No. 754,440. PATENTED MAR. 15, 1904.

# J. D. GALLAGHER.

## BRAKE SHOE.

APPLICATION FILED APR. 11, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

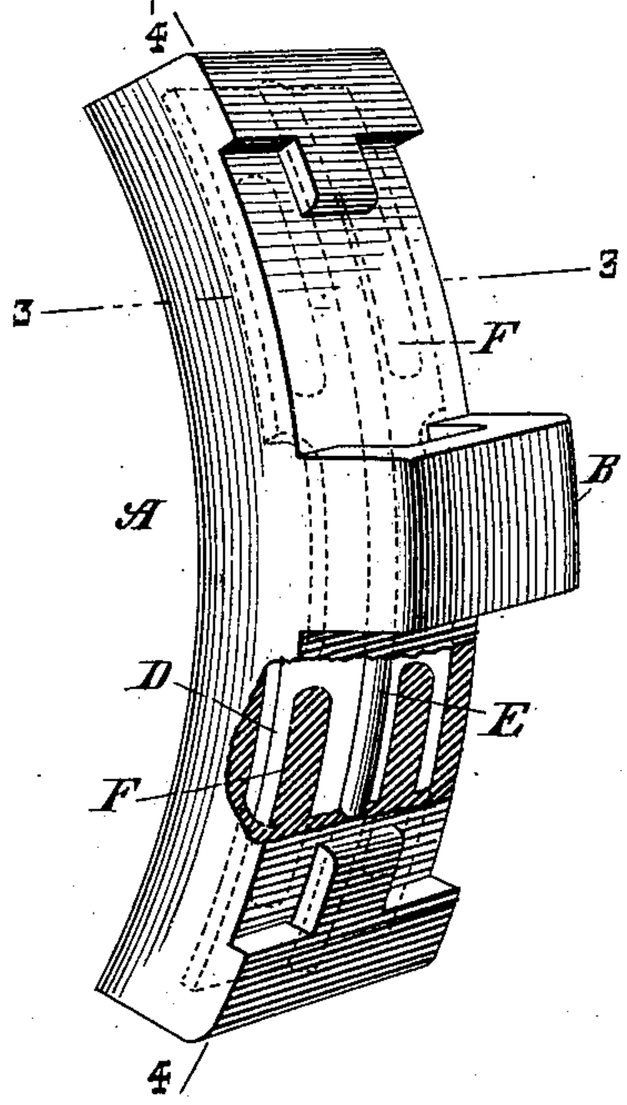



Fig. 2.

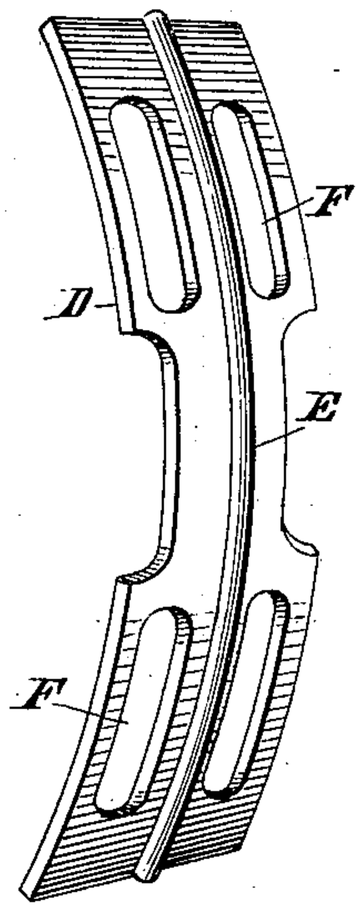



Fig. 3.

