W. DIETER.

AIR FLASK FOR TORPEDOES.

APPLICATION FILED JUNE 18, 1921.

1,429,023. Patented Sept. 12, 1922.

Fig. 1.

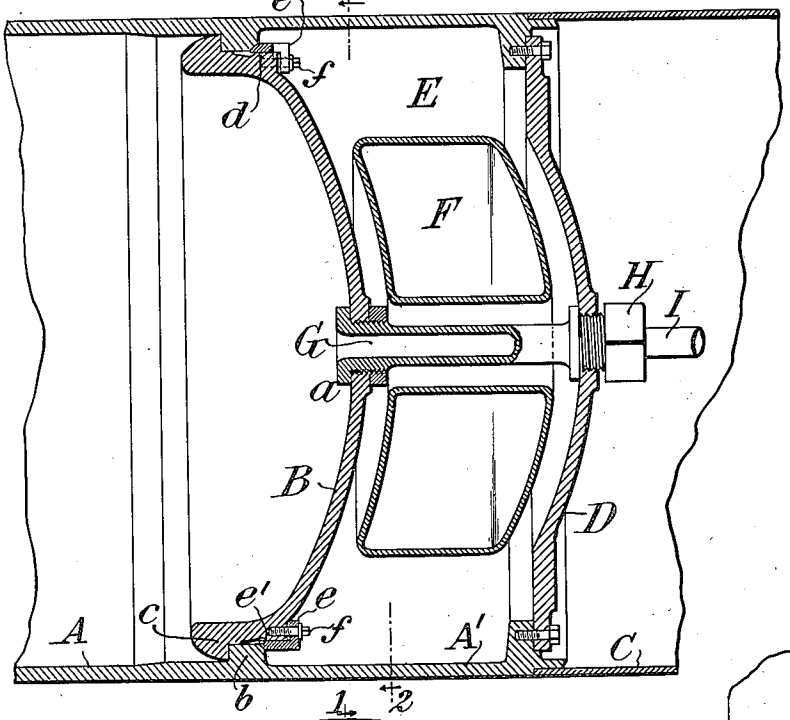


Fig. 2.

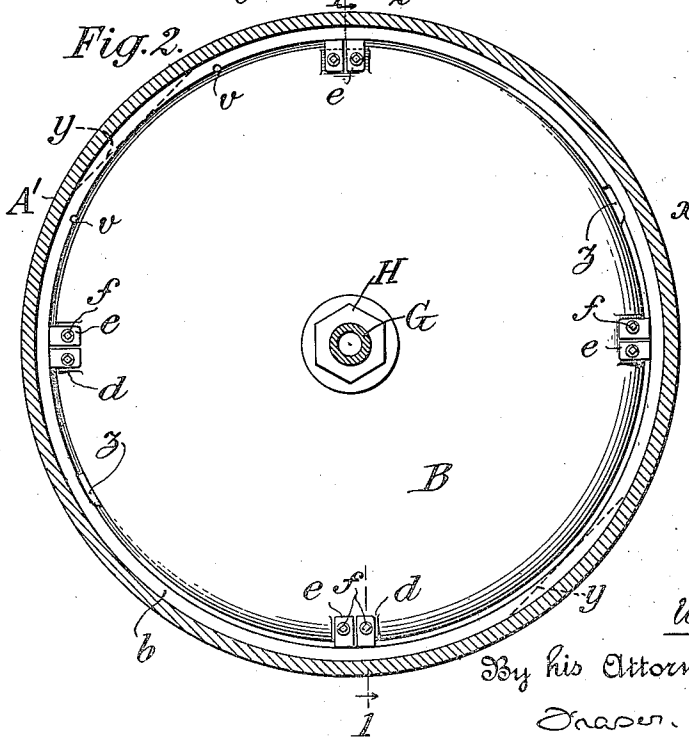


Fig. 3.

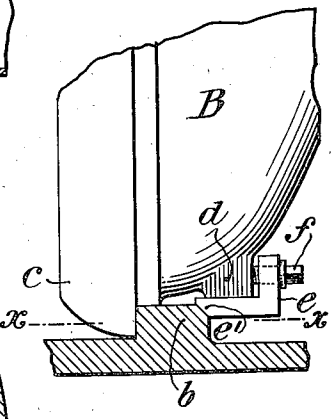
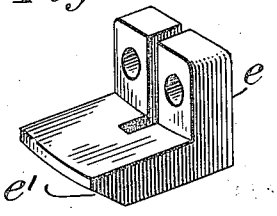


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM DIETER, OF NEWARK, NEW JERSEY, ASSIGNOR TO VITTLEA DEVELOPMENT CORPORATION, A CORPORATION OF DELAWARE.

