

F. W. GUIBERT.
 VACUUM INSULATION.
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1,186,572.

Patented June 13, 1916.

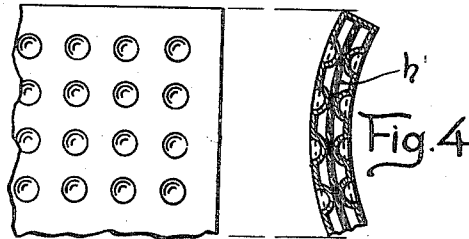
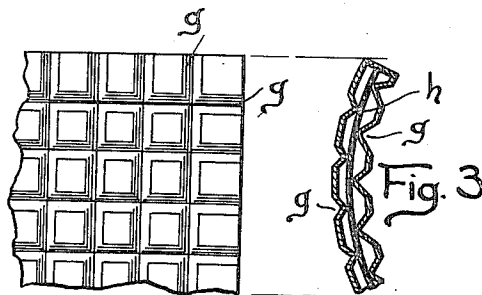
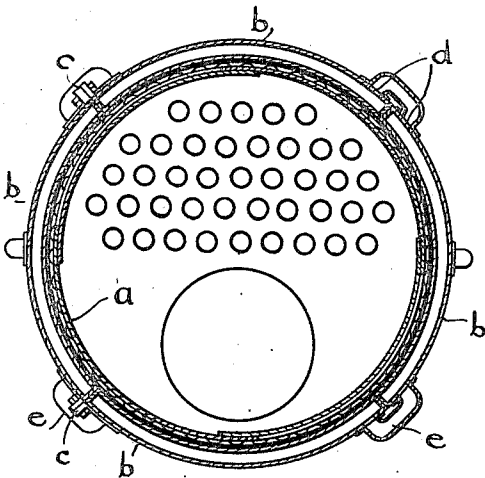
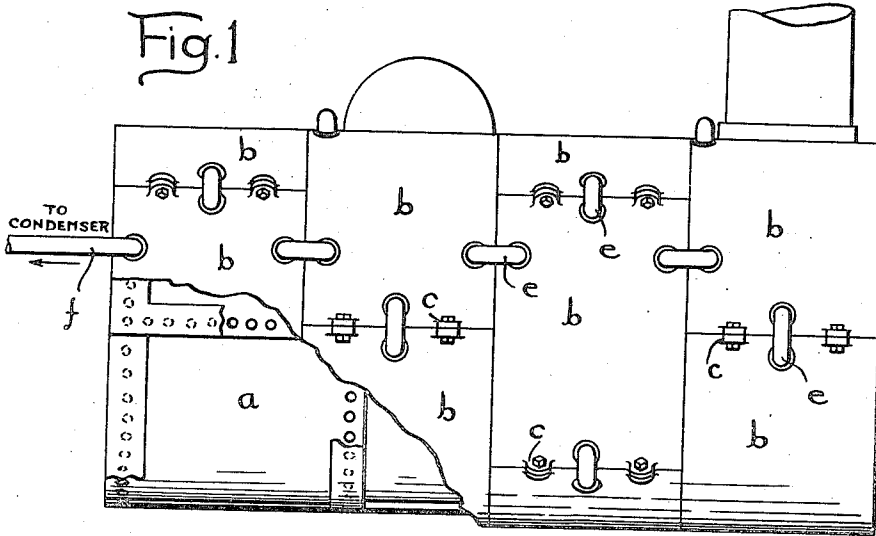


Fig. 2

WITNESSES

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VACUUM INSULATION.

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To all whom it may concern:

Be it known that I, F WALTER GUIBERT, citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Vacuum Insulation, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to vacuum insulation and especially vacuum heat insulation that is made up of a plurality of sections; which may be made by a manufacturer as staple articles of manufacture and may be purchased by a customer to apply to whatever he has that needs insulation.

These vacuum sections may be constructed to fit together to surround the special object for which they are designed. They may be used to insulate steam-boilers, steam-pipes, furnace pipes, refrigerating apparatus and all the manifold things made more effective by good insulation. It is, however, as an insulation for steam-boilers that my sectional insulation was first brought out.

