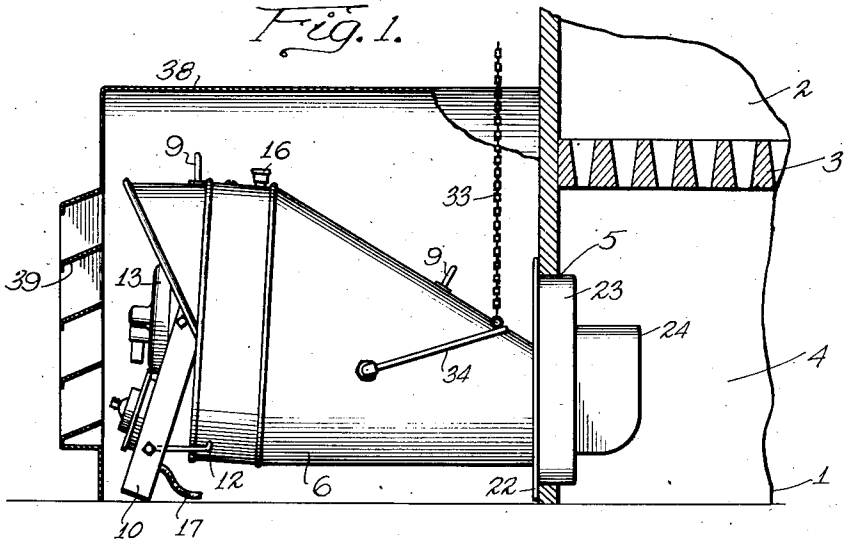
Sept. 27, 1932. S. LAUTER 1,879,342

BLOWER FOR HEATING PLANTS

Filed Sept. 11, 1930

Fig. 1.



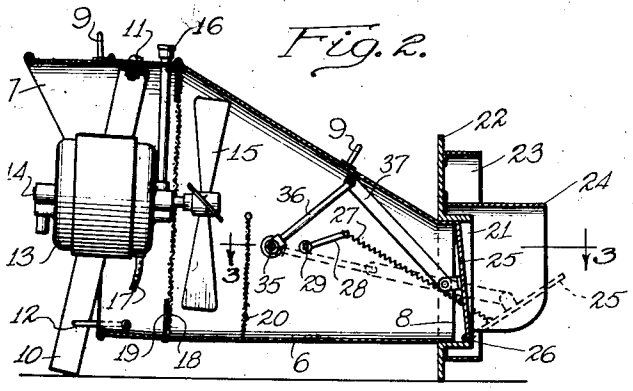


Fig. 4.

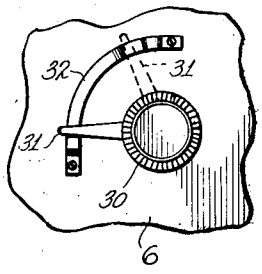
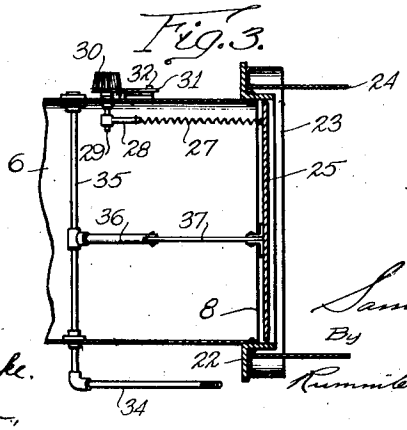


Fig. 3.



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UNITED STATES PATENT OFFICE

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BLOWER FOR HEATING PLANTS

Application filed September 11, 1930. Serial No. 481,167.

The main objects of this invention are to provide an improved form of blower for use in connection with furnaces, boilers and similar heating plants for creating an automatically controlled draft upwardly through the grate; to provide improved means for supporting the outlet end of the blower in the ash pit door of the heater; to provide an improved gate for controlling the passage of air through the blower which is adapted to be opened by the current of air created by the blower fan; and to provide improved adjustable means for yieldably resisting the opening of said gate.

An illustrative embodiment of this invention is shown in the accompanying drawing, wherein:

Figure 1 is a side elevation of an improved draft regulator; the housing being partly broken away, and part of a heating plant being shown in section.

Fig. 2 is a longitudinal vertical section of the improved blower; the motor and fan being shown in elevation.

Fig. 3 is a fragmentary horizontal section, taken on the line 3—3 of Fig. 2.

Fig. 4 is a detail in elevation showing the manually operable knob for varying the tension of the spring which resists the opening of the gate.

The improved blower herein shown is adapted for attachment to many different types of heating plants. In the form shown, the blower is applied to a boiler 1 having the usual fire box 2, grate 3, ash pit 4, and draft opening 5.

In the construction shown, the improved blower comprises a metal casing or shell 6 having open ends providing an air inlet 7 and an outlet 8. The shell tapers toward the outlet 8 and is provided with suitable handles 9 to permit the device to be conveniently carried.

The inlet end of the shell is rigidly secured to a supporting bracket 10, of inverted U-shape, by means of bolts 11 and 12.

Supported on the bracket 10, is an electric motor 13 having a horizontal shaft 14 which supports a fan 15 for forcing air outwardly through the opening 8. A suitable oil pipe 16 is provided for lubricating the motor bearings.

Connected to the motor, is an electrical conductor 17, which leads to a mercury switch, not shown. The mercury switch is connected to the steam line in the well known manner so as to start the motor when the steam pressure is low and so as to stop the motor when the steam pressure reaches a predetermined point.

Located between the fan and the outlet 8, is a vertical screen 18 secured to flanges 19, which are mounted on the inner wall of the shell. A second screen 20 extends across the lower part of the shell directly in front of the fan.

