

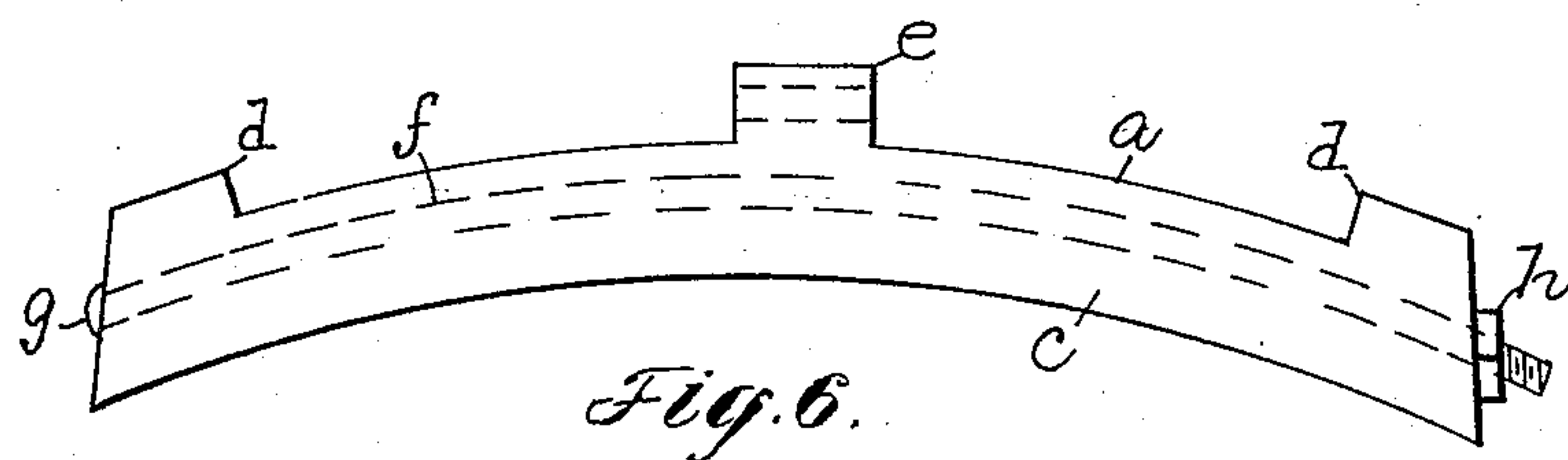
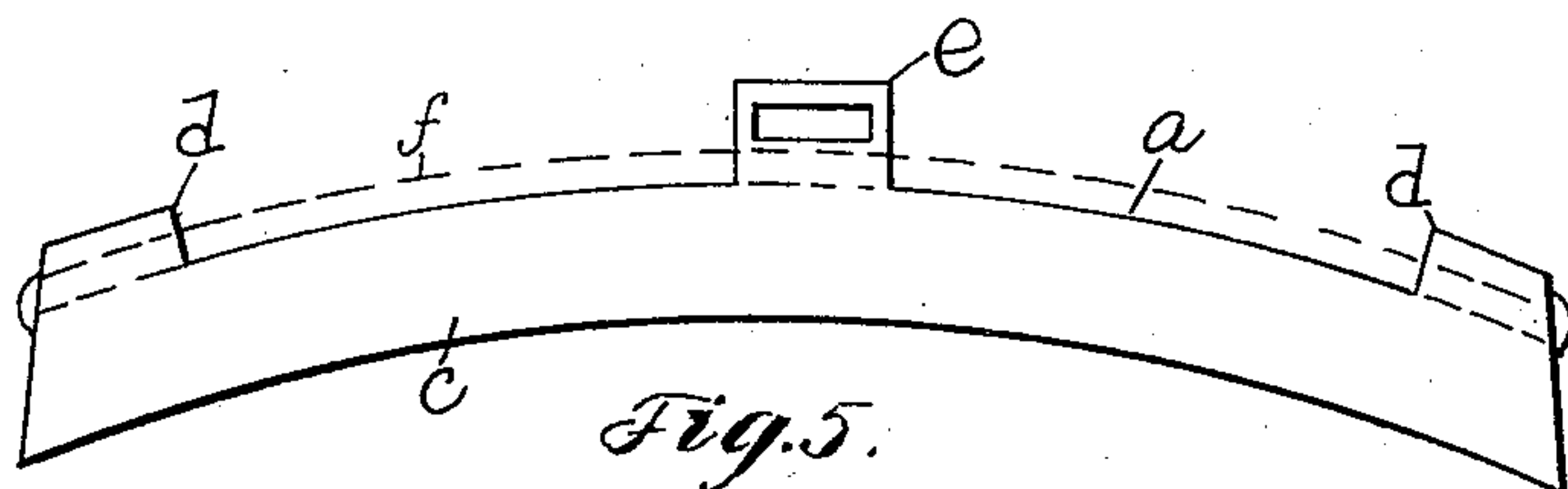
