

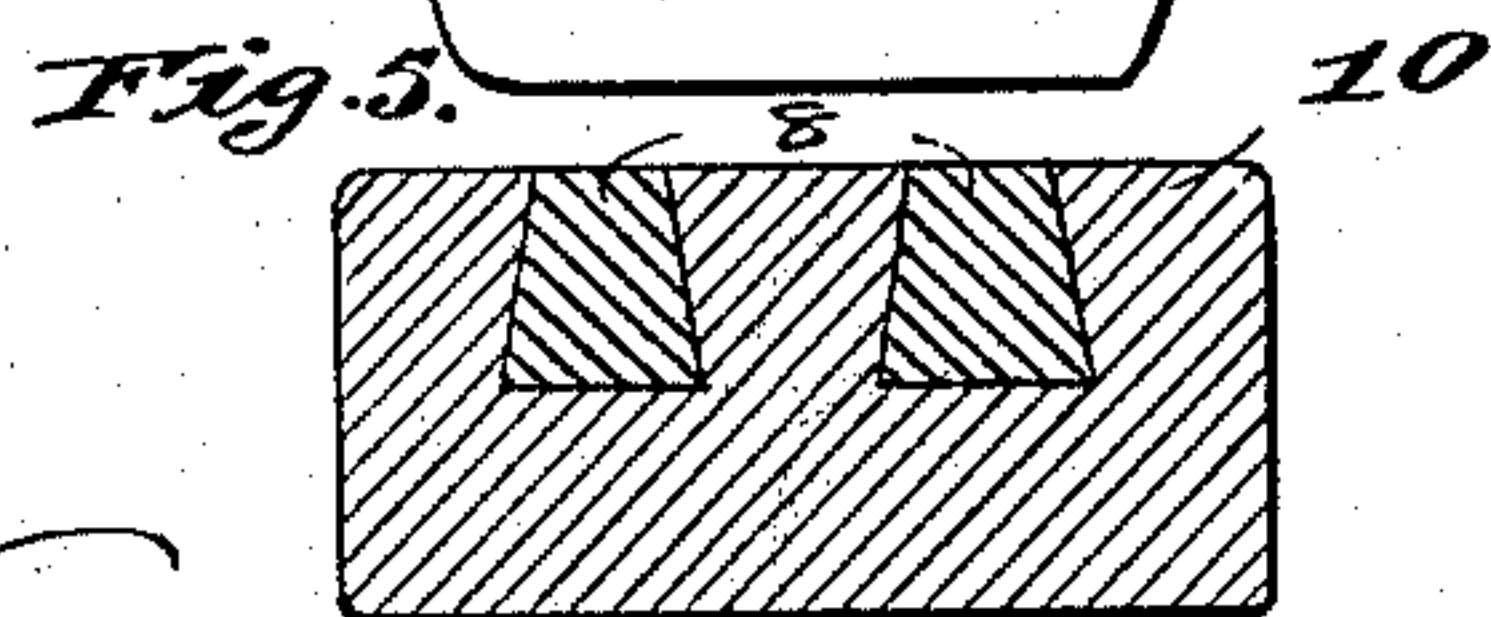
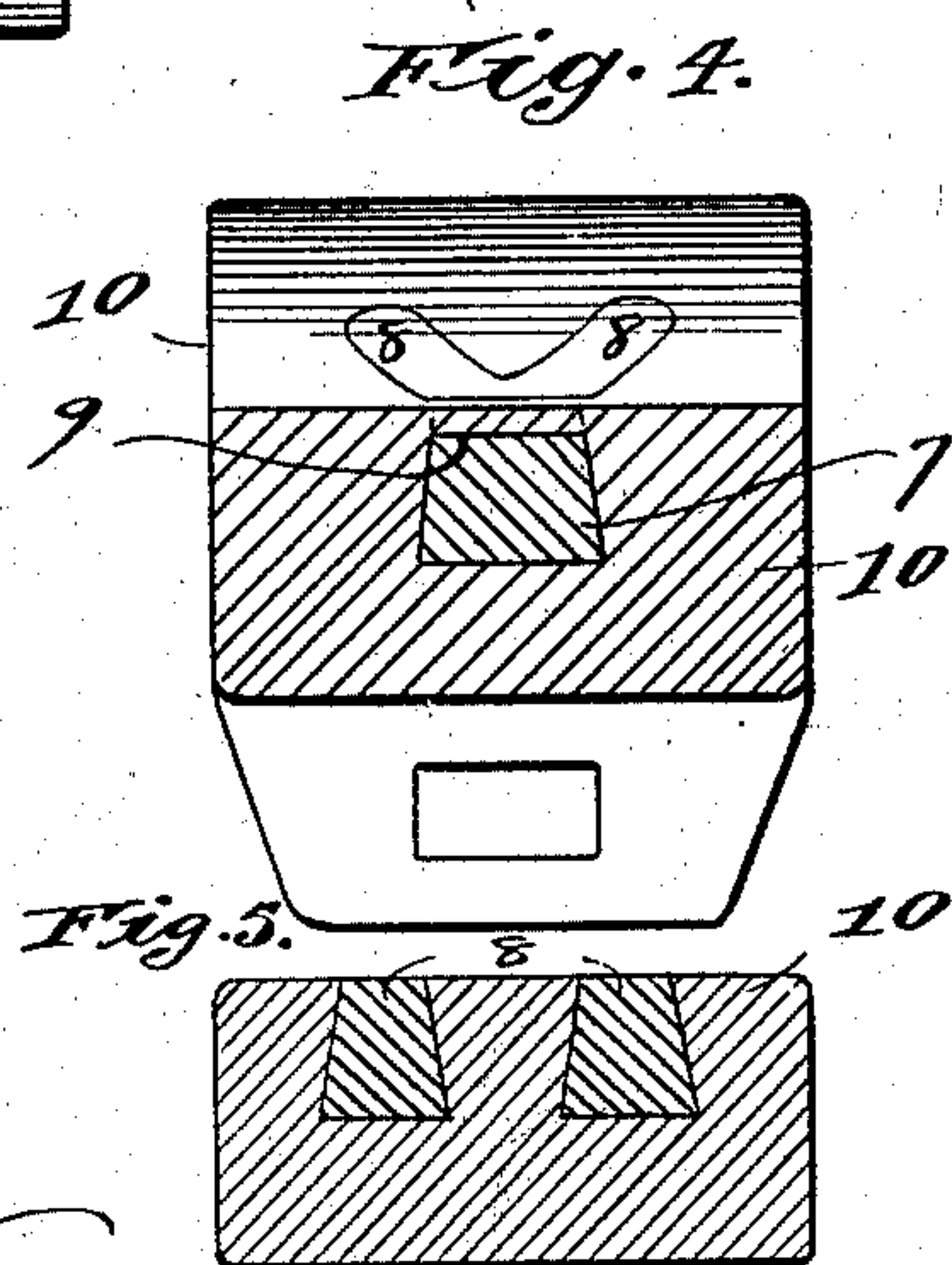
