

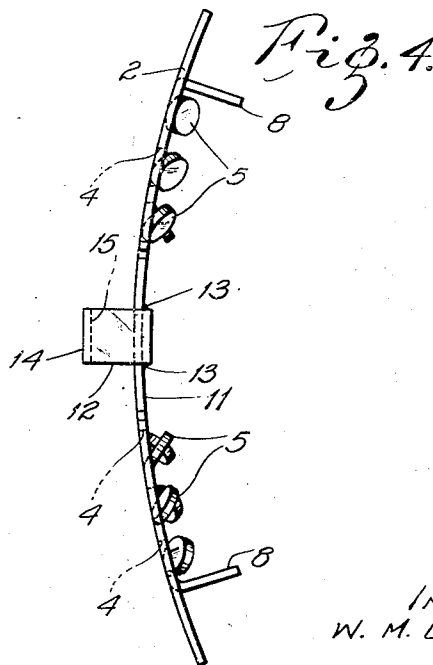
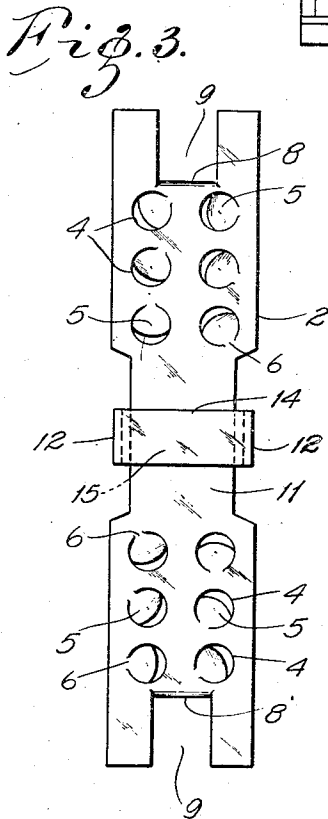
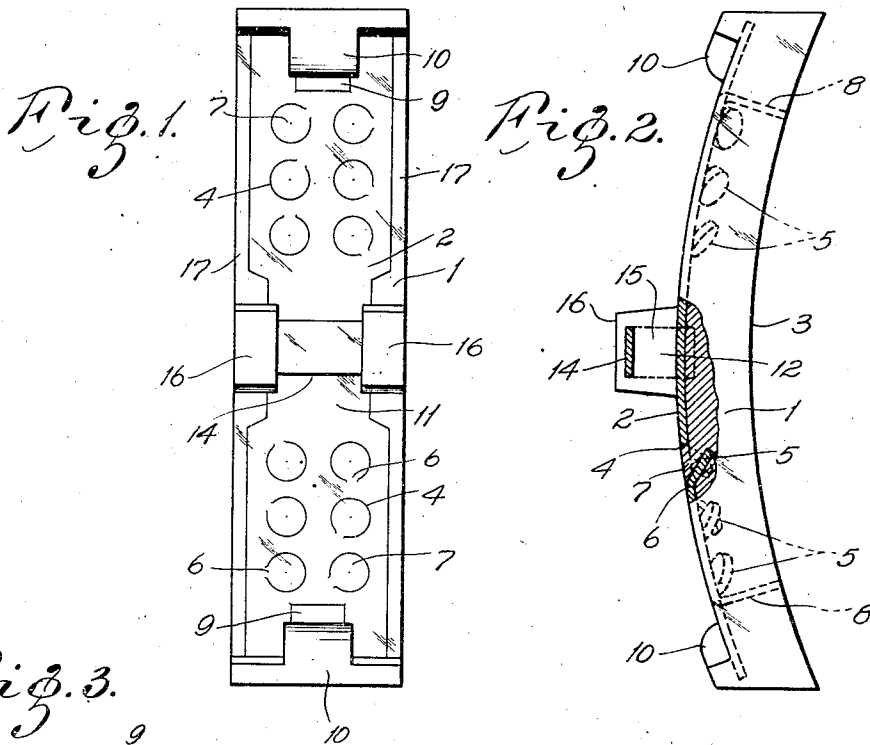
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BRAKE SHOE

Filed April 2, 1928



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UNITED STATES PATENT OFFICE

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BRAKE SHOE

Application filed April 2, 1928. Serial No. 286,520.

This invention relates to improvements in brake shoes, and has particular reference to brake shoes used on railroad vehicles, the main object being to provide a reinforcing back that may be readily incorporated in the brake shoe casting, said back also having means interlocking the back to the casting.

Brake shoes are castings shaped to conform to the tread of the car wheel, and they are secured in operative position by a key engaging the shoe with a brake head on the brake beam of the vehicle. The construction is such that the shoe is bridged between its ends on the head and the key passes through a centrally disposed lug on the shoe to secure the shoe to the head. As the ordinary shoe is worn by friction in service, the casting becomes too weak to endure the strains to which it is subjected, especially in view of the manner in which it is supported, and is easily fractured, and the broken parts displaced. Such broken brake shoes are a serious source of danger, because they fall out of the brake head so that the means for braking the wheel is lost, and the pieces may get under other wheels and cause a derailment. Furthermore, when the broken parts are thus scattered their scrap value is lost.

In the preferred form of my invention a reinforcing back is incorporated in the brake shoe casting along the back thereof, and this back has interlocking means embedded inwardly in the casting and firmly uniting the casting with the back. When reinforced in this way, the casting may be fractured without falling apart, and it may continue in service until it is worn down to the steel back.

