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ELECTRIC VACUUM FLUE CLEANER

Filed March 18, 1940

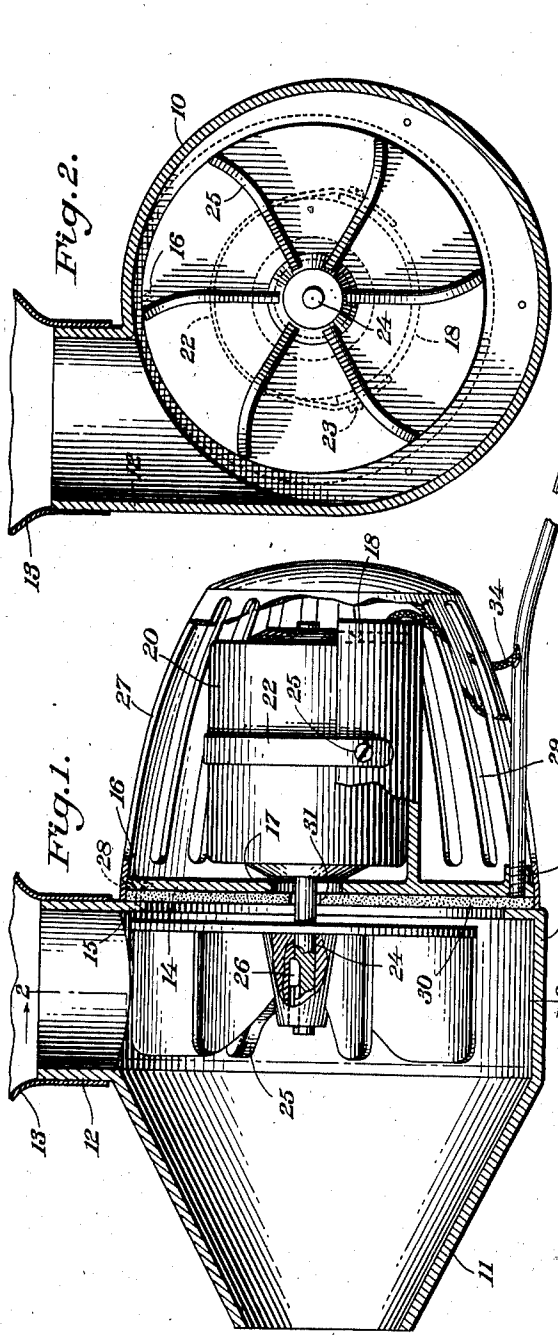


Fig. 1.

Fig. 2.

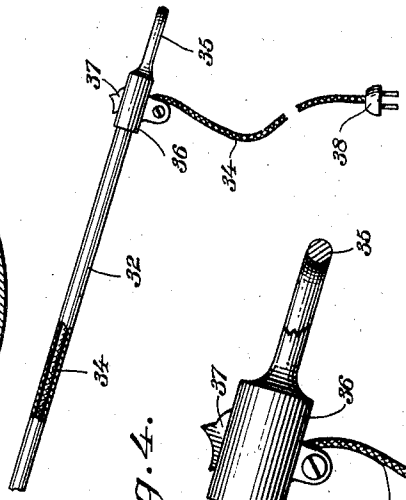


Fig. 4.

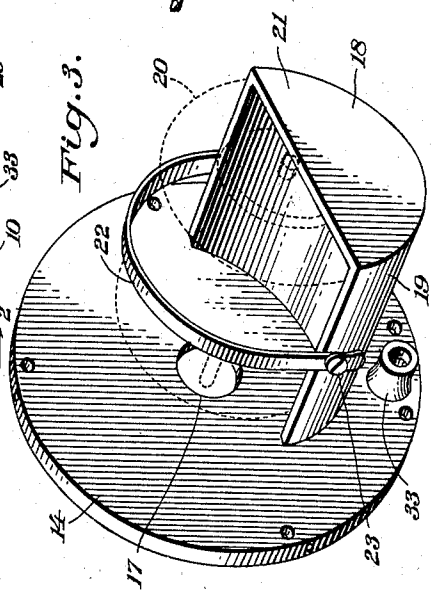


Fig. 3.

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ELECTRIC VACUUM FLUE CLEANER

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Application March 18, 1940, Serial No. 324,683

1 Claim. (Cl. 230—117)

This invention relates to an electric vacuum flue cleaner adapted to effectively remove soot from all heat tube boilers without disturbing the operation of the boiler.

