April 20, 1926.

1,581,097

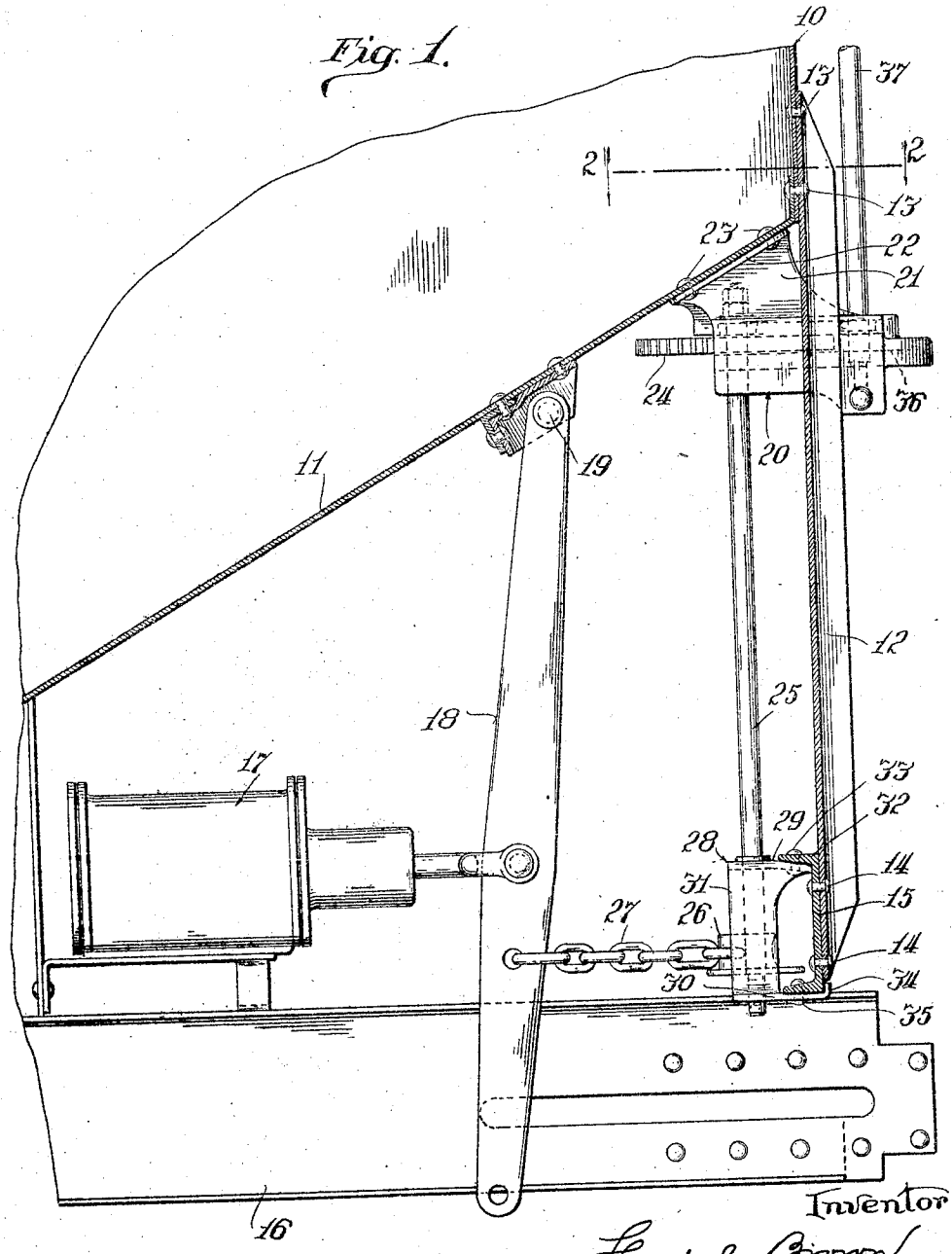
L. J. BROWN

BRAKE GEAR MOUNTING

Filed Dec. 23, 1925

2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

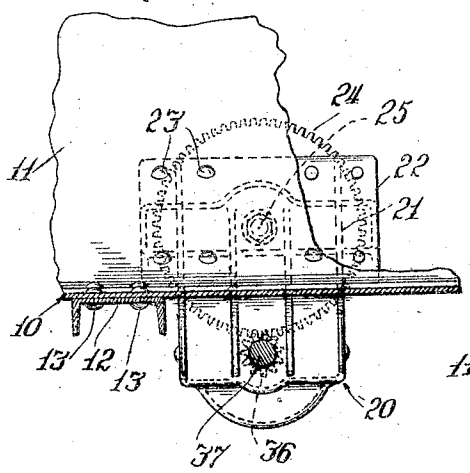


Fig. 3.

