

No. 393,260.

PATENTED JULY 14, 1908.

C. D. PETTIS.  
BRAKE SHOE.

APPLICATION FILED APR. 9, 1908.

Fig. 2.

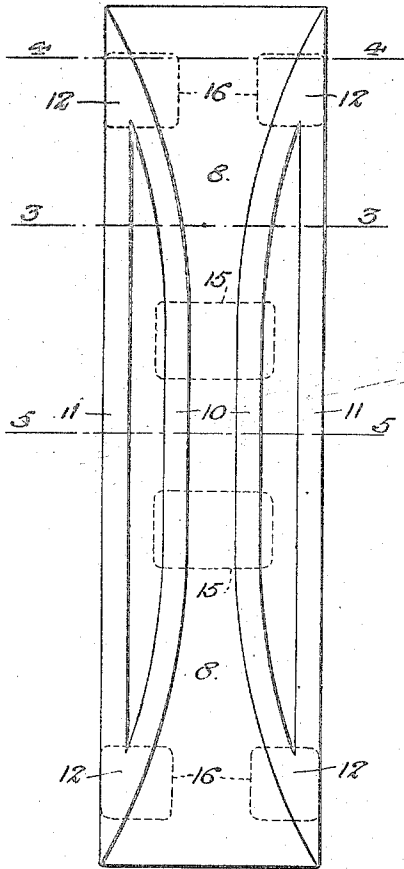


Fig. 1.

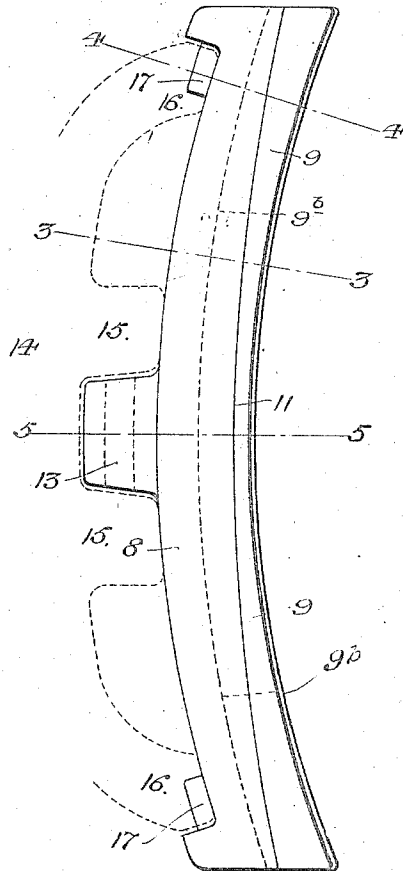


Fig. 3.

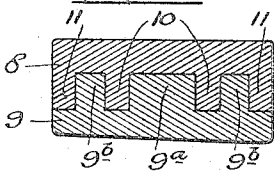


Fig. 5.

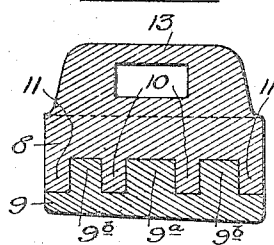
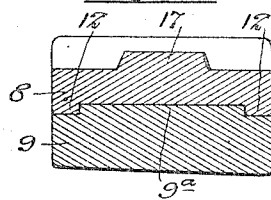


Fig. 4.



Witnesses:-

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# UNITED STATES PATENT OFFICE.

CLIFTON D. PETTIS, OF CHICAGO, ILLINOIS.

## BRAKE-SHOE.

No. 893,260.

Specification of Letters Patent.

Patented July 14, 1908.

Application filed April 9, 1908. Serial No. 426,031.

*To all whom it may concern:*

Be it known that I, CLIFTON D. PETTIS, a citizen of the United States, and a resident 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 drawing, forming part of this specification.

This invention relates more particularly to that class of brake shoes for railway rolling stock commonly known as "composite" brake shoes, and the invention has for its object to produce a composite shoe of increased strength and durability.

The invention consists in the features of construction hereinafter described, illustrated in the accompanying drawing and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in side elevation of a brake shoe embodying my invention. Fig. 2 is a view in elevation of the back of the shoe, the view being taken from the wearing side of the shoe. Fig. 3 is a view in transverse section on line 3—3 of Fig. 1. Fig. 4 is a view in transverse section on line 4—4 of Fig. 1. Fig. 5 is a view in transverse section on line 5—5 of Fig. 1.

My improved brake shoe is composed of two parts, viz: the back portion 8 and a front portion 9, both of these parts being formed of cast metal. The front portion 9 is formed of cast iron of a quality such as is ordinarily employed in the manufacture of cast iron brake shoes. The back portion 8 is formed of a cast metal of greater tensile strength than the front portion, and for this purpose I prefer to employ what is commonly known as "semi-steel."

In the finished shoe the back portion 8 has its front or wearing face formed with the ribs or strips 10 that approach each other at the central portion of the shoe and diverge thence towards the ends of the shoe, as seen in Fig. 2 of the drawing, and along each side of the back portion 8 extend the ribs or strips 11 which at their ends merge into the ends of the diverging ribs 10, as shown at 12 in Fig. 2. My purpose in forming the wearing face of the back portion 8 with the ribs 10 which approach each other at the central portion of the shoe and diverge thence to the ends of the shoe, is to bring these ribs opposite those

portions of the shoe that are subjected to the greatest strain.