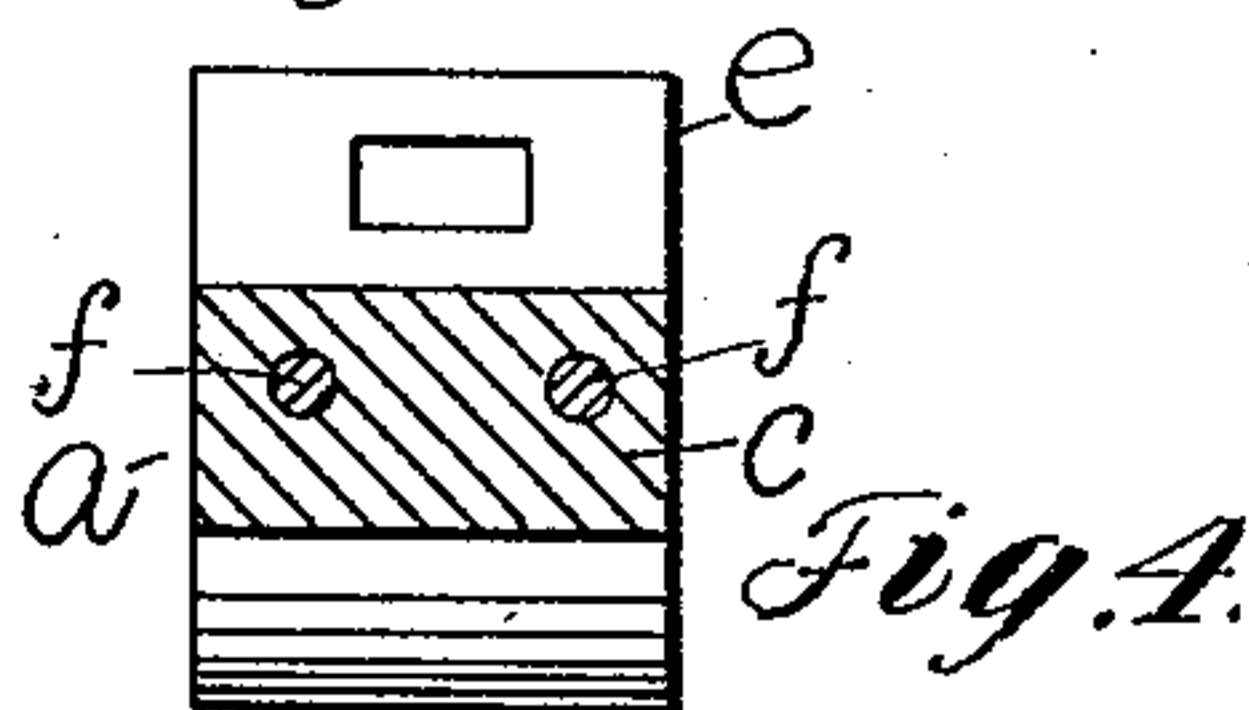
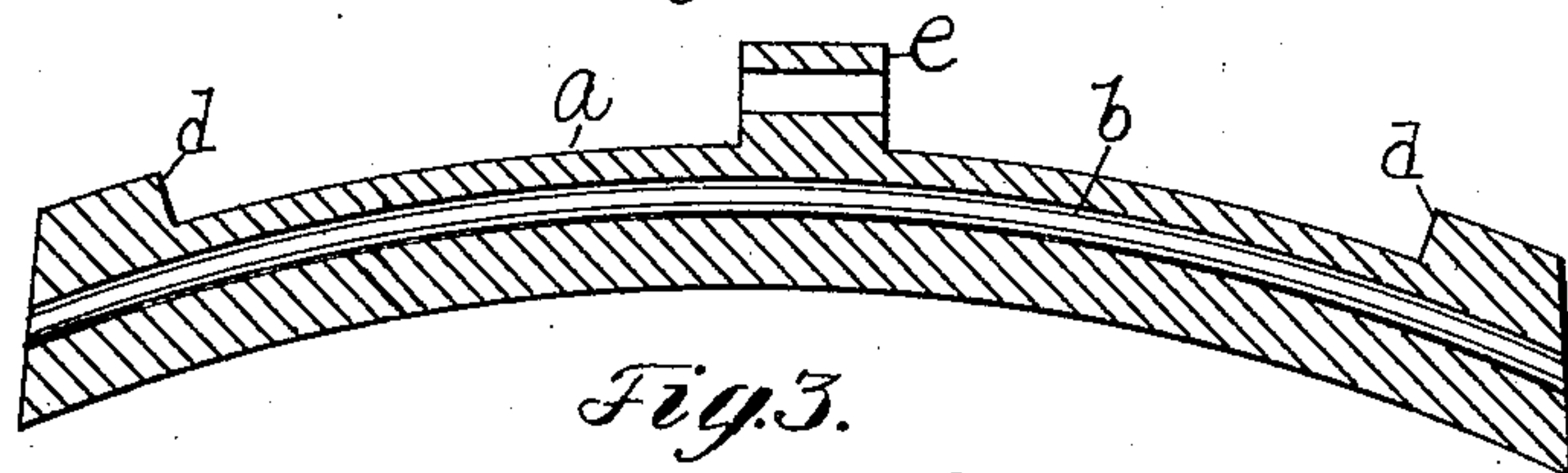
