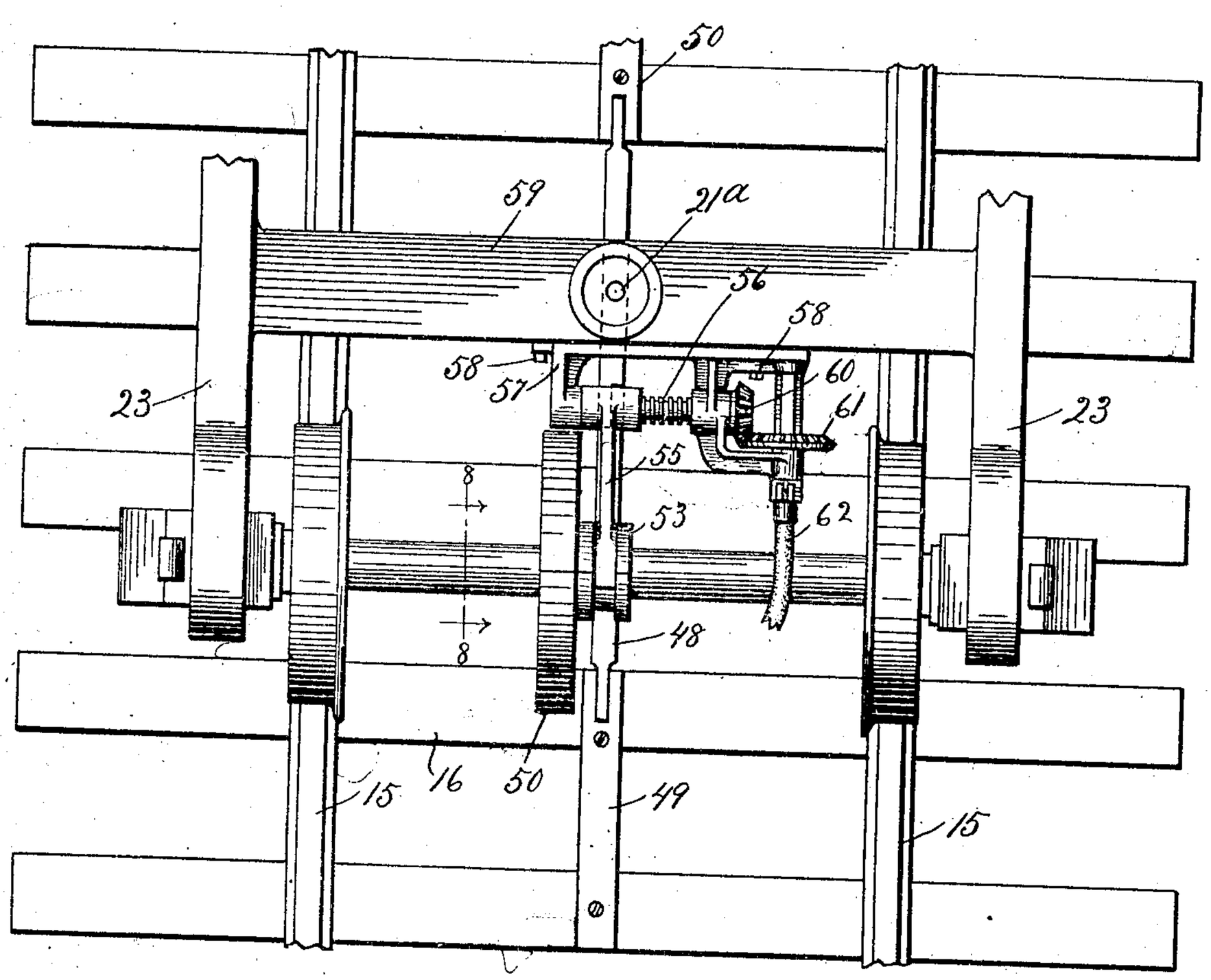

Fig. 7.

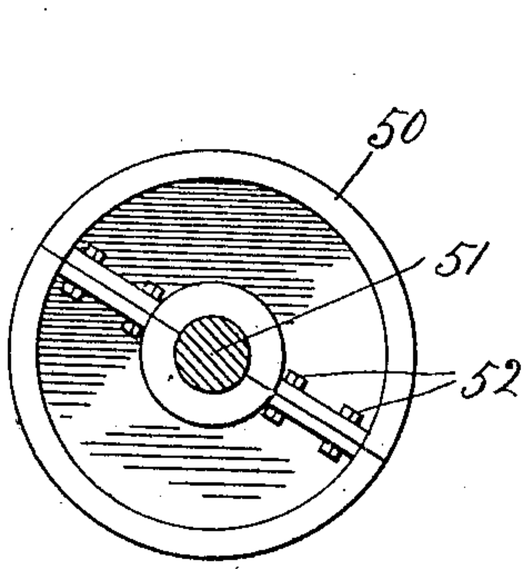

Fig. 8.

