

Jan. 2, 1923.

J. A. FLINT.
TORPEDO.
FILED APR. 24, 1920.

1,440,590

3 SHEETS-SHEET 1

Fig. 1.

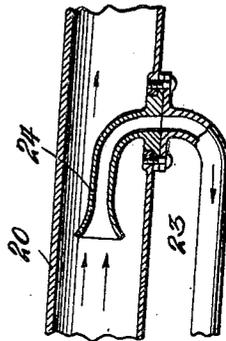
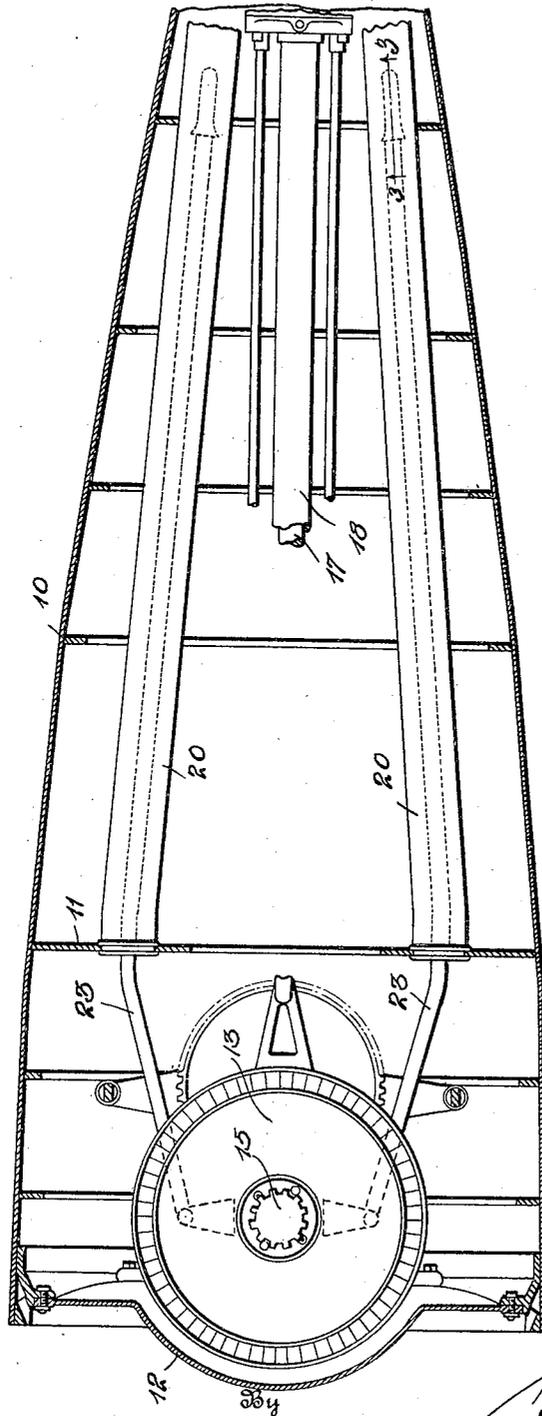


Fig. 3.

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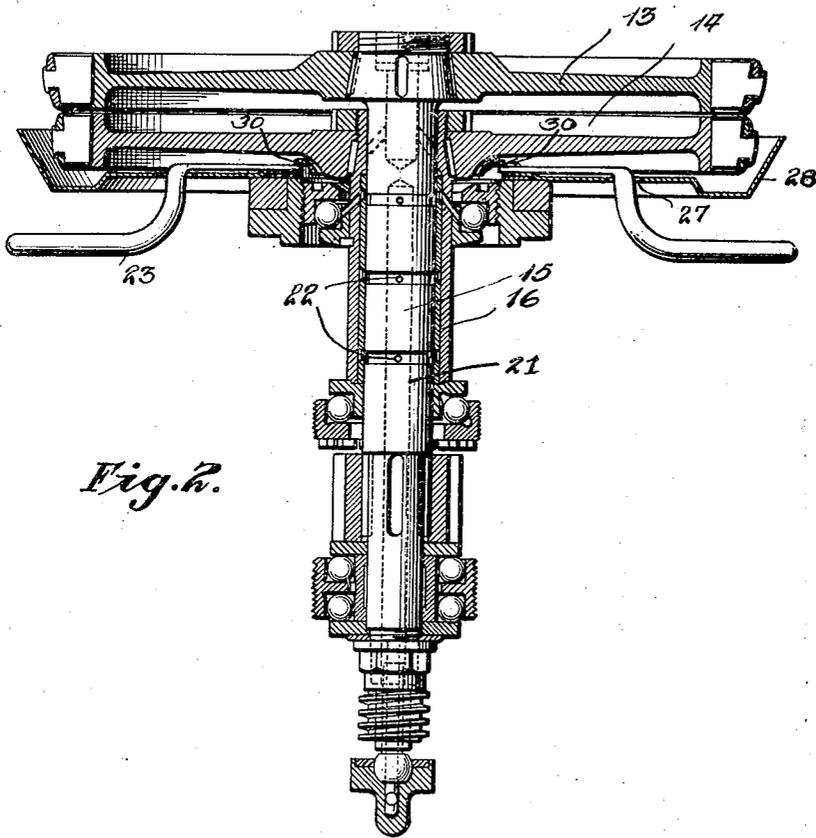


Fig. 6.

