

No. 767,046.

PATENTED AUG. 9, 1904.

F. & F. H. ENGELHARD.
FLOAT.

APPLICATION FILED MAY 28, 1904.

NO MODEL.

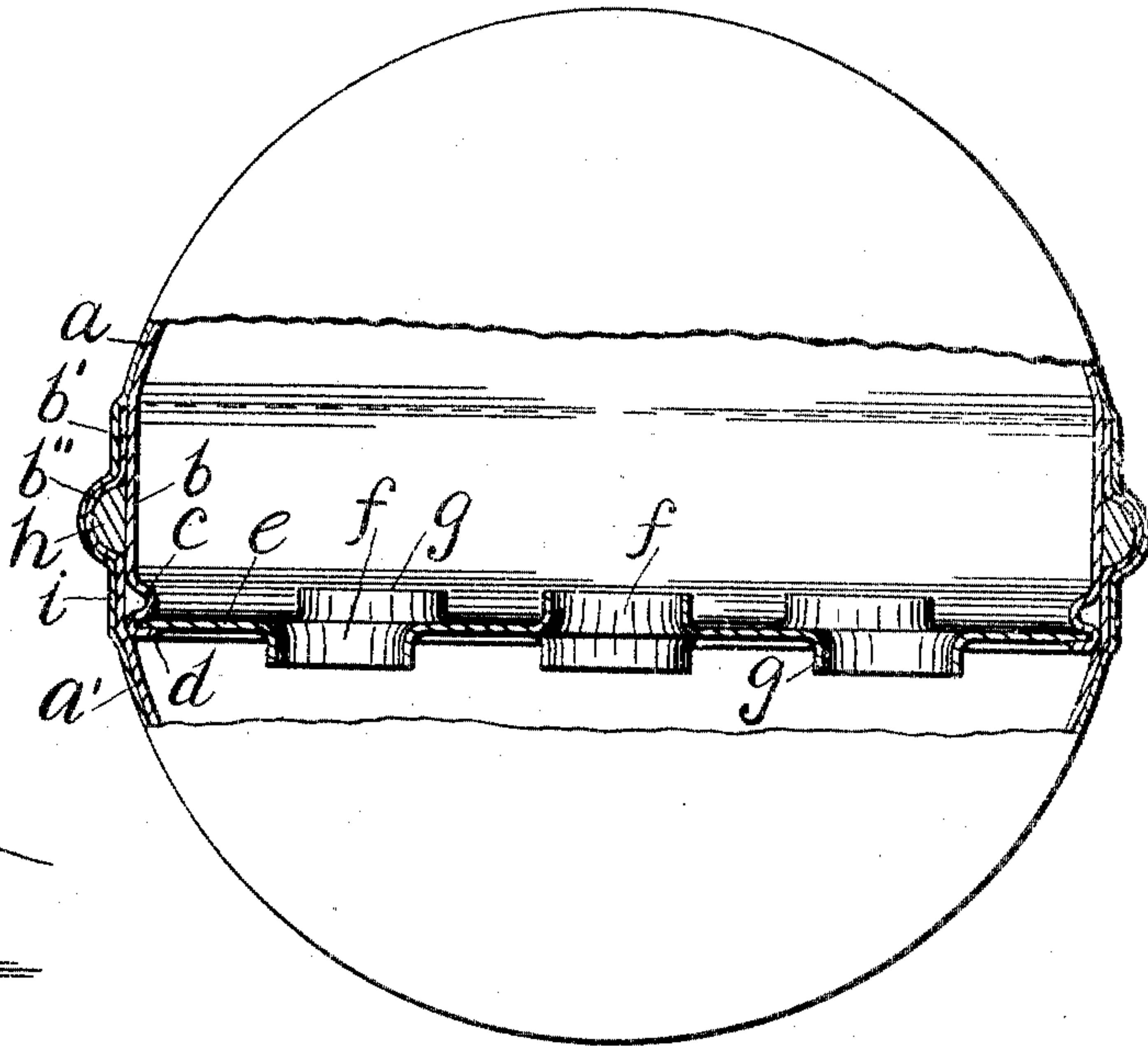


FIG. 1.

