H. JONES.

BRAKE SHOE WITH CAST METAL INSERT.

APPLICATION FILED FEB. 10, 1911.

995,012. Patented June 13, 1911.

Fig. 1.

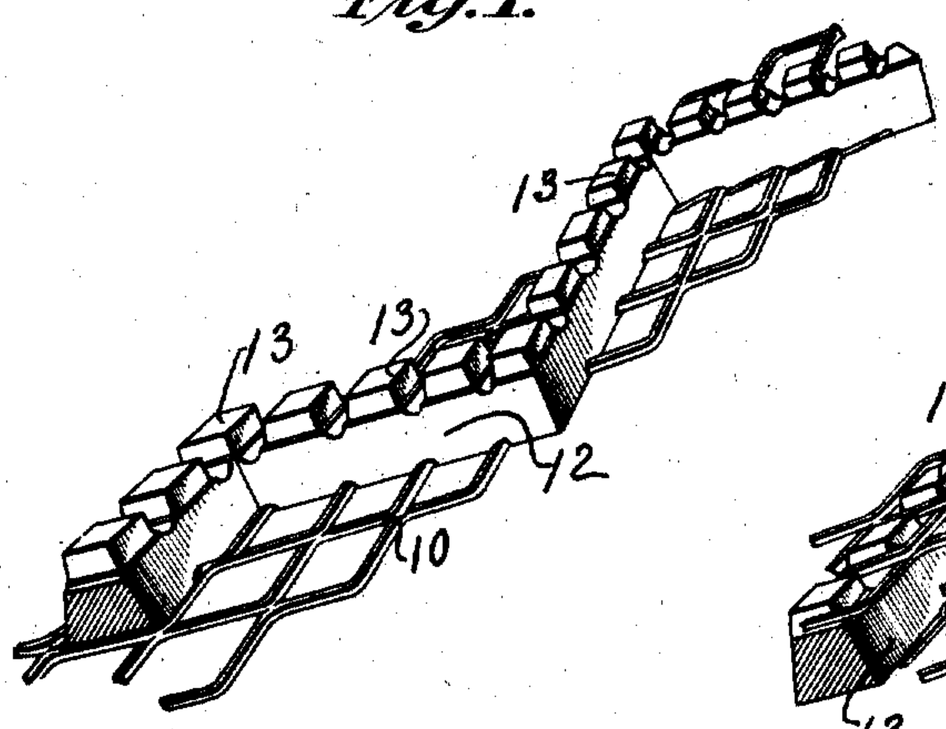


Fig. 2

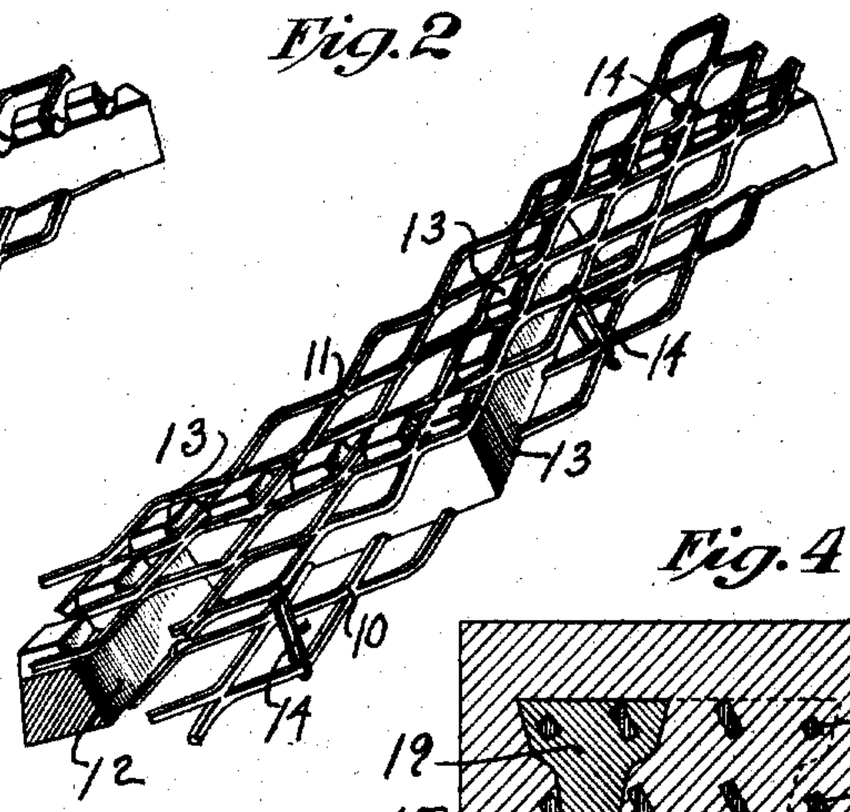


Fig. 4a.

