J. D. GALLAGHER.

SEGMENTAL BRAKE SHOE.

APPLICATION FILED MAY 2, 1913.

1,122,583.

Patented Dec. 29, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

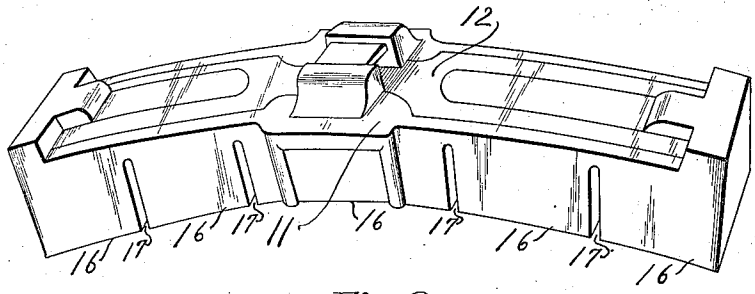


Fig. 2.

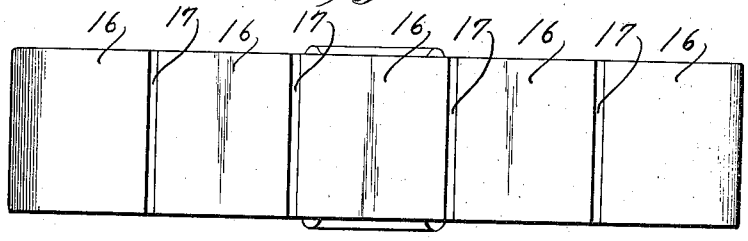


Fig. 9.

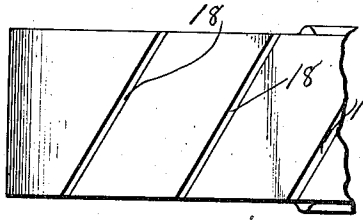


Fig. 3.

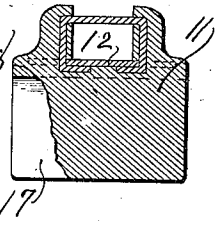


Fig. 10.

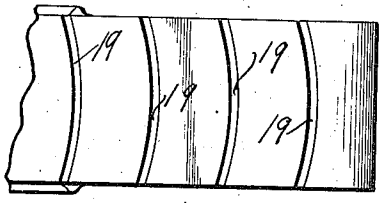
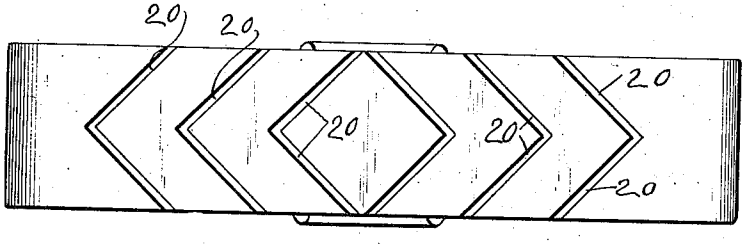


Fig. 4.



Attest:

S. D. Mitchell

R. N. Flint

by

Inventor:

Joseph D. Gallagher

George Cord

Atty

J. D. GALLAGHER.

SEGMENTAL BRAKE SHOE.

APPLICATION FILED MAY 2, 1913.

1,122,583.

Patented Dec. 29, 1914.

2 SHEETS—SHEET 2.

Fig. 5.

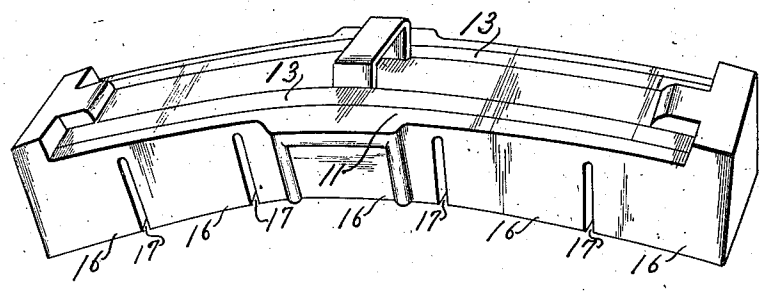


Fig. 6.

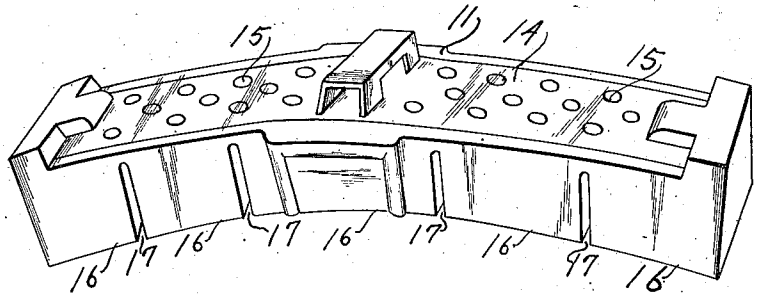


Fig. 7.

