Dec. 29, 1942. J. W. ALLEN 2,306,420

EXPLOSIVE FLUID DISPERSION

Original Filed March 19, 1938

Fig. 1

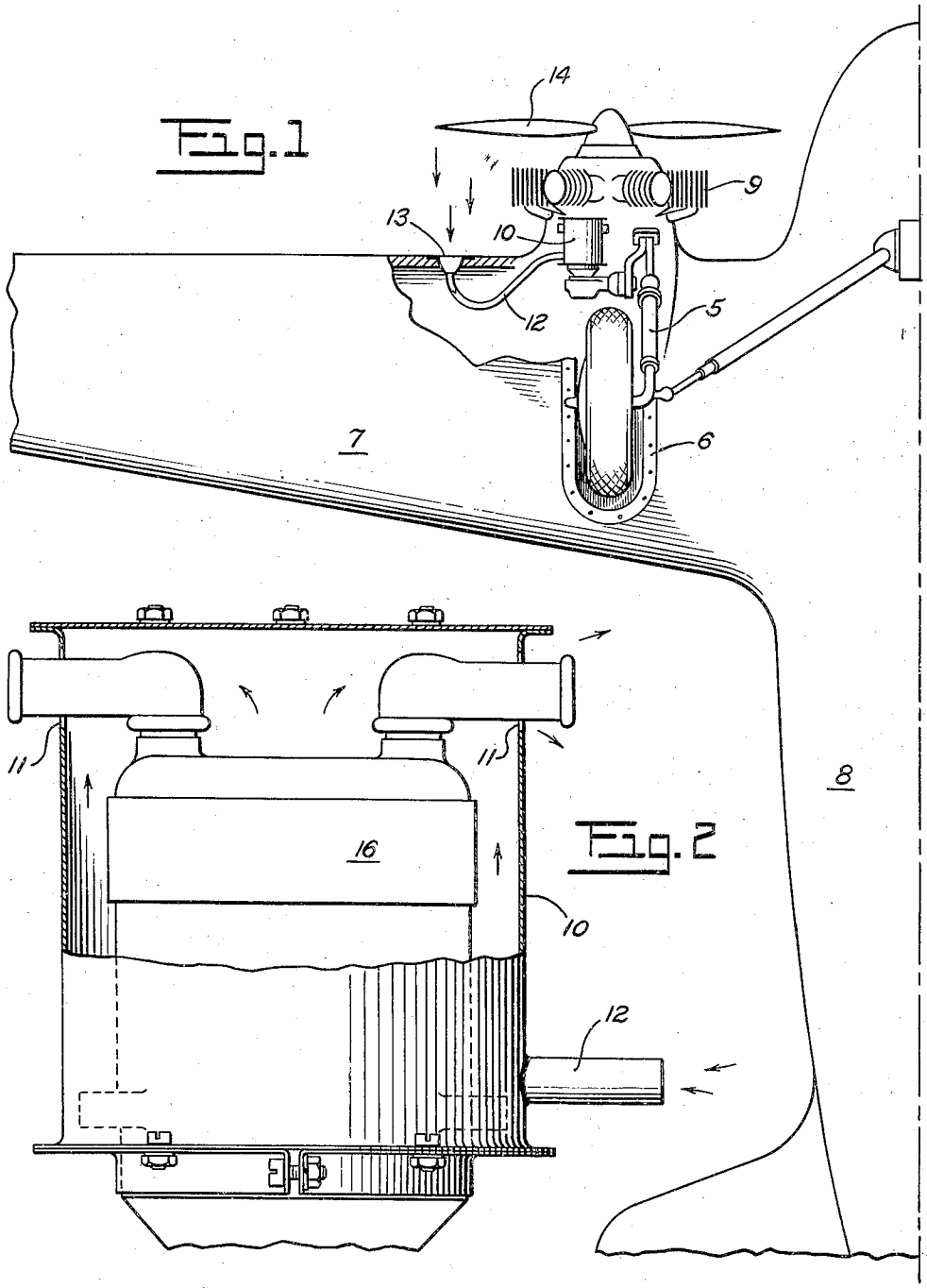


Fig. 2

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EXPLOSIVE FLUID DISPERSION

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1 Claim. (Cl. 172—36)

This invention relates to explosive fluid dispersion, and particularly to the dispersion of explosive fumes and gaseous mixtures, to preclude possible damage due to the accumulation of such explosive materials in dangerous locations, such as the space surrounding electrical apparatus on aircraft.

Heretofore electric motors and the like have been enclosed in supposedly air-tight compartments as a means of preventing contact of an electric spark with explosive gaseous mixtures. The present invention makes it unnecessary to resort to this practice, and permits the substitution of a less expensive and more readily fabricated enclosure, from which explosive gases are excluded, not by the use of gas-tight sealing means, but by the creation of a pressure differential along the surfaces of the electrical or other unit to be enclosed, which pressure differential effectively prevents entry of any appreciable amount of hazard creating gas or gaseous mixture. My concept is to maintain a continuous flow of clean air along the unit's surfaces, the air being guided thereto by means of a conduit or conduits leading directly thereto, and adapted to receive the clean air from a point of substantially higher pressure than that of the air surrounding the enclosed unit. As shown, in Fig. 1 of the accompanying drawing, by way of illustration of the preferred mode of practicing the invention, the air supply conduit or conduits have their origin at or adjacent the leading edge of the aircraft wing or corresponding aerofoil surface, at a point or points within the region of relatively high pressure resulting from the effect of the rotation of the propeller substantially directly in advance of the mouth of the conduit.

In Fig. 1 the invention is shown applied to the dispersion of explosive gases from the region surrounding a landing gear actuating motor; and in Fig. 2 there is a showing, on a larger scale, of such a motor in an enclosure suitable for the purposes indicated. It is to be understood, however, that the drawing is for the purpose of illustration only, and is not designed as a definition of the limits of the invention, reference being had to the appended claim for this purpose.

Referring again to Fig. 1, a portion of the landing gear retracting and extending linkage 5 is shown in the position which it occupies with respect to the wing pocket 6 on the under side of the wing 7 of an airplane whose fuselage is indicated at 8, and one of whose engines is indicated at 9, the enclosure for the landing gear actuating motor being shown at 10. As shown best in Fig. 2, enclosure 10 has two or more openings 11 for cable or conductor receiving purposes, and these may be utilized as outlets for the air which enters the enclosure 10 by way of the supply conduit 12, whose mouth 13 is shown in Fig. 1 as directly in the slipstream of propeller 14 of engine 9, and at or adjacent the leading edge of wing 7. By this means clean air is caused to flow, under the pressure differential which exists from point 13 to points 11, and this clean air effectively removes from the surfaces of inner housing 16 any explosive gases that may have collected prior to creation of the clean air flow which begins upon first rotation of propeller 14. All such explosive gases and fumes are dispersed by the clean air stream as it travels through the outer housing 10 on its way to outlets 11.

If desired, conduit 12 may be provided with a drain (not shown) to allow release of any moisture or foreign material collecting therein.

This application is a division of my co-pending application No. 196,987, filed March 19, 1938.

What is claimed is:

A hazard-reducing device for an electric machine comprising a pair of concentric housings of slightly different diameters, with an undivided annular air space between said housings, the inner housing being integral with the current receiving parts of the machine and the outer housing having an opening for receipt of gas dispelling air for circulation in said annular space, and means disposed entirely at one end of said concentric housings for supporting both said housings.

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