Oct. 25, 1949. L. M. SHOWERS 2,486,332

RAILWAY CAR RETARDING MECHANISM

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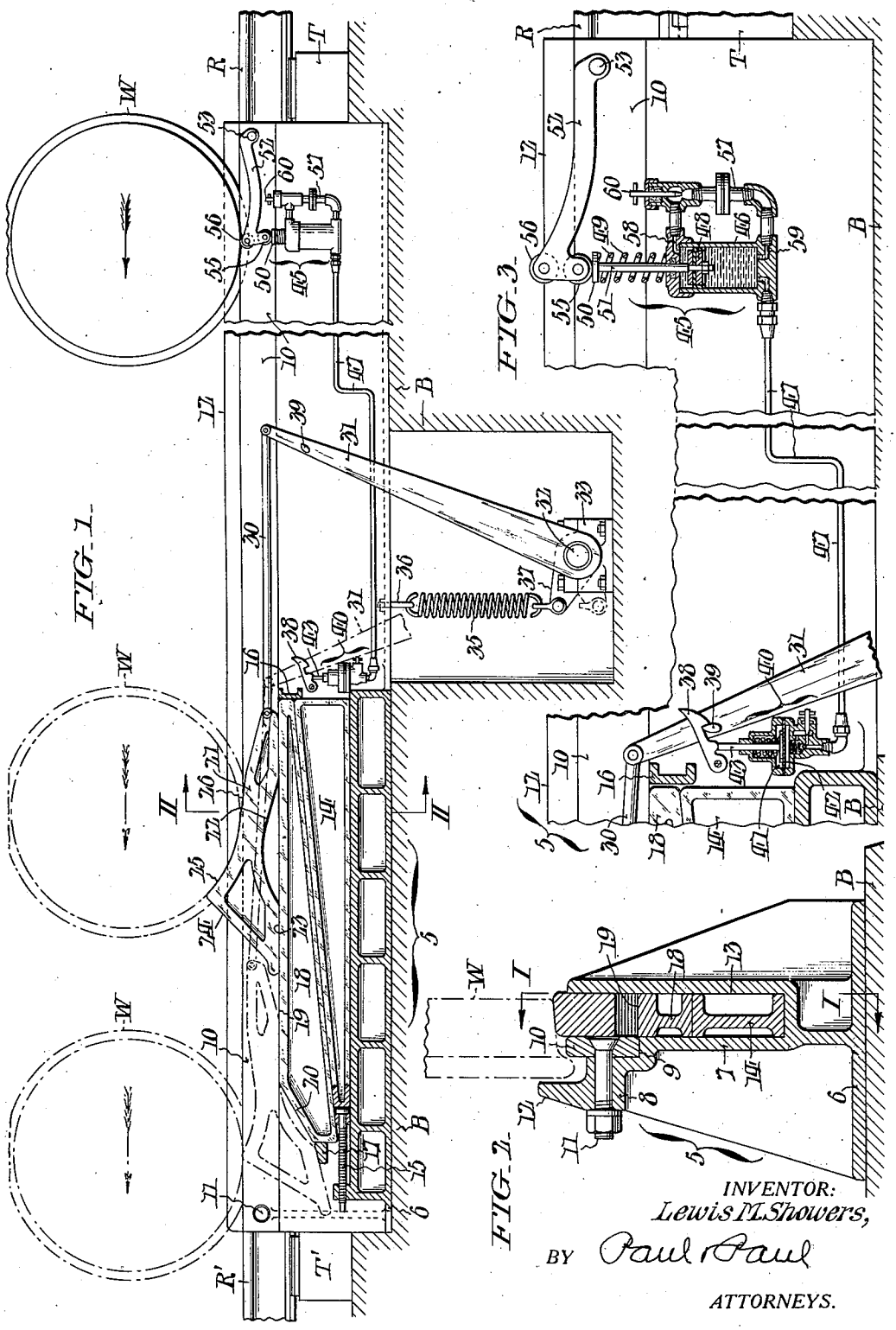

FIG. 1.

FIG. 3.

FIG. 2.

