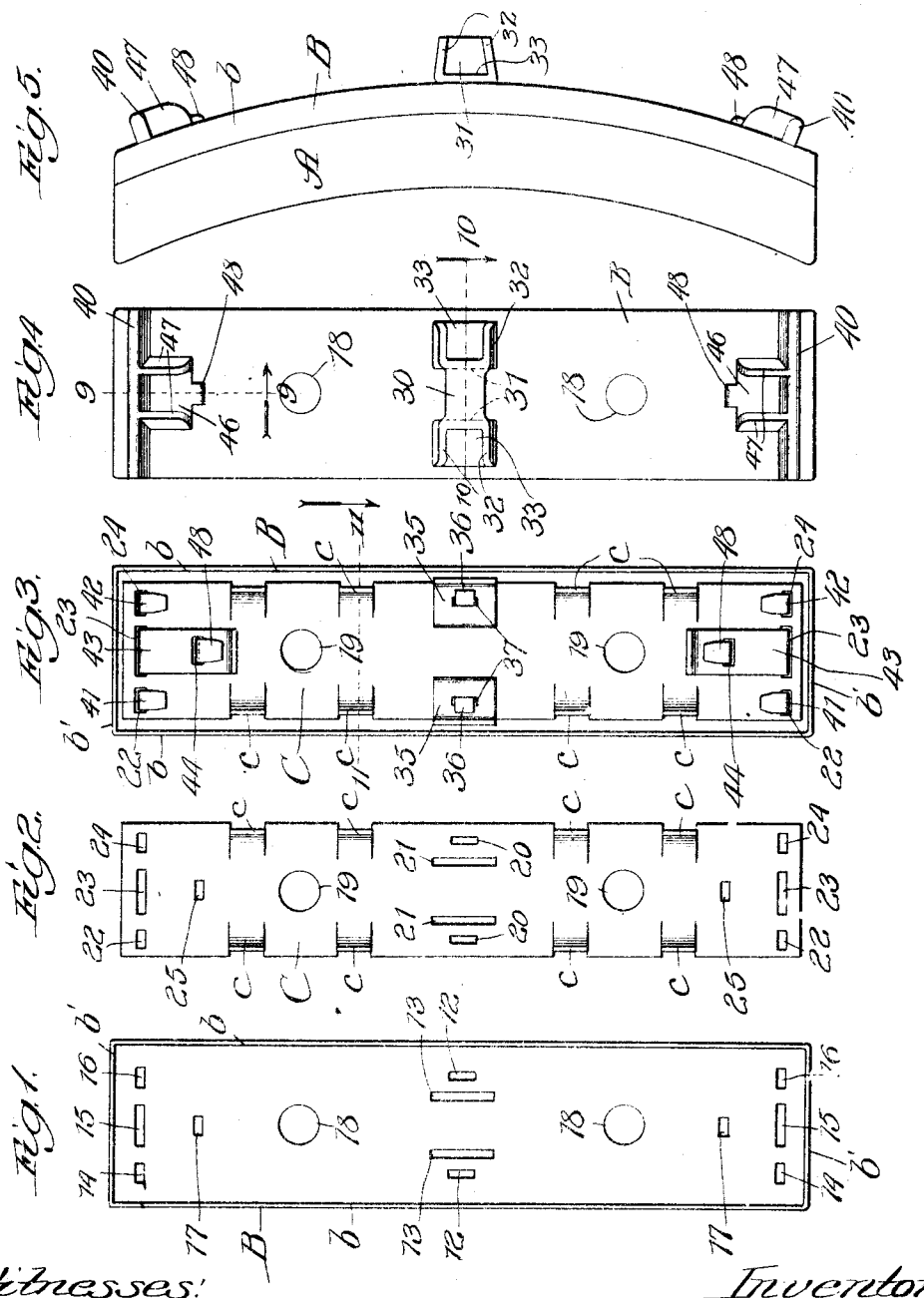
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BRAKE SHOE.

APPLICATION FILED AUG. 3, 1912.

1,065,715. **Patented June 24, 1913.**

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 6.

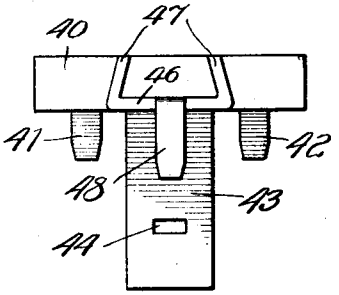


Fig. 7.

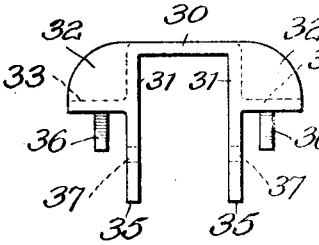


Fig. 8.

