Aug. 21, 1934. J. ANDERSON 1,971,246

BLOWER

Filed Dec. 1, 1932

Fig. 1.

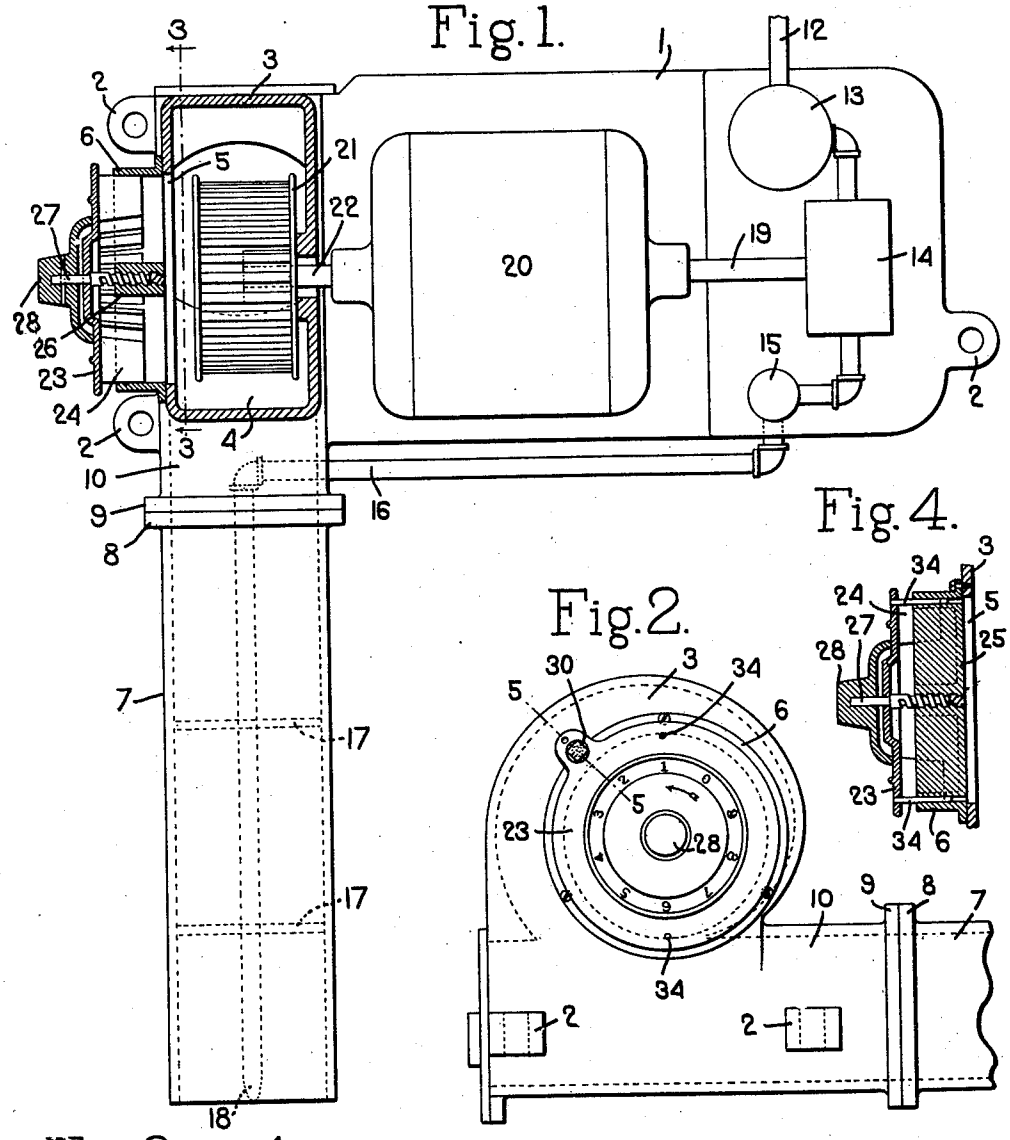


Fig. 4.

Fig. 2.

Fig. 3.

