No. 791,147. PATENTED MAY 30, 1905.

T. W. GREEN.

ROTARY BLOWER AND EXHAUSTER.

APPLICATION FILED JAN. 7, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

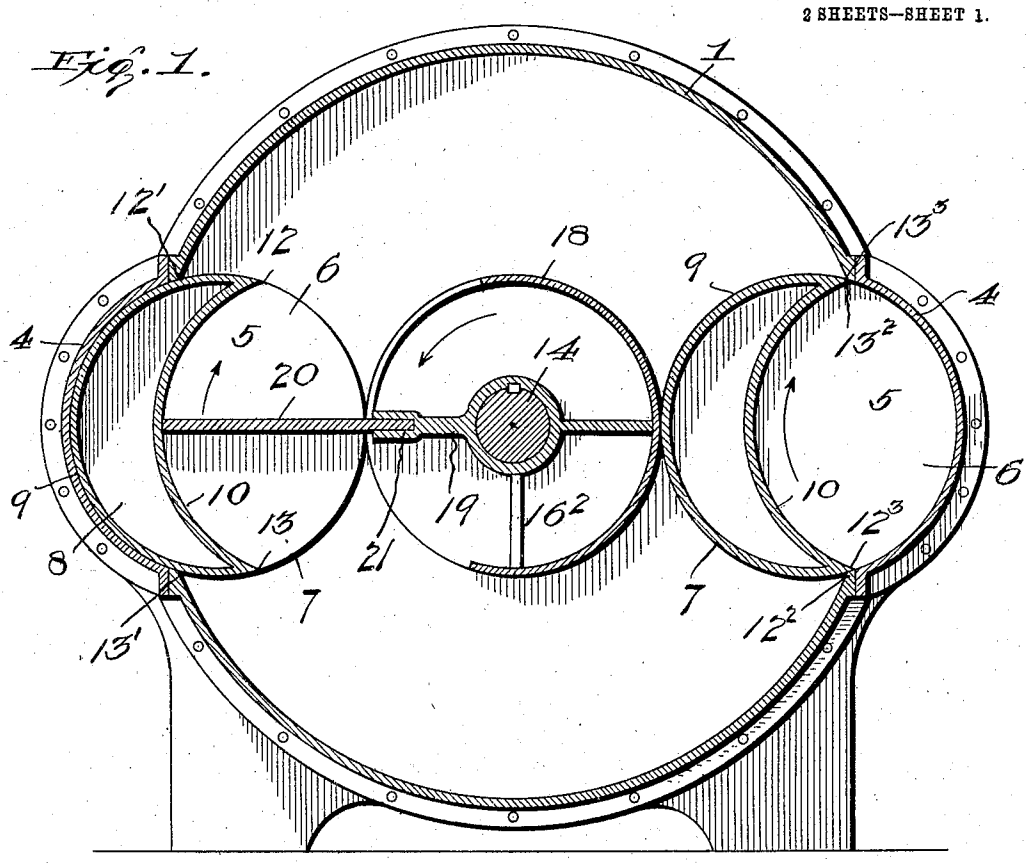
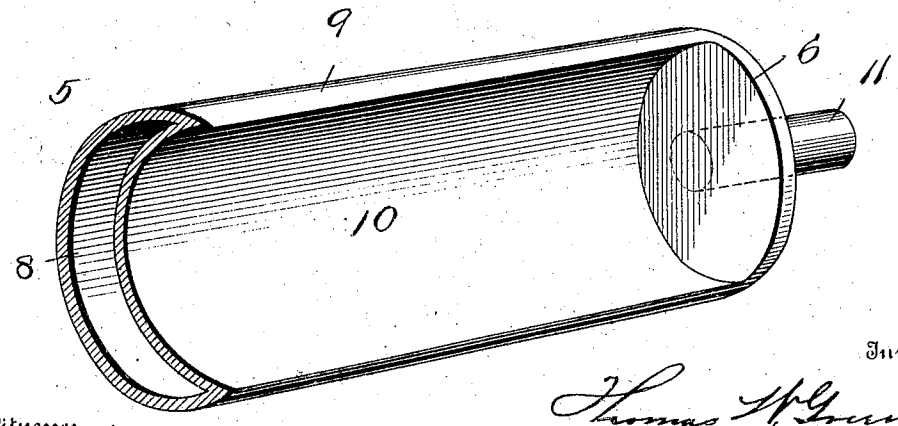


Fig. 3.