AIR FLASK FOR TORPEDOES.

Application filed June 18, 1921. Serial No. 478,773.

To all whom it may concern:

Be it known that I, WILLIAM DIETER, a citizen of the United States of America, residing in Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Air Flasks for Torpedoes, of which the following is a specification.

This invention provides an improved means for attaching the heads to compressed air reservoirs or flasks such as are used in automobile torpedoes of the Whitehead or Bliss-Leavitt types.

The preferred embodiment of the invention is shown in the accompanying drawings, wherein—

Figure 1 is a fragmentary longitudinal mid-section on the line 1—1 in Fig. 2, showing the rear portion of the air flask and its head and appurtenant parts;

Fig. 2 is a transverse section on the line 2—2 in Fig. 1;

Fig. 3 is a fragmentary view on a larger scale, showing a portion of the flask in section, and the head and fastening in elevation;

Fig. 4 is a perspective of one of the fastening clamps.

In the drawings, A is the body of the flask and B is its head. C is a portion of the afterbody or hull of the torpedo, A′ is the usual rearward extension of the flask, and D is the supplemental head applied to the latter, whereby to enclose the usual water receptacle E within which is ordinarily suspended a vessel F constituting a fuel receptacle containing alcohol or other liquid fuel. The air connection from the head B to and through the head D is shown at G, with the usual coupling H connecting the air discharge pipe I. All of these parts are or may be of the usual and customary construction, except for the means for fastening the head B to the flask body, as will be described.

The forward head of the flask is constructed and attached precisely like the rear head B, and is, in fact, a duplicate thereof, except that it has no outlet opening *a* where the connection G is applied, being at this point imperforate, as is well understood. The description of the rear head B will serve for either head.

The flask A has the usual internal flange or rib *b*, and the head B has the usual marginal flange *c* which takes against the inner side of the flange *b* in the usual manner. This construction affords great strength for resisting the heavy internal pressure of the compressed air confined within the flask. It is, however, necessary to apply fastening means to hold the head in position when the flask is empty, and for this purpose it has heretofore been customary to introduce a series of screws through holes drilled longitudinally of the torpedo through the internal flange *b*, these holes being spaced at suitably frequent intervals. The screws pass freely through holes in the flange *b*, and their threaded ends engage tapped holes in the flange *c*, which holes, however, do not pass through the flange. This construction has long been used, and is mechanically suitable, although it is inconvenient and difficult to introduce the screws, especially at the rear end, where the flask extension A′ projects considerably beyond the screws. This screw construction, however, is defective in that leakage is liable to occur around the margin of the flange *c* and between the flanges *b* and *c* for the short distance (approximately one-eighth inch) exterior to the holes in the flange *b* through which the screws pass. It is extremely difficult to make a suitably tight joint between the abutting faces of the flanges *b c* where these faces are so reduced as they are exterior to the screw holes, with the result that compressed air frequently leaks from the flask into the water vessel E, where it generates an undesirable pressure and requires the provision of special means for relieving this pressure. The difficulties referred to are enhanced by the necessity of partly mutilating the flanges *b c* at diametrically opposite points in order to make provision for introducing the head from one end of the flask. For this purpose the flange *c* is cut into, on diametrically opposite sides, to an extent indicated by the line *x* in Fig. 3, that is, for a distance barely exceeding half the overlap of the flanges *b c;* this cut-away portion is substantially straight, being theoretically the chord of an arc, these portions being shown in dotted lines at *y*, *y*, in Fig. 2.

