Dec. 26, 1939. J. R. SCHEEL 2,184,947

METHOD OF AND MEANS FOR CONTROLLING GAS AND OIL BURNERS

Filed March 7, 1938

Fig. 2

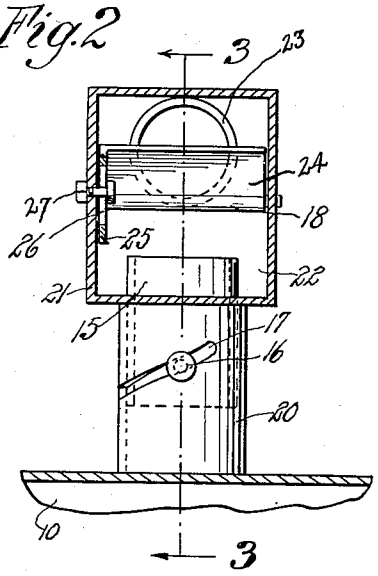


Fig. 3

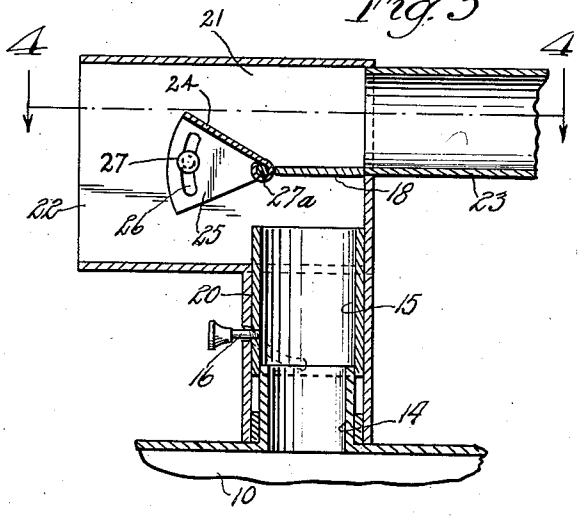


Fig. 1

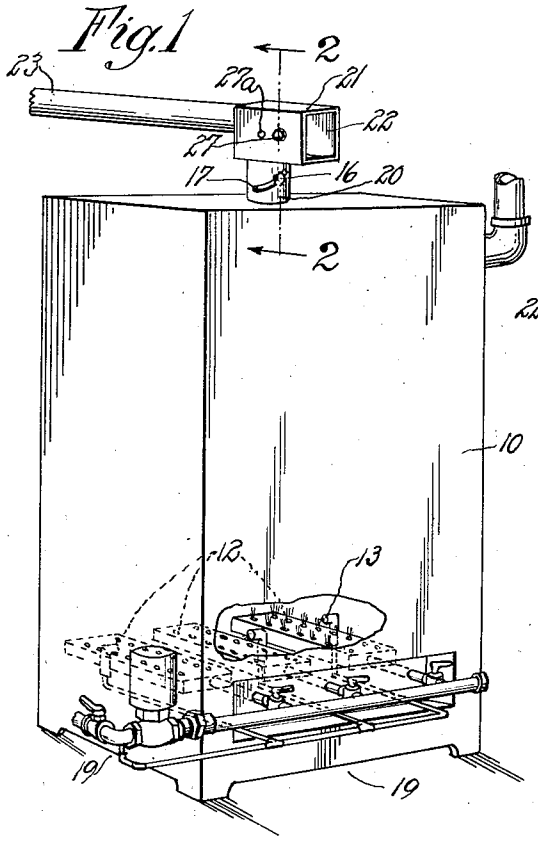
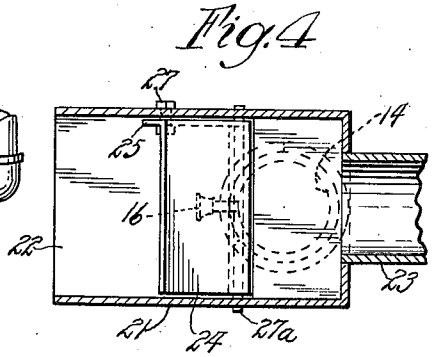


Fig. 4



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METHOD OF AND MEANS FOR CONTROLLING GAS AND OIL BURNERS

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3 Claims. (Cl. 158—1)

My invention relates to a method of and means for controlling gas and oil burners, boilers, or furnace combustion, and particularly to a control for the secondary air admitted to the burners, and the resulting amount of air and products of combustion venting through the chimney.

In the operation of boilers, furnaces and burners, considerable difficulty has been encountered in maintaining a mixiumum heat efficiency in varying locations. One of the main causes of this difficulty is the fact that no satisfactory means, as yet, has been found for controlling the secondary air flowing to the burners.

