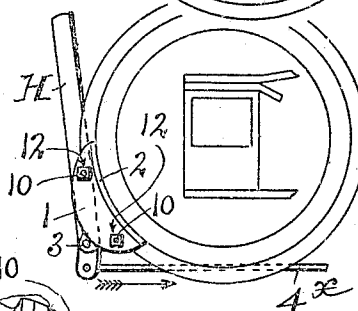
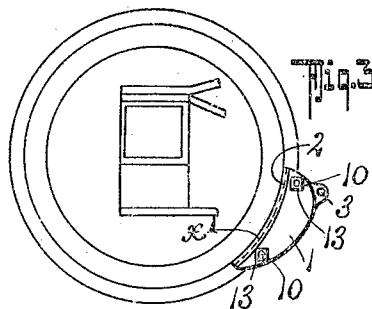
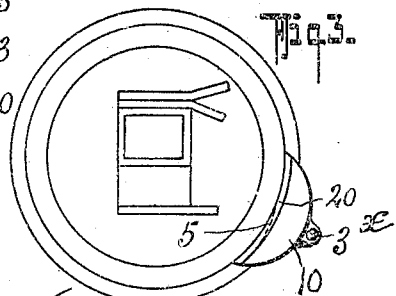
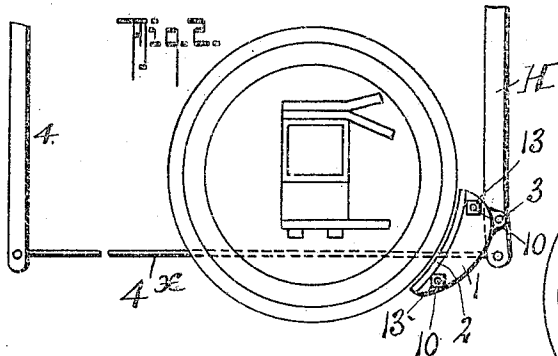
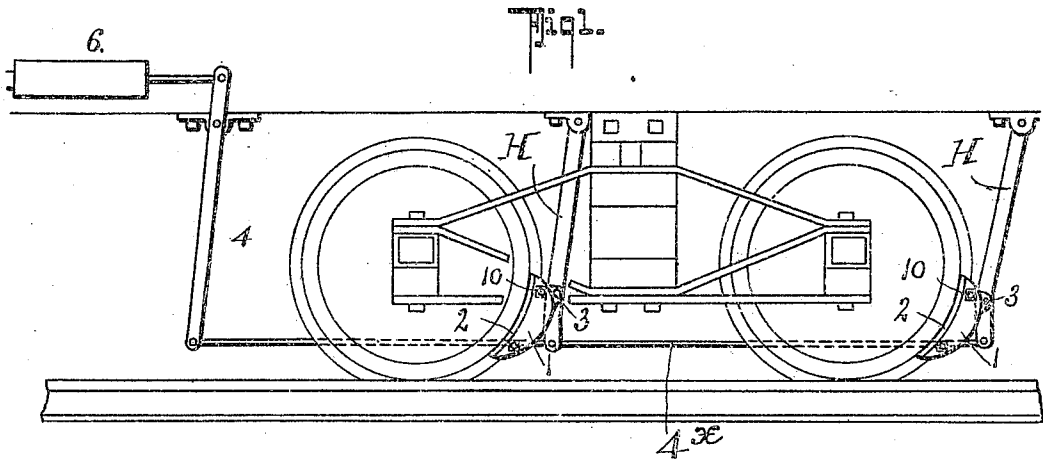


B. F. HYSELL & R. M. CAVEDO,
BRAKE HEAD AND SHOE,
APPLICATION FILED OCT. 7, 1909.

959,542.

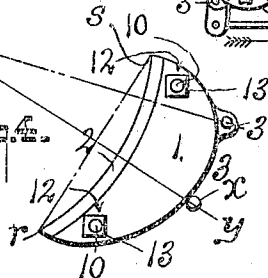
Patented May 31, 1910.