Witnesses

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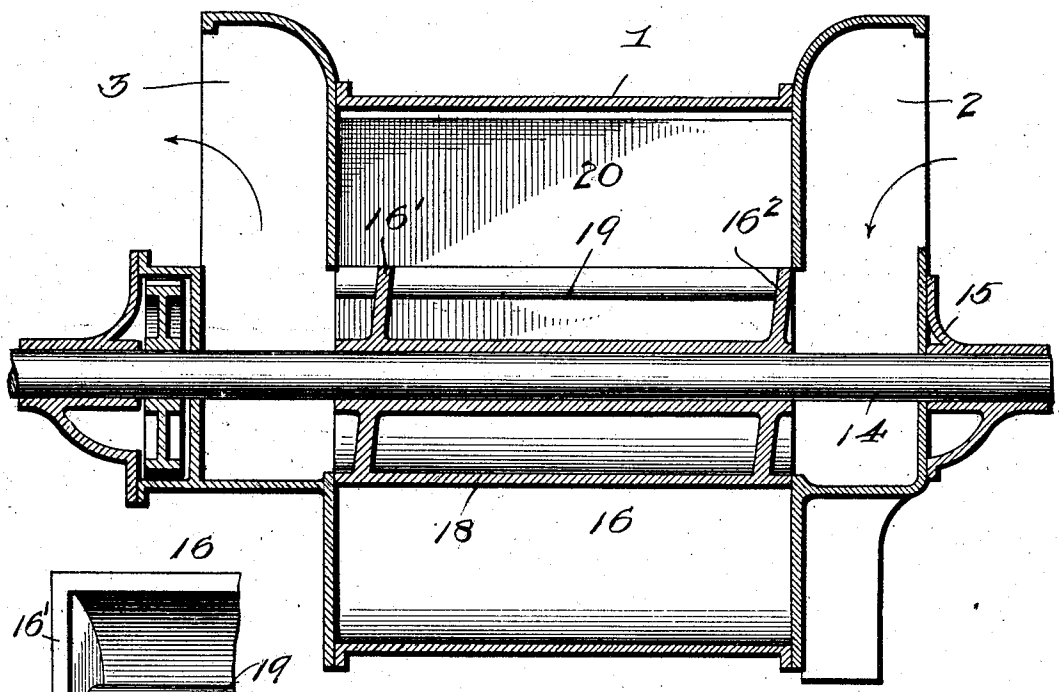
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2 SHEETS—SHEET 2.

Fig. 2.



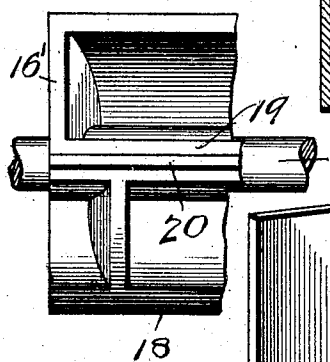


Fig. 5.

