

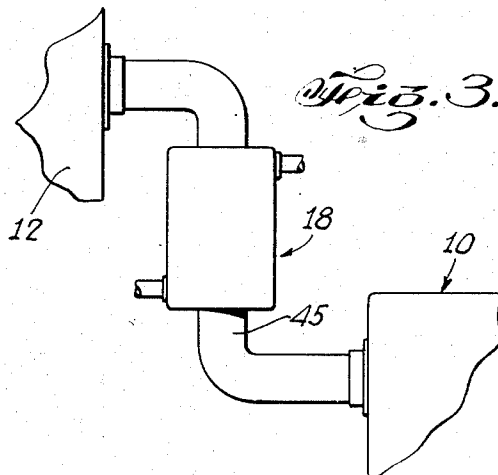
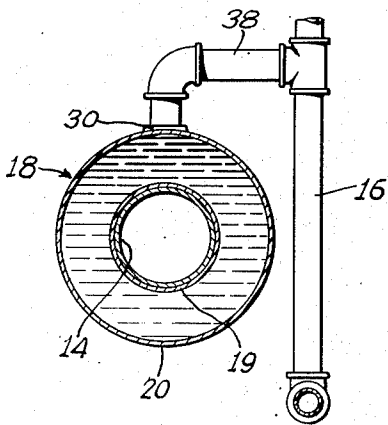
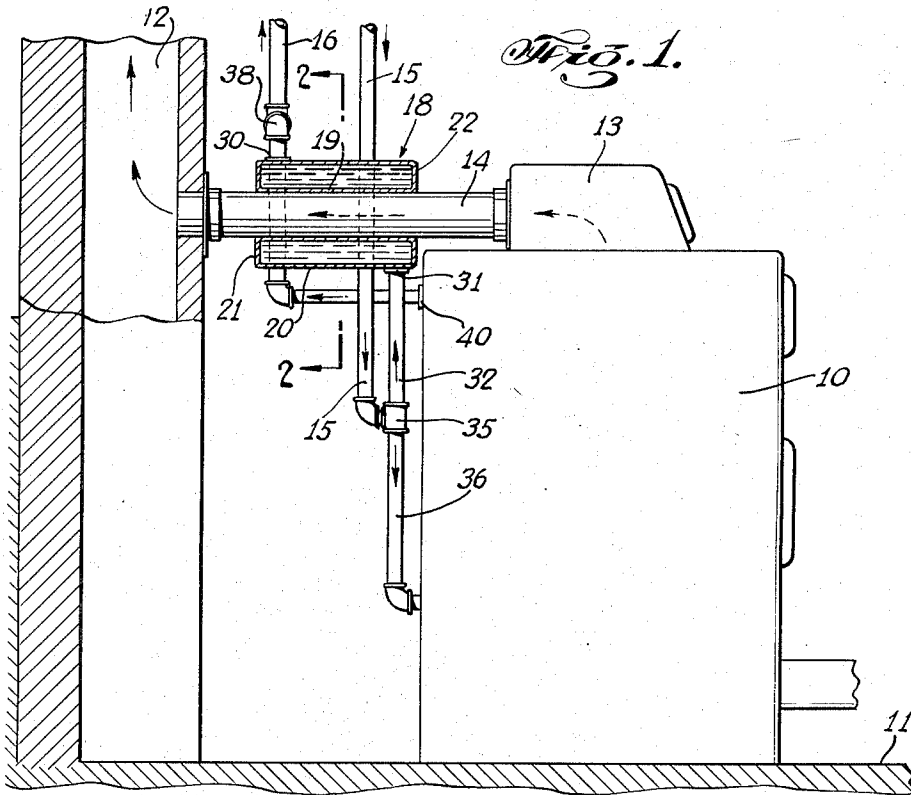
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A. C. RAY

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FUEL ECONOMIZER

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INVENTOR

ALVENZA CARTER RAY

BY

Carl Miller
ATTORNEY

UNITED STATES PATENT OFFICE

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FUEL ECONOMIZER

Alvenza Carter Ray, Newfield, N. J.

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1 Claim. (Cl. 122—20)

This invention relates to fuel economizers for furnaces and the like heated equipment.

An object of this invention is to provide an economizer of the character described which may readily be mounted on the flue connection for the furnace for utilizing the heat from the exhaust gases passing from the flue, whereby to greatly increase the efficiency of the furnace.