WITNESSES:

Hayward Woodard
Charles H. Wagner.

Fig. 4.



INVENTORS
R. M. Cavedo &
B. F. Hysell

BY
Fred C. Dietrich
ATTORNEYS

UNITED STATES PATENT OFFICE.

BENJAMIN F. HYSELL AND ROBERT M. CAVEDO, OF MIDDLEPORT, OHIO.

BRAKE HEAD AND SHOE.

959,542.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed October 7, 1909. Serial No. 521,523.

To all whom it may concern:

Be it known that we, BENJAMIN F. HYSELL and ROBERT M. CAVEDO, residing at Middleport, in the county of Meigs and State of Ohio, have invented certain new and useful Improvements in Brake Heads and Shoes, of which the following is a specification.

This invention is in the nature of an improved construction of brake head and shoe for railway trucks, and other vehicles, and it has for its object to provide a shoe and head of the character stated, especially designed for effecting an even wear throughout the length of the shoe to reduce the frequency with which the common type of brake shoes now in general use have to be renewed.

With other objects in view that will hereinafter appear, our invention consists in certain details of construction and peculiar combination of parts, all of which will be hereinafter fully described, specifically pointed out in the claims and illustrated in the accompanying drawing, in which:

Figure 1, is a side elevation of a car truck frame with our invention attached, the shoes being shown in their applied or braking position. Fig. 2, is a similar view of one of the truck wheels and the brake devices, the shoe being shown in the released position. Figs. 3 and 3^a are diagrams that illustrate respectively the relative position of the common type of brake shoes with respect to the wheel, and our form of shoe, after having been worn. Fig. 4, is a diagram of the shoe hereinafter again referred to. Fig. 5, is a side elevation that shows the brake shoe reversibly arranged to the showing in Fig. 2, to engage the front edge of the wheel, as hereinafter more fully explained.

That the advantages of our invention may be readily understood, it should be stated that in the present, general method of construction of brake heads, it is common practice to connect the brake applying lever to the head in a position midway its ends so as to be intersected by a line that bisects and is normal to the chord of the arc of curvature of the wheel engaging face of the brake shoe. By this practice no adequate provision is made for distributing the wear on the shoe. Theoretically if the engine or car ran as many miles backward as it runs forward the wear on the shoe would be compensated for, but as it is usual to run en-

gines and cars in a given direction more miles than in an opposite direction, such even distribution of wear does not take place with the result that in practice one part of the shoe (usually the lower end) is worn away quicker than the remaining part of the shoe. Whether the wear is greater on that part of the shoe below the connection of the head with the hanger or above its point of connection will depend upon the location of the shoe with respect to the direction of turning of the wheel against which it engages. When the construction shown in Fig. 3 is used and the wheel is normally running in a counterclockwise direction in such figure the greatest wear will be on the lower part of the shoe as that is the place of greatest pressure, whereas were the wheel of Fig. 3 rotating in a clockwise direction the greatest wear would be on the upper part of the shoe for the same reason. Thus to overcome this unequal wear on the shoe we have devised our improved brake head and manner of applying the same to the wheel.

In order to overcome the unequal wearing pressure on the curved surface of the shoe we move the point of connection between the head and the brake hanger beam to one side or the other of the imaginary line which bisects the chord of the arc of curvature and is normal thereto so that if a line be drawn from the center of curvature of the wheel to bisect the chord of the arc of curvature of the shoe as shown in Fig. 4, such line $x-y$ will be normal to the chord $r-s$. Under the old practice the point of connection between the head 1 and the hanger H would be located at the point 3^x, see Figs. 3 and 4, thereby resulting in the uneven wear on the shoe. In our construction we move the point of connection between the head 1 and the hanger H to one side or the other of the line $x-y$ a distance sufficient that when a given force is applied to the brake head the force of application of the brake shoe to the wheel will be evenly distributed through the brake surface thereof to counterbalance the tendency of unequal wear. Thus it will be observed that a line drawn between the center of the wheel (x) in Fig. 4 to the point 3 in Fig. 4 will make an angle other than 90° with the chord $r-s$ and the angle $y-x-3$ will depend upon the amount of pressure the system is designed to operate under in applying the brakes and also upon the speed of rotation of the wheels, the ob-