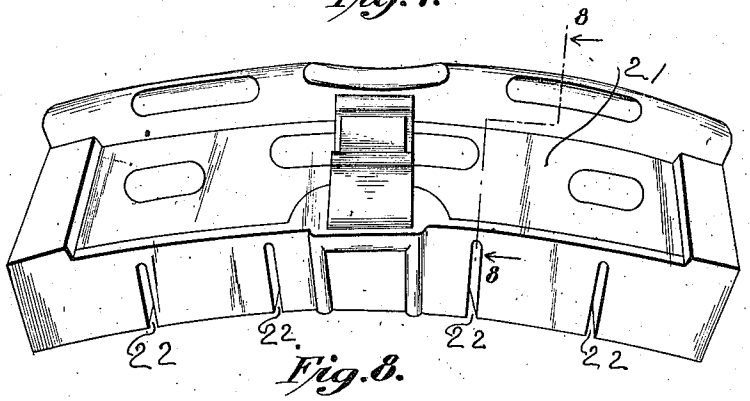
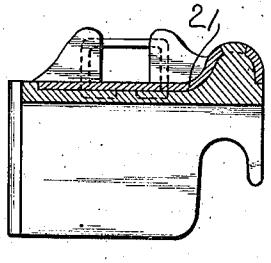


Fig. 8.



Attest:

S. Mitchell

R. N. Hunt

by

Inventor:

Joseph D. Gallagher

George Cook

Atty

UNITED STATES PATENT OFFICE.

JOSEPH D. GALLAGHER, OF GLEN RIDGE, NEW JERSEY, ASSIGNOR TO AMERICAN BRAKE SHOE & FOUNDRY COMPANY, OF MAHWAH, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SEGMENTAL BRAKE-SHOE.

1,122,583. Specification of Letters Patent. Patented Dec. 29, 1914.

Application filed May 2, 1913. Serial No. 765,010.

To all whom it may concern:

Be it known that I, JOSEPH D. GALLAGHER, a citizen of the United States, and a resident of Glen Ridge, in the county of Essex and State of New Jersey, have made and invented certain new and useful Improvements in Segmental Brake-Shoes, of which the following is a specification.

My invention relates to brake shoes of the type comprising a cast metal body portion, and a reinforcing back of wrought iron or mild steel, commonly referred to as a steel back, embedded in the rear portion of said body.

I have found in practice that the body of a brake shoe contains such a quantity of metal that when applied to the tread of the wheel, the heat, generated by friction, results in the warping or twisting or distortion of the shoe body, the tendency of the shoe being to straighten out, thereby resulting in imperfect contact between the shoe and the tread of the wheel. As the shoe is then cooled, it will assume a slightly different curvature to that which it originally had, and when again applied to the tread of the wheel the ends or toes of the shoe only will come into contact with the tread of the wheel, the wearing portions or areas of the shoe constantly shifting from time to time as the shoe is heated up and then cooled.

The object of my invention is to avoid this objection, and to so construct the shoe that the warping, twisting or distorting of the shoe will be avoided, and with this and other ends in view the invention consists in certain novel features of construction and combinations of parts as will be hereinafter described and specifically pointed out in the claim.

With the above and other objects of invention in view, my invention consists in the improved brake shoe illustrated in the accompanying drawings and hereinafter described and claimed, and in such variations and modifications thereof as will be obvious to those skilled in the art to which my invention relates.

Referring to the drawings wherein the preferred embodiment of my invention is illustrated: Figure 1 is a view showing my improved brake shoe in perspective; Fig. 2 is a view showing the front or wearing face thereof; Fig. 3 is a view showing a section of the shoe upon a central transverse plane; Fig. 4 is a view showing the wearing face of a slightly modified form of shoe; Fig. 5 is a view showing another form of my improved brake shoe in perspective; Fig. 6 is a similar view showing still another form of my invention; Fig. 7 is a view showing my invention as applied to a flanged brake shoe; Fig. 8 is a view showing a section upon a transverse plane indicated by the line 8—8, Fig. 7, and Figs. 9 and 10 are views showing the wearing face of two other brake shoes made in accordance with my invention.

In the drawings, the reference numeral 11 designates the body portion of a shoe, commonly made of cast iron, and 12 a reinforcing back formed ordinarily from a wrought iron or mild steel plate of a thickness of from one-eighth to three-sixteenths of an inch, or thereabout, and properly shaped, the said back being embedded in the rear portion of the metal body of the shoe during the casting thereof. The form, type, and other distinguishing features of the reinforcing back are not involved in the invention to which this application relates, it being understood that any kind of a reinforcing back may be used without in any way departing from the invention. For example, Fig. 1 shows an integral, or single piece back, Fig. 5 illustrates the shoe as having a back made up of two longitudinally extending bars 13, curved to correspond with the curvature of the shoe, and Fig. 6 a back in the form of a curved plate 14 having a plurality of holes or openings 15. In all cases, however, it will be understood that the form and structural features of the back will be such that it will become firmly embedded in the rear surface of the body of the shoe as the molten metal, from which the body is formed, is poured into the mold in which the back has been placed and in which the shoe is cast.