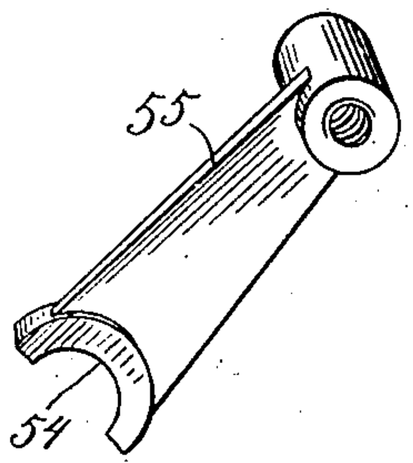

Fig. 9.

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UNITED STATES PATENT OFFICE.

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RAILWAY TRIP-SHOE.

No. 892,728. Specification of Letters Patent. Patented July 7, 1908.

Application filed October 9, 1906. Serial No. 338,197.

To all whom it may concern:

Be it known that I, CHARLES M. HURST, a citizen of the United States, and resident of Rawlins, county of Carbon, and State of Wyoming, have invented certain new and useful Improvements in Railway Trip-Shoes, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to devices for operating and controlling railway switches and signals from moving trains. As usually constructed these devices or mechanisms comprise certain parts, including a trip member, mounted on the railway track and other parts, including a contact piece for engaging the track trip to actuate the mechanism, carried by a car of a train using the track.

This invention relates particularly to those parts of the mechanism which are carried by the railway car.

In railway switch and signal devices intended to be operated from railway trains attaining a high rate of speed, it is important that the engagement between the parts which are carried by the train and those mounted upon the track effect a more or less gradual movement, as otherwise the desired change of the switch or signal will be produced by a blow or a shock likely to cause damage. As frequently constructed, such a gradual movement is obtained by employing as the contacting member mounted on the track a movably-supported bar or apron having one of its longitudinal faces slightly inclined to the direction of movement of the train, and this member is actuated to operate the switch or signal by a trip shoe carried by the train, having a sliding engagement with its inclined face. While this form of construction effectually avoids an injurious blow or shock in the movement of a railway switch or signal, its operation is accompanied by a large amount of friction which produces a rapid wearing away of the parts.

The invention has for its object to reduce the frictional resistance heretofore attained in the operation of switch and signal mechanism, and contemplates a rotary form of trip shoe or wheel carried by a train adapted to have a rolling engagement with the inclined face of a trip apron of the kind described.

A feature of the invention relates to means for moving a railway trip shoe into and out of an operative position.

In the accompanying drawings Figure 1 is a side elevation of a detail of a railway car showing a construction in which the invention is exemplified applied thereto, a detail of a railway track and of one form of track trip being also shown; Fig. 2 is a plan view of details of the trip shoe mechanism illustrated in Fig. 1; Fig. 3 is a transverse section on the line 3—3 of Fig. 1; Fig. 4 is an end elevation of the parts shown in Fig. 1; Fig. 5 is a sectional view on the line 5—5 of Fig. 1; Fig. 6 is a detail elevation, partly in section, illustrating a modified form of the invention; Fig. 7 is a plan view of a railway truck, showing a still further modification; and Figs. 8 and 9 are details of the construction shown in Fig. 7, separated from other parts.

The rails of a track are shown in the drawings at 15, the track ties are designated 16, and a track trip of the apron type is shown at 17 and at 18, one upon either side of the track. Each of these track trips comprises a pair of bars 19, pivotally attached to an appurtenance of the track at 20, and having an operative connection (not shown) with a railway switch or signal. One of the longitudinal edges of each of the bars 19 normally rests in a position slightly inclined to the direction of the track. The body of a railway car, conventionally shown at 21, is movably connected by means of the usual center pin 21^a to a car truck 22 resting on the track, and the truck side frames are shown at 23 and the car wheels at 24.

In carrying out the invention there is provided a wheel or roller 25, mounted on the car truck in such a position that it may have a rolling engagement with the inclined edge of the bars 19 of the track trips to swing them on their pivots and thereby operate a railway switch or signal. In order that track strips, as 17, 18, placed at either side of the track may be actuated by a passing train, a roller 25 is preferably provided at both sides of the car truck. Each of the rollers 25 is mounted on a short shaft 26 which, as shown, occupies a horizontal position transverse to the direction of movement of the car, and is carried by a frame 27 attached by bolts 28 to the truck side frames 23. In order that the rollers may be

moved into and out of a proper position to engage the track trips 17, 18, each is shiftably mounted on its shaft 26 and is provided with a grooved hub 29 which receives the yoke of a forked shipper arm 30. These shipper arms each have a threaded engagement with a screw shaft 31, rotatably mounted in the frame 27.