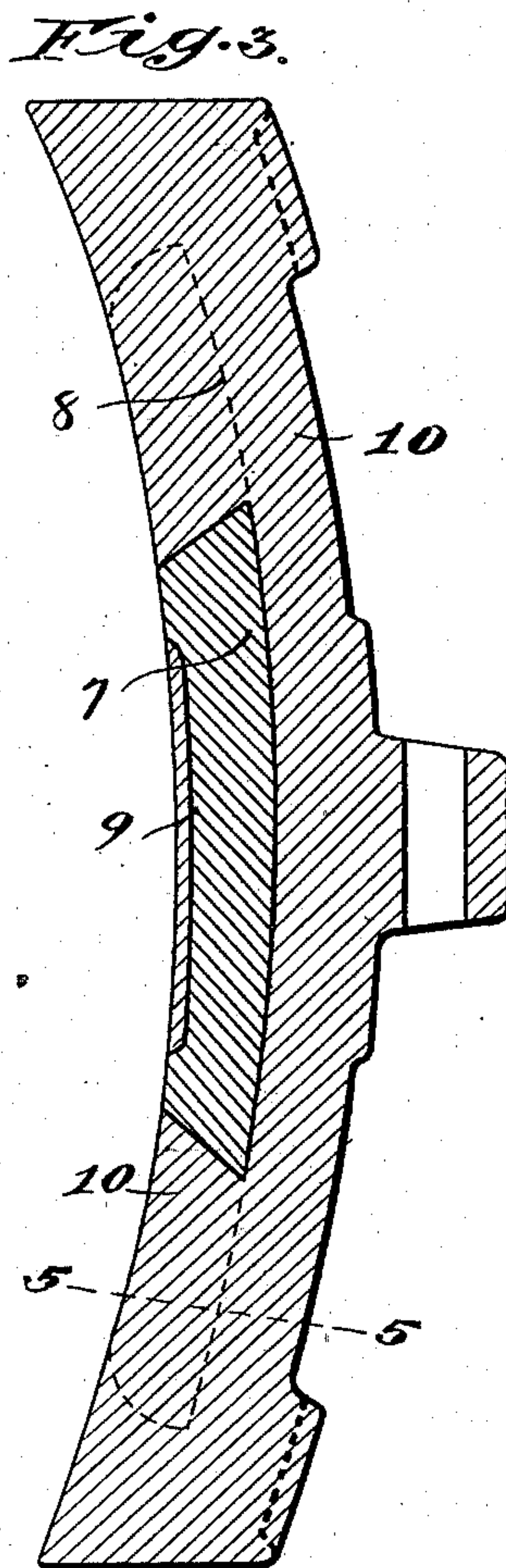
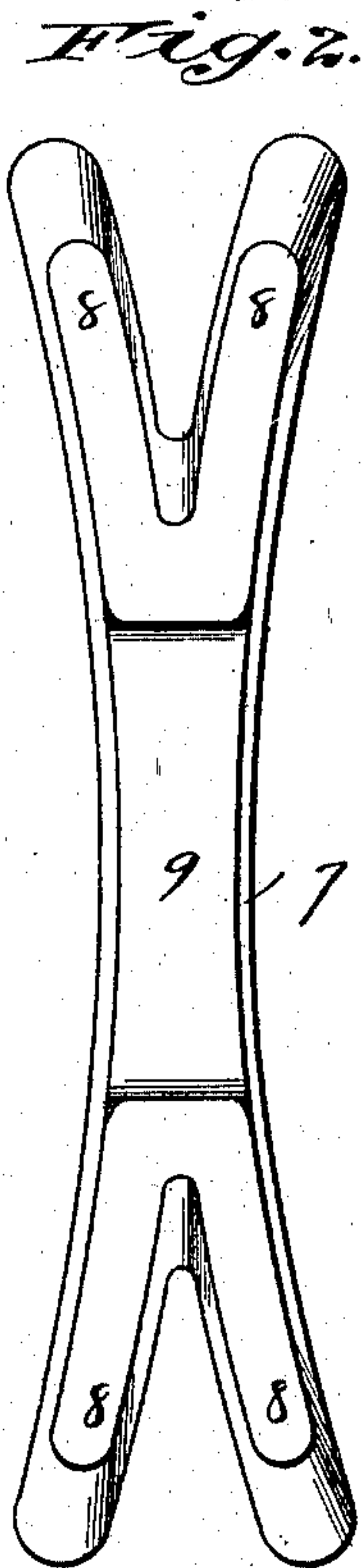