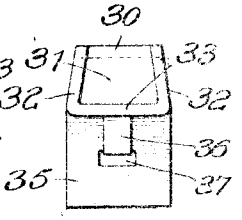


Fig. 9.

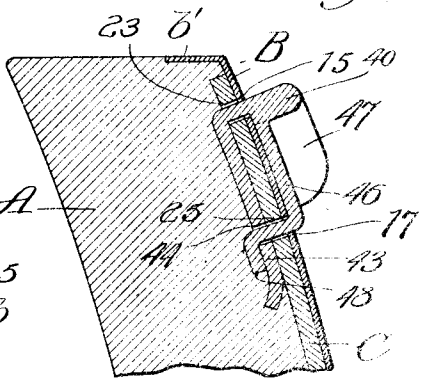


Fig. 10.

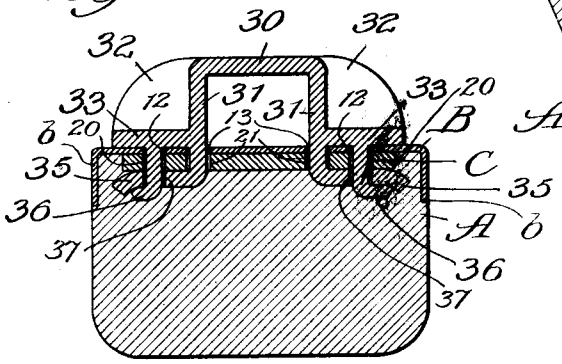
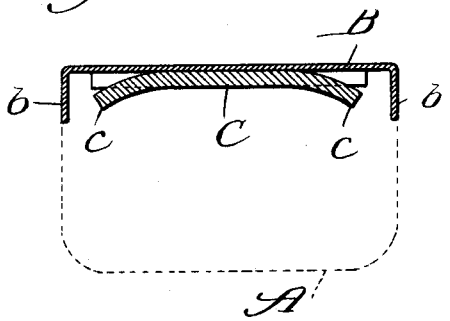


Fig. 11.



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UNITED STATES PATENT OFFICE.

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BRAKE-SHOE.

1,065,715. Specification of Letters Patent. Patented June 24, 1913.

Application filed August 3, 1912. Serial No. 713,175.

To all whom it may concern:

Be it known that I, CLIFTON D. PETTIS, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Brake-Shoes, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The present invention has relation more particularly to that class of brake shoes for railway cars in which provision is made for strengthening the back portion of the shoe so that as the body of the shoe is worn away in service, the fracture of the shoe may be avoided.

The object of this invention is to provide an exceedingly strong and efficient construction of shoe, and this object is accomplished by the features of novelty hereinafter described, illustrated in the accompanying drawings and particularly pointed out in the claims at the end of this specification.

Figure 1 is an inner face view of the back or shell that incloses the back portion of my improved shoe. Fig. 2 is an inner face view of a reinforcing back plate adapted to set within the back or shell. Fig. 3 is an inner face view of the back or shell with the back plate locked thereto by means of center and end lugs of the shoe. Fig. 4 is a view in front elevation and Fig. 5 is a side elevation of the completed shoe. Fig. 6 is a detail view (upon an enlarged scale) of one of the end lugs before it is attached in position for use. Fig. 7 is a detail view of the center lug before it is attached to the shoe. Fig. 8 is a view in side elevation of the center lug shown in Fig. 7. Fig. 9 is a view in vertical section on line 9—9 of Fig. 4. Fig. 10 is a view in cross section on line 10—10 of Fig. 4. Fig. 11 is a view in cross section on line 11—11 of Fig. 3, the cast metal body portion of the shoe being indicated by dotted lines.

The body portion A of my improved brake shoe is preferably formed of cast metal and, in the casting operation, the back or shell B is connected to the body portion. This back or shell B is preferably formed from a thin plate of metal stamped or pressed, so as to form the integral surrounding side and end portion *b* and *b'*. About the center of the back or shell B are formed suitable openings to receive the center lug of the shoe, and adjacent the ends of the back or shell B are formed openings to receive the end lugs of the shoe. In the accompanying drawings I have shown an improved construction of center lug such as is set forth and claimed in application Serial No. 711,304, filed by me in the United States Patent Office July 24, 1912, and have shown also an improved construction of end lug, which is set forth and claimed in an application, Serial No. 771,305, filed by me in the United States Patent Office, July 24, 1912, and I do not wish to be understood as claiming in the present application the specific construction of lugs set forth in the above mentioned applications.