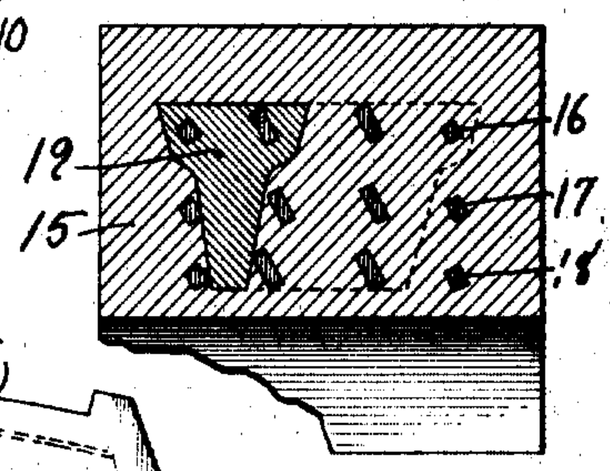


Fig. 3.

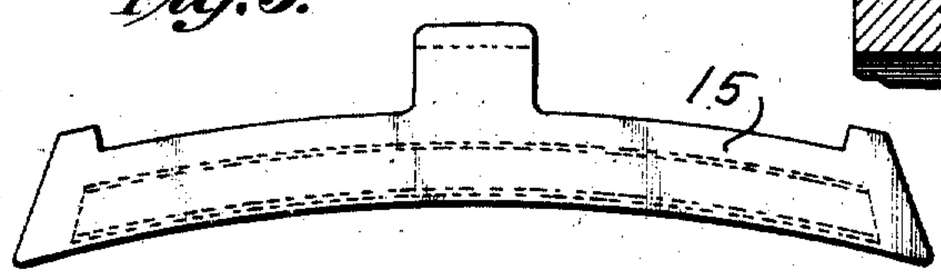


Fig. 6.

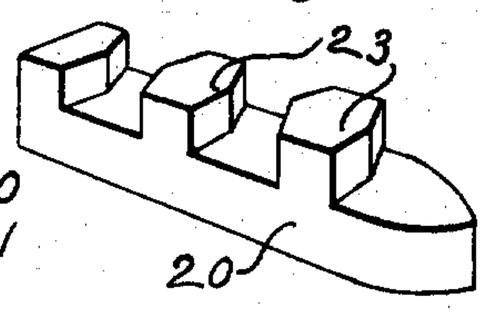


Fig. 4.

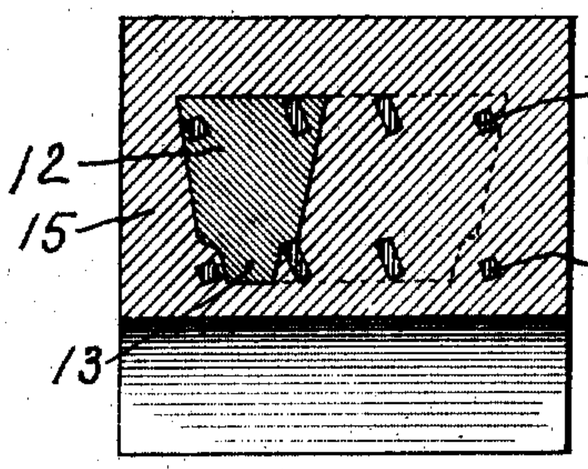


Fig. 5.

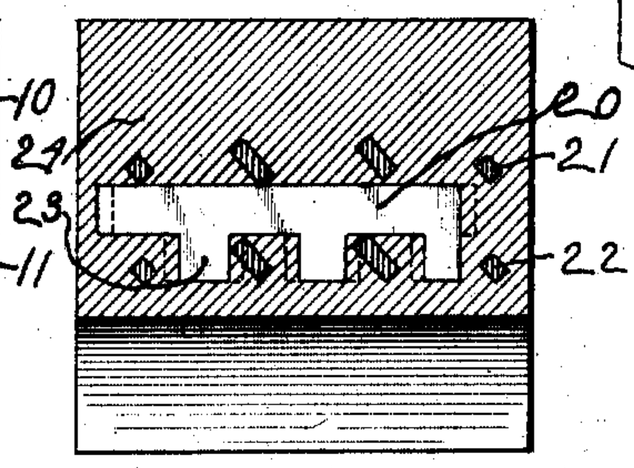


Fig. 7.