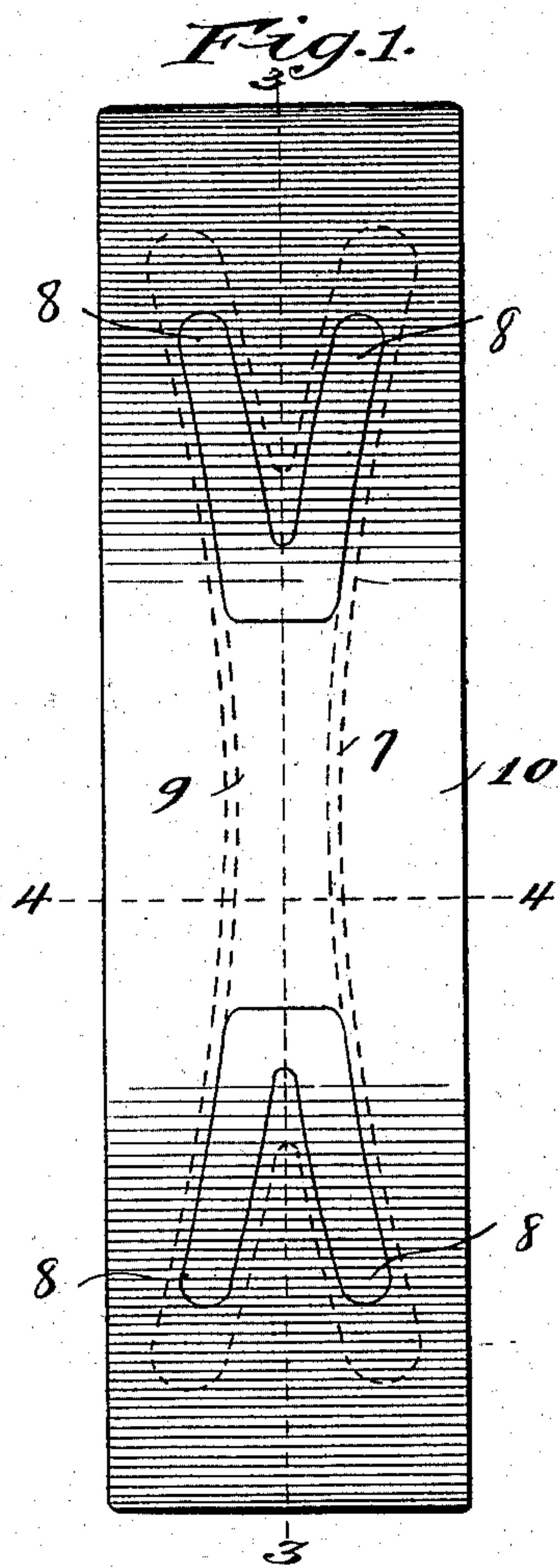
No. 719,897.