Manually operated mechanism is provided for rotating each of the screw shafts 31 to shift the trip wheels 25. As shown it is mounted upon the car body 21, carried by the truck 22, and comprises a crank shaft 32, Fig. 5, rotatably mounted in a column 33 rising from the floor of the car and having at its upper end a crank arm 34, to which is pivotally attached a grip piece 35, yieldingly advanced by a spring 36 to engage a stop 37. At the lower end of the crank shaft 32, and preferably beneath the floor of the car body, is secured a bevel gear 38 which meshes with a bevel pinion 38[a] mounted on a shaft 39 leading to the car truck. As shown this shaft is flexible to accommodate relative movement between the car body and its truck during the movement of the train, being composed of a plurality of intercalating sections 40 having an end to end connection. At its farther end it is journaled in the frame 27, as indicated at 41, and is operatively connected with the screw shaft 31 by means of a pair of bevel pinions 42, 43, fixed on the flexible shaft and the screw rod, respectively. Most conveniently the manually operated mechanism just described for controlling the trip wheel 25 at one side of the car truck, is mounted at the farther side of the car body, as most clearly appears in Fig. 4.

It may be desirable, in some instances, to revolve the trip shoe from the running gear of the car truck, and in Fig. 6 of the drawings is illustrated one method of effecting this result. In this instance a trip shoe, designated 44, is mounted on one axle of the car truck and is firmly secured by bolts 45 to one of the faces of a car wheel 46. This form of trip shoe is particularly applicable for the operation of track trips, as 47, which are placed close to the rails 15 of a track, and are designed to be automatically engaged to shift switches or signals (not shown) to avoid accidents by every train which passes.

In Figs. 7, 8 and 9 of the drawings is shown a form of trip shoe for operating a track trip 48, secured by blocks 49, 50, to a railway track between its rails. As shown this trip shoe is also in the form of a wheel 50, designed to roll upon the inclined face of a track trip, and is preferably mounted on an axle 51 of the car truck between its wheels, being formed in sections united by bolts 52, as most clearly shown in Fig. 8, in order that it may be removed or replaced without disturbing the wheels of the truck. It is preferably shiftably mounted upon the truck axle in order that it may be moved laterally thereon to bring it into or out of a proper position to engage the track trip, and, as shown, is provided with a grooved hub 53 for receiving the fork 54 of a yoked shipper arm 55. This shipper arm has a threaded engagement with a screw rod 56, journaled in a suitable bracket 57, united by bolts to an appurtenance of the car truck, as the bolster 59, and the screw rod 56 is operatively connected by means of bevel gears 60 and 61 and a flexible shaft 62, to any form of manually controlled shifting mechanism, such, for example, as that shown in Figs. 1, 4 and 5 of the drawings.

In use, the form of trip wheels herein described, when set in an operative position, will have a rolling engagement with track trips of the apron type, thereby effecting a positive movement of the trip to change a switch or signal with but little frictional resistance and wear of the parts. Those trip wheels of the form shown in Figs. 1 to 5 and in Fig. 7 of the drawings will normally occupy a position out of line with the trip aprons placed upon the track and which then will not be engaged as they are passed. When it is desired to operate a particular switch or signal of the track, an attendant will, before the corresponding track trip is reached by the train, rotate the crank shaft 32 to shift one of the trip wheels 25 to an operative position. Preferably the gears 38, 38[a] and 42, 43, are so related in size that only a small amount of movement of the crank handle is required to effect the desired movement of the trip wheel. After the switch is passed the attendant may then return the trip wheel to its inoperative position by turning the crank shaft 32 in the reverse direction, the catch 35 engaging the stop 37 when the limit of movement is reached.

I claim as my invention—

1. In a railway car having a truck and a body movably mounted on the truck in combination, a shiftable trip shoe carried by the truck, mechanism carried by the truck for shifting the trip shoe, a crank shaft journaled in the car body, and flexible operative connection between the crank shaft of the car body and the trip shoe shifting-mechanism of the truck.

2. In a railway car having a truck and a body movably mounted on the truck in combination, a spindle carried by the truck, a trip wheel shiftably mounted on the spindle, a shipper arm engaging the wheel, a screw shaft journaled in the truck for moving the arm, a crank shaft journaled in the car body, and a flexible rotatable shaft operatively

connecting the crank shaft of the car body and the screw shaft of the truck.

3. In a railway car having a truck and body movably mounted on the truck in combination, a shiftable trip shoe carried by the truck, and mechanism for shifting the trip shoe comprising a driving member carried by the car body, a driven member carried by the truck and flexible operative connection between such driving and driven members.

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