By reference to Figs. 1 and 2 of the drawing, there will be seen in dotted lines the position of the brake-head 14, the central lugs 15 of which bear upon the brake shoe at each side of its key lug 13, and the end lugs of this brake-head bear upon the end portions of the shoe, as at 16, at each side of the end guide lug 17 which are formed on the back of the shoe. By this arrangement of the ribs 10 they are brought immediately opposite those portions of the brake-head that bear upon the shoe, and, hence, are in position to most effectively resist the thrusts and strains exerted upon the shoe by the brake-head.

The side or marginal ribs 11 that project from the wearing side of the back portion 8, are so disposed that in the finished shoe they are practically flush with the sides of the cast iron portion 9. The lug 13 that projects from the back portion of the shoe, is formed integral therewith and is furnished with the usual key-way for attachment to the brake-head.

In the preferred embodiment of my invention, the ribs 10 and 11 are considerably deeper, *i. e.*, from front to back, at their central portions than at their ends, this feature being clearly shown in Fig. 1 and in the several sectional views of the drawing, the purpose of this being to give to the central portions of the shoe the greatest possible strength, as it is to such portions of the shoe that the greatest strains are applied. For like reason, the body of the back portion 8 is preferably formed somewhat thicker about its central portion than towards the ends of the shoe.

In forming my improved shoe, the front portion 9 is preferably first cast so as to form upon its back a central rib 9<sup>a</sup> that is narrowest along the central portion of the shoe and is flaring or broadest at the ends of the shoe, and with the shorter ribs 9<sup>b</sup> at the sides of the central rib 9<sup>a</sup>. After the front portion 9 has been thus formed it is set in a mold and the back portion 8 is then cast onto the front portion 9. There are several material advantages incident to casting the back portion onto the front portion, as I prefer to do. In the first place, when the back portion 8 is thus cast onto the front portion 9, the metal of the back portion as it cools will shrink and thus more firmly bind upon and adhere to

the ribs on the back of the front portion 9, so that when the shoe is finished, its front and back portions are inseparably connected together throughout the life of the shoe.

5 Again, as the back portion of the shoe is cast onto the front portion, the metal that will form the ribs 10 and 11, as well as the metal nearest the front portion of the shoe, will be chilled more or less, thus increasing the efficiency and durability of such parts.

10 From the drawing it will be understood that the ribs 9<sup>a</sup> and 9<sup>b</sup> at the back of the front portion 9 fill the spaces between the ribs 10 and 11 of the back portion 8, and the shape of the ribs 9<sup>a</sup> and 9<sup>b</sup> is such as to effectively distribute the metal of the front portion of the shoe, even after the main body of this front portion 9 has become worn away. The construction of the back portion, as above described, and of a metal of greater tensile strength than that of which the front portion of the shoe is formed, gives great strength, durability and effectiveness to the shoe and permits it to be serviceable until the ribs upon its wearing side have been worn away, or even longer.

25 It is manifest that the precise details of construction above set out may be varied without departure from the spirit of the invention, and that features of the invention may be employed without its adoption as an entirety.

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

35 1. A brake shoe of the character described, comprising a cast metal front portion having a ribbed or offset back, and a cast metal back portion united to and shrunk upon said front portion in the casting operation.

40 2. A brake shoe of the character described, comprising a cast metal front portion having longitudinal ribs upon its back and a cast metal back portion united to said front portion in the casting operation.

45 3. A brake shoe of the character described, comprising a cast metal front portion and a cast metal back portion,

having marginal ribs and being united to and shrunk upon said front portion in the casting operation. 50

4. A brake shoe of the character described, comprising a cast metal front portion and a cast metal back portion united together in the casting operation, said back portion being provided upon its wearing side with longitudinal ribs nearest each other at the central portion of the shoe and diverging thence towards the ends of the shoe, and the front portion of the shoe having a longitudinal rib or part filling the spaces between said ribs of the back portion. 60

5. A brake shoe of the character described, comprising a cast metal front portion and a cast metal back portion, said parts being united together in the casting operation, said back portion having its body thicker (from front to back) about its center than adjacent its ends. 65

6. A brake shoe of the character described, comprising a cast metal front portion and a cast metal back portion, said parts being united together in the casting operation, said back portion having its wearing side provided with projecting ribs that are deepest about its central portion and tapering thence towards the ends of the shoe. 75

7. A brake shoe of the character described, comprising a cast metal front portion and a cast metal back portion, said parts being united together in the casting operation, said front portion being provided upon its back with a central rib narrowest about the center of the shoe and flaring at its ends. 80

8. A brake shoe of the character described, comprising a cast metal front portion and a cast metal back portion, said parts being united together in the casting operation, said front portion being provided upon its back with a central longitudinal rib having laterally flaring ends and with shorter ribs at the sides of said central rib. 90

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Witnesses:

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