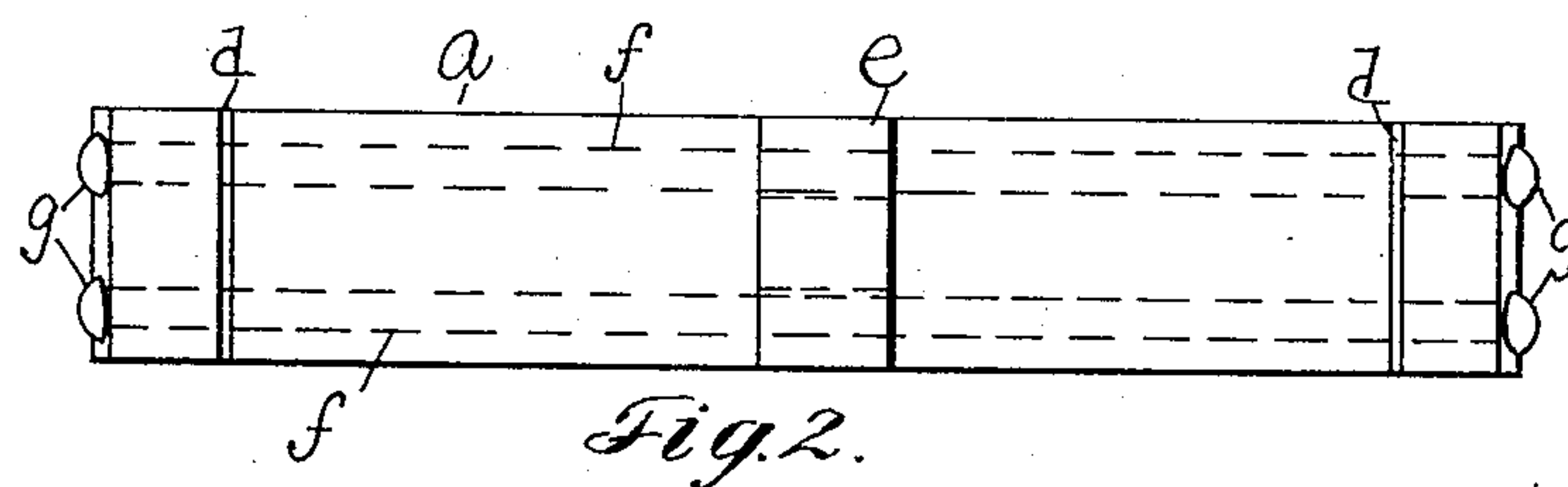
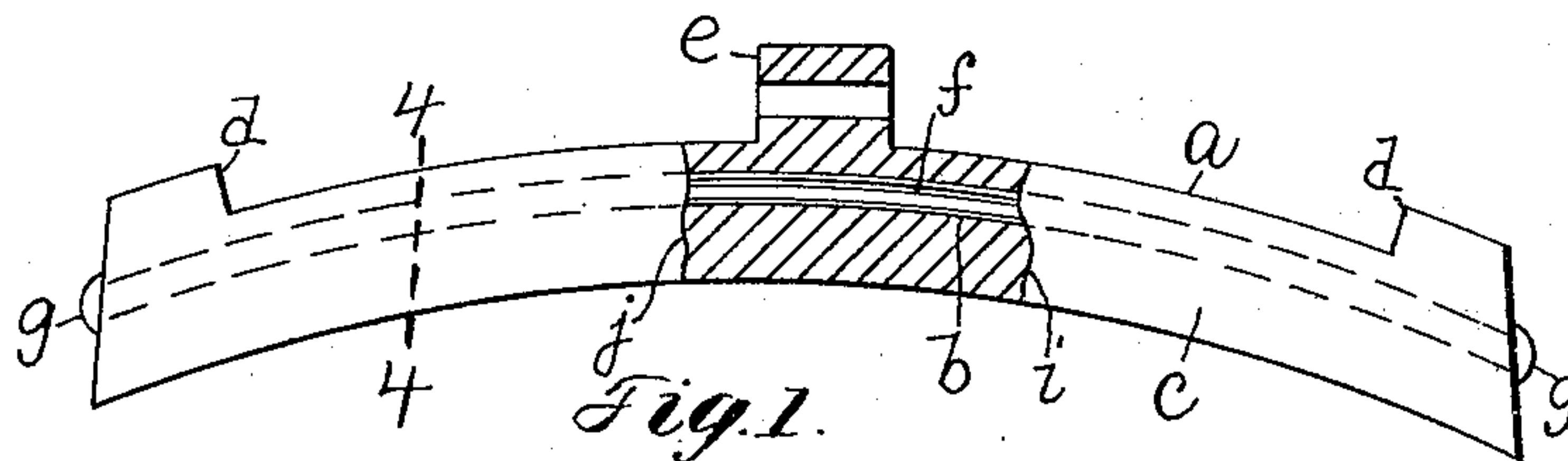
No. 773,697.