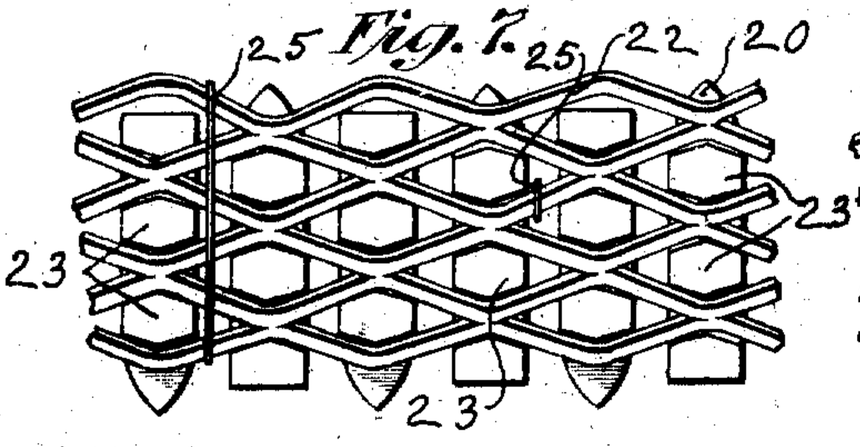
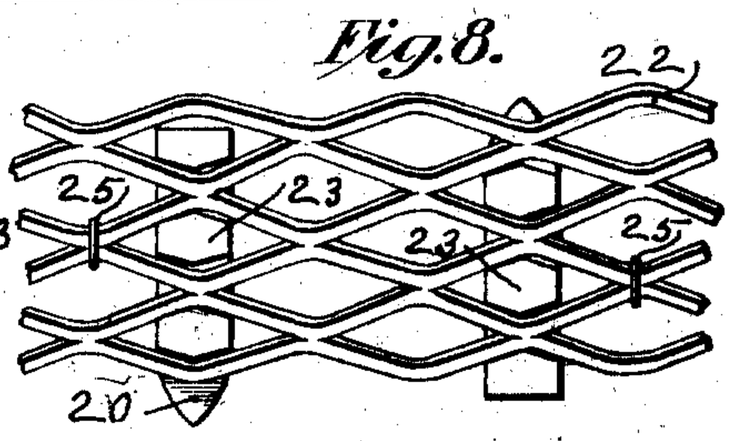


Fig. 8.



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UNITED STATES PATENT OFFICE.

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BRAKE-SHOE WITH CAST-METAL INSERT.

995,012. Specification of Letters Patent. Patented June 13, 1911.

Application filed February 10, 1911. Serial No. 607,727.

To all whom it may concern.

Be it known that I, HARRY JONES, a citizen of the United States, and a resident of Suffern, in the county of Rockland and State of New York, have made and invented certain new and useful Improvements in Brake-Shoes with Cast-Metal Inserts, of which the following is a specification.

My invention relates to brake shoes of the type wherein a metallic insert is embedded within the cast metal body portion of the shoe and worn away therewith, the object being to provide a brake shoe of the type referred to with foraminous holding members, formed preferably from expanded metal and embedded in the cast metal body portion of the shoe, and which members serve to hold the inserts in place and prevent them from falling from the shoe should they become broken, and also to hold the parts of the cast metal body portion of the shoe together should it become cracked or broken in service.

Other objects of my invention are to provide a brake shoe in which inserts may be conveniently and effectively held in place in a mold, while the cast metal body portion of the shoe is being cast about the same; to provide a brake shoe which will be effective for the purpose for which it is intended, which may be readily and cheaply manufactured, and one in which the entire shoe will be held together and thus be capable of continued use should it become cracked or broken.

Further objects of my invention will be referred to in the following specification wherein my improved brake shoe is described, and the particular features wherein my invention consists will be specifically claimed in the clauses of the concluding claim.

