E. FLEISCHHAUER.

DOUBLE WALLED VESSEL.

APPLICATION FILED MAY 19, 1908.

921,099. Patented May 11, 1909.

Fig. 2.

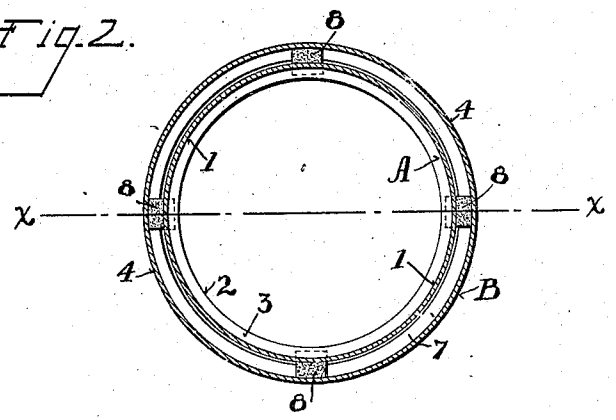
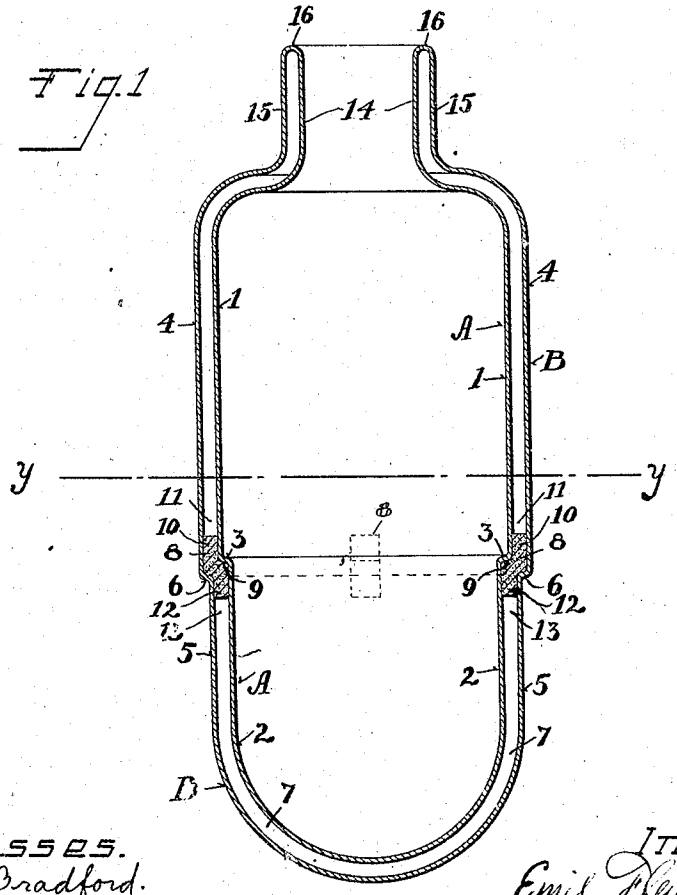


Fig. 1



Witnesses.
Homer Bradford.
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Inventor.
Emil Fleischhauer
by P. F. Derbyshire
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UNITED STATES PATENT OFFICE.

EMIL FLEISCHHAUER, OF GEHLBERG, GERMANY, ASSIGNOR TO GEORGE P. ALTENBERG, OF CINCINNATI, OHIO.

DOUBLE-WALLED VESSEL.

No. 921,099. Specification of Letters Patent. Patented May 11, 1909.

Application filed May 19, 1908. Serial No. 433,692.

To all whom it may concern:

Be it known that I, EMIL FLEISCHHAUER, a subject of the Emperor of Germany, residing at Gehlberg, in Thüringen, Empire of Germany, have invented certain new and useful Improvements in Double-Walled Vessels, of which the following is a specification, and for which I have obtained Letters Patent of Germany, No. 331,560, dated February 7, 1908.

My invention relates to double walled glass vessels having a space between the walls thereof from which air has been withdrawn. It is necessary in vessels of this nature to support the inner suspended vessel from the outer vessel, to protect it from breakage or rupture on account of the air pressure and outer disturbances. For this purpose suitably formed bodies of heat-insulating material are employed which are jammed into the space between the vessels.