PATENTED NOV. 1, 1904.

W. W. WHITCOMB.  
BRAKE SHOE.

APPLICATION FILED AUG. 29, 1904.

NO MODEL.



Witnesses.  
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Inventor:  
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Att'y.

# UNITED STATES PATENT OFFICE.

WILLIAM W. WHITCOMB, OF BOSTON, MASSACHUSETTS.

## BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 773,697, dated November 1, 1904.

Application filed August 29, 1904. Serial No. 222,491. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. WHITCOMB, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Brake-Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to brake-shoes of cast metal—such, for instance, as the cast-iron shoes now commonly employed on railways.

The invention has for its object to reinforce cast-metal brake-shoes in a manner as will be 15 described without decreasing the strength or otherwise impairing the usefulness of the shoe, so that in case of fracture the parts of the shoe may be retained together and prevented from falling.

20 Prior to this invention I am aware that attempts have been made to reinforce cast-iron brake-shoes by casting the shoe about reinforcing strips or rods, so that the latter are wholly or partially embedded in the cast brake- 25 shoe; but so far as I am aware such attempts have not been successful, owing to the weakened structure of the shoe due to blow-holes formed by contact of the hot metal with the reinforcing strips or rods. These defects are 30 avoided in accordance with this invention by casting the shoe in the ordinary manner in a mold provided with a removable core which is extended in the direction of the length of the mold and which forms in the cast shoe a 35 longitudinally-extended hole or opening from which the core is removed when the brake-shoe is cool and through which hole or opening is inserted a reinforcing tie rod or strip of tough metal, such as steel or wrought- 40 iron, and which may be retained in said hole or opening by frictional contact with the walls of said opening or by mechanical means, as will be described. These and other features of this invention will be pointed out in 45 the claims at the end of this specification.

