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CONTROL MEANS FOR HOT BLAST STOVES

Filed Aug. 13, 1927

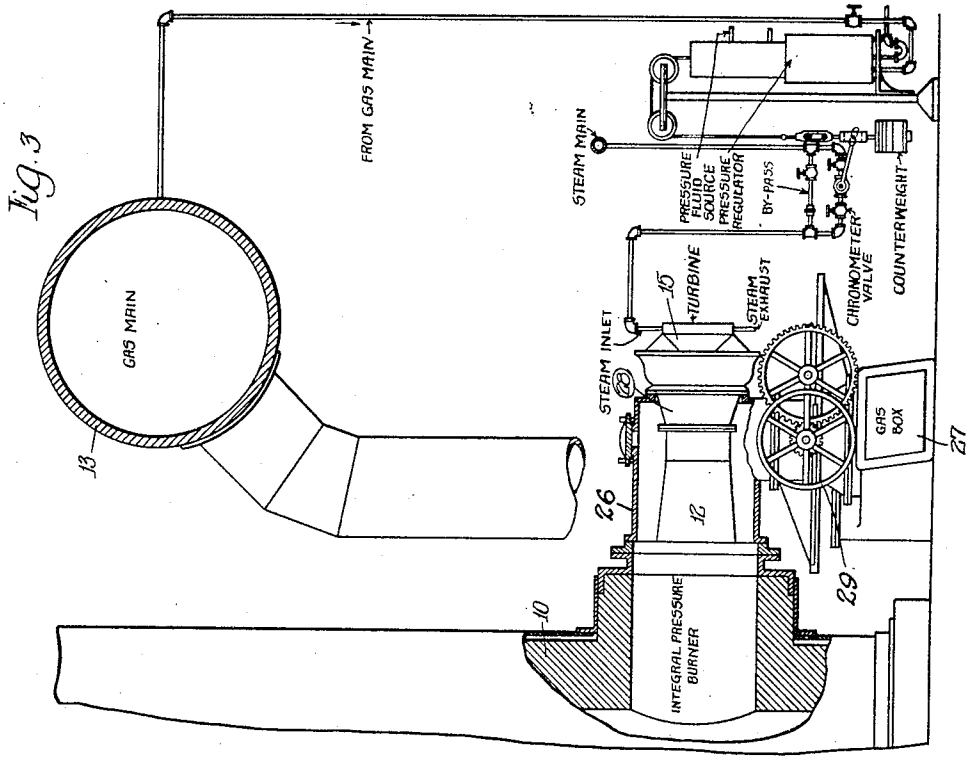


Fig. 3

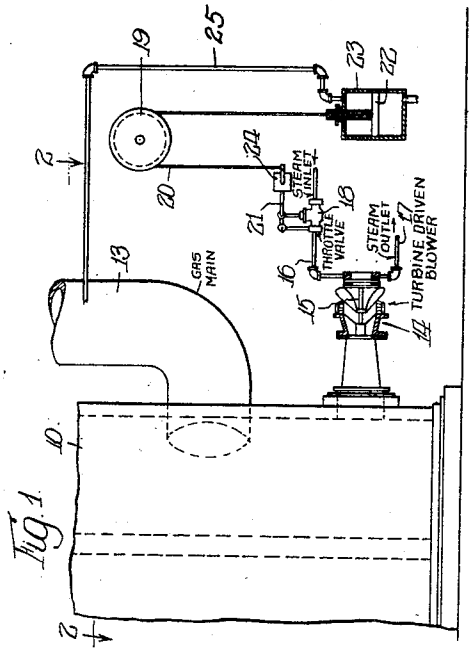


Fig. 1

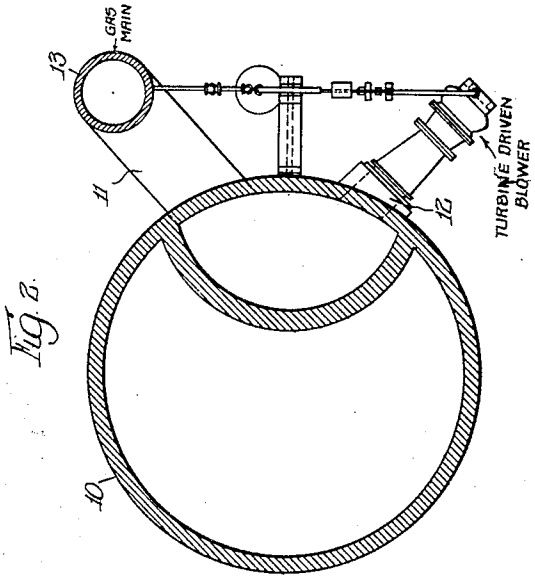


Fig. 2

Witness:
R. Burkhardt

Inventors:
Frederick H. Willcox,
John C. Hayes, Jr.,
By Williamson, Hackney, Byron & Knight
Attys

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UNITED STATES PATENT OFFICE

FREDERICK H. WILLCOX AND JOHN C. HAYES, JR., OF CHICAGO, ILLINOIS, ASSIGNORS TO FREYN ENGINEERING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF MAINE

CONTROL MEANS FOR HOT BLAST STOVES

Application filed August 13, 1927. Serial No. 212,682.

