Aug. 21, 1923. 1,465,711

E. GRAY

SYSTEM OF CLEANING FURNACES

Filed Jan. 13, 1922

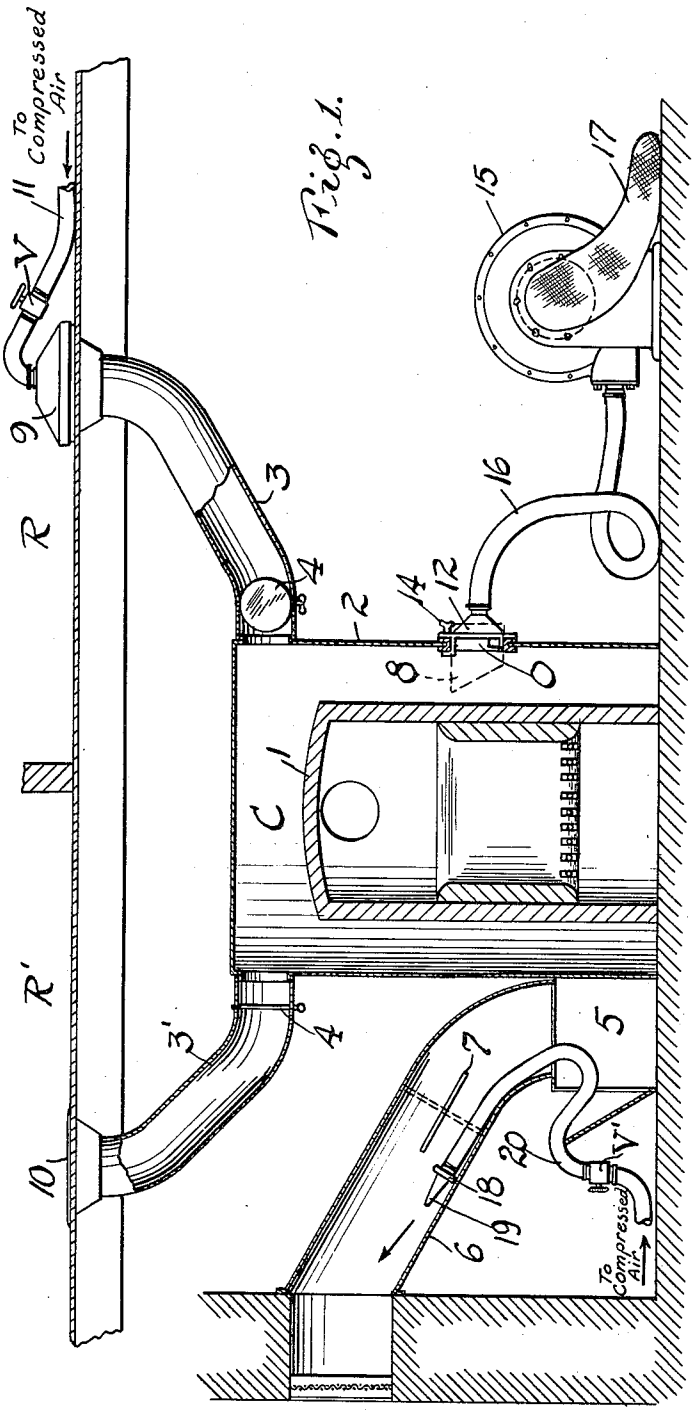


Fig. 1.

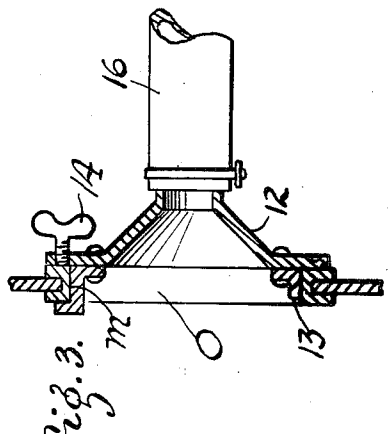


Fig. 3.

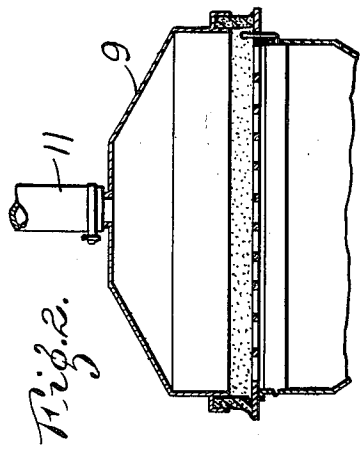


Fig. 2.

Inventor:
Edward Gray
By Harry A. Beinel
Attorney.

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EDWARD GRAY, OF ST. LOUIS, MISSOURI.

SYSTEM OF CLEANING FURNACES.

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To all whom it may concern:

Be it known that I, EDWARD GRAY, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Systems of Cleaning Furnaces, of which the following is a specification.

