W. W. WAINWRIGHT.

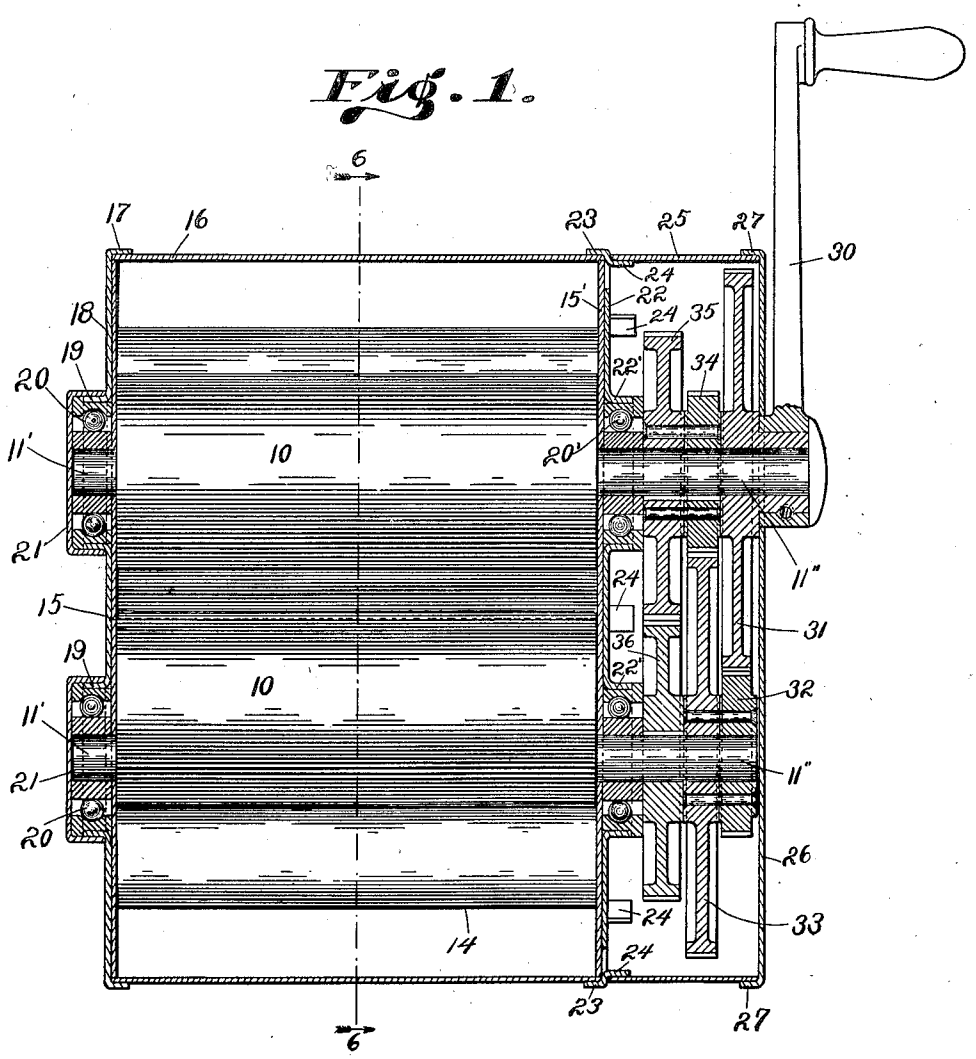
BLOWER CASING.

APPLICATION FILED OCT. 28, 1907.

