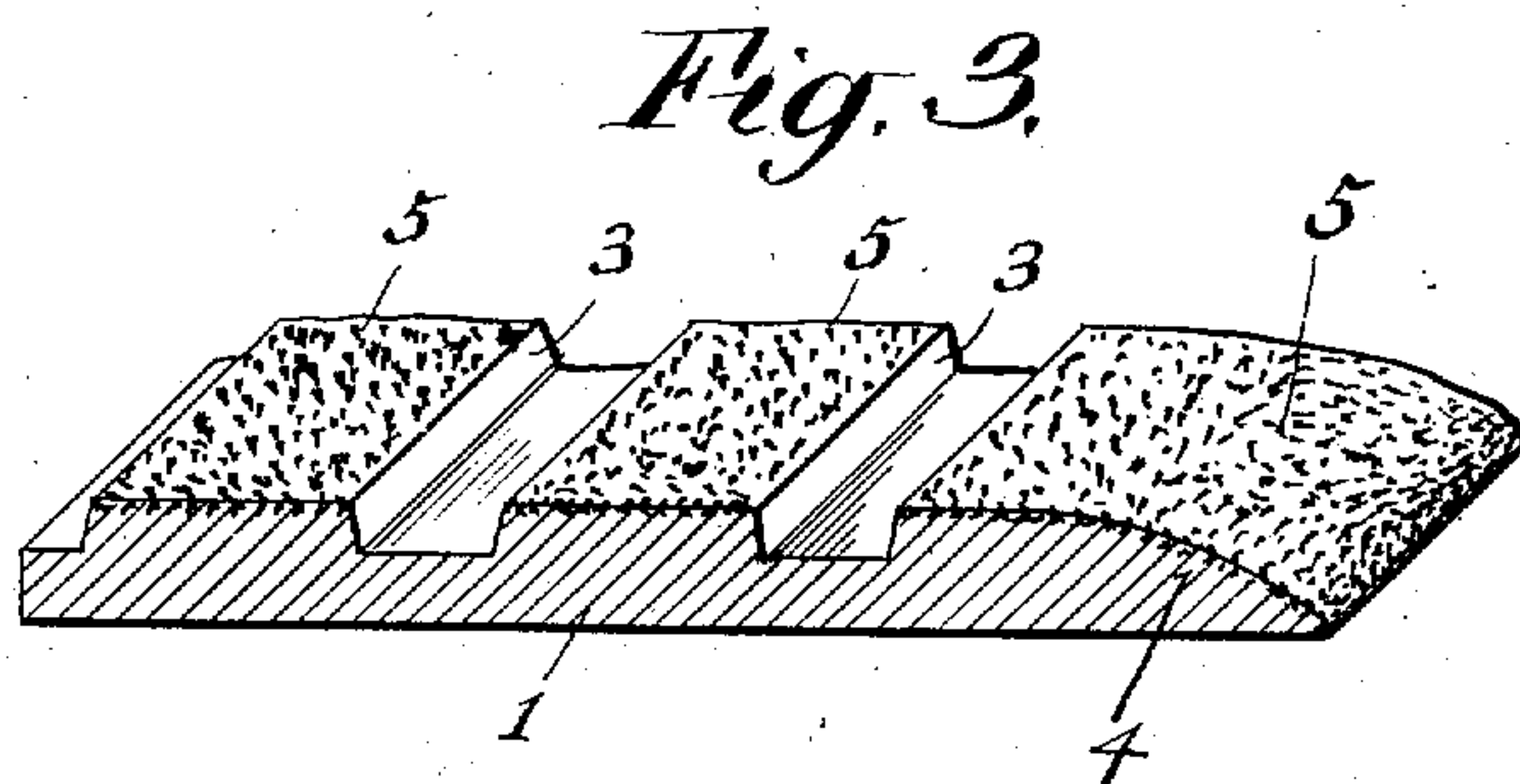
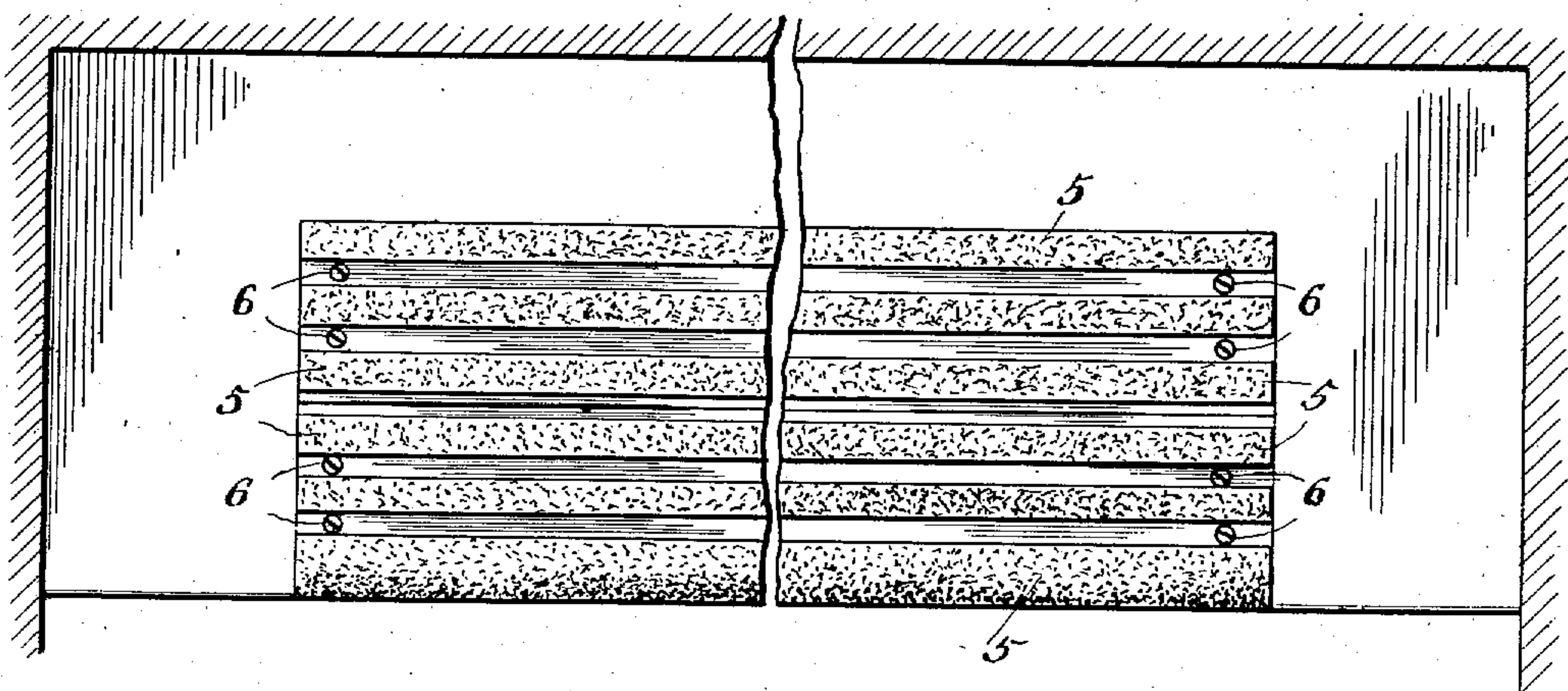