The present invention relates to control means for hot blast stoves.

More particularly the present invention relates to means for controlling the operation of the burners in a hot blast stove, and has for one of its objects the provision of means for maintaining a predetermined mixture of gas and air regardless of variations in gas supply.

A further object is to provide control means for hot blast stoves which is well adapted to meet the needs of commercial service.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a diagrammatic view illustrating one embodiment of the present invention;

Figure 2 is a sectional view taken along the plane indicated by the arrows 2—2 of Figure 1; and

Figure 3 is a view, part being diagrammatic, illustrating a structure embodying the principles of the present invention which has gone into commercial use.

The numeral 10 indicates a blast furnace, the numeral 11 indicates a gas inlet thereto, and the numeral 12 indicates an air inlet thereto. The gas main 13 communicates with the gas inlet 11, and a blower 14 supplies air from the outside to the air inlet 12. The blower 14 is indicated as being turbine driven, a steam turbine being indicated by the numeral 15. It will be understood, of course, that the present invention is quite independent of the means for driving the blower 14, any preferred type of motive means being within the scope of the present invention.

The present invention contemplates a control of the turbine 15 or other motive means in accordance with variations in the supply of gas within the gas main 13. Communicating with the turbine 15 is the steam inlet 16, and leading from said turbine is the steam exhaust 17. Said steam inlet 16 is controlled by the throttle valve 18, which in turn is controlled by control mechanism indicated in its entirety by the numeral 19. The diagrammatic showing in Figure 1 includes a cable 20 connected at one of its extremities to a lever 21 attached to the throttle valve 18 and at its other extremity to a piston 22 located in a cylinder 23. The lever 21 is provided with the counterweight 24, which counterweight 24 tends to hold the piston 22 at the upper limit of its range of travel. The lower portion of the cylinder 23 is open to the atmosphere, and the upper portion of the cylinder 23 has communication through the pipe 25 with the gas main 13.

Referring to the structure shown in Figure 3, the gas inlet 26 is disposed in coaxial relationship with the air inlet 12. Said gas inlet 26 communicates with the gas box 27, which in turn communicates with the gas main 13. The air inlet 12 and gas inlet 26 are part of a bodily movable structure indicated as a whole by the numeral 28, the details of which form no part of the present invention. It may be stated briefly, however, that the member 28 is capable of axial movement, a hand wheel 29 and suitable gears being provided for communicating axial movement to said member 28, whereby to remove same from proximity to the stove 10, after which said stove 10 may be closed by a gate (not shown). Movement of the member 28 will also close a valve (not shown) communicating with the gas box 27.

By reason of the present invention the speed of the turbine 15 and consequently the pressure of air delivered by the blower 14 will be modified in accordance with variations in pressure in the gas main 13, whereby to maintain at all times a predetermined ratio between gas and air pressures.

Though a preferred embodiment of the present invention has been explained in detail, many modifications will occur to those skilled in the art. It is intended to cover all such modifications that fall within the scope of the appended claims.

What is claimed is—

1. In combination, a burner including an air inlet, a gas inlet, a blower for supplying air under pressure to said air inlet independently of said gas inlet, motive means for operating said blower, a gas main subject to pressure fluctuations therein communicating with said gas inlet, and means communicating with said gas main responsive to changes

in gas pressure therein, said means including regulating means for said motive means for controlling the flow of air through said air inlet in response to changes in pressure within said gas main, said regulating means being operable independently of the pressure supplied by said blower.

2. In a hot blast stove, in combination, a burner, means for supplying gas to said burner, said means being subject to fluctuations of pressure therein, means for supplying air to said burner independently of said gas supplying means, said last mentioned means including regulatable motive means, and means operable independently of the pressure of the air supplied to said burner responsive to the pressure within said gas supplying means for regulating said motive means.

Signed at Chicago, Illinois, this 5th day of August, 1927.

FREDERICK H. WILLCOX.
JOHN C. HAYS, JR.