It is the object of my invention to provide a peculiar form for the vessels to enable the supporting bodies to be conveniently introduced and secured in place; the supporting bodies securing the inner vessel against sidewise movement relatively to the outer vessel and preferably also forming supports in a longitudinal direction. For this purpose the lower parts of both vessels are drawn in in step-like form so as to provide preferably annular offsets upon which the supporting bodies are arranged.

In the accompanying drawing: Figure 1 is a central vertical section of my improved device on a line corresponding to the line *x*—*x* of Fig. 2; and Fig. 2 is a horizontal cross-section of my improved device taken on a line corresponding to the line *y*—*y* of Fig. 1.

A represents the inner vessel which comprises an upper portion 1 of larger diameter and a lower portion 2 of smaller diameter, between which there is an annular offset 3 which forms a ledge or shoulder between the upper and lower portions of the inner vessel, the lower portion preferably forming a contraction of the upper portion. The outer vessel B has a similar upper portion 4 of larger diameter and a lower portion 5 of smaller diameter, between which there is an annular offset 6 which forms a ledge or shoulder, the lower portion preferably forming a contraction of the upper portion. The degree of contraction is determined by the thickness of the annular space 7 between the walls or vessels, and the relative diameters of the vessels are preferably such that the upper portion 1 of the inner vessel may be introduced through the lower portion 5 of the outer vessel, while the distance between the ledges is governed by the thickness of the bodies of heat-insulating material introduced between the same.

8 represents the bodies of heat-insulating material which preferably comprise a lateral portion 9 between said offsets or ledges, a longitudinal portion 10 extending into that part of the space of greater diameter, shown at 11, and a longitudinal portion 12 extending into that part of the space of smaller diameter, shown at 13.

14 15 represent the necks of the respective inner and outer vessels, the portions 1 4 of larger diameter of said vessels being between said necks and said offsets or ledges.

In its preferred construction the inner vessel, the bottom of which has already been formed, is introduced through the open bottom of the outer vessel as far as the necks of the same will permit, when the desired number of supporting bodies are placed upon the ledges 6, whereupon the inner vessel is again drawn back for exerting the desired pressure upon the supporting bodies which are thus clamped between the ledges 3 and 6. The vessels are then welded together at their necks at 16, and the bottom of the outer vessel closed, the space between the vessels having the air withdrawn from the same through a suitable nipple which is then fused for providing a double walled vessel, from the space of which the air has been withdrawn or a vacuum formed therein. It will be observed that by this construction the inner vessel is preserved from detrimental strains which would otherwise result from the introduction of the supporting bodies after fusing of the necks, that the supporting bodies are further securely held in place, and that the inner vessel thereby receives lateral as well as longitudinal support for preventing detrimental movements in either direction. The invention is suitable for vessels of any form and size.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. In combination, an outer vessel and an inner vessel connected at the top thereof and having a space therebetween from which air

has been withdrawn, the body of each of said vessels having a lower portion of smaller diameter and an upper portion of larger diameter, and a ledge between said lower portion and upper portion, and heat insulating material between said ledges, substantially as described.

2. In combination, a double walled vessel comprising an inner wall and an outer wall having a space therebetween from which air has been withdrawn and formed with annular mating ledges respectively in said inner and outer walls at different elevations, and heat-insulating material between said ledges extending longitudinally beyond said ledges.

3. In combination, an outer vessel and an inner vessel having a space therebetween from which air has been withdrawn, each of said vessels having a lower portion of smaller diameter, an upper portion of larger diameter, a neck above said upper portion, and a ledge between said lower portion and upper portion, and heat-insulating material between said annular ledges.

4. A glass vessel comprising an inner wall and an outer wall having space therebetween from which air has been withdrawn, said walls having contracted lower annular portions and annular shoulders between said lower contracted portions and the portions thereabove, said shoulders being at different elevations in said respective walls, and supporting bodies at said shoulders for lateral support between said walls.

5. In combination, a glass vessel comprising an inner wall and an outer wall having space therebetween from which air has been withdrawn, each of said walls having a neck and a contracted lower end forming a ledge in each of said walls between said contracted lower end and the portion immediately thereabove, said ledges being at different elevations in said respective walls, and heat-insulating material at said ledges between said walls, substantially as described.

In testimony whereof I have subscribed my name hereto in the presence of two subscribing witnesses.

EMIL FLEISCHHAUER.

Witnesses:

REINH. GREINER,

GUSTAVE LAUTZ, Jr.