902,702. Patented Nov. 3, 1908.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

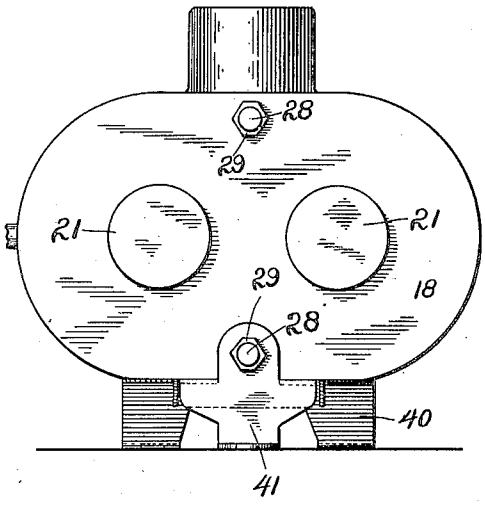


Fig. 3.

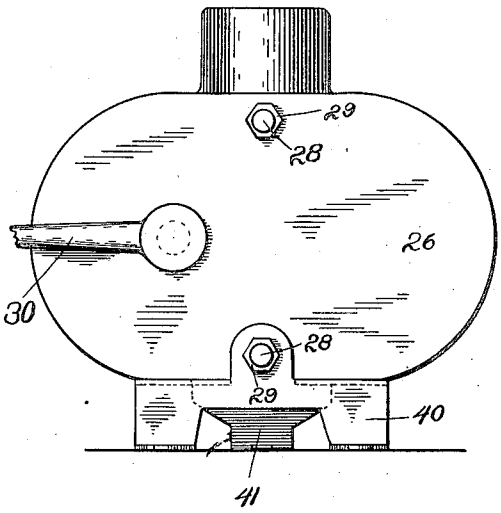


Fig. 4.

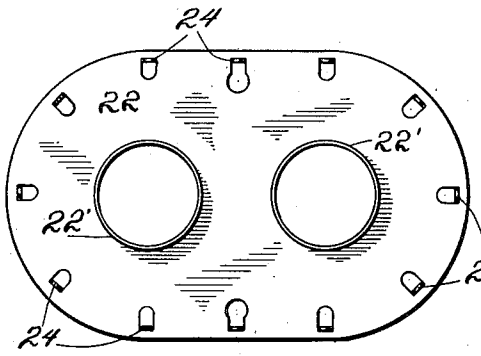


Fig. 6.

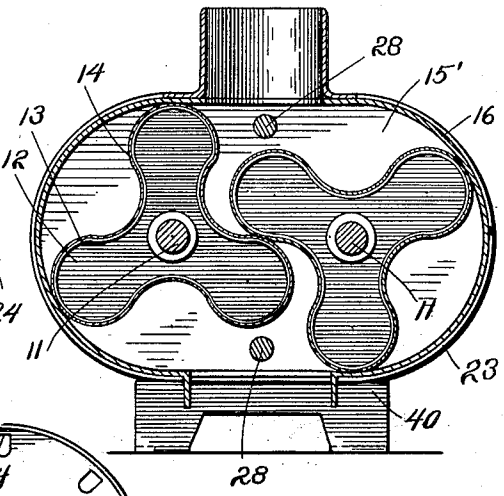
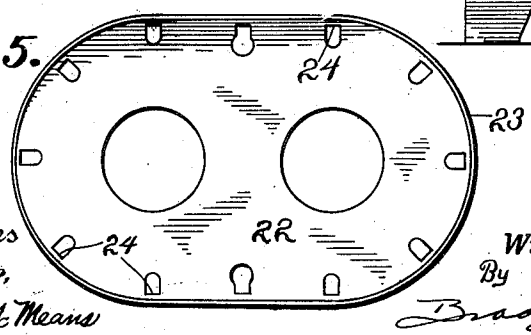


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM W. WAINWRIGHT, OF CONNERSVILLE, INDIANA.

BLOWER-CASING.

No. 902,702. Specification of Letters Patent. Patented Nov. 3, 1908.

Application filed October 28, 1907. Serial No. 399,521.

To all whom it may concern:

Be it known, that I, WILLIAM W. WAINWRIGHT, a citizen of the United States, residing at Connersville, in the county of Fayette and State of Indiana, have invented certain new and useful Improvements in Blower-Casings, of which the following is a specification.

