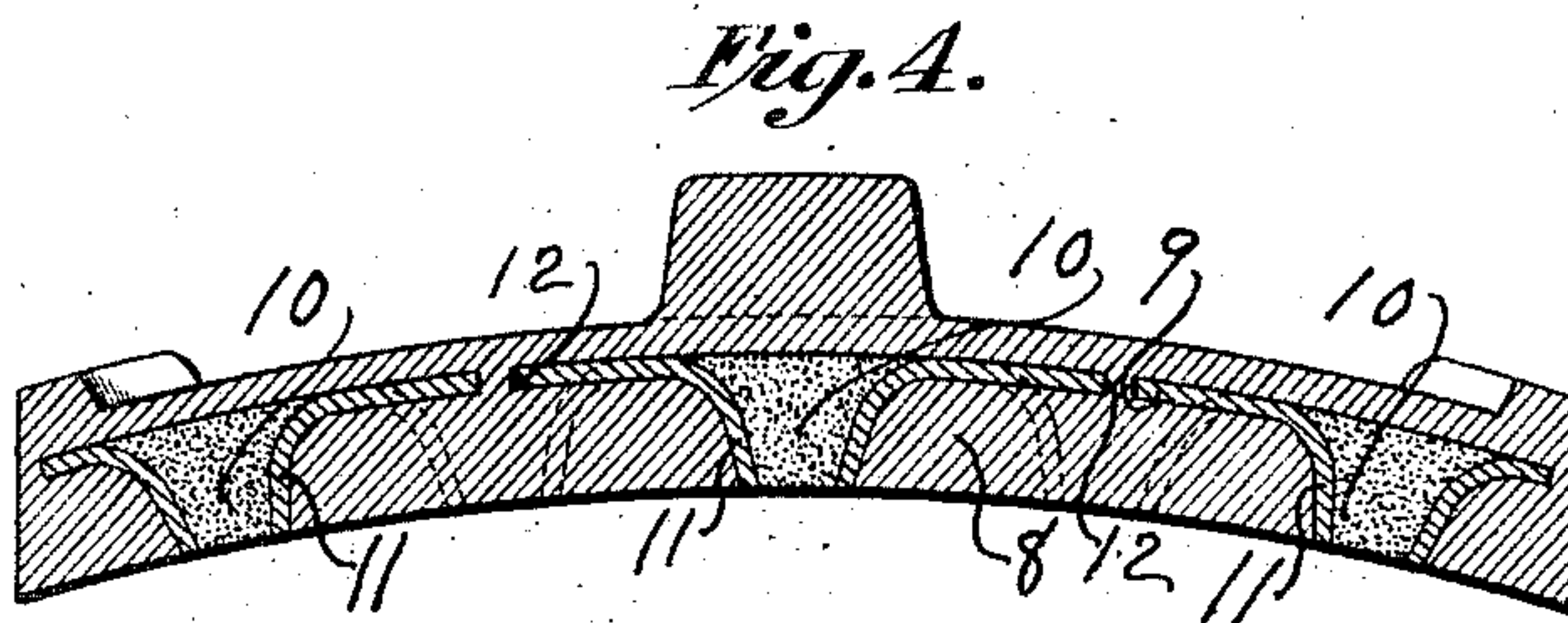