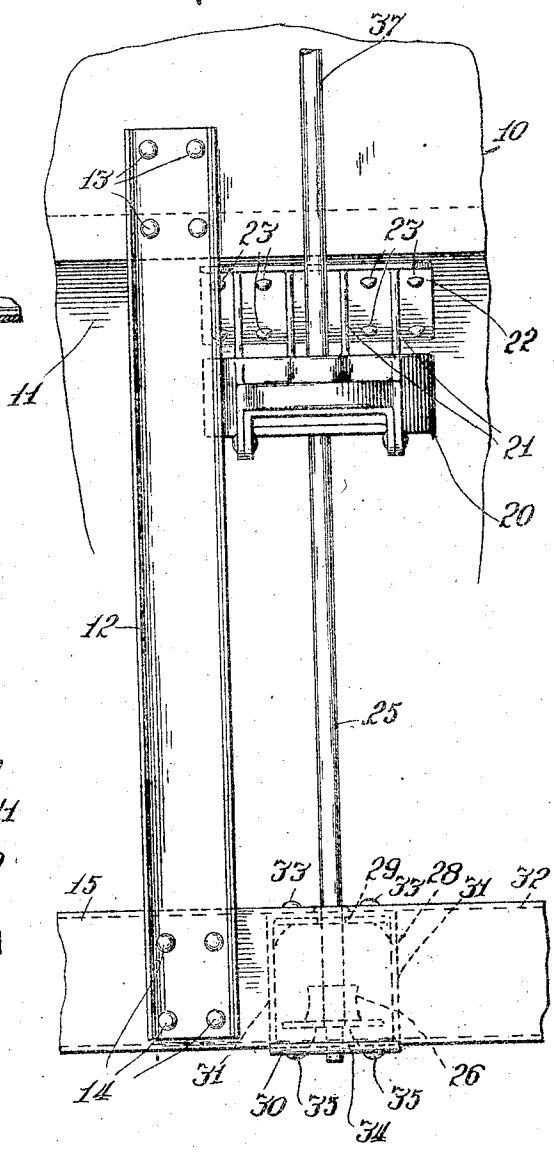
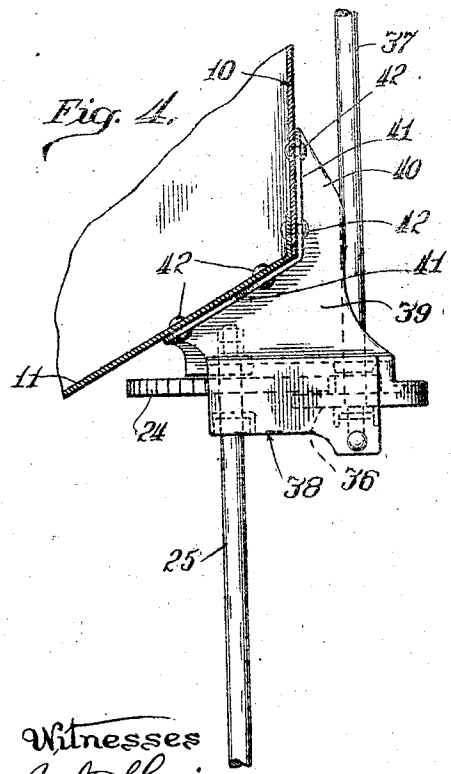


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BRAKE-GEAR MOUNTING.

Application filed December 23, 1925. Serial No. 77,394.

To all whom it may concern:

Be it known that I, LLOYD J. BROWN, a citizen of the United States, and resident of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brake-Gear Mountings, of which the following is a description, reference being had to the accompanying drawings, which form a part of my specification.

My invention relates to the mountings of the brake gear mechanism of manually operated railroad car brakes and more particularly to the application and method of mounting such mechanism for the operation of the hand brakes of hopper cars.

My invention has for its object the mounting of the gear mechanism on hopper cars in such manner that it will not only provide the proper clearance required by the safety appliance rules of the Interstate Commerce Commission, but at the same time overcome the difficulties encountered with the brake operating mechanism mounted in the usual manner heretofore employed, namely on the end sill of the car where interference between the air brake lever and the gearing of the hand operated brake mechanism has resulted and proper operation of the hand brake prevented.

