W. DIETER.

AUTOMOBILE TORPEDO.

APPLICATION FILED AUG. 26, 1918.

1,303,039. Patented May 6, 1919.

Fig. 1.

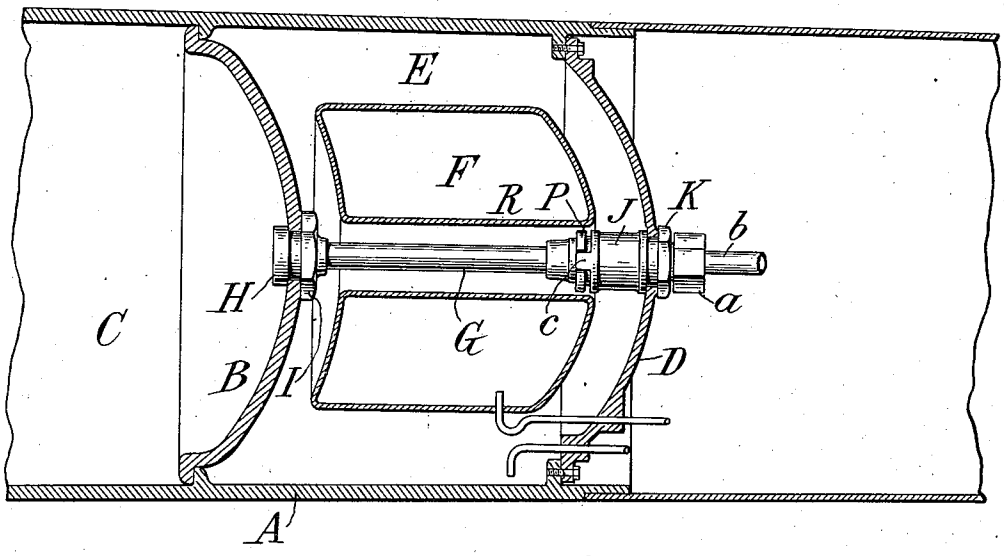


Fig. 2.

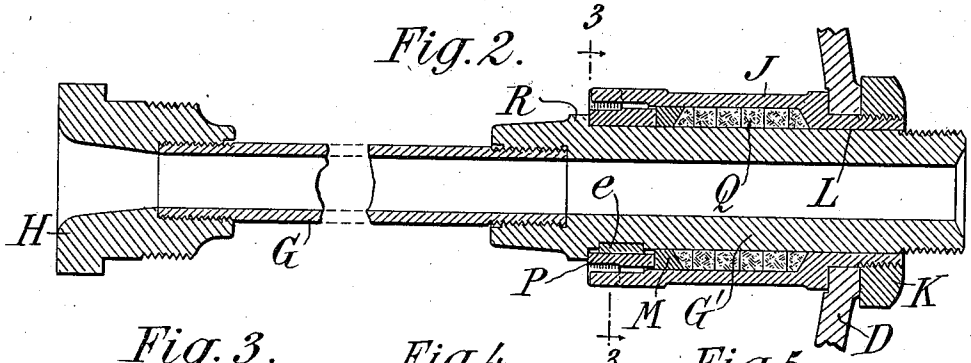


Fig. 3.

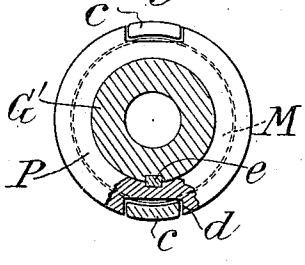


Fig. 4.

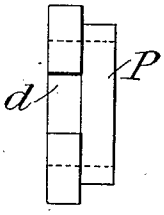


Fig. 5.

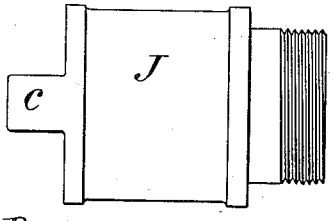
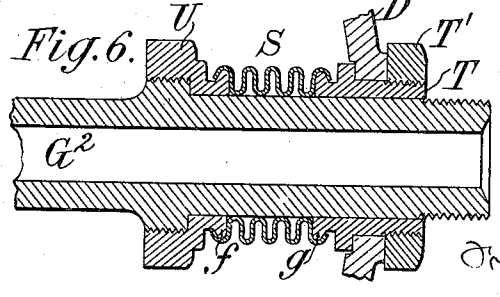


Fig. 6.