When my improved center lug is employed, the back or shell B will be provided adjacent its center with the slots or holes 12, 12 and 13, 13, and when my improved end lug is employed, the end portions of the back or shell B will be provided with slots or holes 14, 15, 16 and 17. The back or shell B will also, by preference, be formed with holes 18 and the back plate or member C with holes 19, through which will be poured the cast metal of which the body of the shoe will be formed.

In the preferred form of my invention, my improved shoe is not only provided with a back or shell B at its back and united thereto in the casting operation, but is also provided with a supplemental reinforcing member or members and, preferably, in the shape of the back plate C of ductile metal. The preferred construction of this back plate or reinforcing member is shown more particularly in Figs. 2 and 3 of the drawings. The plate C is provided with holes or openings 20, 20 and 21, 21 to receive the locking members of the center lug, as will presently appear, these holes or openings corresponding with the holes or openings 12, 12 and 13, 13 about the center of the back or shell B. Similarly, the plate C is provided adjacent each of its ends with holes or openings 22, 23, 24 and 25 adapted to receive the locking members of the end lugs, these holes or openings corresponding with the holes or openings 14, 15, 16 and 17 adjacent the ends of the back or shell B.

It will be readily understood that various forms of center lugs or end lugs may be employed in my improved brake shoe, but I prefer to employ end and center lugs of such character that they will serve to securely lock the back plate or reinforcing member

to the back or shell and, for this reason, my improved center and end lugs are shown.

The center lug, which may be formed of malleable metal or of plate metal, is shown as comprising a crown 30 (see Figs. 7 and 8) having side walls 31 reinforced by laterally projecting walls 32, integral with which walls are formed the base portions 33. From the walls 31 and integral therewith depend the locking members 35 and from the base portions 33 and integral therewith depend the locking members 36. The locking members 35 are formed with openings 37, the purpose of which will presently more fully appear.

My improved construction of end lug is shown as comprising a transverse wall 40 adapted to extend across the end of the brake shoe, from which wall depend short locking members 41 and 42 and a longer locking member 43 having an opening 44 formed therein. At right angles to the tranverse wall 40 extends an inwardly projecting part 46 from which rise the walls 47, and integral with the part 46 is formed a locking member 48.

In forming my improved brake shoe, the reinforcing back plate or member C will first be placed within the back or shell B in such position that the center and end openings of the back plate shall coincide with the corresponding central and end openings of the back or shell. The locking members 35 of the center lug will then be passed through the openings 13, 13 of the back or shell B and through the openings 21, 21 of the back plate C, while the locking members 36 of the center lug will be passed through the openings 12, 12 of the back or shell B and through the openings 20, 20 of the back plate. After the locking members of the center lug have thus been passed through the openings of the back or shell and of the back plate, the locking members 35 on the lug will be turned outwardly and the locking members 36 will be passed through the holes 37 in the locking members 35, after which the free ends of the locking members 36 will be bent laterally, so that the parts will assume the position shown in Figs. 3 and 10 of the drawings. In like manner the locking member 43 of each of the end lugs will be passed through a corresponding opening 15 in the back or shell B and a coincident opening 23 in the back plate C, while the locking members 41 and 42 will be passed through the openings 14 and 16 of the back or shell B and through the coincident openings 22 and 24 of the back plate C; and the locking member 48 will be passed through the opening 17 of the back or shell and through the coincident opening 25 of the back plate. After the locking members have thus been passed through the openings of the back or shell and of the back plate, the locking members will be bent down, as illustrated in Figs. 3 and 9 of the drawings,—that is to say, the locking member 43 will be bent inwardly toward the center of the shoe and the locking member 48 will be passed through the opening 44 of the locking member 43, and the end of the locking member 48 will be bent toward the center of the shoe. The locking members 41 and 42 will be bent toward the center of the shoe, as shown in Fig. 3. When the locking members of the center lugs and of the end lugs have thus been bent, not only will the lugs be securely connected to the back portion of the shoe, but the locking members of the lugs will serve to most effectively lock the back plate to the shell or back B. After the back plate and center and end lugs have been attached to the back or shell B, as shown in Fig. 3 of the drawings, the body A will be cast on to these parts, as indicated more particularly in Figs. 5, 9 and 10 of the drawings. Preferably, the pouring of the cast metal, of which the body of the brake shoe will be formed, will be effected through the pouring holes 18 of the back or shell B and holes 19 of the back plate C, and the cast metal will not only firmly unite with the back or shell B in the casting operation, but will firmly unite also with the back plate C and with the locking members of the center and end lugs, thus guarding against any possibility of the withdrawal of the lugs, or separation of the parts.