The body portion 11 of my improved brake shoe is divided into a plurality of segments, designated by the reference numerals 16 in Figs. 1, 2, 5 and 6, by transversely extending slots or grooves 17, extending from the wearing face of the shoe to, or approximately to, the reinforcing back thereof, which slots may be formed in any way, as by the use of cores in the mold; or, a shoe having a continuous body may be first produced, after which the slots may be formed by suitable milling, sawing, slitting or similar operations. In all instances, however, the segments or parts of the shoe will

be anchored to the reinforcing back and form in effect a unitary structure, even should cracks develop at the inner ends of the slots, as frequently happens when the shoe is in service.

The slots above referred to may extend at right angles to the sides of the shoe as shown in Figs. 1, 2, 5, 6 and 7, or diagonally across the shoe as shown at 18, Fig. 9. They may also be curved in outline, as shown at 19, Fig. 10; or V-shaped as shown at 20, Fig. 4. These slots or grooves may also extend at right angles to the wearing face of the shoe as shown, or at an angle thereto, as will be understood.

My invention may be embodied either in a flanged brake shoe, as shown in Figs. 7 and 8, or in an unflanged shoe as shown in the remaining figures, as the type of shoe is not involved in my invention. When embodied in a flanged shoe the reinforcing back 21 commonly extends over both the tread and flange portions of the shoe, as shown, the grooves 22 extending through both the tread and flange portions, as shown in Fig. 8. Finally, it will be understood that brake shoes made in accordance with my invention will be provided with suitable thrust absorbing and attaching lugs whereby they may be secured to a brake head or similar support, as shown in the drawings; the form, number, location and other distinguishing features of which lugs, however, are in no way involved in the invention to which this application relates.

In brake shoes having a solid and continuous metal body it is impossible to maintain intimate contact throughout the entire wearing face of the shoe and the tread of the wheel because of the warping of the shoe and its inability to retain a shape in conformity with the wheel with which it is used. It therefore follows that after such a shoe is applied to the wheel and becomes heated, contact occurs only at the high points of the shoe, and that the wear is localized and occurs throughout a comparatively small portion of the entire area of the wearing face of the shoe. This localization of the wear causes excessive local heating of the body of the shoe, further distorting the same, and bringing other high areas into contact with the wheel. Thus, while the area of contact between the shoe and wheel is continually shifting, and while the net result may be that the shoe is worn away quite uniformly, the area of contact never coincides in extent with the area of the wearing face of the shoe. In my improved shoe no such localization of the wear can occur, because of the fact that the shoe always retains its shape, thus securing intimate contact between the entire wearing surface or area of the shoe and the tread of the wheel. Moreover, such forces as result from heating cannot be transmitted from one segment of the shoe to another, because of the spaces between the segments, from which it follows that distortion or warping will not occur due to heat developed when the shoe is applied to the wheel. The friction produced when the shoe is applied is also increased because of the fact that contact always exists throughout the entire area of the shoe, the heat generated being more evenly distributed and not localized. A further advantage inherent in a shoe, made in accordance with my invention, is that by avoiding intense heating in limited areas, internal stresses, which tend to break up and disintegrate the body portion of such shoes are also avoided. Again, those particles of the shoe ground away by the abrasive action between its wearing surface and the tread of the wheel fall into, and escape through, the slots, instead of passing along the entire length of the shoe, thus permitting a more intimate contact between the shoe and the wheel, the slots providing for a circulation of air through the body of the shoe and an extended area or increased surface for the dissipation of the heat. Finally, the life of the shoe is materially increased, it being a well known fact that the abrasive action of the wheel upon the shoe is much greater when the metal is locally heated to a high temperature, than in cases where the shoe is heated to a moderate temperature throughout.

Having thus described and explained my invention, I claim and desire to secure by Letters Patent:

A brake shoe comprising a body portion, a reinforcement embedded in the body of the shoe adjacent to the back thereof, and means for securing the brake shoe to a brake head, said body portion of the shoe being provided with a plurality of grooves extending inward from the wearing face substantially to the reinforcement and disposed on either side of the transverse center of said shoe whereby to divide it into a plurality of segments spaced apart and prevent the distortion of said body by heat due to frictional contact thereof with the tread of the wheel.

Signed at New York, borough of Manhattan, in the county of New York and State of New York, this 30th day of April A. D. 1913.

JOSEPH D. GALLAGHER.

Witnesses:
MARY B. JUSTICE,
ANNA E. WALSH.