WITNESS:

René Spuine

INVENTOR:

William Dieter,

By Attorneys,

Fraser, Dunk & Myers

UNITED STATES PATENT OFFICE.

WILLIAM DIETER, OF BROOKLYN, NEW YORK, ASSIGNOR TO E. W. BLISS COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF WEST VIRGINIA.

AUTOMOBILE TORPEDO.

1,303,039. Specification of Letters Patent. Patented May 6, 1919.

Application filed August 26, 1918. Serial No. 251,398.

To all whom it may concern:

Be it known that I, WILLIAM DIETER, a citizen of the United States of America, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Automobile Torpedoes, of which the following is a specification.

This invention relates to a special construction used in automobile torpedoes such as the Bliss-Leavitt torpedo. In such torpedoes, the compressed air pipe leading from the air flask passes through a chamber between the main flask head and a supplemental head, for inclosing the water and alcohol required. The engagement of this pipe with the respective heads has occasioned trouble by reason of leakage of the compressed air or other fluid, a defect which it is the object of the present invention to overcome.

According to the present invention, the air pipe has a positive connection to one of the flask heads (preferably the main head) and has a slip joint connection with the other head. The means for accomplishing this will be made clear as the description proceeds.

Figure 1 of the accompanving drawings is a fragmentary, longitudinal section of a torpedo showing the application of the invention;

Fig. 2 is a longitudinal mid-section of the pipe connections showing the slip joint in detail;

Fig. 3 is a transverse section on the line 3—3 in Fig. 2;

Fig. 4 is an elevation of the follower;

Fig. 5 is an elevation of the outer casing of the stuffing box;

Fig. 6 is a longitudinal mid-section corresponding to the right-hand portion of Fig. 2, showing a modification of the slip joint.

The general construction of torpedo to which the present invention applies is set forth in the Leavitt Patent No. 1,022,486, dated April 9, 1912, and my Patent No. 1,125,979, dated January 26, 1915.

Referring to Fig. 1, A is the outer body or shell of the compressed air flask, B is the main head thereof inclosing the compressed reservoir C, and D is the supplemental head fastened to the extended portion of the flask A beyond the head B and inclosing between the two heads a chamber E which serves as a water chamber and within which is placed a vessel F constituting an alcohol chamber. Pipe connections for introducing air to the water and alcohol and for leading them to the superheater are not shown in detail.

G is the main air pipe for conducting the compressed air from the reservoir C to the engine. This has heretofore been passed through central openings in the respective heads and clamped to both heads by means of nuts. Ordinarily, the entering end has been enlarged by means of a thick tubular boss H having a flange for clamping against the inner side of the head B and being screwthreaded to receive a nut I for clamping against the outer side of this head. The opposite end is similarly connected to the head D.

According to the present invention, the connections with at least one of these heads (preferably with the supplemental head D) is made a sliding or compensating connection whereby to take up relative movements due to differences in temperature or due to the yielding of the respective parts under varying pressures.

Referring to Fig. 2, the pipe G, or preferably an enlarged section G′ applied thereto, passes freely through a tubular part J which is in turn fastened or clamped to the head D as by means of a nut K. The pipe, or its section G′, slides freely through the part J, which where it enters the head is contracted as at L to freely embrace and guide the pipe section G′. The opposite end of the tubular member J receives within it a ring M and a tubular follower P, both of which enter within the enlarged portion of J and inclose the pipe section G′. Within the member J is an annular chamber Q which is filled with a yielding packing which may be of fibrous material permeated with rubber, grease or other packing substance and which must be compressible to a cer-

tain extent. The member J and its appurtenances thus forms a stuffing box or gland forming a leak-tight packing with the pipe section G′.