The objects and advantages of my invention will all be more fully comprehended from the following detailed description of the accompanying drawings wherein:

Figure 1 is a sectional elevation of a portion of the end of a hopper car with my improved gear mechanism mounting, portions of brake-staff being broken away.

Figure 2 is a sectional plan taken on the line 2—2 of Figure 1 looking downwardly.

Figure 3 is an end elevation of a portion of the car end with my improved mechanism.

Figure 4 is a side elevation of a portion of the operating mechanism and a section of the car, showing a modification of the mounting.

My invention relates more especially to the mounting of the hand brake gear mechanism on the well known type of hopper car, wherein the ends of the car consist of the vertically disposed wall, a portion whereof is shown at 10 and the inwardly and downwardly sloping bottom a portion being shown at 11. The ends are usually provided with a reenforcing vertically disposed member in the nature of a channel beam 12; the upper end being suitably riveted at 13 to the end wall 10, while the lower end is riveted at 14 to the end sill 15, beneath which is shown the longitudinal center sill 16, see Figure 1. The deck portion produced beneath the slope sheet or bottom 11 of hopper cars, is utilized for the placing of the brake operating air cylinders generally indicated at 17 in Figure 1, and which controls the air operated lever 18 which is pivotally mounted at 19 to the under side of the slope sheet or bottom 11, while the lower end of the lever is connected to the link and chain mechanism usually employed for operating the brakes.

The object of my invention is to so mount the hand operated brake mechanism that the proper clearance at the end of the car as required by the safety appliance rules is provided, while at the same time interference with the proper operation of the air brake lever 18, due to the necessarily aligned position of the hand operated brake mechanism is prevented; the mounting and arrangement being of a type which enables the brake mechanism to be actuated from the top of the car as is usual in cars of the type in question.

In the particular exemplification of the invention as disclosed in the first three figures of the drawings, the gearing of the hand operated mechanism is shown secured to the lower side of the slope sheet 11 at a point adjacent to the vertical end wall 10 of the car. The invention comprises a suitable gear housing 20, the top portion whereof is provided with a plurality of upwardly and rearwardly sloping webs or gusset-like flanges 21, preferably arranged at equi-distances apart transversely of the top of the housing. The various webs or flanges 21, at their upper ends, are disposed laterally or preferably connected by means of the integral plate portion 22 having a slope similar to that of the slope-sheet 11 of the car bottom so as to extend parallel and flush therewith; the plate portion 22 being riveted as shown at 23 or otherwise firmly secured to the slope sheet 11 of the car. The gearing of the hand operated mechanism may be of any suitable type which may provide a quick

take-up of slack in the brake operating chain while also successively providing a suitable multiplication of power for the proper operation of the brakes; a portion of the driven element or gearing being shown at 24 (Figure 1) which is secured to the upper end of a shaft or brake staff section 25, which at its lower end is preferably provided with a suitable chain winding element or drum at 26 to receive and wind up the chain 27 which is attached to the air brake lever 18.

The lower end of the brake staff section 25 is journaled in a skeleton member or frame 28 having a top portion 29 and a bottom portion 30 connected by or preferably formed integral with the side portions 31 to provide a suitable mounting and open-sided housing for the drum 26 or the chain 27 when the latter is wound up during brake application. The top portion 29 and the bottom portion 30 are each provided with aligned openings in which the brake staff section 25 is journaled. The top and bottom portions of the member 28 are both extended outwardly toward the end of the car so as to permit said portions to be suitably connected to the end sill 15 on the inner side thereof, thus permitting the brake staff section 25 to be vertically disposed and the axis of the chain drum 26 aligned with the axis of the driven gear 24 of the gearing. The extended top portion 29 of the bracket, in the particular exemplification, is formed to extend beneath and flush with the upper flange 32 of the end sill 15, and is firmly secured thereto by means of rivets as shown at 33; while the bottom portion 30 is shown extended beneath and flush with the lower flange of the end sill; the immediate outer end of the extended bottom preferably being upturned or flanged as at 34 to lap the outer side of the end sill 15 and thereby provide additional anchorage for the housing or bracket 28 adapted to resist the pulling strains to which it is subjected during the application of the brake mechanism and which are thus transmitted to the car underframe. The bottom portion 30 is preferably riveted at 35 to the lower flange of the end sill 15. The flange or upstanding portion 34 on the bottom of the housing is provided where the greatest pulling strains are encountered; the flange together with the rivets being sufficient to resist the strains resulting during operation of the hand brakes.