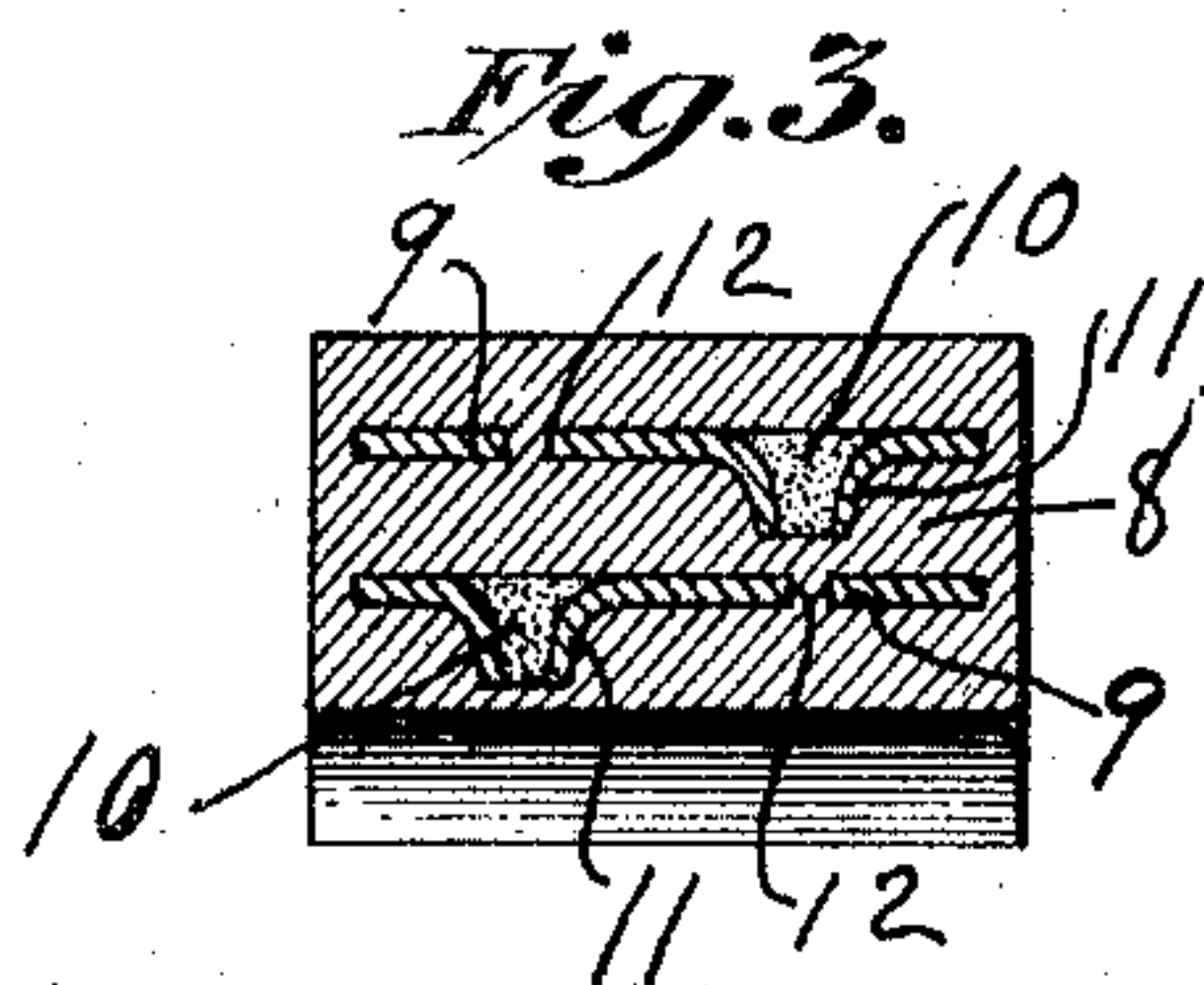
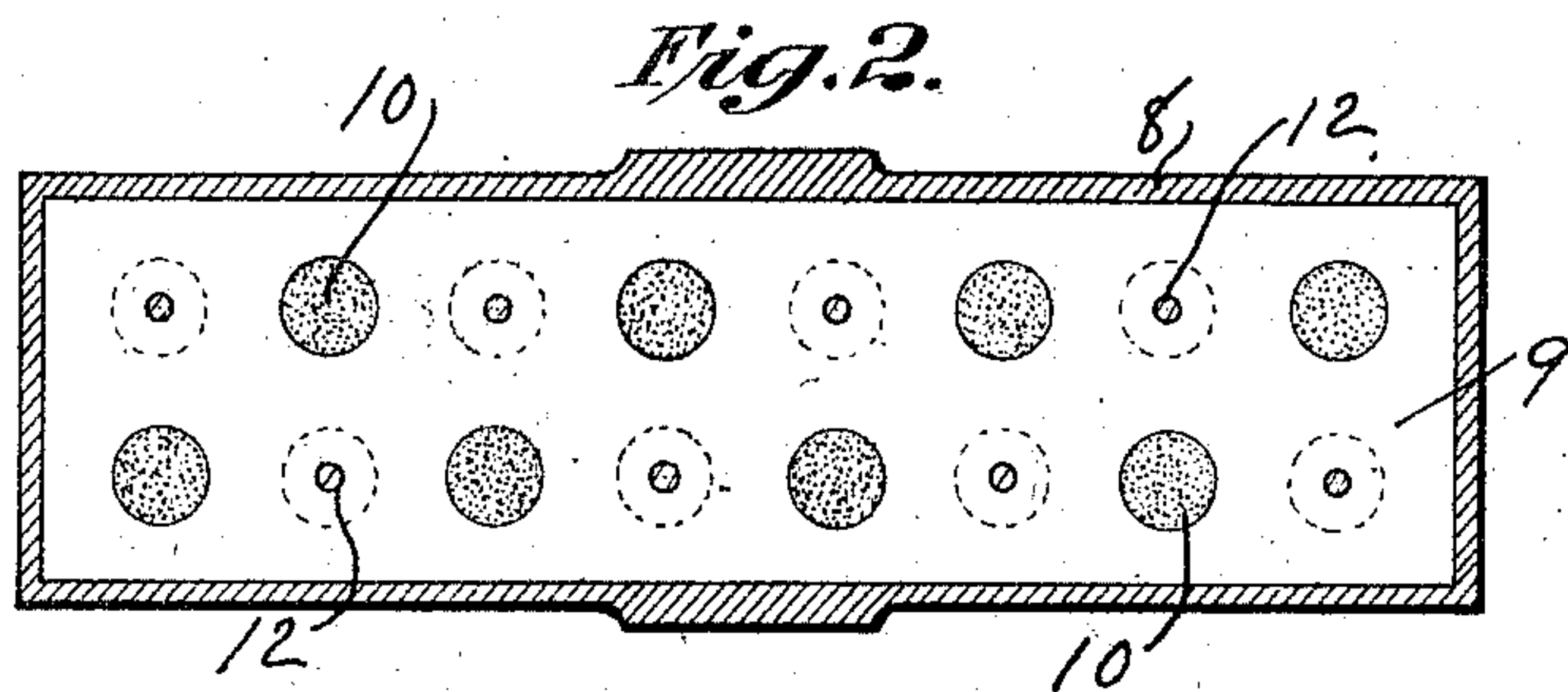