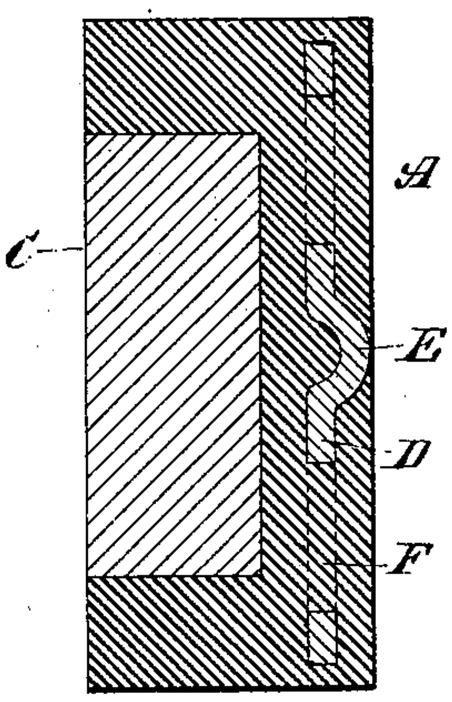
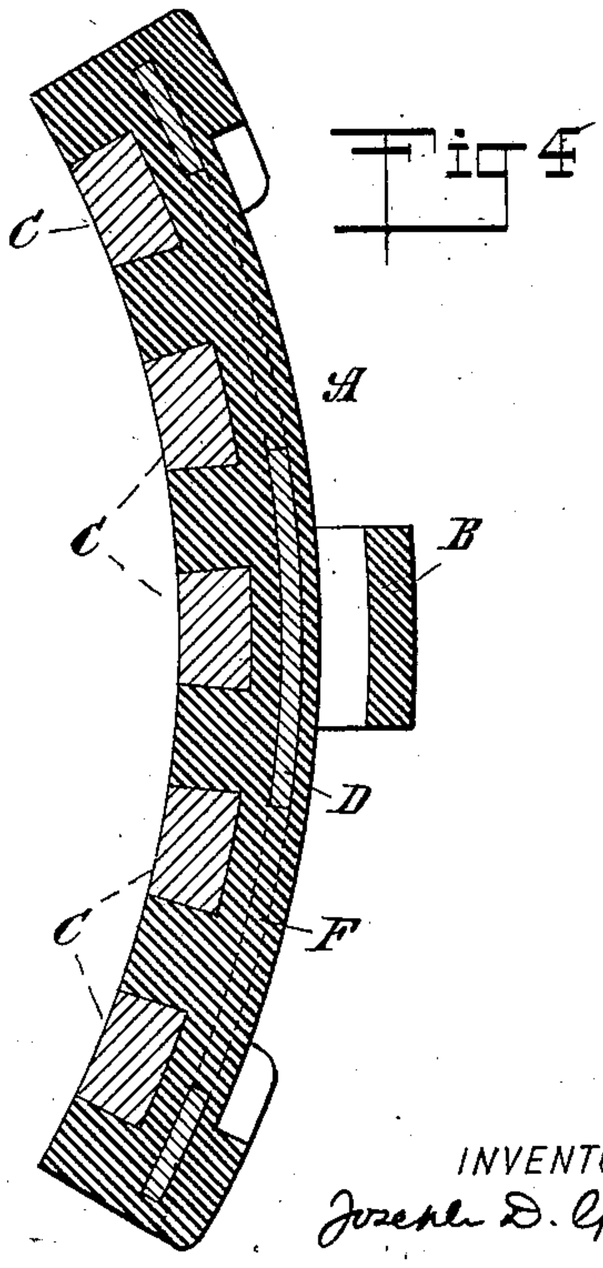



Fig. 4.




WITNESSES:

M. Van Nortwick.

B. K. Van Nortwick

INVENTOR

Joseph D. Gallagher

BY George Cook.

ATTORNEY

No. 754,440. PATENTED MAR. 15, 1904.