As the brake staff, which receives the hand wheel (not shown) must be located to the outside of the car end wall 10, a portion of the gear housing 20 is disposed beyond the end of the car without, however, extending beyond the vertical plane of the striking block or castings (not shown) of the car and therefore in keeping with the safety appliance rules. This forward end of the gear housing 20 is provided with the drive gearing outlined in dotted lines at 36 and the top is apertured to receive the brake staff section 37, to the upper end whereof the usual hand wheel or hand lever is secured for operation of the hand brake mechanism.

In Figure 4, I show a modified form and method of mounting the gear housing which may be of the same general construction as the gear housing 20 shown in Figure 1. In this construction the top of the housing 38 is provided with the somewhat rearwardly sloping webs or flanges 39, of suitable number arranged in spaced relation transversely of the housing, like in Figure 1; the webs or flanges 39, like the webs or flanges 21, being preferably formed integral with the gear housing to provide a rigid unitary structure which may therefore be readily assembled and put into place. The webs or flanges 39 in the construction shown in Figure 4 at what may be termed the outer or forward side of the housing, are extended upwardly beyond the plane of the slope sheet 11 of the car and formed to extend parallel, as shown at 40, with the vertically disposed end wall 10. The webs or flanges 39 and their extended portions 40, like in the construction shown in Figure 1 at their tops, are united by a plate or preferably formed integral with a transversely disposed web portion 41. The vertical webs or flanges and the plate portion are made to conform with the obtuse angle described at the juncture of the end wall 10 and the slope sheet or bottom 11 to permit the plate portion 41 to extend flush with the end wall portion 10 as well as with the slope sheet 11 and to be firmly secured thereto as by means of the rivets 42.

With this construction, it is apparent that a very firm and rigid mounting is provided while at the same time the gear housing is maintained rearward of the vertical plane of the striking block or casting at the ends of the car center sills and thus complying with the safety appliance rules. With the construction shown in Figure 4, like that shown in Figure 1, the brake staff comprises the two sections 25 and 37; the former extending from the driven gear 24 to the bracket which may be secured to the end sill as shown in Figure 1, where the staff section is generally provided with a chain drum as shown in Figure 1; while the upper staff section 37 is disposed forward of and parallel with the end wall of the car and extends to the top of the car where it is provided with the usual hand wheel or lever (not shown).

In hopper cars of the type in question where the hand brake mechanism is operated from the top of the car, it has been usual to mount the gear mechanism and housing adjacent to or on the end sill of the car, with the gearing operated by means of a continu-

ous single brake staff extending from the end sill toward the top of the car. In constructions of that type considerable difficulty has been encountered because the gear housing extends too far forward of the end sill, while any attempt to overcome this trouble by moving the gear housing rearward on the end sill, positions the mechanism where the gearing interferes with a proper operation of the air brake lever 18. With my improved construction and method of mounting, it is apparent that these difficulties have been entirely eliminated, as the housing will not extend beyond the point required by the safety appliance rules and the large driven gear is located where it can in no way interfere with the operation of the air brake lever 18. Furthermore, by employing the comparatively short staff sections, they are better able to withstand the torsional strains than is the case with a continuous long brake staff reaching from the top of the car to gearing located on or adjacent to the end sill.

For the sake of lightness, the upwardly disposed portions of the housings disclosed in Figures 1 and 4 are shown in the form of gusset-like flanges or webs and the upper ends of these flanges are preferably united by a continuous transverse web or plate which enable the housing to be more readily attached to the end of the hopper car.

I have shown what I believe to be the simplest and best embodiments of my invention; having described them in terms employed merely as terms of description and not as terms of limitation, as structural modifications are possible and may be made without, however, departing from the spirit of my invention.

What I claim is:—

1. Brake operating mechanism for a railway hopper car, comprising a gear housing the top whereof is provided with gusset-like flanges disposed upwardly in an inclining manner with the tops of said flanges extending transversely and conforming with the inclination of the slope-sheet and secured thereto, a bracket arranged on the rear side of the car end sill and secured thereto, and a staff section journaled at its upper end in the gear housing with the driven portion of the gearing secured thereto, while the lower end of said staff section is journaled in said bracket.

2. Brake operating mechanism for a railway hopper car, comprising a gear housing, the top whereof is provided with upwardly extending flanges, the upper ends whereof are adapted to extend parallel with the vertical end wall and bottom slope-sheet of the car and secured thereto, a bracket secured to the rear side of the car end sill, and a staff section journaled at its ends in said housing and in said bracket, with the upper end operatively connected with the gearing while the lower end of the staff section controls the operating chain of the brake mechanism.