PATENTED FEB. 3, 1903.

F. R. SPEAR.
CAR BRAKE SHOE.

APPLICATION FILED SEPT. 13, 1902

NO MODEL.



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UNITED STATES PATENT OFFICE.

FRANK R. SPEAR, OF CHICAGO, ILLINOIS.

CAR-BRAKE SHOE.

SPECIFICATION forming part of Letters Patent No. 719,897, dated February 3, 1903.

Application filed September 13, 1902. Serial No. 123,258. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. SPEAR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Brake Shoes, of which the following is a specification.

My invention relates to a cast-metal brake-shoe having a hard-metal insert; and the object of my invention is to improve the construction of brake-shoes of this class, and particularly in respect to the following objects: First, to strengthen the shoe, and this is secured not only by the combination of the tough or hard metal insert with the cast-metal body of the shoe, but also by reason of the particular form of the insert, whereby it is thoroughly interlocked with the body of the shoe, so as to strengthen the same, particularly at the point where there is the greatest liability or tendency of the shoe to break under the strain; second, to improve the durability or life of the shoe, which is accomplished by the employment of a hard-metal insert, which affords the principal wearing-surface and of such form as to distribute the wear, and, third, to prevent undue or excessive wear upon the wheel, which is accomplished not only by the peculiar formation of the insert, which is constructed with outwardly sloping or beveled walls, so as to prevent presenting to the wheel-surface any sharp cutting-angles, which have the effect of cutting away or reducing the surface of the wheel unduly, but also by reason of the shape of the insert the principal wear of the shoe is outside of the line of wear produced upon the tread-surface of the wheel by the rail.

While my improved brake-shoe does not belong to that class known as "tire-dressing" shoes and is not intended to serve the purpose of the so-called "tire-dressing" shoe, yet it has the effect to distribute the wear so as to render the use of the tire-dressing provisions unnecessary.

My invention is shown in the accompanying drawings, in which—

Figure 1 is a face view of the shoe. Fig. 2 is a face view of the hard-metal insert. Fig. 3 is a central longitudinal section through the shoe and insert; and Figs. 4 and 5 are

transverse sectional views on the lines 4 4 and 5 5 of Figs. 1 and 2, respectively.

In carrying out my invention I first form a hard-metal insert (indicated as a whole by 55 7) consisting, preferably, of cast metal and slightly less in length than the total length of the shoe, although the length of the insert may be varied. This insert is also preferably formed with bifurcated or branched ends 8, 65 and the sides of the body of the insert taper outwardly, so that the back of the insert is of greater width than the face. The end portions of the furcations are also beveled or tapered, so that the back of the insert is longer than the 65 face. The central portion of the body is narrower and thinner than the ends and the reduced portion (indicated at 9) intended to be inclosed by the metal of the body 10 of the shoe. In constructing the shoe this insert is prefer- 70 ably made of a hard tough iron and cast on a chill, so that it is much harder and tougher than the body of the shoe itself. The insert is placed face down in the mold, and the metal to form the body 10 is poured thereon, so as to 75 envelop the insert, except the exposed surface of the end portions or furcations of the shoe. These exposed portions provide bearing-surfaces which in outline are somewhat like the shape of the letter V, and the branches or arms 80 of the furcations extend well toward the side edges of the shoe. The central portion of the insert is partially covered by the metal of the body of the shoe and is not as wide as the ends, and this portion in a properly constructed 85 and hung brake-shoe will coincide with the line of wear caused by the contact between the rail and the tread-surface of the wheel. It is well known that this wear produces a groove in the surface of the wheel, leaving the bound- 90 aries or margins higher than the bottom of the groove. This is very largely reduced in my construction because of the bifurcated form of the ends of the insert, which have the effect to distribute the wear and prevent 95 grooving of the wheel and also of the shoe itself. A further and very important feature is the provision of the end portions of the insert with rounded or inclined surfaces. Inserts have heretofore been made in various 100 forms; but they usually have walls which are disposed at right angles to the face of the