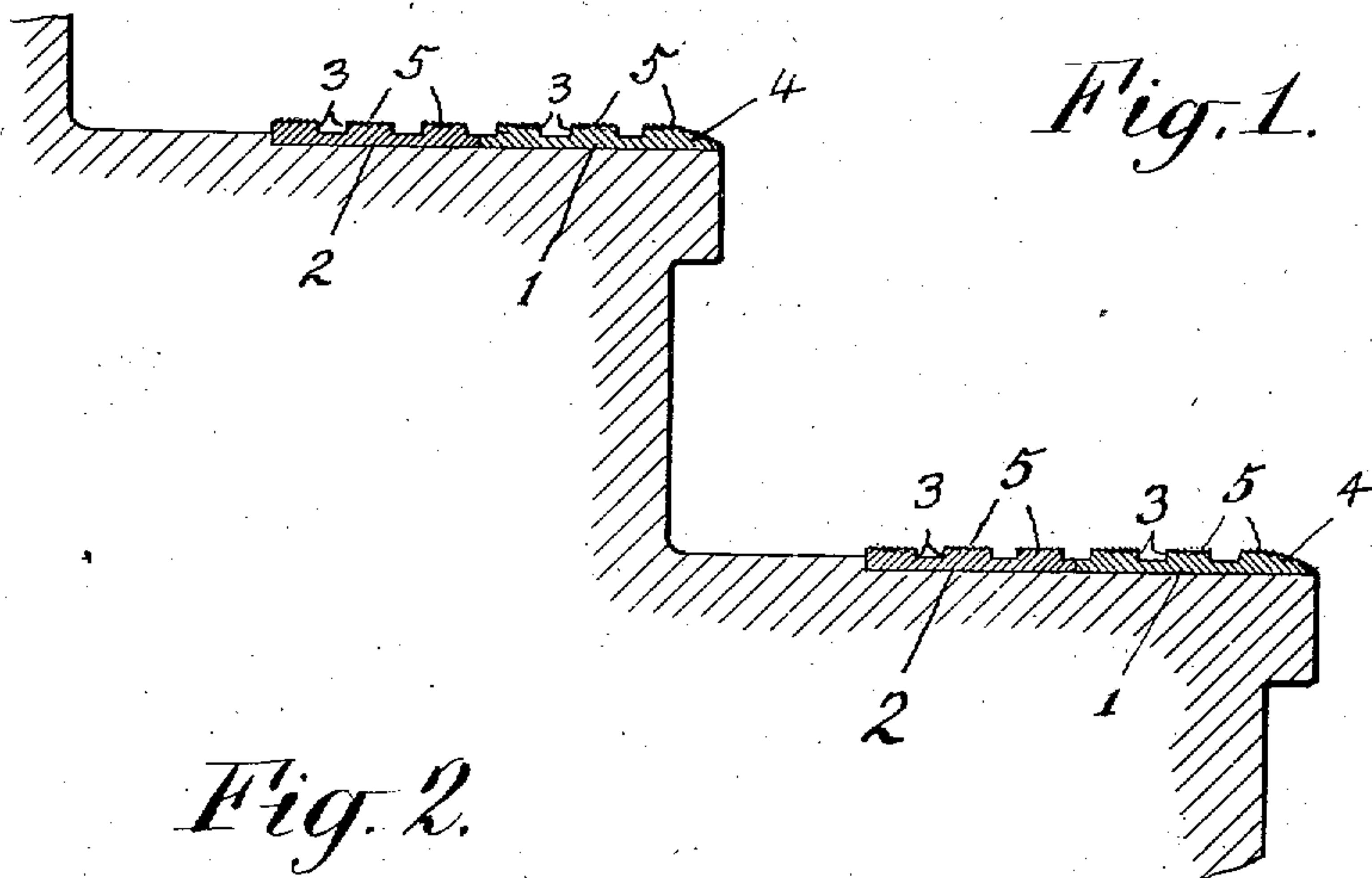