As the heads B or D move relatively to one another, with the varying deflection of either head under pressure, the pipe G being fixedly attached to only one of the heads, is able to slide at its engagement with the other while a tightly packed joint is maintained by means of the packing box or gland described. Thus no strain is transmitted from either head through the pipe G to the other head. It results from this that the leakage heretofore occurring by reason of the strains due to the inflexible union of the respective parts, is avoided.

It is necessary to keep the ring M pressed against the packing material so as to maintain a tight packing. This might be variously accomplished, but a simple construction is that shown wherein the pipe section G′ has a flange R which abuts against the outer end of the follower P and thereby holds this follower in position and keeps the ring M in place to hold the packing compressed. If the head B yields toward the head D, a movement is transmitted through the pipe G which forces the follower P and ring M in the same direction, and this movement is taken up by the yielding of the packing Q to compression.

It is desirable that a non-rotative connection be established between the pipe G and the head D so that on screwing up the usual nipple *a* which connects the section *b* of the compressed air pipe to the end of the pipe G, the turning effort shall not rotate the pipe G and thereby possibly unscrew it at its connection with the head B. To provide such a non-rotative connection, I preferably form the tubular member J with lugs or fingers *c c* on opposite sides which enter notches or recesses *d d* in the follower P so that the follower is kept from turning relatively to the member J. In turn the pipe section G′ has a non-rotative engagement with the follower by means of a key *e* engaging grooves in these respective parts, as shown in Figs. 2 and 3. The member J being tightly clamped to the head D, it follows that the pipe G, or its pipe section G′, is firmly held against rotation.

A modified construction of the invention is shown in Fig. 6, where the main compressed air pipe G (here lettered G^2) is connected to one end of a multiple diaphragm S and the other end of this diaphragm is connected to a nipple T which is clamped by means of a nut T′ to the head D. The connection of G^2 with the diaphragm S is made through the medium of a collar U screwed fast to a threaded flange on the pipe and having its end *f* entering the end convolution of the diaphragm and soldered securely thereto. The opposite end of the diaphragm has its end convolution soldered to a corresponding annular lip *g*, from the nipple T. The diaphragm S is of well-known construction as applied to expansion members, being capable of yielding longitudinally as the pipe G^2 moves relatively to the head D.

It is to be understood that while the pressure in C initially exceeds two thousand pounds (2,000 lbs.) per square inch and is a diminishing pressure during the run of the torpedo, the pressure in E F is a substantially uniform pressure of approximately four to five hundred (400–500) pounds per square inch. It is the latter pressure only that the expansion joint has to deal with for the prevention of leakage.

It will be obvious that the present invention is capable of various applications and that it is not limited to the precise embodiments herein illustrated and described.

I claim as my invention:—

1. The combination with the air flask of a torpedo, with main and supplemental heads and an air pipe passing through said heads, of a yielding connection between said air pipe and one of said heads whereby to allow for movement of the air pipe relatively to such head.

2. The structure of claim 1, the air pipe being fixedly secured to one head and having a yielding connection where it passes through the other head.

3. The structure of claim 1 comprising an expansion joint between the air pipe and one of said heads.

4. The structure of claim 1, the air pipe having a slip joint connection with one of said heads, and packing means to prevent leakage between the pipe and head.

5. The structure of claim 1, with a stuffing box at the passage of the air pipe through one of said heads.

6. The structure of claim 1 with a stuffing box at the passage of the air pipe through one of said heads and means reacting against the air pipe for holding the stuffing box under compression.

7. The combination with an air flask and main and supplemental heads, of an air pipe fastened to one head and having a sliding connection through the other, and a stuffing box packing such connection, comprising an inclosing member, a follower therein for confining the packing material, with an engagement between the air pipe and said follower for holding the packing under compression.

8. The structure of claim 1 with means for making a non-rotative connection between the pipe and head.

9. In a torpedo, the combination of a flask having a main head and a supplemental

head, and an air-pipe fastened in said main head and passing through said supplemental head, and a stuffing box comprising a tubular member fastened to the supplemental head and inclosing the pipe, a packing therein and a follower having non-rotative engagement with said pipe and said tubular member.

In witness whereof, I have hereunto signed my name.

WILLIAM DIETER.