ject being to so proportion the angle that the tendency to greater wear at one end of the beam will be compensated by applying a correspondingly greater pressure at the other end of the head and thereby reduce the pressure at the first end of the head.

In the drawings, 1 designates the brake head, 2 the shoe, 3 the point of connection between the shoe and the brake applying lever hanger H. The hanger H, as shown in the drawing, also performs the function of or acts as a brake applying lever.

4 is the pull lever that is actuated from the brake cylinder 6, in any approved manner and is connected by a rod 4^x with the brake applying lever hanger H.

The brake shoe 2 in our construction is preferably attached to the head 1 by the bolts 10—10 that pass at 12—12 through the brake head 1 and the inner projecting part of the shoe 2, (not shown), the bolts being secured by nuts 13, as shown.

The main purpose of our invention, as hereinbefore indicated, is to so hold the present type of brake shoe to the wheel that the wear on the shoe is evenly distributed, as shown by the dotted line *x'* in Fig. 3^a, and to so coöperatively join the brake head 1 with the lever beam 4, that the shoe will be held with its rubbing face true and concentric with the wheel rim when the brake is applied, so that the force of action resulting during the application of the brake to the wheel will be such as to counteract the re-acting pressure due to the rotation of the wheel, sufficiently to cause the active braking pressure along the surface of contact to be evenly distributed at all points.

Another and important advantage in the practical application of our invention is that the brake head may be readily reversed so that it can be used either behind or in front of the wheel, as indicated in Figs. 1 and 5 of the drawings, but when used in front of the wheel the hanger and shoe are so held relatively to the wheel that the pull on the shoe caused by the rod 4^x is in a line below the center of the shoe instead of above it, as in the case when the shoe is behind the wheel as indicated in Figs. 1, 2, and 3 of the drawings.

By joining the shoe to the head as described, it can also be readily reversed in the head if found desirable.

From the foregoing description taken in connection with the accompanying drawings, it is thought the complete construction, operation and advantages of my invention will be readily understood by those skilled in the art to which the invention appertains.

What we claim is:

1. As an improvement in brakes, the combination with the car wheel, a brake head, a pivoted hanger, and means for connecting said hanger to said brake head, a removable shoe carried by said brake head, means for moving said hanger to bodily oscillate said shoe through an arc having as its center of curvature the pivotal point of said hanger, said connection between said brake head and said hanger being located at a point outside of a line drawn normal to and bisecting the chord of the arc of curvature of the face of said shoe.

2. As an improvement in brakes, the combination with a car wheel, a pivoted hanger, a brake head connected thereto to be swung in an arc having as its center of curvature the pivot of said hanger, means for operating said hanger to swing said brake head, a brake shoe carried by said brake head, the point of connection between said brake head and said hanger being such that when said brake shoe is in contact with the wheel rim a line drawn from the center of said wheel to bisect the chord of the arc of curvature of the face of the brake shoe will not pass through the point of connection between such brake head and said hanger and that a line drawn between said point of connection of said brake head with said hanger and the center of said wheel will make an angle with said first mentioned line dependent upon the wearing force caused by the rotation of the wheel that is to be counteracted.

3. An improvement in brakes comprising the combination with the pivoted brake applying member, of a brake head, a removable shoe carried by said brake head and a connection between said brake head and said brake applying member, said connection being located near one end of said head, substantially as shown and described.

BEN. F. HYSELL.
R. M. CAVEDO.

Witnesses:

JOHN B. YOUNG, Jr.,
WM. MICHAEL.