# J. D. GALLAGHER.

## BRAKE SHOE.

APPLICATION FILED APR. 11, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

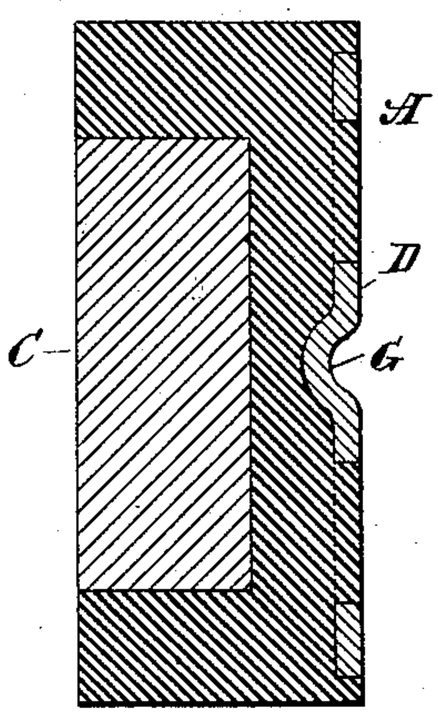



Fig. 6.

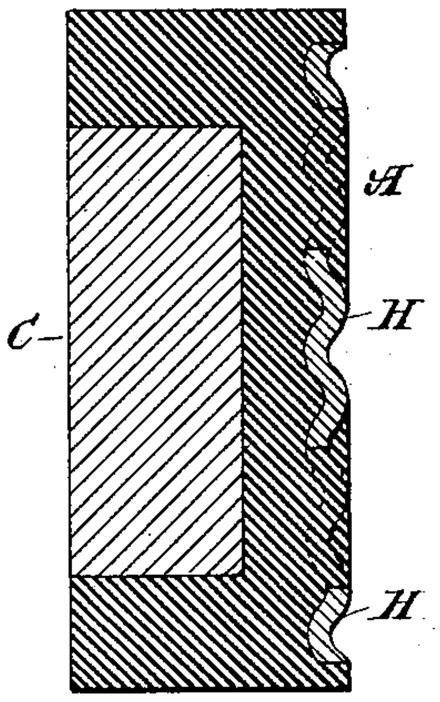



Fig. 9.

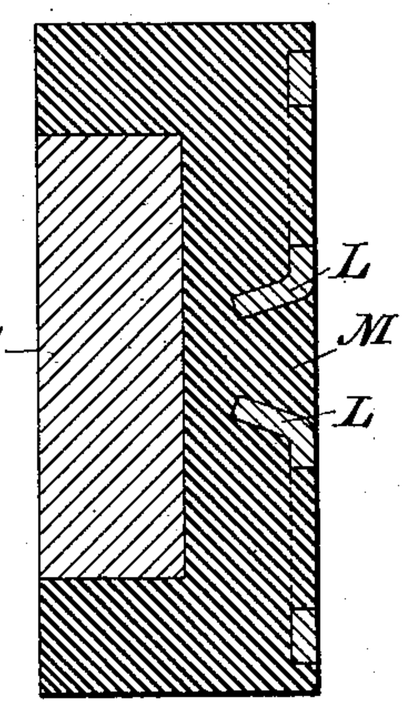



Fig. 7.