Figure 1 is a side elevation of one form of cast-metal brake-shoe embodying this invention; Fig. 2, a plan view of the shoe shown in Fig. 1; Fig. 3, a longitudinal section of the 50 shoe shown in Fig. 2, the reinforcing-rod be-

ing omitted; Fig. 4, a cross-section on the line 4 4, Fig. 1; and Figs. 5 and 6, side elevations of modifications to be referred to.

Referring to the drawings, *a* represents a cast-metal shoe—such, for instance, as a cast- 55 iron brake-shoe, now commonly used on railways, except that in the present instance the shoe *a* is provided with one or more holes or openings *b*, which extend longitudinally of the shoe and preferably are formed in the body 60 portion *c* thereof; but, if desired, they may be formed in lugs or ears attached to the body-portion and shown in the present instance as lugs or raised end portions *d* and the center ear *e*, as represented in Fig. 5. 65

The longitudinally-extended holes or openings *b* are preferably formed when the brake-shoe is cast, a sand or other removable core being provided in the mold for forming said 70 holes or openings, which core is readily removed after the shoe is taken from the mold. The cast-iron brake-shoe thus formed has inserted into the longitudinal hole or opening *b* a reinforcing rod or strip *f* of tough metal, such as steel or wrought-iron and which 75 may be frictionally engaged with the brake-shoe by driving or forcing the said rod into the opening *b* and, if desired, which may be mechanically secured to the brake-shoe by extending the ends of the reinforcing-rod be- 80 yond the ends of the shoe and upsetting the same to form heads *g*, or said rods may be otherwise mechanically secured to the brake-shoe—such, for instance, as by a head *g* at one end and a nut *h* at the other end, as 85 shown in Fig. 6.

I may prefer to frictionally and mechanically secure the reciprocating rod *f* to the brake-shoe, as represented in Figs. 1 and 2, but either alone may be used to advantage. 90

From the above description and by reference to the drawings it will be seen that in case the brake-shoe should become broken— 95 as, for instance, on the lines *i j*, Fig. 1—the parts of the shoe would be retained together and prevented from falling by the reinforcing tie rod or rods *f*, thereby avoiding accidents from this source. It will also be noted that the brake-shoe is cast separate from the reinforcing-rods and the formation of blow-holes 100



in the shoe is avoided and the strength of the shoe is not impaired thereby, and, further, when steel rods are used the temper of the same is not affected.

5 I claim—

1. In a brake-shoe, in combination, a cast-metal shoe having a longitudinally-extended hole or opening, and a tie rod or strip inserted into said hole or opening and secured to  
10 said shoe, substantially as described.

2. In a brake-shoe, in combination, a cast-metal shoe having a hole or opening extended longitudinally through the body portion thereof, and a reinforcing tie rod or strip in-  
15 serted into said opening and secured to said body portion, substantially as described.

3. In a brake-shoe, in combination, a cast-metal shoe having a longitudinally-extended hole or opening, and a tie rod or strip in-  
20 serted into said hole or opening and mechanically secured at its end to said shoe.

4. The method of making reinforced cast-metal brake-shoes, which consists in casting the shoe and forming therein a longitudinally-extended hole or opening, and inserting in the  
25 opening in the cast shoe a reinforcing tie rod or strip, substantially as described.

5. The method of making reinforced cast-metal brake-shoes, which consists in casting the shoe in a mold containing a core to form  
30 a longitudinally-extended opening in said shoe, removing the core from the cast shoe, and inserting a reinforcing tie rod or strip into said opening, substantially as described.

In testimony whereof I have signed my name  
35 to this specification in the presence of two subscribing witnesses.

WILLIAM W. WHITCOMB.

Witnesses:

JAS. H. CHURCHILL,  
J. MURPHY.