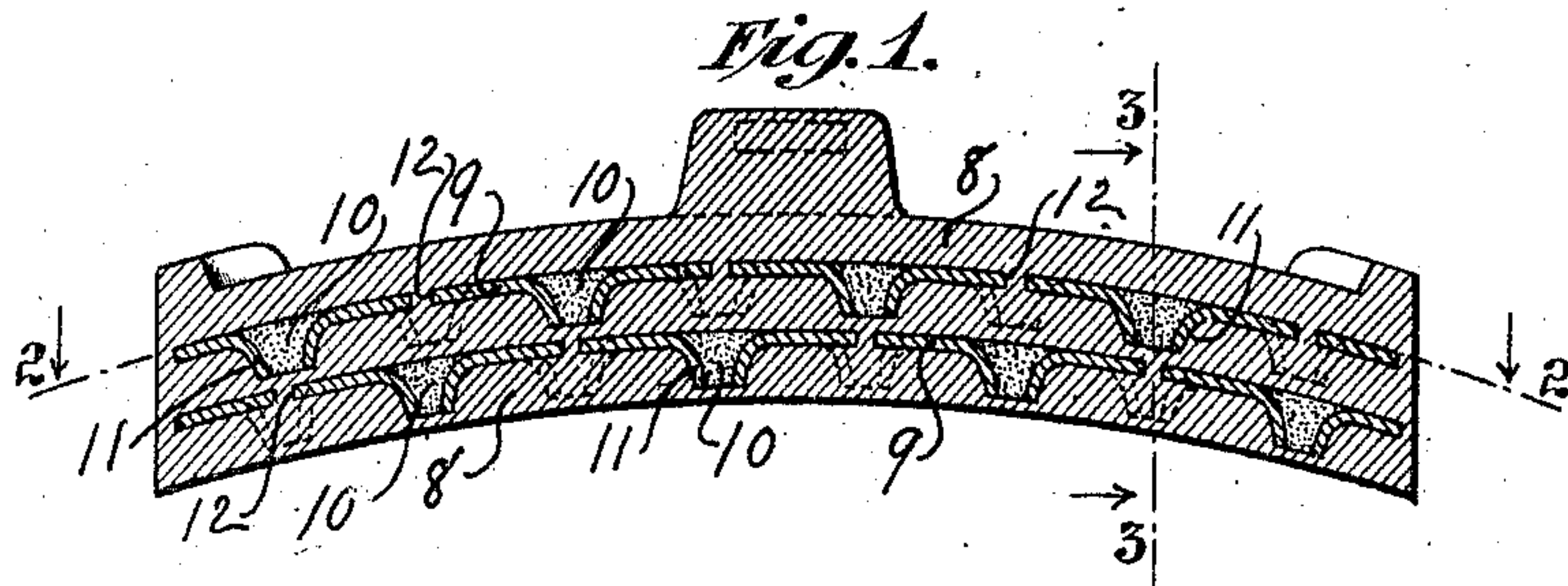