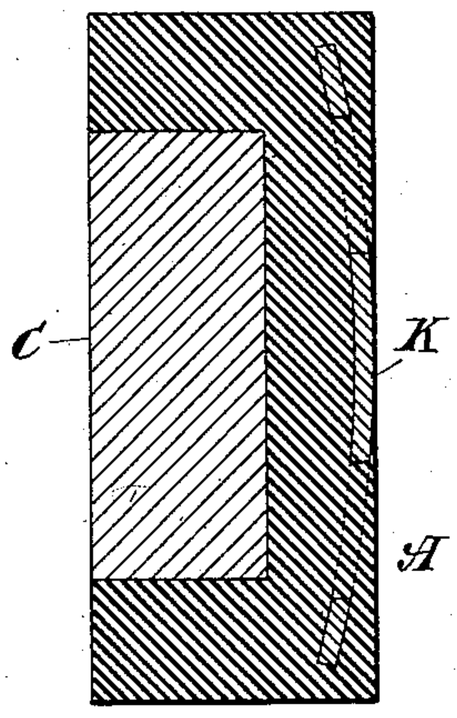
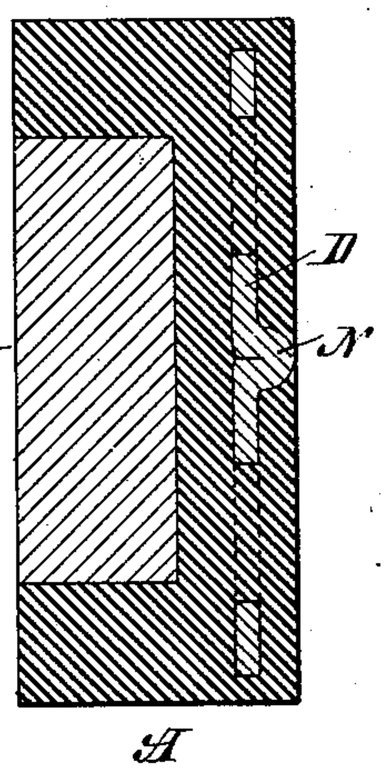



Fig. 8.




WITNESSES:

M. Van Nortwick.

B. C. VanMontfoort

INVENTOR

Joseph D. Gallagher

BY George Cook.

ATTORNEY

No. 754,440. Patented March 15, 1904.

# UNITED STATES PATENT OFFICE.

JOSEPH D. GALLAGHER, OF GLENRIDGE, NEW JERSEY.

## BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 754,440, dated March 15, 1904.

Application filed April 11, 1903. Serial No. 152,217. (No model.)

*To all whom it may concern:*

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

My invention relates to an improvement in brake shoes and more particularly to that kind or class thereof commonly known as "steel back brake shoes," that is a shoe consisting of a cast iron body portion or wearing face provided with a plate made of steel or other ductile metal and secured to the back of said body portion or wearing face, usually by being cast into it in the process of casting the shoe.

As is well known, the usual purpose and function of the steel back is to so bind the different parts of the shoe together, both longitudinally and laterally, that in the event of any fracture of the body portion either by reason of the shoe becoming worn to a thin section or by reason of imperfections in the metal or improper handling, or from other causes, the segments or fractions of the shoe will be held together and prevented from dropping onto the rails, and the shoe can be worn out just as if unbroken.

When, however, shoes commonly known as insert shoes are used, especially where a number of inserts are placed in the shoe transversely, as in an ordinary Congdon shoe, thus weakening the cast iron body or wearing face, it is desirable to use a plate or back much stiffer than the ordinary plate or back, which is usually made of three-sixteenth inch steel, for the purpose not only of holding the parts of the shoe together in case of fracture, but of adding stiffness to the shoe itself, to compensate for the weakening effect of the inserts. In such cases therefore, it becomes of the greatest importance that the steel or iron plate forming the back of the shoe, should be so formed as to contribute the maximum strength or stiffness to the shoe.

I have described a plate which performs some of these functions in Letters Patent granted to me December 24, 1901, and numbered 689,482, and the object of the present invention is to devise a plate which shall be an improvement upon the plate therein described and claimed; and with these ends and other ends in view the invention consists of certain novel features of construction, as will be hereinafter fully described and pointed out in the claims.

In the accompanying drawings Fig. 1 is a view in perspective of a brake shoe constructed in accordance with my invention.

Fig. 2 is a view in perspective of the steel back or strengthening plate detached from the shoe.

Fig. 3 is a sectional view taken on the line 3–3 of Fig. 1, and Fig. 4 a sectional view taken on the line 4–4 of Fig. 1.

Figs. 5, 6, 7, 8 and 9 are cross sectional views of modifications.