In the accompanying drawing wherein the preferred embodiment of my improved brake shoe is illustrated: Figure 1 is a view showing a foraminous member with a metallic insert secured thereto, the view being in perspective; Fig. 2 is a similar view showing a second foraminous member placed upon the insert preparatory to placing the same in a mold; Fig. 3 is a view showing a brake shoe in side elevation with the position of an insert indicated in dotted lines; Fig. 4 is a view showing a cross-section of my improved brake shoe in its finished form; Fig. 4ª is a similar view showing a brake shoe having a modified form of metallic insert; Fig. 5 is a view showing a similar cross-section of a brake shoe having another form of metallic insert; Fig. 6 is a view showing the metallic insert of the form shown in Fig. 5 in perspective; Fig. 7 is a plan view showing several inserts such as are shown in Fig. 6, preparatory to placing them in a mold; and, Fig. 8 is a similar view in which, however, some of the inserts are omitted.

In the drawings: 10 and 11 are two foraminous members between which a metallic insert is to be placed, and held in position, the said insert or inserts, being either entirely separate and distinct from the foraminous members or permanently secured to one of them.

In Figs. 1 and 2, I have shown an insert 12 as secured to the foraminous member 10, this member being the one nearest the back of the completed brake shoe. The insert 12 is formed from cast metal and is secured to the foraminous member 10 by casting the insert in a mold in which the member 10 is placed, whereby as will be understood, a portion of the member 10 corresponding in area with the insert 12 will become embedded in said insert, as will be understood from Figs. 4 and 4ª of the drawing, wherein the upper or back side of the insert 12 is shown as embedding a portion of the foraminous member 10. The insert 12 is provided with a plurality of projections 13, and after the insert has been secured to the member 10 as explained, the second foraminous member 11 is placed over the insert 12 in such a position that the projections 13 extend through openings in the member 11 as shown in Fig. 2 of the drawing, and the members 10 and 11 are secured together by means of wires or other securing means 14.

The cast metal insert 12 is shown in Figs. 1 and 2 as extending longitudinally of the bearing face of the brake shoe, and is shown as traversing a zig-zag or sinuous path throughout the face of the shoe, from which it will be understood that the entire surface of the car wheel with which the shoe comes in contact will be subjected to the action of the insert 12, whereby the formation of grooves in the face of the wheel is avoided, the insert 12 being ordinarily formed from harder metal than the body

portion of the brake shoe, which fact would tend to form grooves in the car wheel if the action of the insert is not distributed over the entire wearing surface of the wheel. The insert 12 is shown as wider at its lower or back side than at the front, so that the same will be securely retained in the cast metal body portion of the shoe.

The foraminous members 10 and 11 and the insert 12 having been formed and assembled in the manner illustrated in Fig. 2, the entire insert thus formed is placed in a mold and the cast metal, preferably cast iron, from which the body portion of the shoe is to be formed is poured into the mold whereupon the said insert becomes embedded in the cast metal body portion of the shoe. In Figs. 4, 4ª and 5, 15 represents the cast metal body portion of the shoe, which, as will be seen, embeds the inserts 12 and the foraminous members 10 and 11.

In the form of my improved brake shoe shown in Figs. 1 to 4ª it will be seen that the cast metal insert embeds a portion of the foraminous member 10, so that the insert is prevented from falling from the shoe should it becomes broken, this action being in addition to a similar action due to the tapered form of the insert, so that if the insert becomes broken as is frequently the case in actual use, the parts therefore are retained in the cast metal body portion of the shoe and held in place until the shoe is worn out.

In Fig. 4ª, I have shown three superposed foraminous members 16, 17 and 18 to the upper or rear one of which the insert 19 is secured by embedding the same therein, the said insert having much longer projections than the projections shown in Figs. 1, 2 and 4, so that the two members 17 and 18 may be placed over these projections. This construction provides a brake shoe in which the entire shoe is more securely bound together and prevented from disintegrating should it become broken in use, and also provides a shoe which may be worn away a somewhat greater distance from its bearing face than is the case when inserts such as are shown in Figs. 1, 2 and 4 are used.

In the form of brake shoes shown in Figs. 5 to 8 inclusive, the inserts 20 are shown as extending transversely to the wearing face of the shoe. These inserts are held between two foraminous members 21 and 22 formed preferably from expanded metal as in the form of the shoe above described, these inserts having each a plurality of projections such as 23 which extend through openings in the foraminous member 22. The inserts 20 in this form of my improved shoe are not, however, positively secured to the rear foraminous member 21, but are held between the two members as will be understood from Fig. 5 of the drawing. The members 21 and 22, however, secure the inserts 20 in place and prevent them from falling from the cast metal body portion 24 of the shoe should the inserts become broken. The members 21 and 22 also hold the inserts 20 in place when the said members and inserts are placed in a mold preparatory to pouring the cast metal of the body portion of the shoe thereinto in the process of forming the shoe, it being understood that the inserts are placed between the members 21 and 22 and these members tied together by means of wires or bands 25 before they are placed in the mold.

