

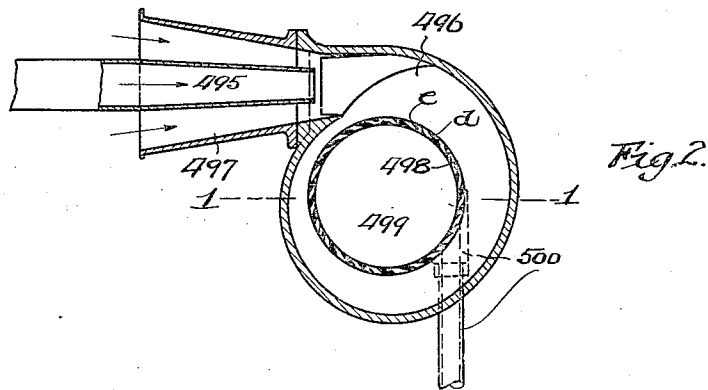
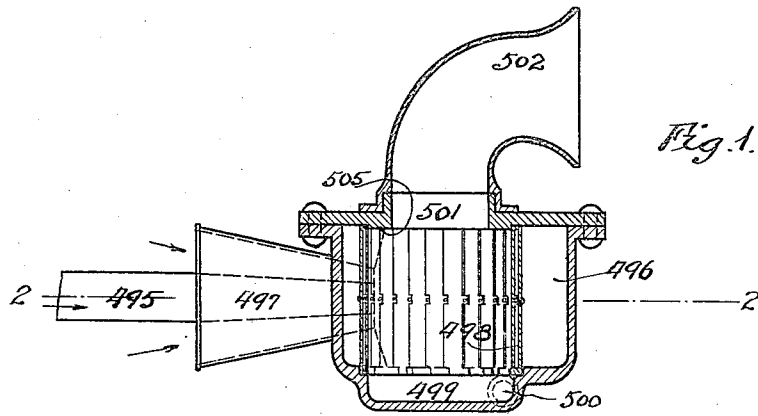
May 8, 1928.

1,668,872

J. M. SCHUTZ

CENTRIFUGAL PROCESS AND APPARATUS

Original Filed Feb. 5, 1924



INVENTOR.

Joseph Martin Schutz.

BY *C. A. Moran* ATTORNEY

UNITED STATES PATENT OFFICE.

JOSEPH MARTIN SCHUTZ, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO CENTRIFIX CORPORATION, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

CENTRIFUGAL PROCESS AND APPARATUS.

Original application filed February 5, 1924, Serial No. 690,861. Patent No. 1,539,435. Divided and this application filed March 3, 1925. Serial No. 12,398.

This application is a division of my original application S. N. 690,861, filed February 5, 1924.

This invention relates to the operation of internal combustion engines and in particular to such as are used in propelling dirigible airships; and, its object is to recover the water of combustion which is exhausted from the engines, to the end that it may be saved as ballast and obviate the difficulty of wasting buoyant gas to maintain the balance or constant buoyancy of the airship.

The invention will be readily understood on reference to the drawings forming a part of the specification; in which, Fig. 1 is a vertical section of the apparatus embodying and employed in carrying out this invention; and, Fig. 2 is a cross-section thereof on the line 2—2 of Fig. 1.

It is deemed unnecessary to illustrate the airship or the internal combustion engine, and sufficient to state that the part marked 495 represents the end of the engine exhaust pipe. As shown, this exhaust pipe enters the funnel 497 of a centrifugal unit; generally of the kind and construction described and claimed in my aforesaid original application.

The exhaust pipe 495 enters the scroll-like casing 496 through a larger conical injector funnel or passage 497. The construction as here shown presents the injector funnel tangentially to the body of the casing. Thus both gas and cooling air are supplied to the centrifugal ring 498 and centrifugal bowl 499, the latter having the tangential outlet 500. The central outlet 501 communicates with the suction producing funnel 502, it being assumed that the device is part of the equipment of an internal combustion engine belonging to a moving airship: a situation that makes it desirable that the water of combustion shall be saved as a load or ballast compensator for the liquid fuel consumed by the engine.

The exhaust gases cooled by the indrawn cold air, enter and whirl within the centrifugal unit, effectively separating and discharging the water, and contained solids, through the pipe 500; thus accomplishing the desired end.

Incidentally, this apparatus, without subjecting the exhaust to back pressure, quite effectively silences the same by the sudden transfer of heat to the currents of cold air which are caused to pass therewith through the scroll, the ring and the outlet 501.

Reverting to the details, the centrifugal tuyère ring 498 comprises a circumferential series of inwardly directed operatively overlapping slit-like tangential tuyères all having the same direction. The tuyères proper are marked *c*. They are formed by the spaces between the tangentially positioned tuyère blades *d*. The latter are fastened one to the other in series and thus the ring is completed. When air and gas under pressure are supplied to the scroll 496 it passes tangentially into the tuyère ring in the form of many thin films or streams. As these have a common direction, there is immediately set up within the ring a rapid rotation of the whole fluid contents thereof. Any water or solids contained by the air and gas, being heavier than the same are projected upon the inner sides of the blades and are held in that position by centrifugal force until, due to the overhanging abutment 505, they are caused to descend into the centrifugal bowl 499. The rotation is continued therein with the result that the peripherally separated water and solids are ejected through the tangential discharge duct or nozzle 500; and thence into a suitable ballast tank.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

An apparatus of the class described, comprising a casing and a tangential air admission funnel, in combination with an exhaust pipe entering said funnel, a multi-bladed centrifugal tuyère ring within said casing, an outlet for the gases in axial relation to and smaller than said tuyère ring and means for independently discharging the water of combustion from said ring and casing.

In testimony whereof, I have hereunto set my hand this 26 day of February, 1925.

JOSEPH MARTIN SCHUTZ.