The object of my invention is to produce a very compact and light blower of the rotary impeller type wherein the coacting impellers are driven by a multiplying gearing and the sheet-metal casing is of such character as to inclose not only the coöperating impellers, but also the multiplying gearing.

A further object of my invention is to so construct the various sheet metal heads that they may be readily utilized in the production of blowers of various capacities, the only change necessary being an increase in length of the barrel within which the impellers are located and a corresponding increase in the length of the impellers.

The accompanying drawings illustrate my invention:

Figure 1 is an axial section; Fig. 2 an elevation of one end; Fig. 3 an elevation of the opposite end; Fig. 4 an elevation of one side of the intermediate partition; Fig. 5 an elevation of the opposite side of said partition, and Fig. 6 a transverse section through the impeller barrel.

In the drawings, 10, 10 indicate a pair of co-acting lobed impellers each of which is preferably formed of a shaft 11, a sheet metal head 12 at each end provided with an inwardly projecting flange 13 around its periphery, and a fitted sheet-metal shell 14, secured to the flanges 13 by brazing or otherwise. Each shaft 11 projects beyond one end of its impeller 10, at 11′, and slipped over these ends is an end plate 15 which is of such shape as to fit within the sheet metal barrel 16, preferably formed of tubing, which is of the usual shape to form a chamber for the impellers 10. The head 15 at its edge fits snugly within the sheet-metal barrel 16 and fitting over said barrel is the flange 17 of a sheet-metal head 18 provided on its outer face with a pair of circular flanges 19, 19 adapted to receive suitable ball bearings 20 also received by the projecting portions 11′ of the shafts of the impellers. Slipped over each flange 19 and covering the bearing 20 is a sheet-metal thimble or cap 21.

At the opposite ends of the impellers the shafts are projected, at 11′, and slipped over these is a head 15′ like head 15, said head 15′ lying within the adjacent end of barrel 16, and being held in place by a sheet-metal partition head 22 provided at its edge with a flange 23 which overlaps the barrel 16, and provided on its other face with a pair of ball-receiving flanges 22′ like the flanges 19 of head 18. Head 22 has struck up from it a series of short tongues 24 which are projected in the opposite direction from the flange 23 a sufficient distance within said flange to receive one end of a sheet metal barrel 25 of the same cross-section as the barrel 16 but considerably shorter. Closing the outer end of barrel 25 is a sheet-metal head 26 having a flange 27 around its edge to lap over or within the barrel 25.

The several parts are readily bound together by a pair of longitudinal clamping bolts 28, 28 which pass through the heads 18–15–15′–22 and 26, being clamped in place by nuts 29. Suitable ball bearings 20′ are placed in the flanges 22′ to receive the shaft portions 11″ and any suitable multiplying gearing may be used to connect the operating crank 30 with two impellers so as to rotate them in opposite directions at a desired speed. A very convenient and cheap system of gears is that shown in Fig. 1. This train consists of a large driving gear 31 slipped upon one of shafts 11″ and having a hub projecting through head 26, the crank 30 being secured to said hub. Gear 31 meshes with a small pinion 32 sleeved upon the other shaft 11″ and pinned to this gear 32 is a larger gear 33 which meshes with a pinion 34 keyed to the first shaft 11″. Pinned to gear 34 is a gear 35 which meshes with a gear 36 of the same size pinned to the other shaft 11″, all of said gears being inclosed within the barrel 25. Suitable sheet-metal foot members 40 and 41 are clamped to opposite ends of the structure by one of bolts 28. Member 40 is provided with a pair of feet while member 41 has only a single foot, thus giving the structure three points of support so that it may be placed solidly without difficulty. Each of the foot members is provided with inturned lips (shown in dotted lines in Figs. 2 and 3) which lie beneath the barrel and thus hold the foot members rigidly in position. Of course it will be readily understood that if it is desired to arrange the structure with the shafts 11 in a vertical position, the two

foot members 40 and 41 may both be readily secured upon head 18 by a slight modification in their form.

