E. H. SHERBONDY.

TURBO BLOWER ASSEMBLY.

APPLICATION FILED APR. 30, 1918.

1,400,322.

Patented Dec. 13, 1921.

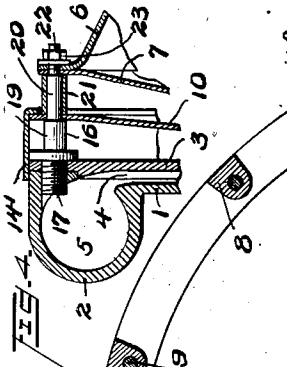


FIG. 4.

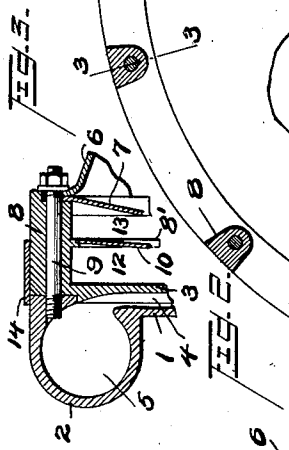


FIG. 3.

FIG. 2.

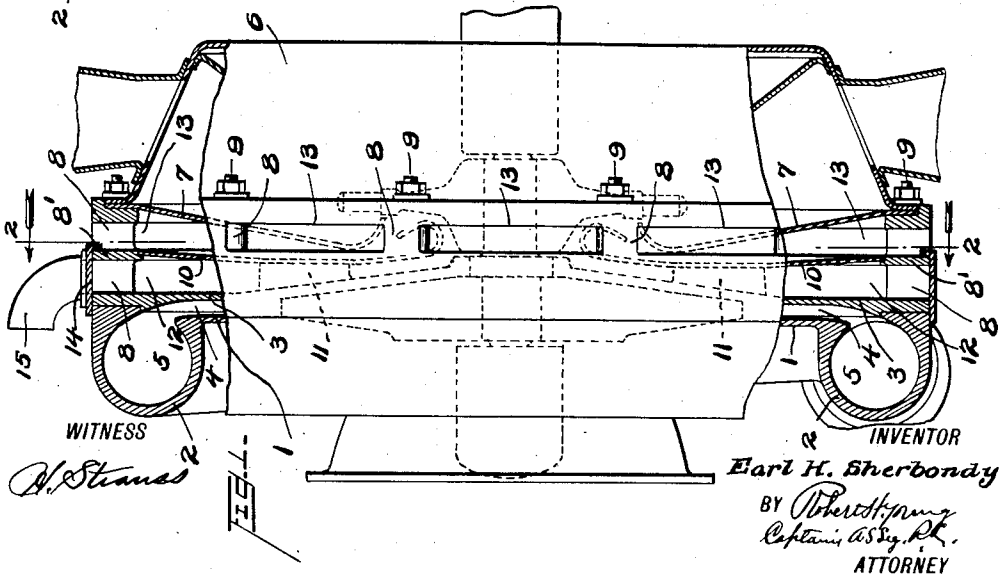


FIG. 1.

WITNESS

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UNITED STATES PATENT OFFICE.

EARL H. SHERBONDY, OF CLEVELAND, OHIO.

TURBO-BLOWER ASSEMBLY.

1,400,322. Specification of Letters Patent. Patented Dec. 13, 1921.

Application filed April 30, 1918. Serial No. 231,765.

To all whom it may concern:

Be it known that I, EARL H. SHERBONDY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Turbo-Blower Assemblies, of which the following is a specification.

This invention relates to a turbo-blower assembly, more particularly to an assembly of the blower casing and the turbine casing, in which the one is directly attached to and supported by the other, whereby a compact and readily assembled unit is obtained, which occupies a minimum of space.

Another object of the invention is to provide an air space between the two casings, for insulation purposes.

Another object of the invention is to utilize the means that attach the two casings together to hold parts of the turbine casing, or blower casing, or both in position.

Referring to the drawings Figure 1 is a side view, partly in section of the turbine blower assembly; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a section on the line 3—3 of Fig. 2; and Fig. 4 is a view, similar to Fig. 3, of a modification.

The blower casing consists of the front casing element 1, with which may be integrally cast the collector ring 2, and the backing plate 3, the two, when assembled, serving to define the air channels 4 and 5.

The turbine casing consists of the main casing element 6, shaped substantially like a dish pan. Associated with the main casing element 6, is a backing plate 7, the two, when assembled, completing the turbine casing, all as more particularly described in my co-pending case, Serial No. 224892 filed March 26, 1918.