Reciprocally, the flange *b* has to be cut or notched into on diametrically opposite sides to an extent sufficient to admit the cut-away portions *y*, *y*, of the flange *c*, so that the head may be turned with its plane parallel

to the longitudinal transverse plane of the flask body, and with its portions *y*, *y*, coinciding with such notches, and then passed longitudinally through the latter, after which the head is turned into its normal plane and brought into position with its flange *c* against the flange *b*, but with the cut-away portions of these flanges out of coincidence. In Fig. 2 the notches in the flange *b* are shown at *z*, *z*. The difficulty of leakage already referred to exists not only at the screw holes, but also where the joint between the flanges *b c* is narrowed by reason of their cut-away portions *y* and *z*. At the cut-away portions *y* it is necessary that the fastening screws be interrupted in order that they may be so widely spaced as to pass wholly beyond these cut-away portions on opposite sides. Thus, the screws cannot in practice approach closer than the locations indicated at *v*—*v* in Fig. 2. It will be understood that the notches *z z* are not necessarily formed on both the front and rear flanges *b*, it being sufficient to form these notches in, for example, the front flange, and introduce both the front and rear heads through the same pair of notches. For clearness they are shown in the drawing as applied to the rear flange *b*.

Such being the disadvantages incident to the use of the fastening screws heretofore resorted to, the merits of the present improvement will now be made apparent.

According to the present invention, the flanges *b* are not perforated, nor are they cut away otherwise than to form the necessary notches *z* for enabling the head to be inserted. Also, the flanges *c* have no holes bored in them, and are not cut away or reduced otherwise than to form the flats *y y*. The head B is formed with suitably spaced bosses *d* (four being shown), these being thickened portions adapted to receive fastening screws. To these bosses are fastened L-shaped clamps *e* which are drawn to the bosses by screws *f*, and bear at their inner ends *e'* against the flange *b*. Advantageously, these ends *e'* are made oblique or blunty wedge-shaped, as best shown in Fig. 3, and the flange *b* is chamfered off to an equal bevel, as shown. Each lug *d* forms on its outer face a guide for the longitudinal leg of the clamp *e*. By means of this guiding function of the lug, and the wedging action of the ends *e'* of the clamps, the tightening of the clamps has a centering effect, and at the same time affords a very tight, snug joint wholly devoid of looseness and without liability of the working loose of the fastening screws *f*. These screws are shown as having squared heads to receive a tightening key, and passing freely through holes in the clamps and screwing into tapped holes in the lugs *d*. It is preferable to apply two screws to each clamp, and to form the clamp in effect as a double clamp, splitting its outer portion in the manner best shown in Fig. 4.

The improved construction insures that the joint between the abutting shoulders of the flanges *b* and *c* shall be of the entire width of contact between these flanges, and avoids any leakage due to perforations therein. The construction is also more convenient to assemble or take apart, because the screws are removed so much farther from the outer wall A' and carried so much farther outside of the flange *b*, that the screws are more easily reached.

While the construction shown is the preferred embodiment of the invention, yet it will be understood that it may be considerably modified or varied without departing from its essential features, which are set forth in the appended claims.

I claim as my invention:

1. The combination with an air flask body having an internal flange, and its head having an external flange, of clamps applied to the outer side of the head and bearing against the internal flange, the bearing ends of the clamps and the bearing faces of said flange being beveled.

2. The combination with an air flask having an internal flange, and a head entering within said flask and having an external flange seating against said internal flange, of a plurality of independent fastening clamps arranged at angular intervals around the circumference of the head, each comprising a screw engaging the head and a part engaged by said screw and having a portion bearing externally against said internal flange, to draw the respective flanges into tight seating relation.

3. The combination with an air flask body having an internal flange with notches on opposite sides, and a head having an external flange reduced at opposite sides to enter through such notches, of a plurality of independent fastening means arranged at angular intervals around the circumference of the head, each comprising a screw engaging the head and a part pressing against said internal flange, to draw the respective flanges into tight seating relation.

4. The combination with an air flask having an internal flange, and a head entering within said flask and having an external flange seating against said internal flange, said head formed with a plurality of external lugs arranged at angular intervals around its circumference, of fastening clamps applied to said lugs, each having a portion engaging and guided by the circumferential face of its lug and bearing at its end against the internal flange, and an angular portion, and a screw entering the lug and drawing such angular portion toward

the head to draw the respective flanges into tight seating engagement.

5. The combination with an air flask having an internal flange, and a head entering within said flask and having an external flange seating against said internal flange, of a plurality of independent fastening clamps arranged at angular intervals around the circumference of the head, each comprising a screw engaging the head, and an L-shaped part having one leg in a plane perpendicular to the screw and engaged thereby, and its other leg in a plane parallel with the screw and perpendicular to the plane of the seating faces of said flanges, and bearing externally against said internal flange, whereby to communicate thereto the thrust of the screw to draw the respective flanges into tight seating relation.

In witness whereof, I have hereunto signed my name.

WILLIAM DIETER.