H. JONES.  
BRAKE SHOE.

APPLICATION FILED FEB. 10, 1911.

995,067.

Patented June 13, 1911.



Attest:  
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by

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Atty



# UNITED STATES PATENT OFFICE.

HARRY JONES, OF SUFFERN, NEW YORK, ASSIGNOR TO EDWARD H. FALLOWS, OF NEW YORK, N. Y.

## BRAKE-SHOE.

995,067.

Specification of Letters Patent. Patented June 13, 1911.

Application filed February 10, 1911. Serial No. 607,726.

*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, of which the following is a specification.

My invention relates to brake shoes of the type having a body portion formed from cast metal, such for example as cast iron, and having within the same inserts formed from a material different from said body, such material, in the more specific embodiment of my invention, being non-metallic. The inserts above referred to are placed within the mold in which the shoe is to be formed and the molten metal from which the body is formed poured thereinto, whereby the inserts become embedded and to a greater or less extent surrounded by the molten metal; and the object of my invention is to provide a metallic supporting member for the inserts whereby they are securely held in place during the casting of the shoe and subsequently throughout the life of the shoe, it being understood that the inserts and the cast body of the shoe are simultaneously worn away when the shoe is in use; and which supporting member serves also to strengthen the shoe and to hold the parts of the cast body thereof together and in place should the shoe become broken in use. Further, the strengthening member being worn away with the inserts and cast body portion, it forms a part of the bearing surface of the shoe, and contributes to the braking action.

With the objects in view and such as will hereinafter appear, my invention consists in the improved brake shoe illustrated in the accompanying drawing, described in the following specification, and particularly claimed in the clauses of the concluding claim of invention, and in such modifications thereof as will be obvious to those skilled in the art to which my invention relates.

In the drawing: Figure 1 is a view showing a section of my improved brake shoe upon a plane passing longitudinally thereof; Fig. 2 is a section taken upon a surface indicated by the line 2—2, Fig. 1; Fig. 3 is a view showing a section upon a transverse

plane indicated by the line 3—3, Fig. 1, and; Fig. 4 is a view showing a section of a modified form of my improved shoe.

The body portion 8 of my improved brake shoe is formed from cast metal, preferably from cast iron of a quality and composition selected with a view to securing a maximum of friction and, consequently, of retarding or braking action between the brake shoe and the car wheel.

9 is a metallic supporting member formed from wrought iron or mild steel or similar strong and tough material, which member serves as a support for inserts 10, a plurality of such inserts being commonly provided as shown. A single supporting member with inserts carried thereby may be used as shown in Fig. 4, or two or more such supporting members may be used as indicated in Figs. 1 and 3, the inserts being smaller and more numerous in the latter than in the former case as will be understood.

Recesses or pockets 11 are formed in the supporting member 9 within which the inserts 10 are contained such recesses being preferably formed by displacing the material of the supporting member either upward or downward, referring to Fig. 1, this being best accomplished by a punching process in which a displacement of the material adjacent the punch is sought rather than a sharp and clean cut hole, the recess or pocket being in the nature of a pronounced or excessive bur formed by driving a comparatively dull punch into and preferably through the supporting member, the die with which the punch coöperates being considerably larger than the punch.

In the manufacture of my improved brake shoe the supporting member is first formed and the inserts placed in the recesses or pockets and secured therein, after which the supporting member with the inserts which it supports, or two or more of such supporting members, is placed in the mold in which the body portion of the shoe is to be cast and the molten metal of which the body is formed poured about the supporting member, whereby the same together with the inserts which it carries becomes embedded in and, commonly, surrounded by the metal of the body portion of the shoe.

The inserts 10 are preferably formed from



a suitable non-metallic material or materials such as fire clay, ground slag, asbestos, plumbago, or similar substances, or from a mixture of two or more of them, selected  
 5 with reference to securing a maximum braking and, under certain circumstances, a limited amount of lubricating action. The ingredients from which the inserts are formed may be mixed with a moistening or binding  
 10 liquid to form a plastic mass, and the inserts formed by pressing the plastic material into the pockets or recesses, or the inserts may be first molded into form such that they will fit the pockets of the supporting member  
 15 and subsequently placed therein and secured in position.

In view of the premises it will be seen that the inserts are held in proper position by the supporting member during the casting  
 20 of the body of the shoe, and that they are prevented from becoming loose and falling out of the body portion while the shoe is in use, the body, inserts, and supporting member all being simultaneously worn away,  
 25 as will be readily understood. The supporting member, in addition, strengthens the cast metal body portion of the shoe and holds the parts of the body portion together should it become broken in use, and, finally,  
 30 as the walls of the recesses in which the inserts are contained wear away with the inserts and body portion, it follows that the said supporting member contributes in part to the braking action of the shoe.