It is, therefore, an object of my invention to provide a means for controlling the inflow of secondary air into a gas or oil burner, boiler or furnace, to obtain maximum heat efficiency by obtaining more perfect combustion of fuel.

Another object of the invention is to provide means for controlling and diverting back drafts to prevent the pilot light within the boiler or burner from being extinguished.

It is a further object of the invention to control the flow of air from the boiler room or basement to the chimney or flue, through the back draft relief opening.

With these and other equally important objects in view, which will become apparent upon a perusal of the invention, the latter comprises the means described in the following specification, particularly pointed out in the claims forming a part thereof, and illustrated in the accompanying drawing in which:

Fig. 1 is a perspective view of a gas boiler equipped with my invention.

Fig. 2 is an enlarged section on the line 2—2 of Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 2, and

Fig. 4 is a section on the line 4—4 of Fig. 3.

Referring to the drawing, 10 designates a burner or boiler of conventional design, equipped with burners 12 and pilot lights 13 for said burners.

The boiler or furnace is provided with a flue gas outlet 14, surrounded by an adjustable sleeve 15, which is provided with a pin 16, extending through a slot 17 in the tubular extension 20 of a casing 21, so that upon manipulation of the pin, the sleeve is caused to move vertically and may be secured in adjusted position.

A stationary baffle plate 18 extends in a horizontal position and is situated directly over the opening in the sleeve, so that the flow of the flue gases, or products of combustion, flowing through the outlet 14 and the sleeve 15 must meet the baffle. By raising or lowering the sleeve, the volume of the flow of the flue gases out of the boiler, and the resultant volume of secondary air flowing into the boiler or burner at the spaces 19 defined by the clearance between the boiler and the floor, may be controlled. The tubular extension 20, integral with the casing 21 of my device, surrounds the sleeve and insures smooth manipulation thereof. The casing, which has an opening 22 to the boiler room or basement, also leads to the chimney or flue 23.

In addition, there is provided an adjustable damper plate 24, hinged at 27a near the free end of the baffle, and equipped with a flange 25, having an arcuate slot 26, through which extends a screw 27, passing through a hole in the casing, so that the damper plate may be adjusted and locked in position so as to allow a relief opening in case of a back draft in the chimney or flue, but still making it possible to reduce to a minimum the amount of air taken from the boiler room by the up draft.

It is evident that, with an opening between the casing 21 and the damper 24, any back draft will be diverted into the boiler room and the hazard of extinguishing the pilot light will be eliminated. In case of back draft, there will be no back pressure in the boiler or furnace, as it will have free venting through the relief opening 22.

In the operation of a gas or oil burner, it is desirable that the proper amount of secondary air be expelled to support combustion without too much excess air. Where a down draft diverter is used, it is also desirable to be able to control the amount of air taken from the boiler room through the relief opening of the down draft diverter, and through the chimney. If the pull of the products of combustion is either excessive or insufficient, the amount of secondary air entrained is either excessive or insufficient, resulting in poor conduction and low efficiency. If the pull of air through the diverter and chimney from the boiler room is excessive, the result will be a cold boiler room which will result in a lower efficiency.

The provision of the adjustable sleeve, stationary baffle plate and the adjustable damper plate provides a simple but very effective means for the control and regulation of the proper amounts of air to be taken through the boiler and from the boiler room and, at the same time, acts as a draft diverter.

While the drawing shows a preferred embodi-

ment of the invention, by way of examples in carrying out my invention, numerous changes and alterations may be made without departing from the spirit of my invention.

I, therefore, do not limit myself to the details of construction and arrangement, as shown, but wish to include all modifications, revisions and changes, constituting departures within the scope of the invention, as defined in the appended claims.

I claim:

1. In combination with a gas or oil boiler and its outlet to the flue, a casing interposed between said outlet and said flue, an adjustable sleeve surrounding said outlet, a partition in said casing and over said sleeve, and a baffle in said casing and adjacent to said partition, said baffle constituting means whereby admission of secondary air to the boiler is controlled.

2. In combination with a gas or oil burner and its outlet to the flue, a device for controlling admission of secondary air to the products of combustion comprising a casing interposed between said outlet and said flue, an opening in said casing to admit air, an adjustable sleeve surrounding said outlet, a baffle plate in said casing between said outlet and said flue, means for controlling the flow of exhaust gases and secondary air by adjusting said sleeve in cooperation with said baffle plate, and an adjustable damper plate interposed between said baffle plate and said flue.

3. In combination with a gas or oil boiler and its outlet to the flue, a casing interposed between said outlet and said flue, an adjustable sleeve surrounding said outlet, a partition in said casing and over said sleeve, and a baffle plate in said casing adjustable about an axis adjacent to the free end of said partition, said baffle plate constituting means whereby admission of secondary air to the boiler is controlled.

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