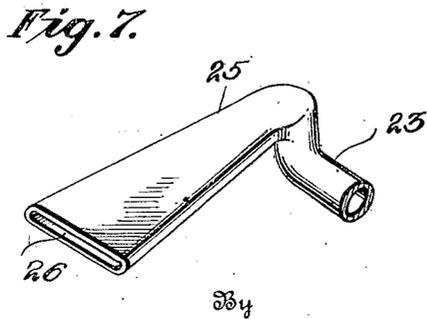


Fig. 7.

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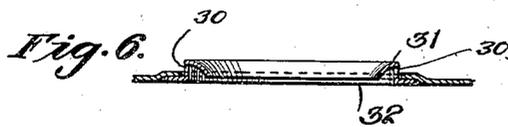
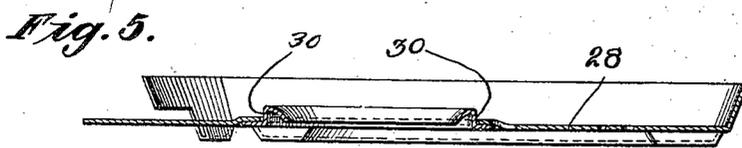
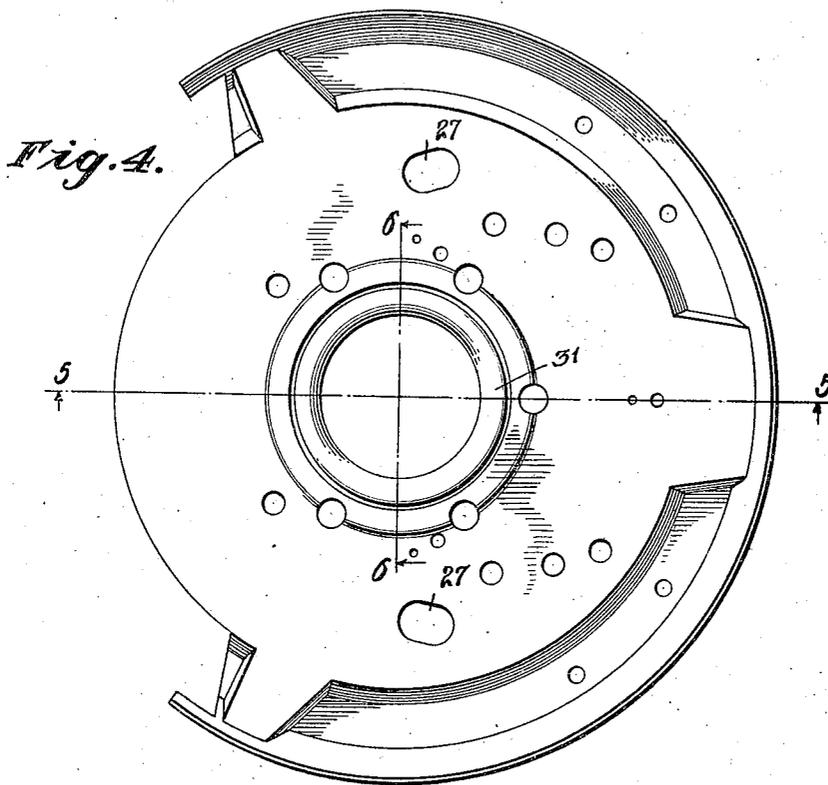
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3 SHEETS-SHEET 3



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UNITED STATES PATENT OFFICE.

JAMES A. FLINT, OF DENVER, COLORADO, ASSIGNOR TO THE GOVERNMENT OF THE UNITED STATES.

TORPEDO.

Application filed April 24, 1920. Serial No. 376,372.

To all whom it may concern:

Be it known that I, JAMES A. FLINT, a citizen of the United States, residing at Denver, Colorado, have invented new and useful Improvements in Torpedoes, of which the following is a specification.

This invention relates to improvements in torpedoes and more particularly to the application of means to a submarine automobile torpedo adapted to reduce the visibility of the wake as the torpedo passes through the water.

One of the objects of the present invention is to provide a mechanism adapted to be incorporated with the motive means of an automobile torpedo adapted to reduce the visibility of the wake of the torpedo.

By way of explanation it might be stated that the wake of a traveling torpedo is caused, to a large extent by the bubbles and smoke given off by the source of motive power which rise to the surface thereby leaving a fairly distinct track or path showing the course of the torpedo. The visibility of this wake is increased by the burning of lubricating oil around the turbines, the smoke of which passes off with the exhaust through the after-body of the torpedo where it rises to the surface of the water.

It is one of the objects of the present invention to reduce the visibility of the wake by the elimination of burning oil around the turbines.

These and other objects will appear more clear from the following analysis of this invention when taken in connection with the annexed sheets of drawings illustrating one of various possible embodiments of the invention in a standard type of torpedo.

