

R. N. EHRHART.
 FLUID TRANSLATING DEVICE.
 APPLICATION FILED OCT. 1, 1910.

1,029,979.

Patented June 18, 1912.

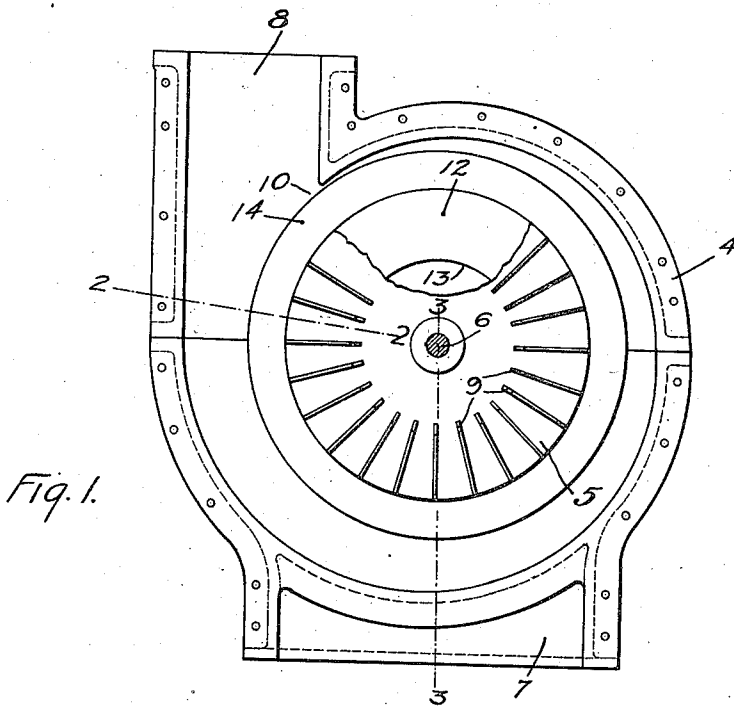


Fig. 1.

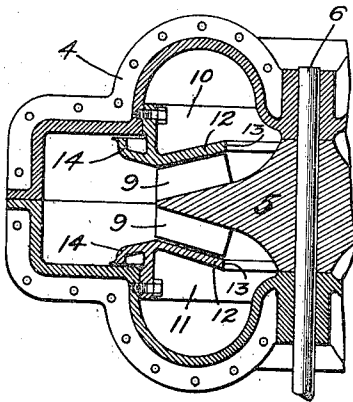


Fig. 2.

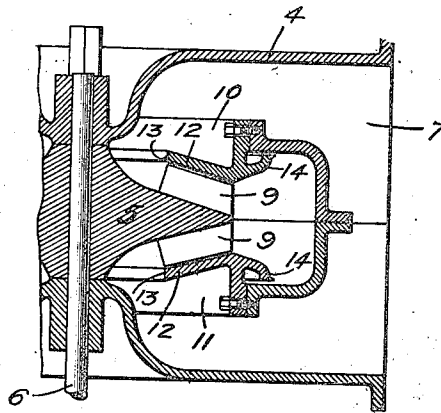


Fig. 3.

WITNESSES:

J. L. Winter.

E. M. Calista.

INVENTOR.

Raymond N. Ehrhart.

BY

James S. Brown.

HIS ATTORNEY IN FACT.

UNITED STATES PATENT OFFICE.

RAYMOND N. EHRHART, OF EDGEWOOD PARK, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE COLONIAL TRUST COMPANY, TRUSTEE, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FLUID-TRANSLATING DEVICE.

1,029,979.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed October 1, 1910. Serial No. 584,848.

To all whom it may concern:

Be it known that I, RAYMOND N. EHRHART, a citizen of the United States, and a resident of Edgewood Park, in the county of Allegheny and State of Pennsylvania, have made a new and useful invention in Fluid-Translating Devices, of which the following is a specification.

This invention relates to centrifugal blowers, compressors and exhausters, and has for an object to produce means for cheapening the cost of manufacture of such apparatus and for enabling standard casings to be employed with apparatus of varying capacities and duties.

A further object is to produce a blower, compressor or exhauster provided with means whereby the dimensions of the impeller may be varied without changing the form or the dimensions of the exterior casing.

These and other objects I attain by means of apparatus embodying the features herein described and illustrated.

In the drawings accompanying this application and forming a part thereof, Figure 1 is a side elevation of a blower embodying my invention; one side of the exterior casing of the blower is shown removed and a portion of the impeller is shown broken away; Fig. 2 is a fragmental section along the line 2-2 of Fig. 1; and Fig. 3 is a fragmental section along the line 3-3 of Fig. 1.