C. B. JACOBS.  
STAIR TREAD.  
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954,967.

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## STAIR-TREAD.

854,967.

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*To all whom it may concern:*

Be it known that I, CHARLES B. JACOBS, a citizen of the United States, and a resident of Port Chester, Westchester county, State of New York, have invented certain new and useful Improvements in Stair-Treads, of which the following is a specification.

My invention relates to stair treads or similar tread surfaces, such as platforms, thresholds, footboards, etc., which have exposed edges upon which people tread.

It is desirable that the surfaces of treads of this character shall have and be capable of retaining anti-slipping properties. It is particularly desirable that the surfaces of such treads at or immediately adjacent to the exposed edges thereof, at which slipping is most likely to occur and which receive the most wear, shall have and be capable of retaining anti-slipping properties. In other words, the surfaces of such treads, while being smooth enough to afford comfortable footway, should nevertheless be of such a nature that the footwear of pedestrians will adhere thereto; and at the same time such surface should be capable of resisting wear or abrasion without losing its adhering or anti-slipping properties, and the anti-slipping and wear-resisting properties should extend to or practically to the exposed edge of the tread so as to be effective to prevent slipping, where slipping is most likely to occur.

The invention has for its object to provide a tread which shall possess these qualities in a high degree. This and other objects of the invention will in part be obvious and in part be more fully explained in the following description.

In accordance with one feature of the invention, the tread comprises a cast metal base with a surface layer of granular hard mineral elements, such elements being embedded in the metal of the base and being of such material and size that they will not be destroyed by the heat of the molten metal when casting the same, and such elements being so closely arranged as to protect the softer material of the base from wear or abrasion and also to present such small or sharp edges or corners as are adapted to partially embed themselves in the contacting surfaces of footwear and thus prevent slipping, the said surface also being extended to the exposed edge of the

tread or so close to the edge as to effectively prevent slipping on the edge.

