June 3, 1930. L. A. HOERR 1,761,209

HAND BRAKE

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Fig.1.

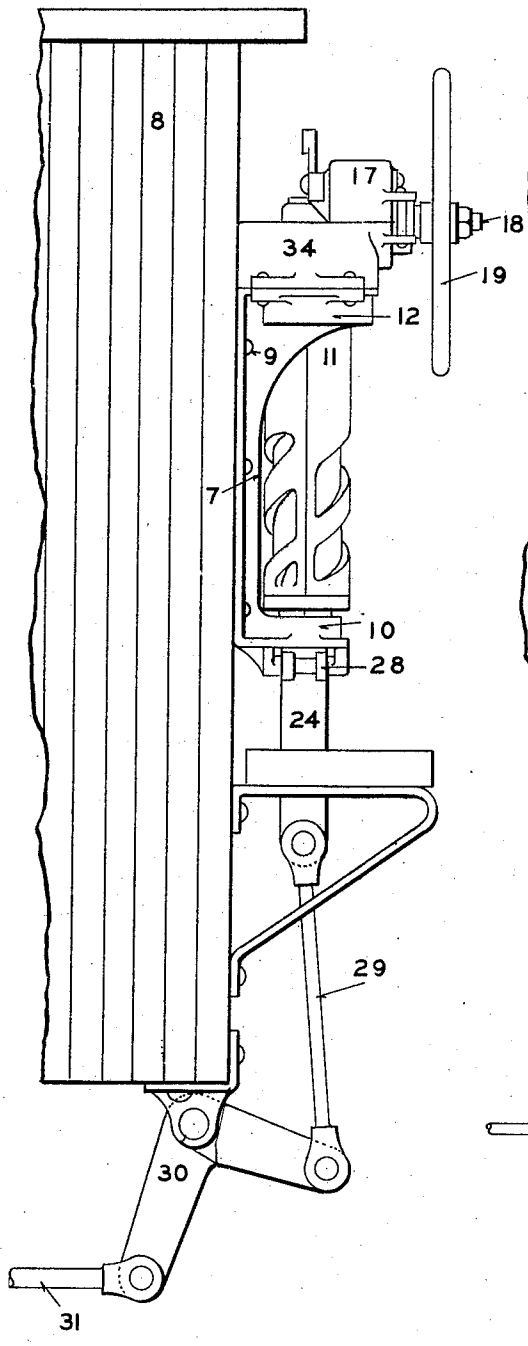
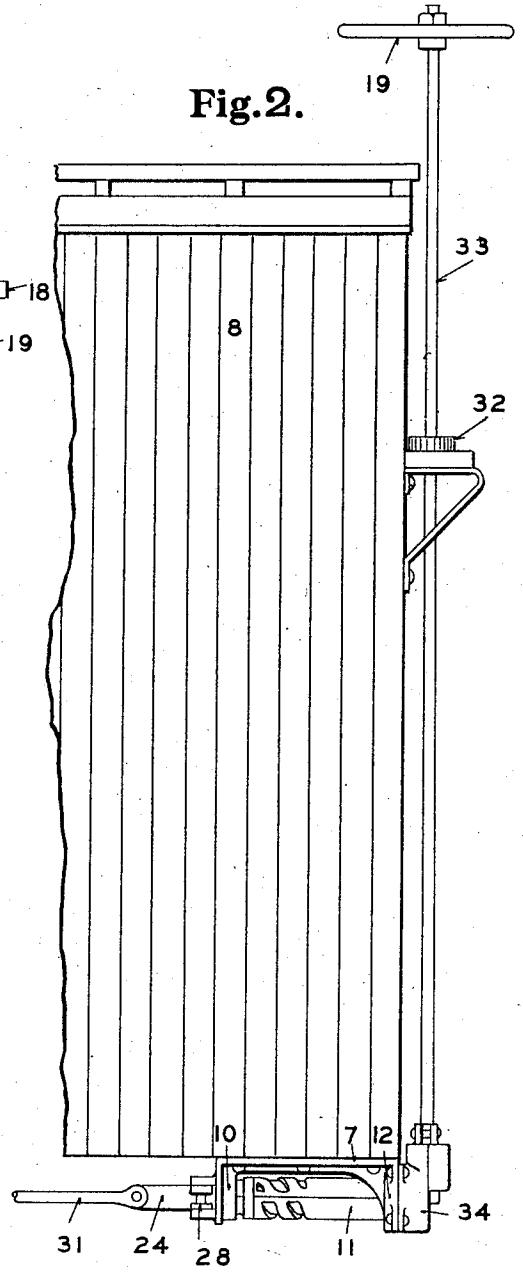


Fig.2.