A further object of this invention is to provide an economizer of the character described which may be utilized with either a horizontal or vertical flue pipe section.

Another object of this invention is to provide a highly improved system for economizing heat in a boiler, the same being easy to install, relatively inexpensive to manufacture, and withal practical and efficient to a high degree.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of this application will be indicated in the following claim.

In the accompanying drawing, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a side elevational view of a boiler furnace provided with an economizer unit embodying the invention,

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1; and

Fig. 3 is a side elevational view showing the economizer applied to a vertical pipe section.

Referring now in detail to the drawing, 10 designates a boiler furnace of any suitable construction mounted on a flooring 11; and 12 designates the flue or chimney which is connected to the exhaust outlet 13 of the furnace by a horizontal flue pipe connection 14. The boiler may be of any usual construction and is provided with an inlet water pipe 15 and an outlet hot water or steam pipe 16. Received on the flue connection 14 and surrounding the same is my improved economizer 18.

The economizer is in the form of a cylindrical hollow sleeve closed at both ends. The same has an inner cylindrical wall 19, an outer cylindrical wall 20, and end walls 21 and 22. The member 18 has a single chamber and is entirely closed except for nipples 30 and 31 adjacent the outer ends thereof.

Said economizer may be attached to the boiler as shown in Figs. 1 and 2. As shown in the

drawing, there is attached to the nipple 31 a pipe 32 connected to the inlet water pipe 15. The pipes 15 and 32 meet at a T connection 35 to which there is attached a pipe 36 connected to the bottom of the boiler. Attached to the other nipple 30 is a pipe 38 connected to the outlet hot water or steam pipe 16. It will be noted that the outlet pipe 16 is connected as at 40 to the top of the boiler. As is well known, the water entering the inlet pipe 15 passes into the bottom of the boiler, and is heated, turning into steam and passing out of the boiler through the outlet pipe 16.

The efficiency of the boiler is greatly enhanced by the economizer since water from the inlet 15 passes upwardly to the pipe 32 into the cylindrical chamber in sleeve 18, there being heated by the hot exhaust gases flowing through the connection 14. The water in said economizer is thus heated and passes through the pipe 38 into the outlet pipe 16. The heat in the exhaust gases which are ordinarily wasted is hence partially recovered with the use of my improved economizer.

In Fig. 3 there is shown an economizer 18 which is mounted on a vertical pipe section 45. The cylindrical sleeve with its two nipples may be readily installed through suitable pipe connections around any section of pipe passing through the economizer for recovering heat of exhaust gases passing through said section.

Although the economizer has been shown for the purpose of illustration only as being applied to the flue pipe of furnaces, it is readily understood that the same may be utilized wherever hot fluids pass through a pipe or passage, for recovering some of the heat therefrom. It will also be understood that the economizer may be connected with a wide variety of different installations and for a wide variety of purposes, and need not be connected directly to the boiler. For example, the economizer might be utilized for producing hot water. In such case, the economizer would not be connected to the water jackets of the boiler.

Obviously, when connected to the boiler in the manner shown in Fig. 1, a greater efficiency and an economy in fuel will result.

Furthermore, the nipples of the economizer may be connected by pipes to different portions of the water jacket of the steam boiler, thus acting as an auxiliary heater for raising the temperature of the water circulating in the economizer, which heated water mixes with the heated water

in the boiler and there turns to steam before passing to the outlet pipe of the boiler.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

In combination, a furnace and water boiler therefor, a water inlet and a water outlet pipe connected to said boiler, a horizontal pipe connecting said furnace with the flue for carrying

exhaust gases from the former to the latter, an economizer comprising a single elongated hollow sleeve having inner and outer spaced concentric tubular walls and end walls connecting said inner and outer walls forming a single cylindrical water chamber, said inner tubular wall defining a passage through the economizer of slightly greater diameter than said pipe connecting the furnace with the flue, said last mentioned pipe extending through said passage with said inner tubular wall in contact therewith, radial nipples at the ends of said outer-tubular wall disposed diametrically one with respect to the other and extending in opposite directions, the nipple nearest the furnace being connected to the water inlet pipe and the nipple furthest from said furnace being connected to the water outlet pipe.

ALVENZA CARTER RAY.