3. Brake operating mechanism for a railway hopper car, comprising a gear housing, an upwardly disposed bracket forming portion, the top whereof is adapted to extend flush with and secured to the slope-sheet of the hopper car, a sectional brake staff, one section being disposed forward of the vertical end wall and adapted to rotate the driving portion of the gearing while the other section extends downwardly from the driven gearing and rearward of the car end sill, and a bracket disposed on the rear side of the end sill and secured thereto, with the lower end of the last mentioned staff section journaled therein.

4. Brake operating mechanism for a railway hopper car, comprising a gear housing provided with a rearwardly sloping top conforming with the inclination of the slope-sheet of the hopper car and secured to the under face of the slope-sheet, a bracket provided with top and bottom extensions adapted to engage the top and bottom flanges of the car end sill and secured thereto, and a sectional brake-staff, one section being journaled at its lower end in said gear housing and disposed parallel with the car end wall while the other section has its upper end journaled in said housing and its lower end journaled in said bracket.

5. In combination with a hopper car, a gear housing secured at the juncture of the end wall and slope-sheet of the car, a bracket secured at the rear side of the car end sill, and a sectional brake-staff, one section being journaled in the gear housing and in said bracket, while the other section is journaled at its lower end in the gear housing.

6. In combination with a hopper car, a gear housing secured to the slope-sheet of the car with the drive gear containing portion of the housing disposed slightly forward of the end wall, a bracket disposed parallel with the rear side of the car end sill and secured thereto, and a sectional brake staff, one section being journaled at its upper end in the portion of the housing beneath the slope-sheet with the lower end journaled in said bracket, while the other section is journaled at its lower end in the forwardly disposed portion of the gear housing parallel with the end wall.

7. In brake operating mechanism, a gear housing provided with a top portion the upper surface whereof is formed to conform with the juncture between the end wall and slope-sheet of a hopper car and is secured thereto.

8. In brake operating mechanism, a bracket having extensions adapted to have

lapping relation with the top and bottom of a car end sill and secured thereto on the inner side thereof.

9. In brake operating mechanism for a hopper car, a gear housing located beneath the juncture of the slope-sheet and the end wall of the car and provided with attaching means conforming with the inclination of the slope-sheet and adapted to be secured thereto so as to position the drive element containing portion of the housing forward of the vertical plane of the end wall.

10. In brake operating mechanism for a hopper car, a brake-staff receiving bracket disposed adjacent to the inner side of the car end sill, said bracket being provided with extensions adapted to have lapping engagement with the top and bottom portions and outer face of the car end sill and be secured thereto.

11. In combination with the end wall and slope-sheet of a hopper car, a gear housing, the top whereof is provided with an attaching portion having vertically disposed and rearwardly declining surfaces to fit the juncture of the end wall and the slope-sheet of the car and be secured thereto.

12. In combination with a hopper car, a gear housing secured adjacent to the juncture of the end wall and slope-sheet of the car, an open-sided housing secured to the end sill of the car underframe, and a sectional brake-staff, one section being journalled at its lower end in the gear housing while the other section is journaled at top in the gear housing and at bottom in said open-sided housing.

13. In combination with a hopper car, a gear housing provided with an attaching portion conforming with the wall of the car at its point of attachment, an open sided bracket or housing secured to the end sill of the car, a brake-staff journaled in the gear housing and controlling the drive gear, and a second brake-staff extending from the driven gear in the first mentioned housing and into the bracket or housing.

14. In combination with a hopper car, a gear housing provided with upwardly disposed extensions secured to the car wall, drive and driven gears mounted in said housing, a brake-staff journaled at its lower end in said housing and controlling the drive gear, a drum containing housing secured to the end sill of the car underframe and having an opening at its inner side, and a staff journaled at its upper end in the first mentioned housing in operative relation with the driven gear while its lower end is journaled in the second housing and controls the drum in said housing.

15. In combination with a hopper car, a gear housing secured to the slope-sheet of the car so as to have the drive gear disposed forwardly of the end wall, a bracket secured to the car end sill, and a sectional brake staff, one section being journaled at its lower end in said housing and controlling the drive gear, while the other section is journaled at its upper end in the housing and operatively connected with the driven gear in said housing, with the lower end of said section journaled in said bracket.

16. In combination with a hopper car, a gear housing, suspending members secured to the gear housing and to the slope-sheet of the car, and driven mechanism for controlling the chain of the brake mechanism.

LLOYD J. BROWN.