It is important that such reinforcing backs be very firmly bonded to the casting by a means that will be effective until the cast iron of the shoe is practically all worn away. In my invention the bonding means firmly interlocks the casting and the back, so that a large portion of the bonding elements may be worn away without destroying the bond or permitting the separation of the casting and the reinforcing member.

It is desirable that such a reinforcing back be properly embedded in the cast iron when making the casting, in order to avoid waste

of metal and to ensure the fullest efficiency of the device. It is desirable, too, that brake shoes constructed according to my invention be manufactured in large quantities at a low expense.

I, therefore, prefer to form the reinforcing back as a unitary structure having integral legs extending forwardly from the back to serve as chaplets when the casting is made. The back is preferably curved to conform to the rear contour of the cast iron shoe in which it is to be embedded, and I further provide a central lug, whereby the shoe is keyed to the brake head, integrally connected to the back. All the parts of the back are integrally assembled before being put in the mold. In such a construction, no cores nor chaplets are needed, and the molder's time is only that required to place the back in the mold.

With the foregoing and other objects in view, the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention. However, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claim hereunto appended.

Fig. 1 is a rear view of a brake shoe embodying my invention.

Fig. 2 is a side view of Fig. 1, a portion thereof being broken away.

Fig. 3 is a rear view of the reinforcing back.

Fig. 4 is a side view of the reinforcing back.

The brake shoe herein shown comprises a shoe casting 1 and a reinforcing member or steel back 2. The front face 3 of the casting is curved to conform to the tread of the wheel. The steel back 2, which defines the rear of the shoe, is likewise curved.

The back 2 has a plurality of apertures 4 formed by striking tongues 5 from the back 2. (Fig. 4.) The tongues 5 are integrally attached to the back by narrow necks of metal as at 6, and the sides of each of these tongues,

adjacent to the neck 6, diverge outwardly for a portion of their length to interlock the tongue with the casting, and then curve towards each other to form a circular outline.

The tongues 5 are inclined in different or multifarious directions, that is to say, they are inclined forwardly from the back, and the axis of the inclination of each tongue is in a different direction from the axis of inclination of the adjacent tongues. (Fig. 4).

Thus not only is the back locked to the casting by the diverging sides of the tongues, but an additional bond is given because the tongues point in different directions, so that the casting cannot slide off the tongues.

The rows of tongues 5 are thus interlocked with the casting 1 and, in addition to this form of interlock, the casting interlocks with the back 2 by means of bonding elements 7, formed integrally with the casting as the cast iron flows under the tongues 5 and into the apertures 4, as shown in Fig. 2.

By this means I not only prevent the separation of the casting from the back, which is a valuable feature in the event of fracture of the casting, but I also minimize the occasion for fracture. This is because the steel back is firmly bonded on one side of the shoe and thereby reinforces the shoe against the bending strain incurred in service. The cast iron portion of the shoe, even when worn very thin, is reinforced against fracture in a simple and effective manner.

Adjacent to each end of the back 2 I provide a forwardly extending leg 8, which, when incorporated in the casting, extends from the back 2 to the face 3 of the shoe, (Fig. 2). This leg is struck up integrally from the back to leave a slot 9 extending inwardly from each end of the back, (Fig. 3). Through each slot 9 and around the corresponding end of the back, extends a portion of the casting 1 to form projections 10 at the top and bottom of the brake shoe (Fig. 2) which forms spacers between lugs on the brake head (not shown) in the usual manner.

In making the casting, the reinforcing back is placed in the mold and it is there supported by the legs 8 which serve as chaplets to properly locate the back in the mold before and during the operation of pouring the molten metal into the mold.

Centrally disposed on the back 2 I mount a U-shaped loop or key lug, which extends rearwardly from the back and straddles a centrally disposed neck portion 11 of the back 2. The terminal portions of the legs 12 of the U-shaped member are bent inwardly and under the back and welded thereto as shown at 13. The medial portion 14 of the U-shaped member is parallel with and spaced from the back to form a key receiving passageway 15.

A portion of the casting 1 is extended rearwardly on each side of the neck 11 to form

projections 16, which surround the legs 12 of the U-shaped member (Figs. 1 and 2). The projections 16 engage corresponding recesses in the brake head (not shown) in the usual manner.

The width of the back 2 is less than the width of the casting 1 so as to leave a shoulder 17 of cast iron along the sides of the back, (Fig. 1).

The use of the device is thought to be obvious from the foregoing description, but I may here point out that, because of the novel means I employ to interlock the steel back with the cast iron, the latter may be worn practically entirely away and yet be firmly secured to the back. Thus there is very little weight of iron in the shoe when it is scrapped. Furthermore, the cast iron may be fractured but the broken parts will not be separated from the steel back, and this security is retained throughout the life of the shoe, in fact, until the tread of the wheel contacts with the steel back itself.

I claim:

A device of the kind described, comprising a cast metal brake shoe provided with a reinforcing back, said back including a curved member at the rear face of the shoe and legs surrounded by the cast metal and extending from said curved member to the face of the cast metal shoe to serve as chaplets in making the casting.

In testimony that I claim the foregoing I hereunto affix my signature.

WILLIAM M. DUNCAN.