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Fig.3.

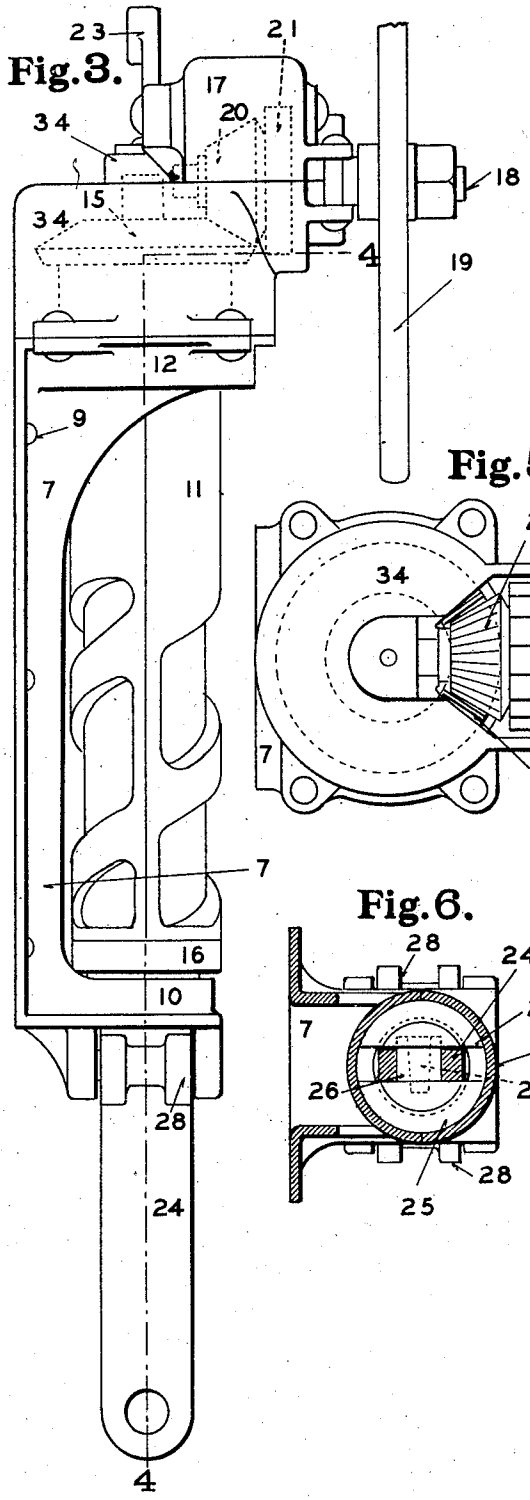
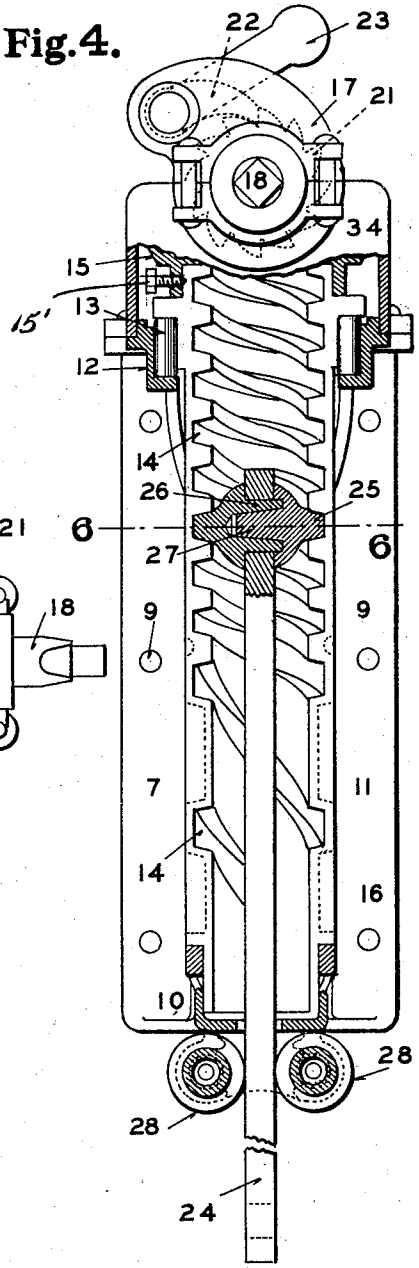


