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SHIM

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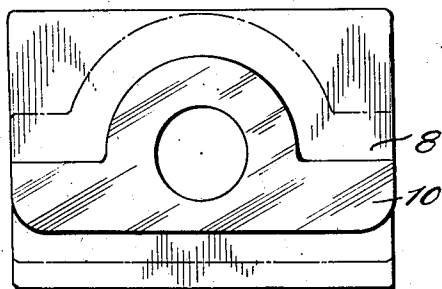


*Fig. 1.*

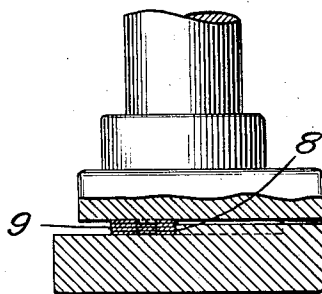


*Fig. 4.*

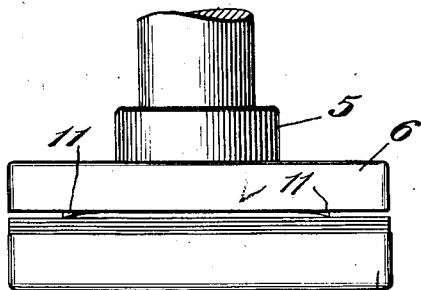


*Fig. 2.*

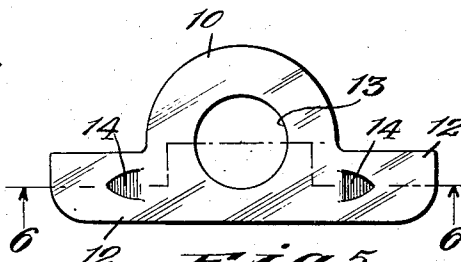


*Fig. 5.*

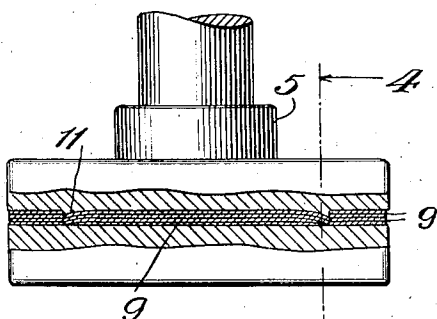


*Fig. 3.*



*Fig. 6.*

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## UNITED STATES PATENT OFFICE.

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## SHIM.

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This invention relates to an improved method of making shims of the type which are used to separate the parts of a bearing and which, due to wear of the shaft in the bearing or journal, have to be more or less adaptable to reduction in size.

In some types of shims it is difficult to reduce the thickness of the shim uniformly, and it is one of the objects of my invention to provide a shim, the thickness of which can be instantly reduced without filing or machining, thus making it possible for the motorist who is desirous of taking up a bearing to eliminate noise or rattle of such bearing, etc., when the parts become worn (and who may not have the necessary equipment at hand to machine or file down a shim), to quickly accomplish this work.

A further object of my invention is to provide a shim in which the laminae are cut so that they will when assembled in the form of a shim hold themselves together without the aid of any binder or the like.

Referring to the drawings, wherein one embodiment of my invention is illustrated:

Figure 1 is a top plan view of the press bed, the pressure member being shown in outline, and the shim shown in place upon the bed of the press;

Fig. 2 is a front elevation of the press showing the laminae that make up the completed shim in assembled position and ready to be acted upon by the pressure member;

Fig. 3 is a front elevation of the press showing the pressure member at the limit of its descending movement, the pressure member, bed and shim being shown in partial section;

Fig. 4 is a section taken on line 4—4 of Fig. 3;

Fig. 5 is a top plan view of the completed shim constructed by my improved method; and,

Fig. 6 is a section taken on the line 6—6 of Fig. 5.

Referring to the drawings in detail, 5 indicates a power press of the usual type which comprises a pressure head 6 and bed 7, the latter being provided at its rear top portion with an arcuately cut raised part 8, against the forward edge of which may be readily assembled in proper relation the laminae 9 which go to make up the com-

pleted shim 10. This raised portion 8 is less than the shim thickness, in height so that the head 6 in descending will be allowed to compress the shim laminae without interference.

In order that the laminae 9 shall be held together securely I have provided tongue-shaped projections 11 on the under surface of the pressure head located so that they will engage the shim in its extended portions 12. These projections 11 are cut arcuately outward so that a point is produced on their ends. In fact the projections serve as punching dies and may be cupped to produce a tongue-shaped cutting edge.

The laminae are provided with a hole 13 through which the retaining bolt of a bearing is adapted to pass, and are shaped to match the particular part of the bearing in which they are placed.

The laminae 9 are assembled according to the number desired for any particular thickness of shim, on the bed of the press, and when the pressure member descends, the die projections 11 force the laminae in the shape of tongues 14 in the projected portions thereof downwardly so that each lamination has cut thereout of oppositely disposed tongues which project into the next lower lamination in the space left by the downwardly bent tongues of said lower lamination.

The effect of this punching then, is to produce within the shim portions of each lamination which are crowded longitudinally and which, while extending into any other lamination will prevent any relative movement thereof. In other words, the tongues 14 in the top lamination 9 (see Figure 6) will extend into the openings left by the tongues in the next lower lamination and there will be no movement of these two laminae relatively to each other. Also, the laminae which are more or less malleable, when subjected to pressure at a point will adhere so closely as to be difficult to separate unintentionally. This is the case of the lowermost laminae, as the shim, being on the smooth top of the press bed will not yield where the die projection engages it, but the laminae will be greatly compressed, and will expand to fill the punched out portion and grip the side walls thereof formed by the laminae.

When the bearing is to be taken up, the shim may be removed and one lamination or more may be removed by the insertion of a pen-knife thereunder without disturbing the other laminæ.

It is to be understood that I am not limited to the shape of the cut out portion in the laminæ, nor am I limited to kind of material or thickness of laminæ in making my improved shim.

What I claim is:

1. As an improved article of manufacture, a shim consisting of a plurality of superposed sheets, each of said sheets except the bottom sheet being so punched

as to provide a tongue which will extend into the next adjacent sheet, said bottom sheet presenting a smooth flat surface parallel to the upper surface of said shim.

2. As an improved article of manufacture, a shim comprising a series of laminæ in superposed relation, and tongues punched simultaneously out of all of the laminæ, except said bottom laminæ, said tongues extending downwardly into the space left by the tongue which was punched out of the next lower lamination, said bottom lamina presenting a smooth surface parallel with the upper surface of said shim.

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