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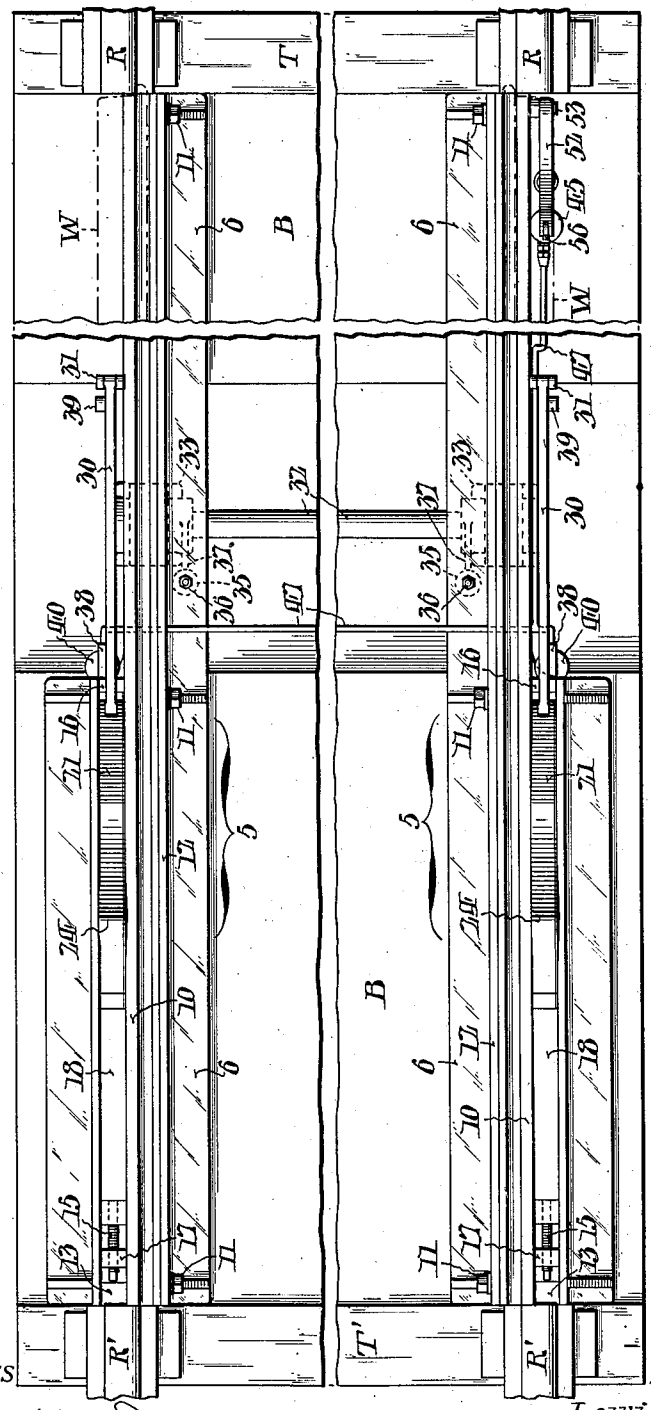

FIG. 4.

WITNESSES

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RAILWAY CAR RETARDING MECHANISM

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10 Claims. (Cl. 104—259)

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This invention relates to mechanism useful, for example in hump yards, to reduce the speed of railway cars incident to making up trains or to distributing them in the yards.

The chief aim of my invention is to provide mechanism of the kind referred to which is entirely automatic in its operation; which is simple and rugged in construction and proof against easy derangement; which can be set to function only when predetermined speeds of car travel are exceeded; and which can be readily adjusted as may be required from time to time to compensate for wear of its parts.

Other objects and attendant advantages will appear from the following detailed description of the attached drawings, wherein

Fig. 1 is a view in longitudinal section of one of two duplicate units of a railway car retarding mechanism conveniently embodying my invention, taken as indicated by the angled arrows I—I in Fig. 2.

Fig. 2 is a cross section taken as indicated by the angled arrows II—II in Fig. 1.

Fig. 3 is a fragmentary longitudinal view similar to Fig. 1 with the movable parts of the unit differently positioned.

Fig. 4 shows the complete mechanism in top plan.

My improved railway car retarding mechanism, it is to be understood, comprises two duplicate units which are individually associated with rails of a car track and arranged in transversely aligned relation. As shown, each such unit includes an elongate bed element 5 which may be in the form of a casting and which is interposed in a gap between contiguous sections R, R' of the track rails and their supporting ties T, T'. At its bottom, the bed element 5 is provided with a relatively wide base flange 6 for firm support on the track bed B, and also with a central longitudinal upright web 7 which is laterally offset at the top as at 8. Fitting into a shoulder recess 9 in the offset 8 is a replaceable bar 10 whereof the top is flush with the heads of the rails R, R', said bar being held in the assembly by a plurality of screw bolts 11. The upward longitudinal flange 12 of the offset 8 serves as a guard rail for the wheels of cars as they run over the bar 10. Throughout approximately half of its length, the bed element 5 is formed with a relatively deep open top slot 13 wherein, at the bottom, is lodged a wedge 14 which is shiftable endwise by means of an adjusting screw 15. Resting on the wedge 14 in the upper part of the slot 13 and constrained against endwise movement therein between crosswise stop