Fig.5.

Fig.6.

Fig.4.



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UNITED STATES PATENT OFFICE

LOUIS A. HOERR, OF ST. LOUIS, MISSOURI, ASSIGNOR TO RAILWAY DEVICES COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI

HAND BRAKE

Application filed November 24, 1928. Serial No. 321,562.

My invention relates to a hand brake for railway cars and particularly to a brake of the screw type in which the power is applied to the brake shoes by the movement of a nut travelling along a threaded member, one of said parts, preferably the latter, being rotated by a hand wheel.

The principal object of my invention is to provide a brake in which the pitch of the thread on the threaded member will vary so that a relatively rapid travel of the moving parts will be secured during the first part of the movement when the slack is being taken up and a relatively slow travel of said parts during the latter part of the movement when the brake shoes are being applied to the wheels.

Another object of my invention is to so construct the device that the working parts will be completely enclosed, thus protecting them from the weather and from the access of dirt and grit.

Still another object of my invention relates to the mechanical structure of the device whereby it is simple and rugged in construction and whereby the parts are both easily manufactured and readily assembled.

In the accompanying drawings, in which two forms of brake mechanism made in accordance with my invention are illustrated, Figure 1 is a side elevation of a portion of a railway car to the end of which is applied one form of my brake; Figure 2 is a view similar to Figure 1 but showing a slight modification of the brake adapting it to application to the bottom of the car; Figure 3 is an enlarged side view of brake mechanism shown in Figure 1; Figure 4 is a section taken on the line 4—4 of Figure 3; Figure 5 is a top plan view of the parts shown in Figure 3, the upper part of the gear casing being removed; and Figure 6 is a section taken on the line 6—6 of Figure 4.

Referring first to the form of brake shown in Figures 1 and 3 to 6, a bracket 7 is secured to the end of the car 8 by bolts or rivets 9. Formed in the lower end of the bracket is a pocket 10 adapted to receive the lower end of a tubular casting 11 forming the threaded member of the brake. The upper end of this member is seated in a pocket 12 in the bracket. A roller bearing 13 is preferably interposed between the member and the pocket 12 to reduce friction when the brake is applied. The casting 11 is formed in two parts held together by the pockets 10 and 12 and is provided with an internal thread 14. This thread, as shown in Figure 4, has a steep pitch at the lower end of the casting but is reduced in pitch at the upper end to produce relatively slower travel and consequently increased power at the end of the brake applying movement.

Rigidly secured to the upper end of the casting 11, by means of a set screw 15′ or otherwise is a bevel gear wheel 15. This wheel preferably has a recess in its lower face to receive the upper end of the casting so that it, together with an annular band 16 on the lower end, will hold the two parts of the casing in proper relation while the parts are being assembled. Bolted or riveted to the upper end of the bracket is a cap or gear casing which, for convenience in manufacture and assembly, is formed of a lower part 34 and an upper part 17. This cap carries a short shaft 18 on which is mounted the hand wheel 19 and a bevel gear wheel 20 meshing with the bevel gear wheel 15. It also has mounted upon it a ratchet wheel 21 engaged by a pawl 22 carried by the upper part 17 of the gear casing and thrown into and out of operation by a hand lever 23.