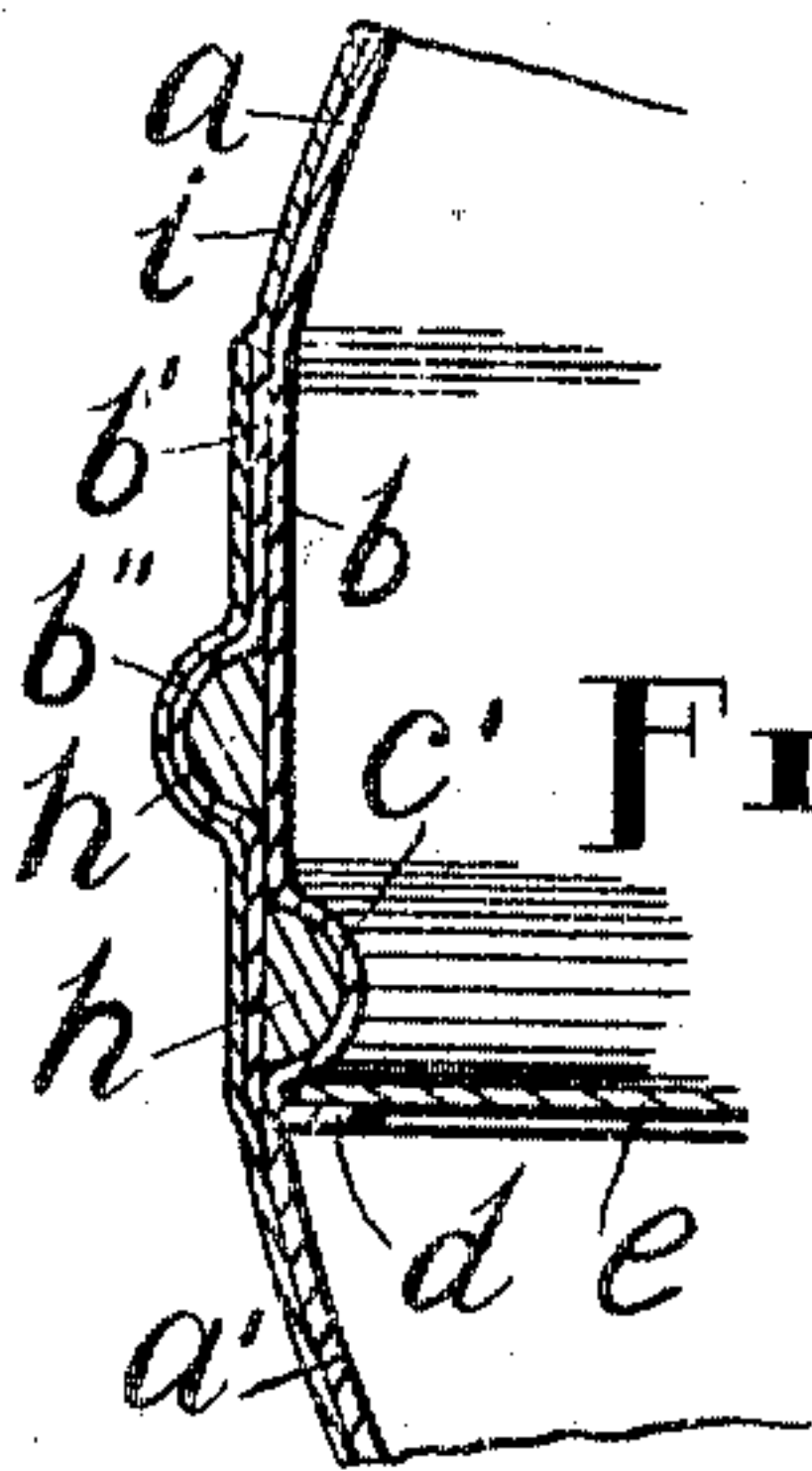


FIG. 3.