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webs 16 and 17, is a friction element 18 with a horizontal top surface 19 and a cam bevel 20 at its rear end, as considered with respect to the direction of car travel indicated by the arrows in Fig. 1. Arranged to slide on the friction element 18 while guided within the upper part of the slot 13 as hereinafter more fully explained, is a skid 21 with a front bearing surface 22 at the bottom of its front end and a heel 23 at its rear end. As shown, the skid 21 is moreover provided at its rear end with an upward projection 24 with a concaved frontal face 25 which corresponds to the curvature of the car wheels and which is approached by a tangentially mergent upwardly inclined surface at 26. Normally, the skid 21 occupies the retracted position in which it is shown in dash and dot lines in Fig. 1 below the level of the rail top, but when it is to function, it is moved forwardly to the full line position incident to which its rear end is raised through cooperation of the heel 23 with the cam bevel 20 of the friction element 18.

The means which I have devised for operating the skids 21 of the two units includes horizontal links 30 by which the skids are connected to the top ends of lever arms 31 which are secured to a transversely arranged rock shaft 32 with rotative support in bearings 33 underground. Helical springs 35 in tension between fixed anchorages 36 on the base flanges 6 of the bed elements 5 and short horizontal arms 37 on the rock shaft 32, tend to move the levers 31 clockwise from the normal position of Fig. 3 in which they are held through engagement of pivoted hook latches 38 with lateral projections 39 thereon.

For the purpose of actuating the latches 38, I have provided hydraulic trip devices 40 each having, as instanced in Fig. 3, chamber 41 which is spanned by a spring-biased diaphragm 42 arranged to act upon a plunger 43 whereof the upper protruding end engages the corresponding latch from beneath. The operation of the hydraulic trip devices 40 is controlled by a velocity release means 45 at the forward end of the bed element 5. As shown, this hydraulic release means 45 includes a vertically arranged cylinder 46 which is in communication at the bottom, by way of connecting piping 47, with the bottoms of the chambers of the hydraulic trip devices 40. The piston 48 within the cylinder 46 is normally held in the raised position in which it is shown in Fig. 3 by a spring 49 in compression between the top of the cylinder and a collar 50 on the protruding end of the piston rod 51. A horizontally arranged control arm 52 fulcrumed at 53 on the

bed element 5 carries, at its outer end, a pair of rollers 55 and 56, the lower one of which bears on the collar 50 at the upper end of the piston rod 51, and the upper one of which is normally disposed above the level of the rail tops so as to be in the path of the wheels of on-coming cars. A by-pass pipe 57 connects ports 58 and 59 respectively at the top and bottom of the cylinder 46; and interposed in said pipe is a manually regulatable needle valve 60.

Operation

The needle valve 60 is so adjusted that, at a predetermined permissible speed of travel of the cars notwithstanding successive depressions of the arm 52, fluid will surge through the by-pass pipe 57 without effect upon the latch tripping devices 40. Under these conditions the skids 21 will remain depressed. However, when the permissible speed for which the device 45 is set is exceeded, sudden depression of the arm 52 by a car wheel will be attended by corresponding sudden displacement of fluid from the cylinder 46 through the piping 47 to upwardly expand the diaphragms 42 of the trip devices 40, with the result that the plungers 43 of the latter will be lifted to trip the latches 38. The springs 35 thereupon immediately swing the lever arms 31 rightward instantaneously to the position shown in Fig. 1, whereby the skids 21 are drawn forwardly to the active full line positions over the friction elements 18, being at the same time lifted by coaction of their heels 23 with the cam rises 20 on the elements 18, in which position their inclined surfaces 26 are elevated slightly above the rail tops. Thus as the on-coming car wheels W reach the skids 21, they will be elevated as they roll up the inclined surfaces 26 with imposition of their weight upon said skids. Upon encounter of the car wheels with the curved frontal faces 25 of the upward projections 24 on the skids, the latter will be dragged along over the top surfaces of the elements 18. By the attendant frictional action between the skids and the top bearing surfaces of the elements 18, the car will be effectively retarded as will be readily understood. Eventually, the skids 21 will recede downwardly as their heels 23 ride down the bevels 20 of the friction elements 18, and the levers 31 relocked in normal position as their lugs 38 are re-engaged by the latches 38 as shown in Fig. 3. In actual practice, this operation may recur several times as other car wheels overpass the mechanism until the rate of travel of the car, or a train of such cars, is reduced to the permissible speed determined, as above explained, by setting of the needle valve 60 of the hydraulic release means. Wear of the skids 21 and the friction elements 18 can be compensated for from time to time by adjusting the wedges 14 for which purpose the screws 15 are provided.