It is necessary to employ casings of different form and design for different sizes of centrifugal blowers, compressors and exhausters, and that type of apparatus as it is ordinarily constructed; for example, the impeller of a blower designed to operate at 1500 R. P. M. and to pass 25,000 cu. ft. of air per minute at two pounds pressure, will differ in diameter and width of blades from an impeller designed to operate under the same conditions and to pass 30,000 cu. ft. of air per minute at four pounds pressure. This variation in the size of the impellers necessitates a variation in the form and size of the casings of the blowers; and as a result, the casing for each blower differs from the casing of every other blower of a different size and must be specially cast, machined and assembled. The labor and ex-

pense of building such apparatus is greatly decreased by standardizing the various parts and also by making the operations of machining and assembling more uniform.

It will be apparent that by providing a standard casing, which may be employed for blowers of widely different capacity and duty, the operation of casting, machining and assembling may be greatly simplified and even standardized.

The principal object of my invention, as heretofore stated, is to provide means such that a standard casing may be employed for blowers, compressors and exhausters of widely different capacities and duties.

Referring to the drawings: the blower illustrated consists of a casing 4 and an impeller 5 located within the casing and mounted on a shaft 6, which extends through each end of the casing. The casing is shown formed in four parts, being divided on a plane, passing transversely through the axis and midway between the ends of the impeller, and on a horizontal plane including the axis of the impeller. A flanged inlet port 7 is formed in the lower portion of the casing 4 and the interior passages of the casing are so arranged that the air entering through the port 7 is delivered to both sides of the impeller. A flanged discharge port 8 is formed in the casing 4 and communicates with the volute chamber of the blower.

The impeller shown is provided on both sides with blades 9 and is located between the separate parts 10 and 11 of an interior casing, which is located within, and is secured in place on, the casing 4. The separate parts of the interior casing are each provided with an inwardly projecting flange 12, which extends into close proximity with the impeller blades 9 and forms a partition between the adjacent air inlet passage and the impeller. Air is delivered to the impeller blades through the annular passage located between the inner edge 13 of each flange 12 and the hub portion of the impeller. Outwardly projecting flanges 14 are formed on each part of the interior casing and they cooperate with each other, and with the walls of the casing 4, in forming a volute chamber of the correct form and cross-sectional area. The interior casing, like the

exterior casing, may be formed in four parts, and each part may be secured to the corresponding part of the exterior casing.

The separate parts 10 and 11 of the interior casing are removable and consequently may be replaced by parts which will accommodate different widths of impeller and blades and different diameters of impellers. With this arrangement, a standard exterior casing 4 may be employed for blowers of various capacities and duties by merely employing an interior casing of different form and design.

In the drawings, I have illustrated but one form of interior casing; but it will be apparent that the interior casing may be formed so as to accommodate an impeller provided with blades, which vary considerably in width, and that it may be constructed to accommodate the great variations in the diameter of the impeller.

Having thus described my invention, what I claim is:

1. A blower, compressor or exhaustor comprising an exterior casing, an impeller and an interior casing having interchangeable side walls.

2. A blower, compressor or exhaustor comprising an exterior casing, an impeller and a removable interior casing having interchangeable side walls.

3. A blower, compressor or exhaustor comprising an exterior casing, an impeller and removable partitions located on each side of the impeller to form a casing for the impeller.

4. A blower, compressor or exhaustor comprising an exterior casing, an impeller and removable partitions located on each side of

the impeller providing an impeller chamber, and provided with cooperating flanges for varying the effective cross-sectional area of the volute chamber of the apparatus.

5. A blower, compressor or exhaustor comprising an exterior casing, an impeller and removable partitions secured in place on each side of the impeller provided with flanges which cooperate with the exterior casing to form fluid passages within the casing.

6. A blower, compressor or exhaustor comprising an exterior casing, an impeller and removable and replaceable means within said casing and cooperating therewith to form working passages within the casing within which the impeller is located.

7. A blower, compressor or exhaustor comprising an exterior casing, an impeller and an interior casing secured to said exterior casing, movable side walls located on each side of the impeller and cooperating with the exterior casing to form working passages within the casing in which the impeller is located.

8. A blower, compressor or exhaustor comprising an exterior casing, an impeller and a removable and replaceable interior casing having interchangeable side walls whereby a standard exterior casing may be employed for different sizes of impellers.

In testimony whereof, I have hereunto subscribed my name this 30th day of September, 1910.

RAYMOND N. EHRLHART.

Witnesses:

C. W. MCGHEE,
J. A. GRISWOLD.