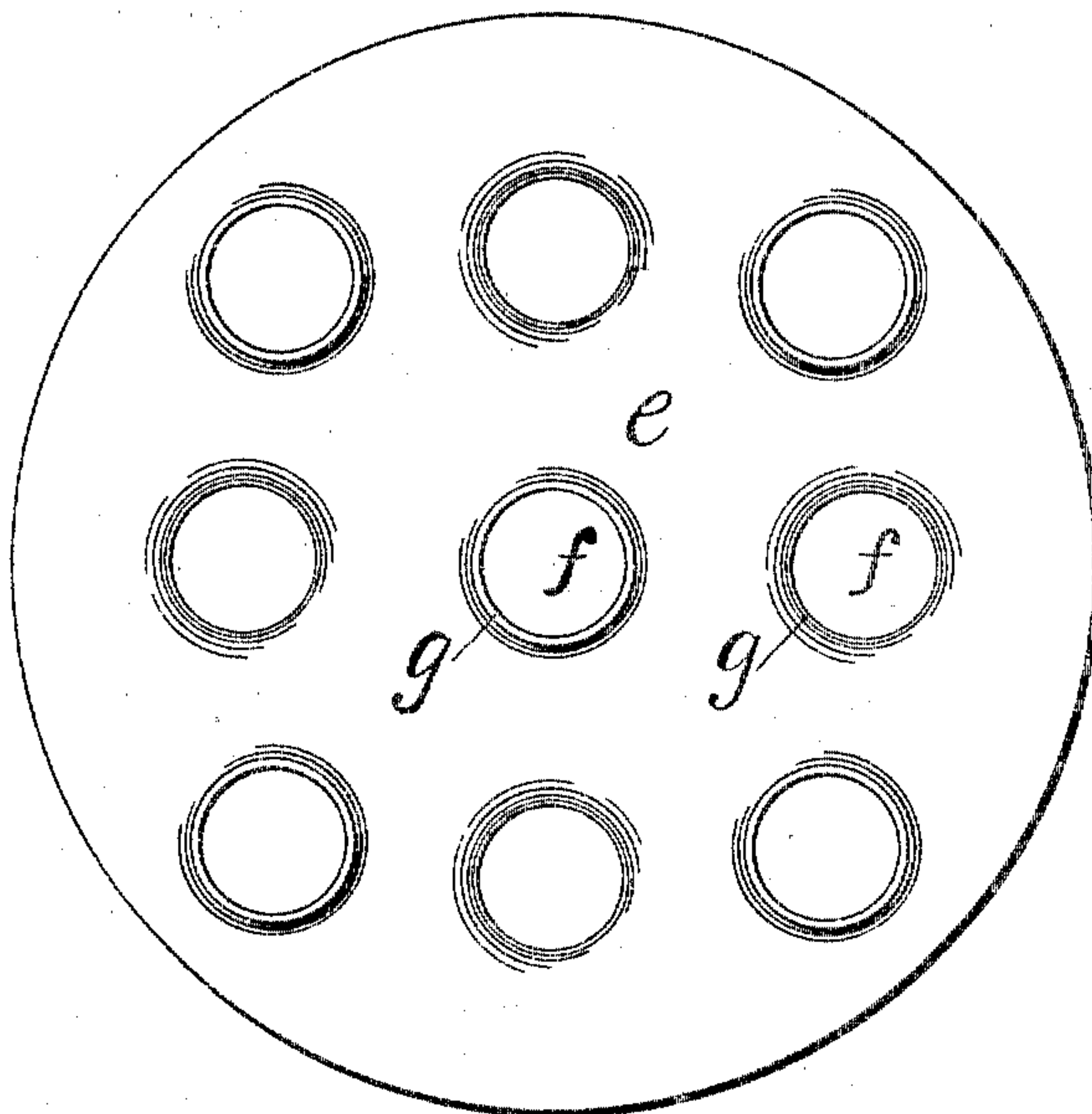


FIG. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

FRANK ENGELHARD AND FREDERICK H. ENGELHARD, OF SPRINGFIELD,
MASSACHUSETTS.

FLOAT.

SPECIFICATION forming part of Letters Patent No. 767,046, dated August 9, 1904.

Application filed May 28, 1904. Serial No. 210,191. (No model.)

To all whom it may concern:

Be it known that we, FRANK ENGELHARD and FREDERICK H. ENGELHARD, both citizens of the United States, and residents of Springfield, in the county of Hampden and Commonwealth of Massachusetts, have invented a new and useful Float, of which the following is a specification.

Our invention relates to improvements in floats for valves in which sheet-metal sections are joined together to form the float; and it consists particularly of certain peculiar reinforcing means within the float, as hereinafter set forth; and the primary object of our invention is to so brace and strengthen a float of the class designated above by an internal diaphragm of peculiar construction that the same is capable of resisting any pressure or heat to which it is likely to be subjected without collapsing or having the integrity and efficiency of its joint impaired, such float being at the same time light, durable, comparatively inexpensive, symmetrical, of proper weight, and seamless. Float-balls, column-floats, and the like, herein termed simply "floats," which are made in sections, semi-spherical, or otherwise, according to the kind of float, are very liable to break apart at the joint; and it is our object to so thoroughly reinforce the float at or near the joint as to overcome any liability of collapsing and spreading at the place of union. This construction enables us to provide a float which really possesses greater strength and durability in the vicinity of the joint than elsewhere, and this is a further object of our invention. We attain these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a float embodying our invention, the same being broken away at the center; Fig. 2, a plan view of the diaphragm; and Fig. 3, a sectional view of a float, showing a slight modification.

The float as illustrated consists, essentially, of sections, generally two in number, the edge of one overlapping the edge of the other, an internal diaphragm of peculiar construction, and a hoop between the inside and outside lapped portions, plating material being de-

posited upon the outside over all. The diaphragm has perforations therein the edges of which are swaged, some up and some down, said diaphragm being made of comparatively thin metal. This diaphragm affords a strong internal lateral brace for the float, one which is capable of resisting shock and strain to a marked degree. It is located more or less centrally and adjacent to the junction between the float-sections, where resistance is most needed and where protection of the joint can best be provided and becomes most effectual. The hoop is not specifically or separately claimed in this application, since it is included in an application for United States Letters Patent, filed by us May 12, 1904, Serial No. 207,594, and we do not wish to be restricted to the position of this member or to the number, since two or more may be employed with the diaphragm as well as one.