Fig. 7 shows a brake shoe in which a sufficient number of inserts such as 20 are used to provide a projection 23 extending through each opening in the expanding metal member 22. It is, however, not always necessary to provide so great a number of inserts, and, in Fig. 8 I have illustrated the use of a lesser number of inserts in the shoe. In such case the inserts should be so located in the foraminous supporting members that the projections 23 of the inserts will not come in line with one another, this feature being to avoid the formation of grooves in the wearing face of the car wheel as will be understood.

In addition to the function referred to above, the foraminous members serve further to prevent the cast metal body portion of the brake shoe from falling apart, should the same become broken in use. The foraminous members therefore serve to hold the entire brake shoe, that is, both the cast metal body portion and the cast metal insert, together in case either or both become broken in use, thereby enabling the shoe to be used until completely worn out.

It will be understood that the ends of the projections 13 or 23 are in the wearing face of the shoe when the shoe is in use, and that the said projections, the cast metal body portion of the shoe, and the foraminous member 11 (or 22) are simultaneously worn away as the shoe is used. The foraminous or expanded metal members serve to hold the parts of the shoe together as explained should the body portion or inserts, or both, become broken in use, so that the brake shoe may be used until both the inserts and body portion are entirely or substantially worn away.

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

1. A brake shoe comprising two superposed foraminous metallic members spaced apart from one another and arranged parallel with the wearing face of the shoe; an insert located between said members and occupying a part only of the areas of said members; and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

2. A brake shoe comprising two foraminous metallic members spaced apart from one another; a metallic insert located between said members and secured to one of them and occupying a part only of the areas of said members; and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

3. A brake shoe comprising two foraminous metallic members spaced apart from one another; a metallic insert located between said members and secured to one of them and occupying a part only of the areas of said members, and which insert extends longitudinally of the shoe; and a body portion formed from cast metal and within which, both said foraminous members and said insert are embedded.

4. A brake shoe comprising a foraminous metallic member; a longitudinal metallic insert secured thereto and occupying a part only of the area of said member, and which extends substantially the entire length of the shoe; and a body portion formed from cast metal and within which both said foraminous member and insert are embedded.

5. A brake shoe comprising two foraminous metallic members spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, said insert being located between said members and extending longitudinally of the shoe; and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

6. A brake shoe comprising two foraminous metallic members spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

7. A brake shoe comprising a foraminous metallic member; a longitudinal insert formed from cast metal and occupying a part only of the area of said member and in which a like area of said member is embedded and which insert extends substantially the entire length of the shoe; and a body portion formed from cast metal and within which both said foraminous member and said insert are embedded.

8. A brake shoe comprising a foraminous metallic member; an insert formed from cast metal and extending substantially the entire length of the shoe and occupying a part only of the area of said member and in which a like area of said member is embedded; and a body portion formed from cast metal and within which both said foraminous member and said insert are embedded.

9. A brake shoe comprising two foraminous metallic members spaced apart from one another; a metallic insert located between said members and secured to one of them and occupying a part only of the areas of said members, and which insert extends in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

10. A brake shoe comprising a foraminous metallic member; a metallic insert secured thereto and occupying a part only of the area of said member, and which insert extends in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which both said foraminous member and said insert are embedded.

11. A brake shoe comprising two foraminous metallic members spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, said insert being located between said members and extending in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which, both said foraminous members and said insert are embedded.

12. A brake shoe comprising a foraminous metallic member; an insert formed from cast metal and occupying a part only of the area of said member and in which a like area of said member is embedded, and which insert extends in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which both said foraminous member and said insert are embedded.

13. A brake shoe comprising two members formed from expanded metal and spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, said insert being located between said members and extending longitudinally of the shoe; and a body portion formed from cast metal and within which both said expanded metal members and said insert are embedded.

14. A brake shoe comprising two members formed from expanded metal and spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, and a body portion formed from cast metal and within which both said expanded metal members and said insert are embedded.