In the drawings: Figure 1 is a side elevation of a boiler and the applied sectional insulation; partly broken away. Fig. 2 is a cross section of the boiler and applied insulation. Fig. 3 is a front and also a sectional view of a modified form of vacuum section. Fig. 4 is a front and also a sectional view of another modified form of vacuum section.

A conventional form of cylindrical boiler is shown and designated *a*. This boiler is made up of the usual boiler-plates riveted together. On the outside of the boiler shell I place strips of asbestos to prevent direct connection between the boiler shells and the walls of the vacuum section. This contact would serve as a conductor between the boiler shell and the atmosphere. The vacuum insulation is then applied over these asbestos strips, and consists of a plurality of vacuum sections or shells, *b*. These vacuum sections are manufactured for receptacles of various diameters. In the boiler shown in the drawings four sections are shown making one complete ring around the boiler, but, of course, no definite number is

requisite. These sections *b* are preferably arranged about the receptacle so that the individual members of each row or ring will be staggered or each row may be said to break joints. I have shown the ends of the sections provided with lugs so that adjacent sections may be fastened and drawn tightly together by bolts and nuts. Of course, metal straps or other tightening devices could be employed. The sections are, preferably provided with openings *d*, so placed that pairs of openings in adjacent sections are in proximity. These pairs of openings may be connected with suitable short lengths of pipe *e*, after the vacuum sections have been applied to the receptacle to be insulated. These connections allow the exhausting of the insulation at one point instead of exhausting each section separately. In steam-boilers *I*, preferably, connect the insulation directly to the condenser by the condenser pipe *f*. The condenser of the engine may then be used to keep the sections exhausted.

Inasmuch as it is much cheaper and convenient to make the vacuum sections out of sheet metal as contradistinguished from plate metal, I have found it advisable to build my vacuum sections as shown in Figs. 3 and 4. In Fig. 3 the metal is pressed to form a plurality of intersecting grooves *g*. The sheets of metal on opposite sides of the section are laid out so that their grooves will preferably cross when the section is completed. A sheet of asbestos *h* is laid between the side sheets and the bottoms of the grooves are separated by this asbestos so as to prevent material loss of heat by conduction. The walls of these grooves act as stays to prevent the metal buckling or becoming indented. In Fig. 4 a slightly different method of indentation to stay the sides is shown. This comprises spot indentation instead of groove indentation.

What I claim is—

1. Insulation, comprising a portable vacuum shell complete in itself, a sheet of insulating material between the side walls of the shell and stay portions on each side wall lying against the insulating material and stay portions on the other side wall.

2. Insulation, comprising a portable vacuum shell complete in itself, having its side walls indented so that indentions in the opposite side walls cross, and sheet insulating

materials interposed between the indenting portions of the two side walls to hold them out of contact.

3. Insulation for a receptacle, comprising
5 in combination with the receptacle, a strip of insulating material lying against the receptacle, a plurality of vacuum sections each a complete shell in itself, and means for holding the same in place about the receptacle and against the said insulating material.
10

4. Insulation, comprising a plurality of connectible and complete vacuum sections constructed of sheet metal, two opposite side walls being indented to stay such walls
15 and insulating material between the opposite indentations which would otherwise contact.

5. Insulation, comprising a plurality of connectible and complete shells from which
20 the air has been exhausted, each shell being constructed of sheet material, stay portions of conducting material between the two

large side walls, and insulating material between opposite stay portions which would otherwise contact.

6. Insulation, comprising a plurality of connectible shells, each forming a complete inclosure in itself and adapted to have its contents evacuated, opposite side walls being provided with indented portions which bear
25 against one another to support the shell walls.
30

7. Insulation, comprising a plurality of portable vacuum shells adapted to fit together, and each shell a complete inclosure
35 in itself, opposite side walls being provided with stay portions which bear against one another to support the side walls.

In testimony whereof, I sign this specification in the presence of two witnesses.

F WALTER GUIBERT.

Witnesses:

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