I prefer to reinforce my improved brake shoe with a pan shaped back portion B, the sides and end walls of which are comparatively shallow, for the reason that until the body A of the brake shoe is very materially reduced in thickness, it has sufficient strength to guard against fracture. And it is when the body A of the shoe approaches the end of its wearing capacity that the reinforcement of the back is required. A further reason for using a shallow back or shell B and for forming this back or shell of thin metal is, that the construction is far less expensive than if the walls of the back or shell were carried to the face of the body of the shoe. Indeed, the thin metal of the back or shell B so coalesces with the body A of the shoe in the casting operation as to form in effect a tough skin or cover for the back portion of the shoe—the metal of the back or shell B being thick enough, however, to stand up and maintain its shape under the heat of the cast metal when the latter is poured into the mold.

By having the integral side and end walls b and b' of the shell B of such dimensions that the edges of these walls terminate at a distance from the initial wearing face of the shoe, the side edges of the latter adjacent its wearing face may be curved or rounded,

as shown in Fig. 10, and as required to properly engage the treaden flange of the car wheel. Moreover, by employing a shallow shell which is of course curved to correspond with the form of the shoe, the shell may be more readily and cheaply manufactured. It is understood that the side and end walls *b* and *b'* are not only integral with the back of the shell, but are integral with one another to securely support the body of the shoe when worn thin.

The reinforcing back plate abuts against the inner face of the back wall of the shell B and, while it extends approximately from side to side and from end to end thereof, it is smaller in area than the back wall of the shell to permit the metal of the body A to unite with the back wall in the casting operation. Preferably, also, the reinforcing member C is provided with lips *c* at intervals throughout its length which are bent inwardly away from the inner face of the back of the shell. These lips thus increase the area over which the cast metal body is united to the back of the shell and are also embedded in the cast metal body to more effectively unite the parts.

Various other forms of back plates or reinforcing members may be used without departure from the spirit of the invention, and the details of construction above set out may also be varied within wide limits without departing from the scope of the invention. Thus, for example, the feature of employing a reinforcing back plate or member within an inclosing shell may be used to advantage even with a body portion formed of any of the compositions of material commonly employed in the manufacture of brake shoes, but in such case, of course, it will be necessary to give greater depth to the body of the back or shell. So, also, features of the invention may be employed without its adoption as an entirety.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. A brake shoe comprising a cast metal body provided with a shallow reinforcing back or shell formed of thin ductile metal and having integral side and end walls surrounding the body of the shoe and terminating above the initial wearing face of the shoe, said shell being united directly to the metal body of the shoe in the casting operation.

2. A brake shoe comprising a cast metal body, a pan shaped ductile metal back and a supplemental reinforcing back plate located within said pan shaped back, said supplemental reinforcing plate being of smaller area than the back wall of said ductile metal back to permit the cast metal of the body to unite with said back wall in the casting operation.

3. A brake shoe comprising a cast metal body having curved edges at the sides of its wearing face and being provided with a back of thin ductile metal bent to form a shallow pan or shell having integral side and end walls surrounding said cast metal body and terminating above the curved side edges of its wearing face, a supplemental reinforcing member of thicker ductile metal arranged within said pan or shell, and an attaching lug having parts extending through said pan or shell and said reinforcing member and interlocked therewith.

4. A brake shoe having a back of ductile metal, a supplemental reinforcing back member located within said back and extending approximately from side to side and from end to end thereof and center and end lugs having parts passing through said back and bent about said reinforcing member.

5. A brake shoe comprising a body having a ductile metal back and having a supplemental reinforcing back member located within said back, and end lugs having parts passing through said back and through said reinforcing member, the ends of said parts being bent to interlock said back and said reinforcing member together.

6. A brake shoe comprising a cast metal body having a perforated back of thin ductile metal bent to form a shallow pan or shell, a supplemental reinforcing member of thicker ductile metal and lugs connecting said back and supplemental member, the ends of said lugs being bent and embedded in the cast metal body of the shoe.

7. A brake shoe comprising a cast metal body, a pan shaped ductile metal shell and a supplemental reinforcing back plate of ductile metal secured thereto within said ductile metal shell, said supplemental reinforcing plate being provided with lips bent away from the back wall of said shell to extend within the body of the shoe and permit the metal of the shoe body to unite with said back wall in the casting operation.

8. A brake shoe comprising a cast metal body having a pan shaped back of thin ductile metal, a supplemental reinforcing member of thicker ductile metal located within said pan shaped back and a lug for attachment to the brake head, said lug having bent ends interlocking said back and supplemental member and embedded in the cast metal body of the shoe.

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