My invention has relation to improvements in systems of cleaning hot-air furnaces, and consists in the novel features more fully set forth in the specification and pointed out in the claim.

It is well known that after a hot-air furnace has been used for awhile, there is a considerable accumulation of fine dust and ashes within the hot-air chamber and pipes leading to the rooms. Now, this dust is constantly being carried into the living rooms by the hot-air during the operation of the furnace, and menaces the health of the occupants in addition to soiling the walls and furnishings. As far as I am aware the only way to remove these accumulations from the hot-air chamber is by scraping it out through clean-out openings in the outer casing, but this method is superficial and does not result in a thorough cleaning. There is no effective way of removing the dust that settles in the hot-air pipes except by taking these pipes down and cleaning them. This is, of course, an expensive procedure and not often resorted to. It is the object of the present invention to provide a system of cleaning the dust accumulations from the hot-air chamber and the pipes without in any way disturbing the hot-air pipes. I accomplish this object by the combined use of compressed air and suction together with a suitable exhauster for causing a forced draft in a manner to be more fully described hereinafter in connection with the accompanying drawings, in which—.

Figure 1 is a diagrammatic view of a furnace together with its heating pipes showing the apparatus applied thereto for practicing my improved system; Fig. 2 is a sectional detail of a plenum box that is fitted over the register of the hot-air pipe being cleaned; Fig. 3 is a sectional detail of the suction head that is applied to the water-tank opening in the casing.

Referring to the drawing, 1 represents a hot-air furnace surrounded by the usual jacket or casing 2 suitably spaced from the furnace so as to provide a hot-air chamber C. Leading from the hot-air chamber C to the rooms R, R′ are hot-air pipes 3, 3′, each of which is provided with a damper 4 as well understood in the art. The chamber C is provided with a cold-air box 5 to which is conducted fresh cold air from the outside by a conduit 6 which is also provided with a damper 7 for controlling the flow of cold air to the chamber. An opening O is provided in the casing 2 into which is inserted a water-tank 8 which is open to the hot-air chamber so that the water vapor may enter the chamber and be conducted to the rooms R, R′ for the purpose of humidifying the atmosphere. All of the parts thus far described are well known in the art and are availed of in practicing my system.

In order to clean out the dust and dirt from the pipes 3, 3′ I apply an air-box 9 to the outlet of pipe 3, the outlets of the other pipes 3′ being sealed shut by a cover-plate 10 and their valves 4 being closed, the object of which is not to disturb the dust in any pipe except the one being cleaned. The air-box is connected by a suitable hose 11 (in which a valve V is inserted) to a source of compressed air which may be either a compressor or compressed air tank. The valve 7 in the conduit is preferably closed at this time also. However, the opening O in the casing 2 is availed of (after removing the water-tank) to apply a suction head 12 to the hot-air chamber C into which the dust is blown from the pipe 3 when valve V is opened. The suction head 12 may be applied to the opening in any well known manner. In the present instance I show a flange 13 projecting from the bottom of the head 12 which may rest on the bottom edge of the opening O, the upper edge of said opening being received in a channel *m* formed on the upper edge of the suction head, the head then being held in place by tightening the clamp-screw 14. The suction head is connected to a suitable exhauster 15 by a valve-controlled hose 16, and as the dust that is blown down into the chamber C is collected by the suction head 12, it is conducted through the exhauster to a receptacle 17. After pipe 3 is thoroughly cleaned (which takes but a minute or two) the other pipes 3′ are cleaned in like manner one after the other, and when all of said pipes have been cleaned the suction head 12 is removed from the hose and a suitable

collecting head (not shown) substituted. The hose is then run through the opening O and every particle of dust and ash removed from the chamber C. By this time the pipes and chamber are clean, however, some dust may still remain in the conduit or in various inaccessible places. I now insert an exhauster (or ejector) 18 comprising a nozzle 19 on a valve-controlled hose 20, into the conduit, pointing the nozzle toward the inlet end of the conduit and open valve V′ when the rush of air through the nozzle 19 will carry with it the last vestiges of dust from the chamber and conduit.

From the foregoing it is readily apparent that I have devised a system of cleaning furnace pipes whereby said pipes may be effectively cleaned without in any wise disturbing them. Obviously the apparatus with which my improved system is practiced may be modified without departing from the spirit of the invention.

Having described my invention, I claim:

A process of cleaning hot-air furnaces and the heat-distributing pipes thereof, which consists in discharging compressed air through one of said pipes from its outlet to the furnace hot-air chamber, sealing the openings of the other pipes, applying suction to the furnace hot-air chamber simultaneous with the application of compressed air to the pipe, and thereafter directing a jet of air toward the intake end of the air-supply conduit to the hot-air chamber.

In testimony whereof I hereunto affix my signature.

EDWARD GRAY.