The float shown in the drawings consists of two semispherical sections a and a' , the former being provided with an edge portion b and the latter with an edge portion b' , such edge portions lapping one upon the other with the portion b inside and the portion b' outside. By preference the aforesaid edge portions are straight in a meridional direction. An internal bead c is formed around the edge portion b near its base, which latter is bent inwardly to form a flange d . The edge of a thin metallic disk or diaphragm e is received into the annular groove between the bead c and the flange d , said diaphragm being placed against the bead before the flange is formed. The bead and flange just described constitute elements of strength in themselves, as well as serving to hold the diaphragm firmly and rigidly in place.

In order to increase the rigidity of the diaphragm e , which should be made of very light material, any number of holes f are punched therein and the edges of said holes are turned outward, some rising above the upper surface of the diaphragm and others projecting below the bottom surface of the same, as shown at g . This is done usually by swaging.

A groove b'' is formed in the edge portion b' , into which a band or hoop h is sprung or forced,

or said hoop may be first soldered or otherwise securely attached to the edge portion *b* and the edge portion *b'* forced into place over the hoop. At the time of assembling contacting surfaces of the edge portions with each other and with the hoop and diaphragm are soldered or otherwise securely united, although it may not always be necessary to attach the hoop and the diaphragm to the edge portions by other means than that afforded by the nature of the construction of these parts. After being assembled the joint and float are completed by depositing a coating *i* over the outside of the sections *a* and *a'*, including the edge portion *b'*. We now have a float which possesses all of the advantages hereinbefore enumerated.

The presence of the diaphragm, together with the means of connection, enables us to use very thin metal for the parts, and the external plating or coating not only unites the sections into a homogeneous mass, as it were, but serves to remove inequalities in the outside surface and to bring the float up to the required weight. The coating also assists in holding the sections together and preventing the opening of the joint and renders the float seamless. The diaphragm offers strong resistance to outside pressure, while the hoop and coating offer like resistance to both inside and outside pressure, and all together they produce the desired results. Furthermore, the exterior bulging belt comprising the overlapping edge portion, with its offset and hoop, receives whatever wear the float may be subjected to by being rubbed against the side of the tank or other receptacle in which said float is located, and said hoop, with the diaphragm, protects the float from harm when it sustains a blow.

As shown in Fig. 3, the bead *c* may be of sufficient size to receive a second hoop *c'*, which still further stiffens the construction. Other hoops may be utilized, as before intimated, and of course the diaphragm might be duplicated; but for all ordinary purposes it is believed no such additional members need be employed.

The holes in the diaphragm need not necessarily be round, nor the hoops half-round in cross-section, and we do not desire to be restricted to any particular kind of float, but seek to include within the scope of our invention and claims any jointed sheet-metal float or similar device.

Copper is probably the most practical metal of which to make our float throughout; nevertheless some other metal can be used for the diaphragm, in which event the latter should not be soldered to adjacent parts of the edge portion *b*, and sufficient clearance should be left between the edge of said diaphragm and the groove in the portion *b*, formed by the bead *c* and the flange *d*, to allow for any difference there may be in expansion and contraction between the two metals.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, a float having a diaphragm therein and provided with means to hold said diaphragm in place.

2. As a new article of manufacture, a float having a perforated diaphragm therein, the edges of the perforations in said diaphragm being swaged or turned out.

3. As a new article of manufacture, a float having a diaphragm therein and provided with means to hold said diaphragm in place, clearance being left between the edge of the diaphragm and adjacent parts of the float to allow for expansion and contraction.

4. As a new article of manufacture, a float having certain portions which are meridionally straight and provided with an internal diaphragm and means to hold said diaphragm in place.

5. As a new article of manufacture, a float comprising sections having lapped portions, one of such portions being provided with a bead and a flange, and an internal diaphragm held in place by said bead and flange.

6. As a new article of manufacture, a float comprising sections having lapped portions with a hoop between such portions, an internal diaphragm, and means to hold said diaphragm in place.

7. As a new article of manufacture, a float comprising sections having lapped portions with a hoop between such portions, an internal diaphragm, means to hold said diaphragm in place, and a coating or deposit over the outside of all.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRANK ENGELHARD.

FREDERICK H. ENGELHARD.

Witnesses:

RICHARD PIEHL,
F. A. CUTTER.