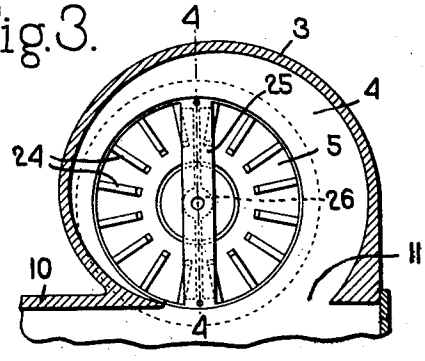
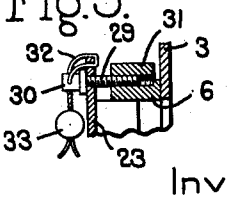


Fig. 5.



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UNITED STATES PATENT OFFICE

1,971,246

BLOWER

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Application December 1, 1932, Serial No. 645,214

2 Claims. (Cl. 230—114)

This invention relates to a blower particularly for an oil burning apparatus in which a combustible mixture of oil and air is provided by the burner. Blowers of this general type are in use in connection with a wide variety of furnaces, boilers and heaters in the heating of dwelling houses, buildings, and commercial and industrial purposes.

In the type of blower to which this invention relates, the air is drawn from the atmosphere and supplied to the nozzle in which the oil and air are mixed by a fan driven by a suitable source of power.

The object of the invention is to provide an accurate means for regulating the amount of air supplied by the fan and thus in the case of an oil burner to secure the amount of air requisite for efficient combustion.

The object of the invention is further thus to regulate the amount of air, while at the same time guarding the air intake opening so as to prevent the person, and particularly the fingers, of operatives from coming into contact with the driven fan and thus being injured.

The object of the invention is further to provide means for preventing unindicated tampering with the adjustment so that when the adjustment of the supply of air has been made in accordance with the operating conditions to secure an amount of air such, for example, as that requisite for efficient combustion, there can be no unindicated altering of the adjustment.

These and other objects and features of the invention will appear more fully from the accompanying description and drawing and will be particularly pointed out in the claims.

The drawing illustrates a preferred form of the invention embodied in an oil burner of the type referred to with those parts the specific structure of which is not involved in the invention being shown more or less diagrammatically.

In the drawing:

Fig. 1 is a top plan view of the burner with a portion thereof in horizontal cross section.

Fig. 2 is an end elevation looking toward the left of Fig. 1.

Fig. 3 is a view in vertical cross section of a portion of the burner taken on the line 3—3, Fig. 1, and looking toward the left.

Fig. 4 is a detail in vertical cross section taken on the line 4—4 of Fig. 3.

Fig. 5 is a detail in cross section taken on the line 5—5 of Fig. 2.

The invention in its preferred form is illustrated as embodied in an oil burner. The burner is shown as comprising a suitable horizontal base 1 of generally rectangular shape adapted to be bolted to the floor or other suitable support by bolts passing through the lugs 2. At one end there is secured to or formed integrally with the base an upstanding casing 3 of generally cylindrical shape. This casing is formed to present a generally cylindrical chamber 4. At one side of the casing there is provided an air intake opening 5 preferably circular in shape. A flange member 6 secured to and forming a part of the casing 3 corresponds in shape to the opening 5 and thus extends the air intake opening out through the side wall of the casing.

The nozzle of the burner is shown as of cylindrical tubular form and, as illustrated, in two sections, viz., an outer section 7 having a flange 8 secured to a flange 9 of an inner section 10 integral with the casing 3 and opening into the bottom of the casing at 11.

The casing thus presents the chamber 4 having the air intake opening through the side at 5 into the chamber and the air discharge opening at 11 through the bottom of the casing into the nozzle.

The oil is fed to the nozzle by a suitable oil feed. As illustrated, the oil comes from a suitable supply through a pipe 12 into a pressure regulator 13 mounted on the base 1, thence through a pump 14 mounted on the base, through a filter 15 mounted on the base, and thence through a pipe 16 into the nozzle 7 where it extends concentrically thereof, being supported by spiders 17. As illustrated, the oil is forced out of the pipe 16 at the tip 18. The pump 14 which forces the oil into the nozzle is shown as driven through the shaft 19 by an electric motor 20 mounted on the base.

