

No. 697,795.

Patented Apr. 15, 1902.

P. A. BRAWNER.
BRAKE SHOE.

(Application filed Aug. 22, 1901.)

(No Model.)

Fig. 1.

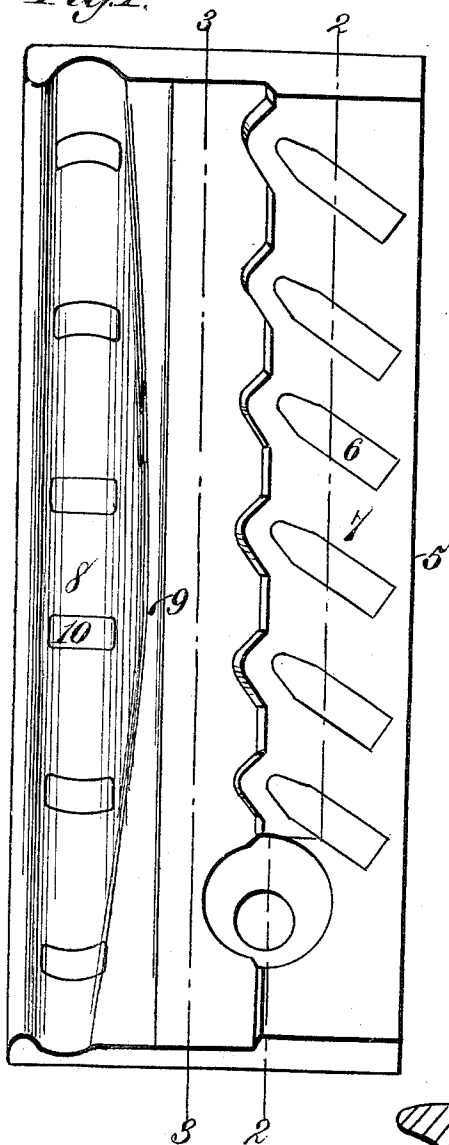


Fig. 2.

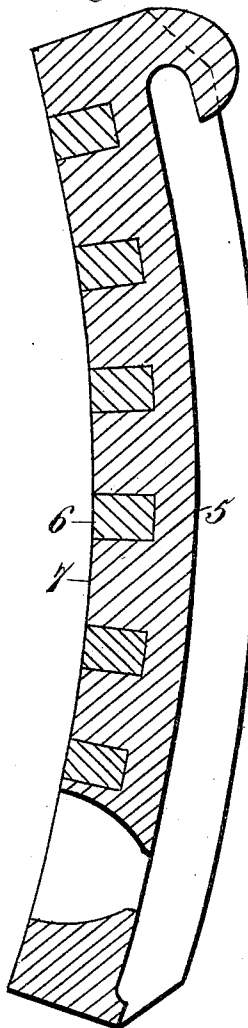


Fig. 3.

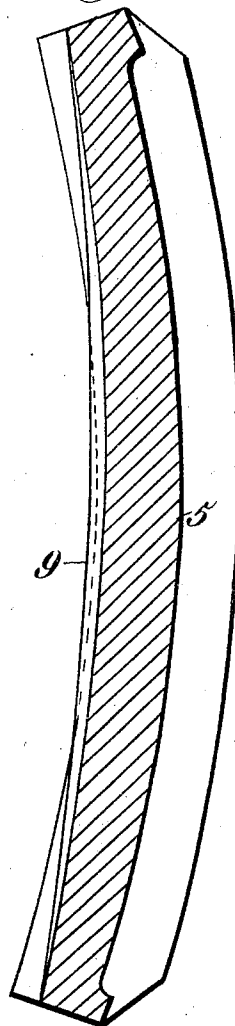
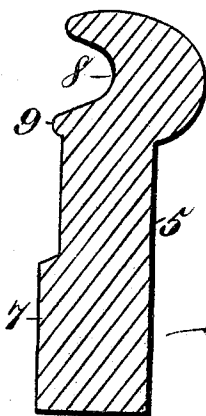


Fig. 4.



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UNITED STATES PATENT OFFICE.

PEMBROKE A. BRAWNER, OF CHATTANOOGA, TENNESSEE.

BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 697,795, dated April 15, 1902.

Application filed August 22, 1901. Serial No. 72,900. (No model.)