The particular materials employed may be varied to suit varying conditions without departing from the invention, as viewed in its broader aspects. For most purposes it has been found that a base of cast iron provided with a surface layer of granular artificial corundum, known as "alundum," gives satisfactory results. However, other cast metals, such as brass or bronze or aluminum alloys, may be used for the base, and natural corundum, carborundum, or similar natural or artificial material, which may be granulated and which when granulated will not be destroyed or seriously injured by the heat of the molten metal, may be employed for the surface layer.

A tread surface of the character specified may be produced in accordance with a method which forms the subject-matter of a copending application. This method is as follows: A mold for the tread is formed, preferably in green sand. A surface of the mold, which is to shape a resistant, anti-slipping surface of the tread and particularly the exposed edge of the tread, is provided with a layer of the granular hard mineral elements, this layer preferably being caused to adhere sufficiently to the mold surface by lightly tamping the layer into the surface. This may be done by replacing the pattern in the mold after the layer of granular material has been applied and then exerting a suitable pressure on the pattern, as by tapping the pattern with the hand or a mallet so as to force the granular elements partly into the sand surface of the mold. The pattern is then removed, the mold closed, and the molten metal introduced into the mold, the metal being in such condition that it will penetrate the layer of granular material without destroying the elements thereof and being of such a character that it will thereafter become sufficiently rigid to effectively resist displacement of the mineral elements.

The layer of granular elements should cover the surface of the mold or be so closely arranged that, when the interstices between the elements are filled by the cast metal, the latter will be protected by the hard elements from wear or abrasion. Preferably, the layer of granular elements is made to practically cover the surface of the mold and



may be given a substantial thickness, the thickness of the layer being preferably as great as the distance to which the molten metal will penetrate. The coarser the grains of the layer, the thicker it may be. Ordinarily, the layer may be made to adhere sufficiently by the application of pressure, as above stated. When necessary, however, the layer of granular elements may be held in place on the metal surface by covering the same with some material the identity of which will be destroyed by the molten metal introduced into the mold. For example, the layer of granular elements may be held in place by a piece of thin sheet metal, fine wire gauze, or the like, which will melt or become incorporated in the body of the molten metal introduced into the metal but not, however, until the molten metal has filled the mold or assumed a sufficiently quiescent state to avoid the detachment of the granular layer from the mold surface.

The invention further consists in the novel constructions, combinations, and improvements herein set forth.

In order that the invention may be more fully understood reference may be had to the accompanying drawings wherein the invention is illustrated as applied to a stair tread.

Of the drawings, Figure 1 is a fragmentary vertical section of a stairway equipped with treads embodying the invention; Fig. 2 is a plan view of one of the treads; and Fig. 3 is a sectional perspective view illustrating a portion of one of the treads on a larger scale.

In the embodiment of the invention illustrated the tread is formed of two parts 1 and 2 but it is obvious that the tread may be made of a greater or less number of parts, if desired. As shown, each of the parts is provided with raised portions in the form of ribs 3, and the part 1 is provided with the exposed edge or nosing 4. It is obvious that these raised parts may be of any form and number desired and arranged in any suitable relation to each other, or the tread may be provided with a plain surface, if desired. The upper surface of the raised portions 3 and the surface of the nosing 4 are studded with granular hard mineral elements forming highly resistant, anti-slipping layers 5, these layers being produced in the manner and having the properties already described.

For ordinary purposes the base or body portions of the tread are preferably formed of cast iron and the surface layer of granular alundum embedded in the metal of the base, as above explained. It is to be particularly observed that the resistant, anti-slipping layer may be extended over and to the extreme edge of the nosing 4, as illustrated, so that there is no danger of slipping

on the edge of the tread, and by reason of the resistant nature of the layer this exposed edge as well as the other effective surfaces of the tread will retain their anti-slipping properties even though much used. While the resistant layer is extremely durable, it will nevertheless eventually be worn down, particularly at those parts which receive the greatest amount of wear. As the forward part of the tread receives the greatest amount of wear, this part is preferably made of a separate piece from the rear part, as shown, so that it may be removed and replaced without disturbing the rear part, both parts being removably secured to the step or other support. The parts may be removably secured to the support in any desired way. In the construction shown the parts are secured by means of screws 6 which may pass through openings conveniently formed in the thin portions of the tread members between the raised portions. Where the treads are employed in connection with concrete stairs, the screws may enter suitable anchor pieces embedded in the concrete.