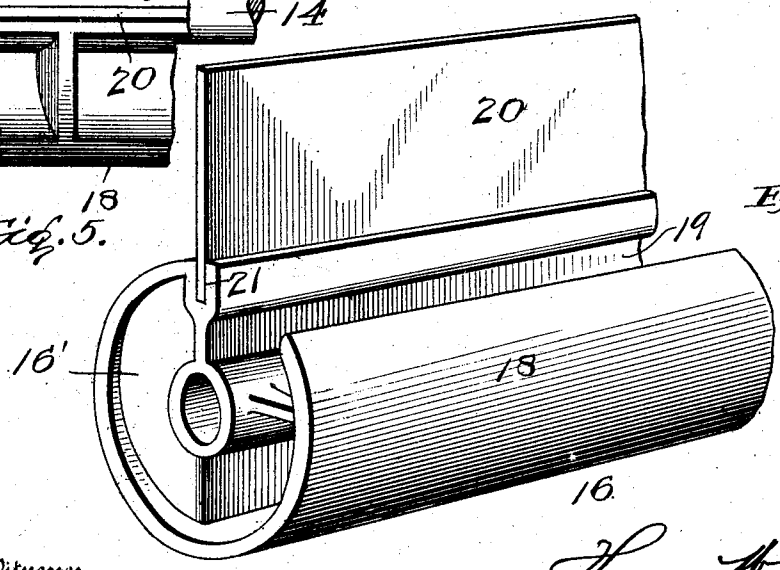


Fig. 4.

Witnesses

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No. 791,147. Patented May 30, 1905

UNITED STATES PATENT OFFICE.

THOMAS W. GREEN, OF PHILADELPHIA, PENNSYLVANIA.

ROTARY BLOWER AND EXHAUSTER.

SPECIFICATION forming part of Letters Patent No. 791,147, dated May 30, 1905.

Application filed January 7, 1905. Serial No. 240,129.

To all whom it may concern:

Be it known that I, THOMAS W. GREEN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Rotary Blowers and Exhausters, of which the following is a specification.

This invention relates to improvements in rotary blowers, gas-exhausters, &c., and has particular reference to a device wherein the lock is formed by three coacting rotary locking parts.

The object of the present invention is to increase the volume of air or other fluid delivered therefrom and to provide a steady even flow therefrom when the device is operated.

A further object of the invention is to provide a device in which the impellers may be easily, quickly, and accurately finished and assembled and in which the maximum amount of air-space may be obtained.

To these ends the invention consists in the novel construction, arrangement, and combination of the several parts of the device, as hereinafter described, illustrated in the drawings, and more particularly pointed out in the claims hereunto appended.

In the drawings, Figure 1 is a transverse vertical section of the device, showing the locking parts in cross-section and their relation to one another and to the blower-casing. Fig. 2 is a vertical longitudinal section of the device. Fig. 3 is a perspective view of one of the side locking members; and Fig. 4 is a perspective view, partly broken away, of the central locking member, showing the construction thereof. Fig. 5 is a view of one of the heads of the central locking member.

Referring to the drawings, the numeral 1 indicates the shell or casing of the device, which is circular in cross-section, 2 the intake, and 3 the outlet.

The numerals 4 4 indicate circular or segmental offsets in the sides of said casing, extending the length thereof and are for a purpose hereinafter stated.

The numerals 5 5 indicate the side locking members, each of which consists of two circular heads 6 6, adapted to set into and revolve in circular seats 7 7 in opposite ends of the casing and are connected by a longitudinal web or crescent-shape portion 8. The outer surface 9 of this crescent-shape portion has the same curve as the heads 6 6, while the inner surface 10 is made on an arc greater than the outer surface 9 for a purpose hereinafter stated. This crescent-shaped web may be either hollow or solid and may be cast integral with the heads 6 6 or separately and afterward secured thereto in any suitable manner. Each head 6 6 is provided with a suitable journal 11, which passes through a suitable opening in the end of the casing, as is evident. On one of the journals 11 of each of the side locking members 5 5 is a suitable gear-wheel adapted to mesh with a corresponding gear-wheel on the main driving-shaft for the purpose of giving rotation to the side locking members, as will be evident.

The numeral 14 indicates the main driving-shaft mounted in the casing through the inlet and outlet openings in the end walls thereof and journaled in suitable bearings in the housings 15 15 at the respective ends of said casing. The shaft 14 carries the rotary central locking member 16 of the device, revolving the same, and also the two side locking members with which it is geared. The central locking member 16 consists of the heads 16′ 16^2, having spiral or other suitable channels 16^3 16^4 therein, an imperfect cylinder or curved web 18 connecting said heads and of the same diameter as said heads and coincident therewith, a suitable blade-holding arm or bracket 19, and a blade 20, secured in a slot or socket 21 in said arm, said blade being of such dimensions as to sweep the interior surface of the casing, including the inner surfaces 10 10 of the side locking members 5 5 during the revolution of the central locking member and the coacting side members. The member 16 may be cast integral or made in parts and afterward secured together, and the member itself may be cast integral with the main driving-shaft, if so desired.