To all whom it may concern:

Be it known that I, PEMBROKE A. BRAWNER, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented new and useful Improvements in Brake-Shoes, of which the following is a specification.

The principal object of my invention is to provide a brake-shoe composed of hard and soft metal so disposed relative to each other as to provide a wearing-surface which shall yield the maximum braking or frictional power with a minimum of wear.

A further object of the invention is to provide novel means for strengthening the shoe and at the same time provide for throwing off small particles of metal that may be ground off from the face of the shoe or mud or sand that may be carried up by the wheel, as these, if not thrown off, will burn into the shoe and produce hard places, which when the brake is applied will plow or furrow the wheel.

In order that my invention may be fully understood, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a face view of the brake-shoe. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1, and Fig. 4 is a cross-section through the shoe.

According to my invention I make the body 5 of the shoe of steeled cast-iron, high combined carbon iron, or similar hard metal, having inserts 6 of soft gray iron, said inserts being set diagonally across the face of the shoe. Such a composite shoe is formed, as usual, by casting the body portion 5 about the slugs or inserts 6. The shoe as to shape is curved to conform to the surface of the wheel and is provided at one side with a bearing-surface 7 for engagement with the tread of the wheel and at the opposite side with a longitudinal groove 8 for embracing the flange of the wheel.

One of the important features of my invention is the provision of a strengthening-rib 9, located at the inner side and forming, as it were, the inner wall of the groove 8 and connection between groove 8 and tread or bearing surface 7. This rib is struck on an arc less than that of the curvature of the shoe, so that, as shown in Fig. 3, it is high-

est at the center of the shoe and from this point gradually approaches the plane of the inner surface of the shoe in either direction until at the ends it merges into the body of the shoe. This reinforcing-rib not only adds great strength to the shoe, but on account of its shape its central portion will engage in application with the tread of the wheel and serve to disengage and carry off particles of metal, mud, sand, or the like adhering to or taken up by the wheel. The bottom of the groove 8 is also provided with slugs or inserts 10 of soft metal.

By making the entire body portion 5 of the shoe of hard metal I thereby greatly add to the wearing qualities of the shoe, and consequently increase the life thereof. Heretofore as generally made the body portion of composite brake-shoes consisted of soft metal rendered hard only at those portions which would be chilled by contact of the molten metal in casting with the metal inserts. Consequently the larger portion of the wearing-surface of the shoe would be of soft metal, and the life of the shoe would be relatively short. By constructing the shoe with a body of hard metal having soft-metal inserts I find that said inserts will afford the necessary frictional resistance to the turning of the wheel, while the larger surface of hard metal offers the maximum resistance to wear. Furthermore, the soft-metal inserts in the hard-metal body will cut or wear with the friction produced by the application of the brakes, and the fine particles so worn off or detached distribute themselves over the entire face of the shoe, and thus produce a degree of friction equal to that of the softest cast-iron shoe. In other words, these fine particles detached from the soft inserts will distribute themselves over the face of the shoe and produce an effect somewhat similar to that produced by sanding the track. At the same time being separate from the main body of the shoe they will not cause the wheel to lock or burn and will permit the shoe to release more quickly than a soft-metal shoe, either cast iron or steel, when brake-pressure is removed. By setting the inserts diagonally across the face of the shoe I thereby strengthen the shoe by causing the braking-line to run approxi-

mately at right angles to the chilling-line, which is the weakest point of a composite shoe, instead of parallel with such line.

Having thus fully described my invention, what I claim as new is—

1. A brake-shoe having its entire body portion made of hard metal and its wearing-surface provided with a series of soft-metal inserts set diagonally across the face of the shoe.

2. A brake-shoe made of hard metal and having a wearing-surface and a groove, and soft-metal inserts set diagonally in said wearing-surface and transversely in the bottom of said groove.

3. A brake-shoe having a strengthening-rib projecting outward from its inner side, said rib being of greater height in the middle than at the ends.

4. A brake-shoe having a curved inner surface and a strengthening-rib extending from end to end of the shoe on its inner side and having a lesser curvature than the face of the shoe.

5. A brake-shoe having its body made of hard metal and its wearing-face provided with a series of soft-metal inserts, and a strengthening-rib extending from end to end of the shoe on its inner side and being higher in the middle than at ends.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PEMBROKE A. BRAWNER.

Witnesses:

R. H. WILLIAMS,
J. B. RAGON.