A rotary fan 21 is mounted on a prolongation 22 of the shaft 19 at the opposite end of the motor and is located in the chamber 4 of the casing. Consequently, when the motor is driven, not only is the oil forced into the nozzle through the pipe 16, but air is drawn by the fan through the intake opening 5 into the casing chamber 4 and forced into the nozzle 7. It is necessary, in order to secure efficient and perfect combustion accurately to correlate the amount and pressure of the oil fed through the pipe 16 and the amount of air forced through the nozzle 7. Since a single motor is preferably employed simultaneously to operate the pump 14 and rotate the fan 21, the required regulation is effected by adjusting the effective air intake opening into the chamber 4. It is essential also that since the motor

runs at a constant speed, this regulatory adjustment shall not be changed so long as the same operative conditions continue. It is therefore necessary to provide an adjustment which cannot be tampered with or which, if tampered with, will plainly indicate that fact.

Furthermore, the fan 21 operates at a high speed and if the fingers or person of an operative should come into contact with the fan when operating, injury would result. It is therefore essential to provide an air intake opening which will be guarded so as to prevent such injury taking place.

The present invention, therefore, provides, in the preferred form illustrated, a cover 23 fitting over the intake opening and over the flange 6 through which this opening passes. This cover 23 has secured to or integral therewith a series of closely spaced blades 24. With the circular cover 23 and flange 6 illustrated, these blades extend in a circular series and radially of the axis of the opening, thus giving the desired strength while at the same time taking up the minimum amount of space. At their outer edges these blades telescope with the interior of the flange 6 and consequently of the air intake opening. The cover with its blades is mounted to telescope with the air intake opening and to be moved toward and from the air intake opening, thus to regulate the effective air intake opening. It will be observed that this telescoping movement takes place without altering the width of the spaces between the blades 24 so that no matter what may be the position of the cover, the air intake opening is positively guarded against entrance of the fingers or any portion of the person of an operative into the casing where is located the fan 21.

In the preferred construction illustrated, the regulatory movement of the cover is provided by cooperating screw and nut elements, one of which is fixedly mounted on the casing and the other of which is rotatably mounted on the cover, thus enabling a very accurate adjustment to be made. As shown, a narrow bar 25 extends transversely across the intake opening 5 and presents an outwardly projecting stud 26 internally threaded, which thus constitutes the nut element. A spindle 27 is screw-threaded at its inner end to cooperate with the element 26. This spindle passes through the cover 23 and is pinned to a cap 28 so that this cap and spindle are rotatably mounted on the cover. Consequently by rotating the cap 28, the cover wil be moved toward and from the casing, thus adjusting the effective area of the air intake opening between the cover and flange 6 and the blades 24.

A simple and preferred construction for preventing unindicated tampering with the adjustment is provided in the construction illustrated. A set screw 29 having a square head 30 is threaded into the cover 23 and enters a threaded lug 31 on the flange 6. When the cover has been adjusted by turning the cap 28 to bring it into the desired position, this set screw is placed in position, being screwed into the cover 23 and the lug 31. A wire 32 is then threaded through a hole in the head 30 and through a hole in the edge of the cover and the ends of the wire twisted together and permanently secured together by a lead seal 33. Thus it is impossible to alter the adjustment of the cover without breaking and removing the seal and then removing the wire.

The inward and outward movement of the cover is further preferably guided rectilinearly by pins 34 secured in the cover and fitting in bores in the edge of the flange 6. The cap 28 is shown as provided at its periphery with index numerals serving as a means for indicating the adjusted position of the cover.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A blower comprising a nozzle, a casing having a chamber and an air intake opening to the chamber and an air discharge nozzle opening from the chamber, a fan in the chamber, means for driving the fan to force air through the nozzle, a cover for the air intake opening having a plurality of blades extending in all positions into the opening and telescoping with the walls of the opening and spaced apart so closely as to prevent an operative's fingers from coming into contact with the fan, and means for adjusting the cover toward and from the opening to provide an effective area of air intake opening between the blades while guarding the air intake opening to prevent the person and fingers of operatives coming into contact with the fan and thus being injured.

2. A blower comprising the construction defined in claim 1, together with a set screw having threaded engagement with the casing and the cover and extending through the cover in the direction of the adjusting movement of the cover, and means for sealing the screw to the cover to lock it against rotation and thereby to lock the cover in its adjusted position, whereby unindicated tampering with the adjustment is prevented.

JOSEPH ANDERSON.