In assembling the machine the several locking members are so geared they will occupy the positions shown in Fig. 1 of the drawings.

The operation of the device is as follows:

Power being applied to the shaft 14, the three locking members 5 5 and 16 will each revolve in the direction of the arrows placed thereon. By reason of each of the side locking members 5 5 being geared with the central revolving locking member 16 the edge 12 of one of the side locking members 5 will be exactly at the edge 12′ of the inner surface of the casing when the blade 20 reaches that point in its revolution and permit said blade to enter upon and sweep the inner surface 10 of the said side locking member, and when the blade 20 reaches the edge 12^2 of the opposite side of the inner surface of the casing the edge 13^2 of the corresponding crescent-shaped side locking member will have reached that point, thus permitting said blade to enter upon and sweep the inner surface 10 of this side locking member, the blade 20 passing therefrom at 12^3 when this edge is at the point 13^3 of this side of the outer casing. The outer surface 9 of each of the side locking members 5 5 is adapted to contact with and roll against the imperfect cylinder or curved web portion 18 of the locking member 16 during the operation of the device to form a lock, so that there is maintained at all times a perfect lock between the inlet and outlet openings of the device.

When this device is operated, air will be drawn into the intake 2 and through the channel or passage 16^4 of the head 16^2 of the central rotary member and out into the interior of the casing to the rear of the blade 20 and forced by said blade during its travel out through the channel or passage 16^3 in the head 16′ of said central rotary member into the outlet 3, as is evident.

It will be apparent that modifications and alterations in the construction of the device may be made without departing from the spirit of my invention, and I therefore do not confine myself to the structure herein shown.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a device of the character described, the combination with two rotary locking members, of a third rotary locking member provided with a single locking-blade, said blade and third locking member being arranged to coact with said other locking members to form a lock.

2. In a device of the character described, the combination with two rotary crescent-shape locking members, of a third rotary locking member having a single blade adapted to sweep the inner surfaces of said crescent-shape locking members, all of said locking members adapted to coact to form a lock.

3. In a device of the character described, the combination with two crescent-shape rotary locking members, of a third rotary member located between said crescent-shape locking members and adapted to coact therewith, said third member being provided with a single blade adapted to sweep the inner surfaces of said crescent-shape rotary locking members, and an inlet-opening through one end of the casing and the abutting end of the third rotary locking member, and an outlet-passage through the opposite end of said third rotary locking member and the adjacent end of the casing.

4. In a device of the character described, the combination with two rotary crescent-shape locking members, of a third rotary locking member located between said crescent-shape locking members said third rotary locking member having a curved web portion, and a single blade adapted to sweep the inner surfaces of said crescent-shape locking members, and an inlet-passage extending through one end of the casing and the abutting end of the third rotary locking member to one side of said blade, and an outlet-passage extending from the opposite side of said blade through the opposite end of said third rotary locking member and the adjacent end of the casing.

5. In a device of the character described, the combination with two rotary crescent-shape locking members, of a third rotary locking member located between said crescent-shape locking members, said third rotary locking member having a curved web portion, and a single blade adapted to sweep the inner surfaces of said crescent-shape locking members, said curved web portion adapted to engage the outer surfaces of said crescent-shape locking members during the operation of said device, and an inlet-opening in one end of said third rotary locking member at one side of said blade, and an outlet-opening in the opposite end of said third rotary locking member on the opposite side of said blade.

6. In a device of the character described, the combination with two rotary crescent-shape locking members, each member having a convex and a concave locking-surface, of a third locking member located intermediate said crescent-shape members and having an imperfect cylinder or curved web-locking portion and a single locking blade, the said curved web-locking portion being adapted to contact with the convex surfaces of the crescent-shape locking members and the blade with the concave surfaces thereof, and openings in said third locking member on each side of said blade for the entrance and exit of the air.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

THOMAS W. GREEN.

Witnesses:
THOS. D. MOWLDS,
LIDA C. ILKO.