In these drawings, where similar reference characters denote corresponding parts,

Figure 1 is a semi-diagrammatic plan view of the after-body of a torpedo showing such parts thereof as are necessary to understand the invention.

Figure 2 is a vertical longitudinal section of a part of the turbines.

Figure 3 is a detail view taken on the line 3/3 Figure 1.

Figure 4 is a plan view of the pan beneath the turbines shown in Figure 2.

Figure 5 is a sectional view taken on the line 5/5, Figure 4.

Figure 6 is a sectional view taken on the line 6/6 Figure 4.

Figure 7 is a detail perspective view of one of the parts shown in Figure 1.

Referring now to the drawings in detail, 10 denotes the after-body of a torpedo of standard construction provided with a supporting partition 11 and a forward bulkhead 12 between which is located the motive power means or turbine for the torpedo. In the standard type of torpedo this motive means comprises a pair of turbines 13 and 14, Figure 2, mounted upon concentric shafts 15 and 16 respectively which are revolved in opposite directions in a well-known manner to drive the concentric propeller shafts 17 and 18, Figure 1, in opposite directions. The exhaust gases, after impinging upon the blades of the turbine pass out through exhaust tubes 20 extending through the after-body of the torpedo as shown in Figure 1. These parts are also of well-known construction and it is believed require no further detail description, for they do not form a part of the invention hereinafter described except in so far as the elements broadly enter into certain combinations.

It is, of course, to be understood that the turbine shafts which are revolved at a very high rate of speed must be well lubricated in order that uniformity of speed may be maintained throughout the entire run. Heretofore, it has been customary to operate an oil pump from the turbines whereby the lubricating oil is pumped upwardly through passage 21 in the central part of shaft 15 as shown in Figure 2 and passes outwardly through one or more ducts 22 thereby to thoroughly lubricate all moving contacting surfaces.

There is, however, a tendency, due to the high rotation of the shafts, for the oil to be gradually drawn upwardly in to engagement with the under side of the turbines from whence by centrifugal action it is shot out radially where it mixes with the superheated motive fluid and is burned thereby thus causing the objectionable smoke to form and come to the surface of the water after passing through the exhaust pipes 20. The present invention is intended to overcome this objection as much as possible by introducing an opposing force to the upward movement of the oil on the rotating parts of the driving mechanism.

As herein shown there are provided pipes 110

23 passing along the under side of the exhaust pipes 20 or adjacent thereto if more convenient, the after ends of which are provided with flared, bent back ends as shown clearly in Figure 3. These ends are, of course, secured in the exhaust pipe in any desired manner and one form is shown in this figure. The exhaust gases passing through the pipe 20 will be taken up to a certain extent by the flared end 24 of the pipe 23 and thence conducted forwardly as shown in Figure 1 where they exhaust through an outlet nozzle 25 as shown in detail in Figure 7. This nozzle is provided with a flared flattened end or opening 26 through which the gases pass in a flat stream of considerable force thereby substantially embracing or surrounding the central shafts 15 of the turbines 13 and 14 as shown in Figure 1. In Figure 2 it will be noticed these pipes 23 pass upwardly through openings 27 in a pan 28 positioned beneath the turbine wheels. After passing through the opening 27 the ends are flattened out whereby the jet of air is directed downwardly through openings 30 shown in Figure 2 with sufficient force to counteract the natural upward movement of the oil about the shafts due to the rotary movement thereof.

In Figure 6 it will be seen an annular member 31 is placed over and in operative relation with the pan 28 whereby these exhaust gases are deflected downwardly by the in-turned edge 32 to have the greatest effect in counteracting the upward movement of the oil.

It is believed that the operation and method of use of an apparatus of this character will be clear from the above description. It might be stated, however, that simultaneously with the starting of the turbines the oil pump which is connected with

and operated by the turbine shaft starts to force oil upwardly through the central passage 21 and outwardly through the lateral ducts to thoroughly lubricate all of the adjacent revolving surfaces. In this way all of the co-acting parts and bearings are thoroughly lubricated and due to the high rotary speed there is a tendency for the oil to climb up the shaft to the under side of the turbine. The turbines, however, are rotated in the first instant by compressed air which after impinging upon the turbine blades passes out through the exhaust pipes and a portion is conducted back through the pipes 23 as previously explained. The air issuing from the nozzle 26 tends to counteract the upward movement of the oil and thus prevent it from coming in contact with the turbines thereby overcoming the objections previously noted.

It is thus seen that the present invention provides a simple and practical apparatus adapted to accomplish among others all the advantages herein set forth.

What I claim is:

In a torpedo, in combination, a plurality of turbines, turbine shafts, and exhaust pipe, a lubricating system for said turbine shafts, and means for conducting a portion of the exhaust gases to a point adjacent the outlet of the lubricating system, said means including a pipe communicating with the exhaust at one end and terminating at a point below the turbine at its other end, the last mentioned end of said pipe being flattened out to form a fan-shaped jet to partially embrace the turbine shaft adjacent the turbine wheels.

Signed at Washington, D. C., this 13th day of December, 1919.

JAMES A. FLINT.