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ALL-METAL GASKET

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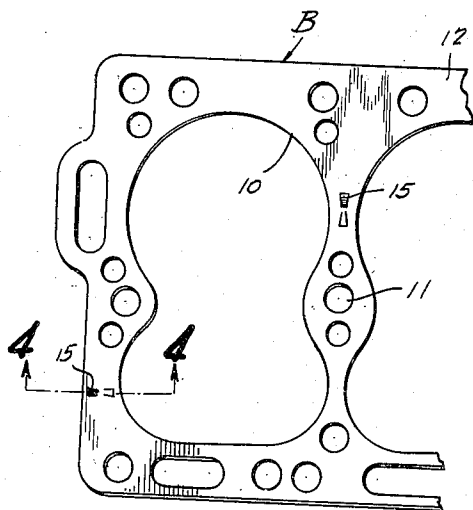


Fig. 1

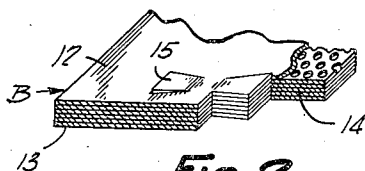


Fig. 2



Fig. 3

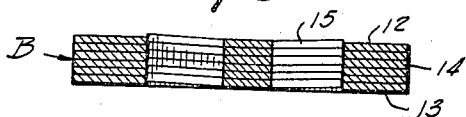


Fig. 4

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# UNITED STATES PATENT OFFICE

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## ALL-METAL GASKET

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Application March 23, 1937, Serial No. 132,466

### 1 Claim. (Cl. 288—1)

This invention has to do with gaskets which are commonly known as cylinder head gaskets, and is concerned primarily with a laminated gasket of an all-metal construction.

5 There has recently been proposed in this art the use of a laminated all-metal gasket, that is one made up from a plurality of layers of sheet metal, which several layers are held in assembled relationship as by the use of adhesives or spot  
10 welding.

The present invention has in view, as its foremost objective, the provision of an all-metal laminated cylinder head gasket of the character described, in which the several laminations are  
15 maintained assembled by a so-called "staking" of the laminations. In "staking" the laminations in accordance with this invention, an appropriate tool is availed of as a means of deforming the metal of the several layers over a desired zone,  
20 and when the deformed portions of the metal are substantially returned to their original positions the several laminations are maintained in assembled form.

More in detail this invention has in view as an  
25 object the formation of wedge shaped "stakings" which are cut from the several laminations by the use of a chisel, or other appropriate tool, and which "stakings" are hammered back into substantially their original position to provide substantially flush surfaces, and at the same time  
30 prevent relative movement between the several sheets of metal.

The invention has in view as a further more detailed object the provision of a cylinder head  
35 gasket of the character described, in which the outer layers are maintained unperforated, but in which the intermediate layers are provided with a plurality of small perforations closely spaced apart, together with an appropriate cementitious material which is present on all the  
40 surfaces of the intermediate layers, and which is contained in the perforations. This cementitious material, together with the "staking" of the metallic layers in the manner above noted, serves  
45 to maintain the several laminations in proper assembled relationship.

Other more detailed objects and advantages of the invention will in part become apparent, and in part be hereinafter stated, as the description  
50 of the invention proceeds.

The invention, therefore, comprises a cylinder head gasket of an all-metal laminated construction, the intermediate layers of which are perforated, and which are coated with a cementitious  
55 material. The laminations are "staked" by cut-

ting out or deforming portions of the metal thereof, and then substantially, but not quite, returning the deformed portions to their original position; the "stakings" being of a wedge shape.

For a full and more complete understanding of  
5 the invention, reference may be had to the following description and accompanying drawing, wherein

Figure 1 is a plan view of a portion of the cylinder head gasket made in accordance with the  
10 precepts of this invention,

Figure 2 is an enlarged detailed view in perspective of one portion of the gasket, bringing out the formation of the "stakings",

Figure 3 is a detailed showing in transverse section  
15 of the "stakings" after they have formed prior to being pressed back into place, and

Figure 4 is a sectional view similar to Figure 3, taken about on the plane represented by the line  
20 4—4 of Figure 1, showing the "stakings" pressed back into place.

Referring now to the drawing, wherein like reference characters denote corresponding parts, a cylinder head gasket is shown in Figure 1 as including a main body portion B, which is of an all-  
25 metal laminated construction, as will be hereinafter pointed out in detail. This main body B is formed with cylinder openings 10, and circulatory water openings 11. The main body portion B of the gasket shown in Figure 1 is of a laminated  
30 construction comprising outer layers 12 and 13, and intermediate layers 14.

As clearly set forth in the co-pending application of Patrick J. Fitzgerald, Serial Number  
35 114,375, for "Gasket", filed December 5, 1936, the intermediate laminations 14 may be perforated and provided with cementitious material, which serves to assist in providing a unitary body structure.

In accordance with the present invention the  
40 several layers 12, 13 and 14 are maintained assembled by "staking" the same. In effecting this arrangement an appropriate tool, such as a chisel having the required shape, is applied to the metal of the laminations to deform the same into the  
45 condition depicted in Figure 3, in which wedge-shaped "stakings" 15 are cut from the laminations and deformed outwardly. When these "stakings"  
50 15 are depressed back into substantially, but not quite their original position, as shown in Figure 4, the several laminations are relatively immovable, and hence will be maintained in their required assembled relationship.

It will be noted from Figure 4 that each "staking" 15 is slightly out of line from the planes  
55

of the surfaces of the lamination from which it was originally struck. It is this arrangement which affords the desired binding effects.

While the present invention is herein illustrated 5 in conjunction with intermediate layers 14, which are of the perforated construction shown in the co-pending Patrick J. Fitzgerald application above referred to, it is important to note that the present "stakings" may be carried out in all-metal 10 gaskets in which the intermediate layers are not perforated. Also, various other changes and departures may be made without departing from the spirit of the invention as defined by the appending claim.

I claim:

A cylinder head gasket of the character described comprising a plurality of sheet metal laminations which together define an all-metal gasket, and means for maintaining said lamina- 5 tions in an assembled relationship permitting a slight amount of relative movement between the several laminations, said means consisting of "stakings" of wedge-shaped formation, there being a pair of such "stakings" with the smaller 10 edges of the wedge-shaped formations disposed towards each other.

PATRICK J. FITZGERALD.