The conventional method of blowing flues with live steam damages the flues by causing pitting and cracking, and also the steam moistens the soot so that it clings to the walls of the flues and carbonizes. Another disadvantage is that if any soot is blown out of the flues, it is blown into the combustion chamber or out into the boiler room. The use of steam cools the fire and lowers the steam pressure so that the plant cannot be operated until the steam has again been raised.

With the above in mind an object of the present invention is to provide a vacuum cleaner through the medium of which soot may be sucked out of the flues and either discharged up the stack or collected in a bag so that none of it is blown out into the boiler room.

A further object is to provide apparatus of this character which will be formed of a few strong simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claim without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming a part of this specification:

Figure 1 is a longitudinal sectional view of an electric vacuum flue cleaner constructed in accordance with the invention, parts being shown in elevation.

Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1, and showing the fan in elevation.

Figure 3 is a detail perspective view of the motor base housing, rear wall and clamp strap.

Figure 4 is a detail sectional view, with parts in elevation, of the tubular handle, electric switch and conductor cord.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 10 designates a cylindrical housing, the same being formed integral with a tapered nozzle 11 which is adapted to fit into boiler flues of various diameters. An outlet tube 12 is formed integral with the annular wall of the housing and is adapted to receive the open mouth of a soot collecting bag 13. The housing is closed opposite the nozzle by a disk rear wall 14, the same being secured to a flange 15 formed integral with the housing by screws 16, or other connectors. The disk wall is provided centrally with an opening 17.

A motor base 18 is formed integral with the rear wall 14 of the housing and comprises a concave bottom wall 19 adapted to conform to the contour of and support an electric motor 20, and an end wall 21 forming a stop wall to prevent outward endwise shifting of the motor.

An arched clamp strap 22, formed of metal, is adapted to be placed astride of the motor 20. The ends of the strap are secured to the bottom wall 19 of the motor base by screws 23, or other connectors.

The shaft 24 of the motor projects through the opening 17 of the housing rear wall and is equipped with a suction fan 25. The fan is keyed as shown at 26 to the shaft. The blades of the fan are so constructed as to suck the soot into the housing 10 and expel it through the outlet tube 12.

A guard 27 is removably secured to the housing rear wall 14 by screws 28, or other connectors. The guard is in the form of a cup having longitudinal slots 29 to permit access of air to cool the motor. An asbestos sheet 30 is interposed between the housing rear wall 14 and the housing flange 15 and is provided with a central opening 31 through which the motor shaft 24 projects. The asbestos sheet prevents heat from gaining access to the motor and damaging the windings.

A tubular handle 32 is threaded at one end into a lug 33 which is formed integral with the housing rear wall 14. A helical conductor cord 34 is housed in the handle and is passed through one of the slots 29 in the guard 27 and connected to the motor. The handle terminates in a grip 35 and adjacent to the grip is provided with a switch housing 36 in which a switch 37 is housed and connected to the cable 34.

In operation the plug 38 of the conductor cord is plugged into an electric outlet and the motor started. Then the cleaner nozzle 11 is inserted in each flue for about four seconds more or less and the soot therein is sucked into the bag 13. However, it is not necessary to use the bag since the outlet tube 12 may be turned in the direction of the breeching or smoke stack and the soot sucked from the flue is blown through the outlet tube 12 into the smoke stack. Since the

flue cleaner works in the direction of the natural draft of the boiler nothing can be blown into the flue and an absolutely dry operation is performed. Furthermore, the fly ash which accumulates in the front end of the boiler can also be removed with this flue cleaner so that the breeching and stack will be maintained clean. The use of the cleaner does not lower the steam pressure or interfere with the operation of the fire in any way since the flues can all be cleaned in from five to seven minutes.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

A boiler flue cleaner comprising, a cylindrical housing having an inlet and an outlet and being adapted to be applied to a boiler flue, an inturned rear flange at the rear end of the housing, a disk rear wall for the housing secured to the flange, a suction fan mounted eccentrically in the housing, an electric motor outside the rear wall having its shaft extending through a central opening in the rear wall and connected to the fan, a concave bottom wall integral with said rear wall conforming to the contour of the bottom of the motor and supporting the motor on the rear wall, an end wall closing the outer end of the concave bottom wall forming a stop to prevent outward endwise shifting of the motor, an arched clamp disposed astride of the motor and secured at the ends to the concave bottom wall, a slotted cup secured at its open end to said rear wall and forming a ventilating guard enclosing the motor, and an asbestos sheet clamped at the peripheral edge portion between said inturned flange and said rear wall preventing access of heat from the housing to the motor, said sheet being provided with a central opening through which the motor shaft is engaged.

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