35 The supporting member 9 is provided with holes 12 through which the metal from which the body portion 8 of the shoe may flow as the shoe is formed whereby connections are provided between the portions of  
 40 the body upon the two sides of the supporting member and the shoe strengthened. This construction lessens the liability of the body of the shoe to separate from the supporting members when the shoe is in use, it  
 45 being difficult in practice to secure an entirely satisfactory union between the cast metal body of the shoe and the supporting member. As many openings 12 will be provided as may be necessary to secure adequate  
 50 strength in the finished shoe.

While I have referred to the member or plate 9, as a support for a plurality of inserts, the latter may be omitted without sacrificing the advantages secured by the plate.  
 55 In such cases the cast metal from which the body portion 8 is made, flows into, through, and fills the pockets 11 as the molten metal is poured into the mold, the result being a brake shoe, the wearing face of which is  
 60 made up for the most part of cast iron, but which includes annular portions of wrought iron or steel contributed by the plate 9. The projecting pockets also serve to space the plates in case two or more are used.

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

1. A brake shoe comprising a body portion formed from cast metal, and a plate provided with a series of projecting open bottom pockets, said plate being embedded in  
 70 said body portion and the open bottoms of said pockets being in the wearing face of the shoe.

2. A brake shoe comprising a body portion formed from cast metal, and a plurality of superposed plates embedded therein each of which is provided with a series of projecting open bottom pockets.

3. A brake shoe comprising a body portion formed from cast metal, and a plate provided with a series of cone-shaped pockets open at their smaller ends, said plate being  
 80 embedded in said body portion.

4. A brake shoe comprising a body portion formed from cast metal, and a plate embedded in said body portion, said plate having a series of openings the material surrounding which is depressed to form ridges.

5. A brake shoe comprising a body portion formed from cast metal, a supporting member located within said body portion and embedded in the material thereof and having a plurality of openings, and a plurality of inserts located within the openings in said supporting member and embedded in the body  
 90 portion of said shoe.

6. A brake shoe comprising a body portion formed from cast metal, a supporting member provided with a series of pockets, and inserts contained within said pockets, said supporting member and inserts being  
 100 embedded in said body portion.

7. A brake shoe comprising a body portion formed from cast metal, a supporting member portions of which are depressed to thereby form a series of pockets, and inserts contained within said pockets, said supporting member and inserts being embedded in  
 105 said body portion.

8. A brake shoe comprising a body portion formed from cast metal, a supporting member provided with a series of cone-shaped pockets open at their smaller ends, and inserts contained within said pockets, said supporting member and inserts being  
 115 embedded in said body portion.

9. A brake shoe comprising a body portion formed from cast metal, and a supporting member containing a series of non-metallic inserts, said supporting member and inserts being embedded in said body portion.

10. A brake shoe comprising a supporting member carrying a series of non-metallic inserts, and a body portion formed from cast metal and surrounding both said support and said inserts.

11. A brake shoe comprising a body por-



tion formed from cast metal, and a metallic supporting member having a series of pockets each of which contains a non-metallic insert, said supporting member and inserts 5 being embedded in said body portion.

12. A brake shoe comprising a body portion formed from cast metal, and a supporting member portions of which are depressed to thereby form a series of pockets each of 10 which contains a non-metallic insert, said supporting member and inserts being embedded in said body portion.

13. A brake shoe comprising a body portion formed from cast metal, and a supporting 15 member having a series of cone-shaped pockets open at their smaller ends and each of which contains a non-metallic insert; said supporting member and inserts being embedded in said body portion.

20 14. A brake shoe comprising a body portion formed from cast metal, and a supporting member having a series of openings each of which contains a non-metallic insert, said supporting member and inserts being embedded 25 in said body portion.

15. A brake shoe comprising a supporting member having a series of pockets each of which contains a non-metallic insert, and a body portion formed from cast metal and

surrounding said supporting member and 30 inserts.

16. A brake shoe comprising a supporting member portions of which are depressed to thereby form a series of pockets each of 35 which contains a non-metallic insert, and a body portion formed from cast metal and surrounding said supporting member and inserts.

17. A brake shoe comprising a metallic supporting member having a series of cone- 40 shaped pockets open at their smaller ends and each of which contains a non-metallic insert, and a body portion formed from cast metal and surrounding said supporting member 45 and inserts.

18. A brake shoe comprising a metallic supporting member having a series of open- ings each of which contains a non-metallic insert, and a body portion formed from cast 50 metal and surrounding said supporting member and inserts.

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.