One advantage of the particular embodiment of the invention illustrated is that by reason of the fact that the thin portions of the tread members are not provided with resistant surfaces, the holes for the screws may be easily formed in the tread members at any desired point or points along their lengths to suit the location of the anchor pieces.

Advantages other than those mentioned of the invention and of the particular embodiment thereof illustrated will be obvious to those familiar with the practical use of stair and similar treads.

I claim:

1. A stair or similar tread having an exposed edge, said tread comprising a base of cast metal and a layer of granular hard mineral elements embedded in the surface of said base and extending substantially to the said exposed edge thereof, said elements being of such material and size that they will not be injured by the heat of the molten metal when casting the base and said elements being so arranged as to prevent slipping and to protect the metal in which they are embedded from abrasion.

2. A stair or similar tread having an exposed edge, said tread comprising a base of cast iron and a layer of granular corundum embedded in the surface of the base and extending substantially to the exposed edge thereof, the grains of corundum being so arranged as to prevent slipping and to protect the iron in which they are embedded from abrasion.

3. A stair or similar tread having an exposed rounded edge or nosing, said tread comprising a base of cast metal and a layer



of granular hard mineral elements embedded in the surface of said base and extending substantially to the said exposed edge or nosing, said elements being of such material and size that they will not be injured by the heat of the molten metal when casting the base and said elements being so arranged as to prevent slipping and to protect the metal in which they are embedded from abrasion.

4. A stair or similar tread having a ribbed surface and an exposed rounded edge or nosing, said tread comprising a base of cast metal and a layer of granular hard mineral elements embedded in the upper surfaces of the ribs and in the surface of the edge or nosing, said elements being of such material and size that they will not be injured by the heat of the molten metal when casting the base and said elements being so arranged as to prevent slipping and to protect the metal in which they are embedded from abrasion.

5. A stair or similar tread having a ribbed surface and an exposed rounded edge or nosing, said tread comprising a base of cast iron and a layer of granular corundum embedded in the upper surfaces of the ribs and in the surface of the edge or nosing, said grains of corundum being so arranged as to prevent slipping and to protect the iron in which they are embedded from abrasion.

6. A stair or similar tread formed of a plurality of members each having a ribbed surface and one having an exposed rounded edge or nosing, said tread comprising a base of cast metal and a layer of granular hard mineral elements embedded in the upper surfaces of the ribs and in the surface of the edge or nosing, said elements being of such material and size that they will not be injured by the heat of the molten metal when casting the base and said elements being so arranged as to prevent slipping and to protect the metal in which they are embedded from abrasion, and the depressions between the ribs being provided with perforations for receiving the fastening devices.

7. A stair or similar tread formed of a plurality of members each having a ribbed surface and one having an exposed rounded edge or nosing, said tread comprising a base of cast iron and a layer of granular corundum embedded in the upper surfaces of the ribs and in the surface of the edge or nosing,

said grains of corundum being so arranged as to prevent slipping and to protect the iron in which they are embedded from abrasion, and the depressions between the ribs being provided with perforations for receiving fastening devices.

8. A stair or similar tread comprising a ribbed member having an exposed edge, said member comprising a base of cast metal and a layer of granular hard mineral elements embedded in the base at and in the immediate vicinity of said exposed edge, said elements being of such material and size that they will not be injured by the heat of the molten metal when casting the base, and said elements being so arranged as to prevent slipping and to protect the metal in which they are embedded from abrasion.

9. A stair or similar tread comprising a ribbed member having an exposed edge, said member comprising a base of cast iron and a layer of granular corundum embedded in the base in the immediate vicinity of said exposed edge, said elements being so arranged as to prevent slipping and to protect the metal in which they are embedded from abrasion.

10. A stair or similar tread comprising a ribbed member having an exposed rounded edge or nosing, said member comprising a base of cast metal and a layer of granular hard mineral elements embedded in the surface of said rounded edge or nosing, said elements being of such material and size that they will not be injured by the heat of the molten metal when casting the base, and said elements being so arranged as to prevent slipping and to protect the metal in which they are embedded from abrasion.

11. A stair or similar tread comprising a ribbed member having an exposed rounded edge or nosing, said member comprising a base of cast iron and a layer of granular corundum embedded in the surface of said rounded edge or nosing, the grains of corundum being so arranged as to prevent slipping and to protect the cast iron in which they are embedded from abrasion.

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

CHARLES B. JACOBS.

Witnesses:

EDWIN SEGER,

WM. J. DOLAN.