The turbine blower assembly here described is intended to be operated by the exhaust gases from an airplane engine. These gases are, of course, at a high temperature, and for that reason the backing plate 7 becomes quite hot. It is evident, therefore, that casing 7 must be spaced slightly from the blower casing element 3, so that the said casing element 3 will not be unduly heated. To this end, the casing 3 and backing plate 7 are spaced apart. As shown in Fig. 3, spacing elements 8 are provided which are shown as cast integrally with casing 3 of the blower. Obviously, however, this spacing element 8 may be separate if desired. The casing elements 6 and 3 and backing plate 7, and the spacing elements 8 are all held in position by a series of bolts 9, which bolts are arranged around the periphery of the mentioned parts, as shown in Fig. 3, the bolts 9 being threaded into the front casing element 2 of the blower, then passing through the casing element 3, spacing element 8, and then through the backing plate 7 and turbine casing 6. It should be noted that the mounting means just described, not only holds the blower casing elements 2 and 3 together, but also holds the turbine casing elements 6 and 7 together, and in addition supports the turbine casing on the blower casing, or the blower casing on the turbine casing, according as the blower casing or the turbine casing is supported on any suitable foundation. The point to be noted is that either casing is supported directly on the other.

The spacing elements 8 may themselves be spaced from one another by an annular ring 8', which preferably is cast integral with the spacing elements 8 and the blower casing 3.

In order to minimize the transmission of heat from the hot backing plate 7 to the blower casing, there may be provided an annular plate 10, which may be positioned substantially midway between the casing elements 3 and 7, in such a way as to provide a double layer of air, as particularly described in my co-pending case, Serial No. 224357 filed March 23, 1918. This plate 10 may be supported at its periphery by spacing elements 8, the spacing elements 8 carrying suitable grooves or lugs for this purpose.

The plate 10 may be supported from the backing casing element 3 of the blower, by series of lugs 11, arranged at spaced intervals as shown in Fig. 2.

The arrangement of the spacing element 8 around the periphery of the two casings, leaves a series of openings 12 and 13. The opening 12 is for the ingress of the cooling air, and the opening 13 is for the egress of the same, all as more particularly described in my said co-pending case, Serial No. 224,357.

An annular ring 14 may be attached to the casing 3, and carried out far enough to cover up the several openings 12, as

shown in Fig. 1. This ring 14 may be bent over the ring 8', as shown in Fig. 1. The ring 14 may be provided with one or more horns 15, facing in the direction of the travel of the airplane, the purpose of these horns 15 being to take in air for passage down the opening 12, between the two casings and out through the opening 13, as detailed in my said co-pending case, Serial No. 224,357.

Referring now to Fig. 4, a modification is shown, in which a bolt of several different diameters is provided, to take the place of the spacing elements 8 and 9 bolt, described in Fig. 3. This bolt 16 carries a threaded portion 17, whichthreaded portion is adapted to engage the parts 2 and 3 of the blower casing. A washer may be located against the casing 3, as shown. The two parts 19 and 20 of the bolt are made of different diameters, whereby a shoulder is left between them, against which shoulder the plate 10 is seated. The plate 10 is held against this shoulder by the annular spacing tube 21, arranged around the portion 20 of the bolt 16. The end portion 22 of the bolt 16 is of still smaller diameter, and may be screw threaded for a nut 23, which serves to clamp the turbine casing elements 6 and 7 in position. A ring 14', similar to the ring 14 described in connection with Fig. 1 may be provided. The horn is not shown in Fig. 4, but obviously one may be used in the same manner as in Fig. 1.

It will be noted that I have produced an extremely compact turbo-blower assembly, which will be of particular advantage in use in an aeroplane fuselage, because of the limitations of space there.

While I have illustrated certain embodiments of my invention, it should be understood that the invention may be carried out in other ways, as defined within the scope of the appended claims.

I claim:

1. In a turbo-blower assembly, a turbine casing, a blower casing, means engaging with each casing to hold the two casings spaced apart so as to leave an air space therebetween, and an annular plate, carried by said means and extending into said air space.

2. In a turbo-blower assembly, a two-part turbine casing, a two-part blower casing, and a bolt, provided with a plurality of shoulders, to clamp the two parts of the blower casing to one another to clamp the two parts of the turbine casing to one another and to further hold the two said casings in rigid spaced relationship.

In testimony whereof I affix my signature.

EARL H. SHERBONDY.