Having thus described my invention, I claim:

1. Railway car retarding mechanism comprising duplicate units adapted to be associated with the individual rails of a car track in transversely aligned relation, each such unit including a skid arranged along the corresponding track rail and normally disposed below the rail top, and an element providing a friction surface lengthwise of the rail; a control device in advance of the skids adapted to be actuated by an on-coming wheel of the car; and interposed operating means connecting the skids and instrumental, upon actuation of the control device, to shift the skids longitudinally in a direction toward the on-coming car wheel and at the same time raise them above the rail tops into the path of the said wheel, so that they will be dragged over said friction surfaces in the direction of car travel and, by cooperation with the said surfaces, retard the movement of the car.

2. Car retarding mechanism according to claim 1, wherein the skids are provided at their rear end with upward projections having concaved frontal surfaces corresponding to the curvature of the car wheels and approached by tangentially mergent upward inclines.

3. Car retarding mechanism according to claim 1, wherein the skids are provided at the rear ends with heels, and wherein the friction elements are provided at the rear ends with cam bevels for cooperation with the heels of the skids to elevate the latter when they are moved into active position.

4. Car retarding mechanism according to claim 1, wherein each unit further includes a fixed base member with an open-topped longitudinal slot for guidance of the skid.

5. Car retarding mechanism according to claim 1, wherein each unit further includes a fixed base member in which the friction element is constrained against movement along the rail, and means constructed and arranged for adjusting said element to compensate for wear between its friction surface and the skid.

6. Car retarding mechanism according to claim 1, wherein each unit further includes a fixed base member with an open-topped longitudinal slot in which the friction element is constrained against endwise movement and which serves as a guide for the skid; a wedge in the slot beneath the friction element; and adjusting means for shifting the wedge to compensate for wear between the skid and said friction element.

7. Car retarding mechanism according to claim 1, wherein the interposed operating means comprises spring-biased lever arms with connections to the front ends of the respective skids, latches for normally holding the lever arms retracted against spring action with the skids in depressed position, and trip devices operated through connections with the control device.

8. Car retarding mechanism according to claim 1, wherein the control device is provided with means whereby it can be adjusted to function only when the car approaches the mechanism at speeds above a predetermined rate.

9. Car retarding mechanism according to claim 1, wherein the interposed operating means comprises spring-biased lever arms with connections to the front ends of the respective skids, latches for normally holding the lever arms retracted against spring action with the skids in depressed position, and fluid-motivated devices for tripping the latches; and wherein the control device comprises a cylinder with pipe connections to the trip devices, a piston with its rod spring-cushioned and extending through the other end of the cylinder, and a lever arranged in advance of the skid as considered with respect to the direction of car travel, said lever being fulcrumed on a fixed axis with a free end portion bearing against the outer end of the piston rod and normally projecting above the rail top into the path of the car wheel.

10. Car retarding mechanism according to claim 1, wherein the interposed oerating means comprises spring-biased lever arms with connections to the front ends of the skids, latches for normally holding the lever arms retracted against

spring action with the skids in depressed position, and fluid-motivated devices for tripping the latches; and wherein the control device comprises a cylinder with a pipe connection to the trip devices, a piston with its rod spring-cushioned and extending through one end of the cylinder, a lever arranged in advance of the skid as considered with respect to the direction of car travel, said lever being fulcrumed on a fixed axis with a free end portion bearing against the outer end of the piston rod and normally projecting above the rail top into the path of the car wheel, a by-pass between the opposite ends of the cylinder, and an adjustable bleed valve interposed in said by-pass.

LEWIS M. SHOWERS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
874,622	Pipin et al.	Dec. 24, 1907
1,289,886	Osbourne	Dec. 31, 1918
1,349,388	Simpson et al.	Aug. 10, 1920
1,511,813	Ingram	Oct. 14, 1924
1,825,899	Deloison	Oct. 6, 1931

FOREIGN PATENTS

Number	Country	Date
100,946	Germany	Aug. 4, 1897