Engaging with the internal thread 14 is a nut carried on the upper end of a flat bar 24. Owing to the fact that the pitch of the thread varies this nut is necessarily of peculiar construction. It consists of two substantially semi-circular parts 25, one of which is provided with a boss 26 extending through a hole in the bar, and the other with a stud 27 entering a central opening in the boss. This construction enables the two parts of the nut to have relative pivotal movement and thus to compensate for the variation in the pitch of the thread in which they travel. The bar 24 passes between a pair of rollers 28 journaled below the pocket 10 which rollers reduce friction and also prevent the rotation of the bar.

The lower end of the bar 24 is pivoted to

one end of a link 29, the other end of which is pivoted to one arm of a bell-crank lever 30, the other arm of which is pivoted to a brake rod 31 connected with the usual brake lever mechanism (not shown).

In Figure 2 I have shown a slight modification in which the bracket is secured to the bottom of the car instead of the end. In this modification the bell-crank lever and connecting link are dispensed with, the bar 24 being directly connected with the brake rod 31. Also, the ratchet wheel 21 and pawl 22 are unnecessary as their function is performed by the usual foot pawl device 32 on the brake shaft 33 which in this construction replaces the shaft 18.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a device of the class described, the combination with a threaded member provided with a thread varying pitch, of a relatively movable member having a nut comprising two parts having relative pivotal movement, and a brake connection actuated by one of said members.

2. In a device of the class described, the combination with a rotary member secured to a car and provided with a thread of varying pitch, of a longitudinally movable member having a nut comprising two parts having relative pivotal movement, and a brake connection actuated by said longitudinally movable member.

3. In a device of the class described, the combination with a rotary tubular member provided with an internal thread of varying pitch, a bar provided with a nut engaging said thread, and a brake connection actuated by said bar.

4. In a device of the class described, the combination with a rotary tubular member provided with an internal thread of varying pitch, a bar provided with a nut comprising two parts having relative pivotal movement, and a brake connection actuated by said bar.

5. In a device of the class described, the combination with a bracket adapted to be secured to a car, of a rotary tubular member carried by said bracket and provided with an internal thread, a bar provided with a nut engaging said thread, rollers carried by said bracket and contacting with said bar, and a brake connection actuated by said bar.

6. In a device of the class described, the combination with a bracket adapted to be secured to a car, of a rotary tubular member carried by said bracket and provided with an internal thread of varying pitch, a bar provided with a nut comprising two parts having relative pivotal movement and engaging said thread, rollers carried by said bracket and contacting with said bar, and a brake connection actuated by said bar.

7. In a device of the class described, the combination with a tubular member formed of two longitudinally separable parts and having an internal thread of varying pitch, of means for holding said parts together, of a relatively movable member provided with a nut comprising two parts having relative pivotal movement, and a brake connection actuated by one of said members.

8. In a device of the class described, the combination with a rotary tubular member formed of two longitudinally separable parts having an internal thread of varying pitch, means for holding said parts together, means for securing said member to a car, a bar provided with a nut comprising two parts having relative rotary movement, and a brake connection actuated by said bar.

9. In a device of the class described, the combination with a bracket adapted to be secured to a car and provided with a pair of pockets, of a rotary tubular member formed of two longitudinally separable parts and having an internal thread, said member being seated in and having its parts held together by said pockets, a bar provided with a nut engaging said thread, and a brake connection actuated by said bar.

10. In a device of the class described, the combination with a bracket provided with a pair of pockets and adapted to be secured to a car, of a rotary tubular member formed of two longitudinally separable parts and provided with an internal thread of varying pitch, said member being seated in and having its parts held together by said pockets, an anti-friction bearing interposed between said member and one of said pockets, a bar provided with a nut comprising two parts having relative pivotal movement and engaging said thread, rollers carried by said bracket and contacting with said bar, a brake connection actuated by said bar, a gear casing carried by said bracket, and gearing in said casing for rotating said tubular member.

In testimony whereof, I hereunto affix my signature, this 22nd day of November, 1928.

LOUIS A. HOERR.