The outlet end of the shell 6 is supported in a collar 21 formed on a vertical plate 22, which is adapted to bear against the front wall of the boiler to serve as a closure for the ash pit opening 5. Extending outwardly from the closure plate 22, is a flange 23 adapted to fit within the opening 5, as shown in Fig. 1, for supporting the outlet end of the shell.

Mounted on the closure 22, between the flange 23 and collar 21 is a hood 24 serving as a deflector for properly directing the air which is forced out through the outlet 8.

The flow of air through the outlet 8 is controlled by a hinged gate 25, which is secured to the collar 21 by a hinge pin 26. The gate 25 is arranged so as to be automatically opened by the flow of air when the fan 15 is operated.

Opening of the gate 25 is yieldingly resisted by a spring 27. One end of the spring is connected to the gate and its other end is connected to an arm 28 mounted on a shaft 29, which is rotatably supported in one side of the shell 6. The outer end of the shaft is provided with an operating knob 30, whereby the tension of the spring 27 may be varied for varying the throw of the gate 25 and consequently varying the amount of air passing through the outlet. The knob 30 has an indicating finger 31 adapted to engage a rack 32 for holding the knob in its adjusted positions.

When the knob 30 is adjusted so as to place

the spring 27 under tension, the spring closes the gate as soon as the fan stops rotating. When the spring is not under tension, as for instance, when a large amount of draft is desired, it is necessary to have additional means for closing the gate as soon as the pressure of the steam in the heating plant has reached the desired point. For this purpose suitable means is provided for connecting the gate with the usual pressure diaphragm, not shown.

The pressure diaphragm may be located in the customary place in the steam line.

In the form shown, the means for closing the gate under the action of the pressure diaphragm includes a cable 33 having one end connected to the diaphragm and having its other end connected to an arm 34 mounted on a horizontal rock shaft 35 which is supported in the shell 6. The shaft 35 also has an arm 36 connected to a link 37 which is pivotally secured to the gate so that, as the diaphragm is moved under the pressure of the steam, the cable 33 is raised for closing the gate.

The improved blower herein shown is preferably enclosed in a removable hood or housing 38, which is adapted to rest on the floor in front of the boiler. One end of the hood is open and abuts the boiler, as shown in Fig. 1, and the other end thereof is provided with louvers 39.

In operation, the door of the ash pit is opened and the outlet end of the shell 6 is inserted into the opening 5 in the manner shown in Fig. 1. The knob 30 is then adjusted to give the desired tension to the spring 27. When the steam pressure of the heating plant falls below a predetermined point, the mercury switch, not shown, closes the motor circuit and starts the fan 15, thereby creating a current of air which opens the gate 25. The air, after leaving the outlet 8, passes through the ash pit and upwardly through the grate.

When the steam pressure rises, the pressure diaphragm, not shown, raises the cable 33 and slowly closes the gate 25 thorugh the members 34, 35, 36 and 37.

When the steam pressure reaches the desired amount, the mercury switch, not shown, opens the motor circuit so as to stop the fan.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that certain details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. A device of the class described comprising a casing having an outlet, means for causing a flow of air through said casing, a gate movably mounted in said casing for controlling the passage of air through said outlet, said gate normally urged toward a closed position and being adapted to be opened by the air forced through said casing, adjustable means for limiting the opening of said gate and permitting its self-closing, said adjustable means being arranged for adjustment from the outside of said casing and having an indicator attached thereto.

2. A device of the class described comprising a casing having an outlet, means far causing a flow of air through said casing, a gate movably mounted in said casing for controlling the passage of air through said outlet, said gate being adapted to be opened by the air forced through said casing, a spring yieldably resisting the opening of said gate, means for adjusting the tension of said spring from the outside of said casing to limit the opening of said gate, and an indicator on said adjusting means to indicate the extent of opening of said gate.

3. In a heating plant having a fire grate and an ash pit under said grate, a draft creating device comprising a body shell having open ends providing an inlet and an outlet, means on said shell for creating a flow of air through said outlet, a gate movably mounted in said outlet and adapted to be automatically opened as the air is forced toward said outlet, said gate being normally urged toward a closed position, adjustable means for limiting the opening of said gate and permitting its self-closing, said adjustable means being arranged for adjustment from the outside of said body shell, and a deflector mounted on said shell above said gate and positioned to cause an even spread of air across the under side of said fire grate.

4. In a heating plant having a draft door, a device comprising a body shell adapted to be supported horizontally and having open ends providing an inlet and an outlet, a fan on said shell for creating a flow of air through said outlet, a gate movably mounted in said outlet and adapted to be opened only by the air forced through said outlet by said fan, a substantially vertical plate on said shell adjacent the outlet, and a flange projecting outwardly from said plate for supporting the outlet end of said shell in said draft door, said plate being positioned to act as a closure for said draft door.

5. In a heating plant having a fire grate and an ash pit and a draft door on said ash pit, a device comprising a body shell adapted to be supported horizontally and having open ends providing an inlet and an outlet, a fan on said shell for creating a flow of air through said outlet, a gate movably mounted in said outlet and adapted to be opened only by the air forced through said outlet by said fan, a substantially vertical plate on said shell adjacent the outlet, a deflector arranged above said gate and positioned to cause an even spread of air across the under side of

said fire grate, and a flange projecting outwardly from said plate for supporting the outlet end of said shell in the draft door of a heating plant, said plate extending to the floor on which the device rests and being positioned to serve as a closure for said draft door.

Signed at Chicago this 20th day of August, 1930.

SAMUEL LAUTER.