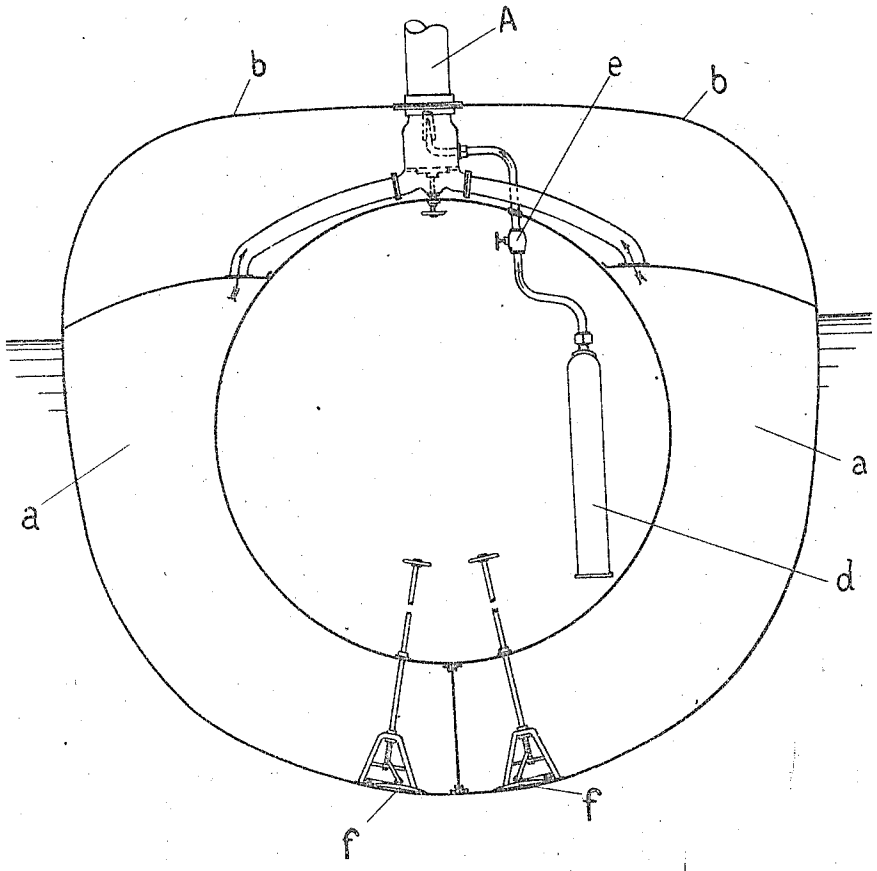
C. LAURENTI.

SUBMARINE VESSEL.

APPLICATION FILED AUG. 24, 1915.

1,161,484. Patented Nov. 23, 1915.



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SUBMARINE VESSEL.

1,161,484. Specification of Letters Patent. Patented Nov. 23, 1915.

Application filed August 24, 1915. Serial No. 47,025.

To all whom it may concern:

Be it known that I, CESARE LAURENTI, engineer of Turin, Italy, have invented certain new and useful Improvements in Submarine Vessels, of which the following is a full, clear, and exact specification.

The present invention relates to improvements in submarine vessels and more particularly to means for accelerating the submergence of such vessels by means of compressed air or of water under pressure.

A known phenomenon in the dynamics of gases and liquids is that of the injector or what is termed "lateral transmission of motion" by virtue of which a jet of fluid under pressure introduced into a tube, or meeting in a tube another traversed fluid, accelerates the motion of this latter in consequence of the partial vacuum which is set up at the zone where the two fluids meet. This phenomenon may be applied to accelerate the submergence of submarines, by making use of a jet of air or water or other fluids singly or mixed under heavy pressure, this being injected into the main air pipe so as to encounter the current of air issuing from the escape pipes leading from the ballast tanks. In place of allowing the air to escape from the upper part of the ballast tanks under the sole influence of the admission of water into the lower part, it is possible, by means of a jet of compressed air, or of water under pressure, in the air escape pipe to accelerate or assist the outflow of the air, and consequently increase the speed at which the water enters the ballast tanks, thus diminishing the time required for immersion.

The application of the aforesaid principle of the injection of air or water under pressure into the main air escape pipe connected to the ballast tanks, may be carried out in different ways one embodiment being illustrated in the accompanying drawing by way of example.

In this drawing A represents the main pipe to which are connected the pipes leading from, and through which issues the air escaping from the various ballast tanks; *a* represents the ballast tanks to be flooded; *b* the bridge of the superstructure. A jet of compressed air from the small cylinder *d* is introduced into the pipe A, after the pressure of the air has been suitably reduced in passing through the reducing valve *e*. The jet of air injected into the said escape pipe produces an appreciable depression or partial vacuum in the exhaust pipes and consequently in the ballast tanks, thus accelerating the admission of water thereinto through the flooding valves *f*. By suitably opening or closing the valve of the compressed air injector it will be seen that the rate of immersion of the boat can be regulated at will.

What I claim is:

In a submarine, ballast tanks, pipes leading from the ballast tanks for the escape of air therefrom when it is desired to admit water for submergence purposes, and an injector located in the air escape pipe for accelerating the flow of air from said ballast tanks and thereby accelerating the inflow of water and the submergence of such vessel.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

CESARE LAURENTI.

Witnesses:
C. S. SEYLES,
FELISE BARETTA.