15. A brake shoe comprising two members

formed from expanded metal and spaced apart from one another; an insert formed from cast metal and occupying only a part of the area of said members and in which a like area of one of said members is embedded, said insert being located between said members; and a body portion formed from cast metal and within which both said expanded metal members and said insert are embedded.

16. A brake shoe comprising a member formed from expanded metal; an insert formed from cast metal and occupying a part only of the area of said member and in which a like area of said member is embedded and which insert extends longitudinally of the shoe; and a body portion formed from cast metal and within which both said expanded metal member and said insert are embedded.

17. A brake shoe comprising a member formed from expanded metal; an insert formed from cast metal and occupying a part only of the area of said member and in which a like area of said member is embedded; and a body portion formed from cast metal and within which both said expanded metal member and said insert are embedded.

18. A brake shoe comprising a member formed from expanded metal; an insert formed from cast metal and occupying a part only of the area of said member and in which a like area of said member is embedded, and which insert extends in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which both said expanded metal member and said insert are embedded.

19. A brake shoe comprising two members formed from expanded metal and spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members, and in which a like area of one of said members is embedded, said insert being located between said members and extending in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which both said expanded metal members and said insert are embedded.

20. A brake shoe comprising two foraminous metallic members spaced apart from one another; a metallic insert located between said members and occupying a part only of the areas of said members, and having a plurality of projections extending through openings in one of said members; and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

21. A brake shoe comprising two foraminous metallic members spaced apart from one another; a metallic insert located between said members and occupying a part only of the areas of said members, and secured to one of them and having a plurality of projections extending through openings in the other of said members; and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

22. A brake shoe comprising two foraminous metallic members spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, said insert having a plurality of projections extending through openings in the other of said members; and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

23. A brake shoe comprising two foraminous metallic members spaced apart from one another; an insert extending longitudinally of the shoe and formed from cast metal and occupying a part only of the area of said members, and in which a like area of one of said members is embedded, said insert having a plurality of projections extending through openings in the other of said members; and a body portion formed from cast metal and within which, both said foraminous members and said insert are embedded.

24. A brake shoe comprising two foraminous metallic members spaced apart from one another; a metallic insert located between said members and secured to one of them, and having a plurality of projections extending through openings in the other of said members, said insert occupying a part only of the areas of said members and the same extending in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which both said foraminous members and said insert are embedded.

25. A brake shoe comprising two foraminous metallic members spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, said insert being located between said members and having a plurality of projections extending through openings in the other of said members and the same extending in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which, both said foraminous members and said insert are embedded.

26. A brake shoe comprising a foraminous metallic member; an insert formed from cast metal and occupying a part only of the area of said member and in which a like area of said member is embedded, said insert extending in a sinuous path longitudi-

nally of the shoe and having a plurality of projections; and a body portion formed from cast metal and within which both said foraminous member and said insert are embedded.

27. A brake shoe comprising a foraminous metallic member; an insert formed from cast metal and occupying a part only of the area of said member and in which a like area of said member is embedded, said insert extending longitudinally of the shoe, and having a plurality of projections; and a body portion formed from cast metal and within which both said foraminous member and said insert are embedded.

28. A brake shoe comprising two members formed from expanded metal and spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, said insert being located between said members and having a plurality of projections extending through openings in the other of said members, and the same extending in a sinuous path longitudinally of the shoe; and a body portion formed from cast metal and within which, both said expanded metal members and said insert are embedded.

29. A brake shoe comprising two members formed from expanded metal and spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members and in which a like area of one of said members is embedded, said insert being located between said members and having a plurality of projections extending through openings in one of said members; and a body portion formed from cast metal and within which both said expanded metal members and said insert are embedded.

30. A brake shoe comprising two members formed from expanded metal and spaced apart from one another; an insert formed from cast metal and occupying a part only of the area of said members, said insert being located between said members and having a plurality of projections extending through openings in one of said members; and a body portion formed from cast metal and within which both said expanded metal members and said insert are embedded.

31. A brake shoe comprising a member formed from expanded metal; an insert formed from cast metal and occupying a part only of the area of said member, and in which a like area of said member is embedded, and which insert extends in a sinuous path longitudinally of the shoe and has a plurality of projections; and a body portion formed from cast metal and within which, both said expanded metal member and said insert are embedded.

Signed at Suffern in the county of Rockland and State of New York, this third day of February A. D. 1911.

HARRY JONES.

Witnesses:
F. H. HARTWELL,
FRANK OSBORN.