Referring to the drawings, A represents the body portion of a brake shoe formed of cast iron, B the attaching lug and C inserts of relatively hard or soft metal to provide a compound wearing surface for the shoe. The shoe is also provided with a strengthening plate D at or adjacent to the back thereof formed of wrought metal or steel, and preferably of the form or shape as illustrated in Fig. 2.

In the formation of this plate, either by means of dies or otherwise, I provide a rib E running lengthwise of the plate from one end to the other. This rib may be formed by striking upwardly the metal, as shown in Fig. 3, forming a channel into which the metal of the body portion A will flow during the casting operation. The plate near its ends is also formed with the openings F on either side of the rib E, in order to allow the metal of which the body portion is formed to flow into and through the same and secure the back in place, the entire plate, excepting the extreme top of the rib, being covered by and anchored in the metal of the body portion, as illustrated in Figs. 1 and 4.

While I have shown and described the plate D as being provided with openings or perforations therein, it will, of course, be understood that such openings are not absolutely essential as the plate is completely covered by the cast metal, and therefore sufficiently anchored, although I prefer to have the plate

so constructed in order that the cast metal may flow through said openings and thus insure a perfect locking of the several parts.

Instead, however, of striking the metal upwardly to form the rib, as before described, it may be struck downwardly as illustated at G in Fig. 5, in which instance the rib will be surrounded by and buried in the metal of which the body A is formed. Again, instead of employing but one central rib as described, a number may be used, as illustrated at H in Fig. 6. Further, instead of bending the central portion of the plate to form a rib, the entire plate in cross section may be bent or curved, as shown at K in Fig. 7, or if desired, the plate may be slitted longitudinally and the adjacent metal struck downwardly as shown at L, Fig. 9, in which instance the flanges L will perform the same function as the rib or ribs before referred to, the channel formed thereby being open and allowing the metal of the body to fill the same, as shown at M, and securely lock the plate in position. Again, instead of forming the rib as before described, it may be constructed as shown at N, Fig. 8, the metal forming the central part or portion of the plate D being folded or doubled upon itself, all of these forms being obvious modifications of the construction shown in Figs. 1, 2, 3 and 4, wherein the plate is shown provided with a central rib and buried in the cast metal of the body portion.

It will be understood from the foregoing that by thus forming the shoe, that is, with the steel back or strengthening plate, having one or more longitudinal ribs, it will be much stiffer than the back as ordinarily constructed, the added stiffness compensating for the weakness caused by the use or employment of the inserts.

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

1. A brake shoe comprising a cast iron body portion and a wrought metal back, the latter being bent to form a strengthening medial rib extending longitudinally along the same, substantially as described.

2. A brake shoe comprising a cast iron body portion and a perforated wrought metal back, the latter being provided with corrugations extending lengthwise along the flat back of the same, substantially as described.

3. A brake shoe of the character described comprising a cast iron body portion and a steel back or strengthening plate, the latter being anchored to said body portion and provided with a rib extending lengthwise of the same, the cast metal of the body portion extending upwardly into said rib, substantially as described.

4. A brake shoe of the character described comprising a cast iron body portion and a perforated steel back or strengthening plate, the latter being provided with a downwardly extending strengthening rib forming a channel, said channel being filled with the cast metal of the body portion, substantially as described.

5. A brake shoe of the character described comprising a cast iron body portion and a wrought metal back, said back being constructed with a rib extending lengthwise of the same forming an open channel, said channel being filled with the cast metal of the body portion, substantially as described.

6. A cast metal brake shoe provided with a malleable plate backing, the said backing being provided with a forged rib thereon extending longitudinally of the shoe, and the backing being attached to the body of the shoe in the casting of the shoe, whereby it is cast in place therein, substantially as described.

Signed at Newark, in the county of Essex and State of New Jersey, this 11th day of March, A. D. 1903.

JOSEPH D. GALLAGHER.

Witnesses:

PERCY L. GALLAGHER,

WARREN L. JACOBUS.