I claim as my invention:

1. In a blower of the two-impeller type, comprising a main sheet-metal body-barrel, a sheet-metal head for one end thereof, said head having a flange overlapping the end of the body-barrel and having upon its outer face a pair of circular flanges, bearings mounted in said circular flanges for the reception of impeller shafts, a sheet-metal partition arranged at the opposite end of the body-barrel and having a flange overlapping the same and also having a pair of circular flanges coaxial with the flanges of the opposing head, bearings mounted in said circular flanges, a pair of rotary impellers mounted within the main body-barrel and supported in the bearings carried by the head and partition, a lining plate fitted within the main body-barrel between the end of the impellers and the head and between the opposite end of the impellers and the partition, and gearing between the impellers outside said partition.

2. In a blower of the two-impeller type, comprising a main sheet-metal body-barrel, a sheet-metal head for one end thereof, said head having a flange overlapping the end of the body-barrel and having upon its outer face a pair of circular flanges, bearings mounted in said circular flanges for the reception of impeller shafts, a sheet-metal partition arranged at the opposite end of the body-barrel and having a flange overlapping the same and also having a pair of circular flanges coaxial with the flanges of the opposing head, bearings mounted in said circular flanges, a plurality of tongues struck out from the partition near the periphery thereof and extended in a direction opposite from the main body-barrel, a sheet-metal gear-barrel similar to the main body-barrel mounted upon said tongues, a sheet-metal head having a flange adapted to fit the outer end of said gear-barrel, and multiplying gearing mounted within the gear-barrel and forming a connection between the two rotary impellers, the initial member of said multiplying gear extending through the last mentioned head and carrying means by which it may be driven.

3. In a blower of the two-impeller type, comprising a main sheet-metal body-barrel, a sheet-metal head for one end thereof, said head having a flange overlapping the end of the body-barrel and having upon its outer face a pair of circular flanges, bearings mounted in said circular flanges for the reception of impeller shafts, a sheet-metal partition arranged at the opposite end of the body-barrel and having a flange overlapping the same and also having a pair of circular flanges coaxial with the flanges of the opposing head, bearings mounted in said circular flanges, a pair of rotary impellers mounted within the main body-barrel and supported in the bearings carried by the head and partition, a lining plate fitted within the main body-barrel between the end of the impellers and the head and between the opposite end of the impellers and the partition, gearing between the impellers outside said partition, sheet-metal foot members forming three points of support attached to opposite ends of the structure, and caps sleeved over the circular flanges of the first mentioned head, all substantially as and for the purpose set forth.

4. In a blower of the two-impeller type, comprising a main sheet-metal body-barrel, a sheet-metal head for one end thereof, said head having a flange overlapping the end of the body-barrel and having upon its outer face a pair of circular flanges, bearings mounted in said circular flanges for the reception of impeller shafts, a sheet-metal partition arranged at the opposite end of the body-barrel and having a flange overlapping the same and also having a pair of circular flanges coaxial with the flanges of the opposing head, bearings mounted in said circular flanges, a plurality of tongues struck out from the partition near the periphery thereof and extended in a direction opposite from the main body-barrel, a sheet-metal gear-barrel similar to the main body-barrel mounted upon said tongues, a sheet-metal head having a flange adapted to fit the outer end of said gear-barrel, multiplying gearing mounted within the gear-barrel and forming a connection between the two rotary impellers, the initial member of said multiplying gear extending through the last mentioned head and carrying means by which it may be driven, sheet-metal foot members forming three points of support attached to opposite ends of the structure, and caps sleeved over the circular flanges of the first mentioned head, all substantially as and for the purpose set forth.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this twenty-sixth day of October, A. D. one thousand nine hundred and seven.

WILLIAM W. WAINWRIGHT. [L. S.]

Witnesses:

ARTHUR M. HOOD,

THOMAS W. MCMEANS.