shoe. The result is that these sharp angles or shoulders being harder than the body of the shoe do not wear so rapidly, but remain more or less sharp and present abrupt or cutting angles to the surface of the wheel. In my construction after the shoe has worn no such abrupt or sharp-cut angles are left; but, on the contrary, the rounded shoulder is always presented while the shoe remains serviceable. Obviously the longitudinal sides of the shoe need not be beveled, as they do not cut in a line transverse to the length of the shoe; but if beveled the insert will be more firmly secured.

Another important feature of the invention consists in the strengthening of the shoe by means of the form of insert. Not only is the insert broader at the base than at its face, which results in a dovetailed engagement of the insert with the body of the shoe, but the bifurcation of the ends of the insert also serve to more firmly and effectually lock the insert with the body of the shoe, and this is still further enforced and carried out by the depression of the central portion of the insert below the surface of the shoe; but the most important consideration in the strengthening of the shoe consists in the fact that the insert is a continuous body and extends across the middle of the shoe and well toward its ends, thus affording all the advantages of those constructions wherein it is attempted to strengthen the shoe by the use of steel plates on the back or rods embedded in the shoe at the back and at the same time affording the necessary wearing-surface on the face of the shoe itself. It is well known that it is not desirable to provide the entire face of the shoe with the chilled metal, because it would produce excessive wear and reduce the braking power. Neither is it desirable that the wearing-surfaces of the inserts should be localized or centered at one point, but rather that these wearing-faces should be distributed over the face of the shoe, and particularly on opposite sides of its middle. All these advantages are secured in my construction, while at the same time the insert is of such form and size and is so disposed as to very materially strengthen the shoe, and particularly across its middle, where the greatest strain occurs.

While I prefer the particular form of insert shown, it is obvious that slight variations may be made in its form and still secure the advantages hereinabove pointed out in greater or less degree. For example, instead of forming the end portions as complete furcations they may be in the form of lobes connected by webs, or the base portion of the

insert may be continuous. Again, the insert may vary from the form shown either in width or length; but I consider it important, if not indispensable, that the insert shall be continuous and of such length as to extend across the middle portion of the shoe and that its sides, at least those which are presented at an angle to the length of the shoe, shall be beveled or tapered, so as to prevent the formation of sharp angles or shoulders.

I claim—

1. A brake-shoe having a cast-metal body and a hard-metal insert extending longitudinally of the shoe-body, the transversely-disposed end edges of said insert being sloped from the wearing-face of the shoe toward the proximate ends of the shoe-body.

2. A brake-shoe having a cast-metal body and a hard-metal insert extending longitudinally of the body, the end portions of said insert being exposed for wear and the intermediate portion embedded below the surface of the shoe, and the transversely-disposed edges of said insert presented to the advancing tread of the car-wheel being inclined to form obtuse angles with the contiguous wearing-surface of the insert, for the purpose set forth.

3. A brake-shoe having a cast-metal body and a hard-metal insert extending longitudinally and uninterruptedly along the principal length of the central portion of the shoe-body, the end portions thereof being of bifurcated form and exposed for wear and the central portion embedded and cast in below the wearing-surface of the shoe and the transversely-disposed edges of said insert, exposed at the wearing-surface of the shoe, being constructed to form obtuse angles with the contiguous wearing-surface of the insert, whereby the advancing tread of the car-wheel encounters sloping edges of the insert only.

4. A brake-shoe having a cast-metal body and a hard-metal insert, the transversely-disposed edges of which insert are convergent toward the wearing-surface of the shoe.

5. In a brake-shoe, the combination with the cast-metal body, of a chilled-iron insert having outwardly sloping or beveled walls and bifurcated ends the insert being embedded in the body of the shoe with portions of its ends exposed and its connecting middle portion enveloped or covered by the metal of the body, substantially as described.

FRANK R. SPEAR.

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