Jan. 16, 1934. G. G. TRYON 1,943,750

FLUID HEATER ECONOMIZER

Filed April 25, 1931

Fig. 1.

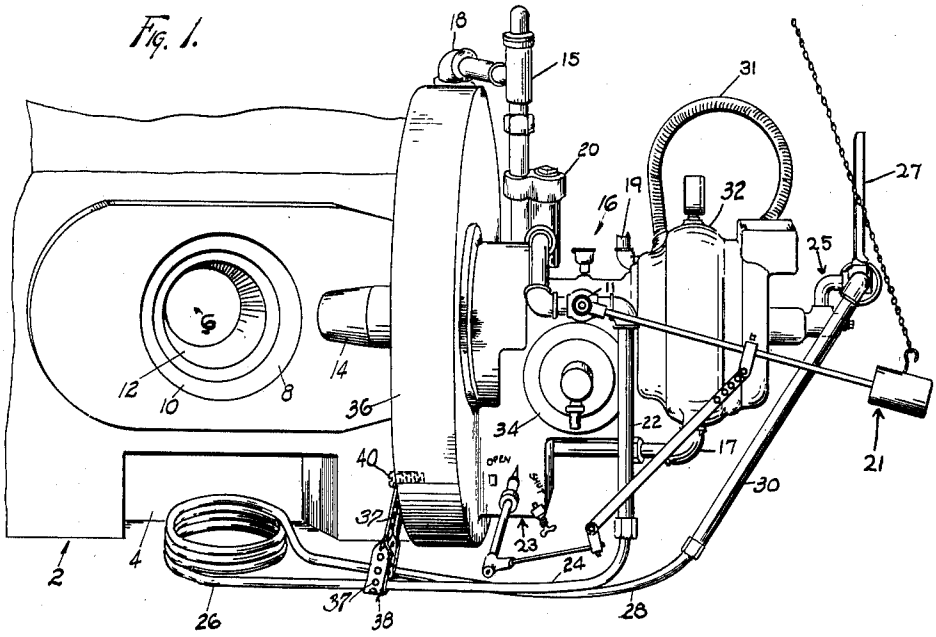
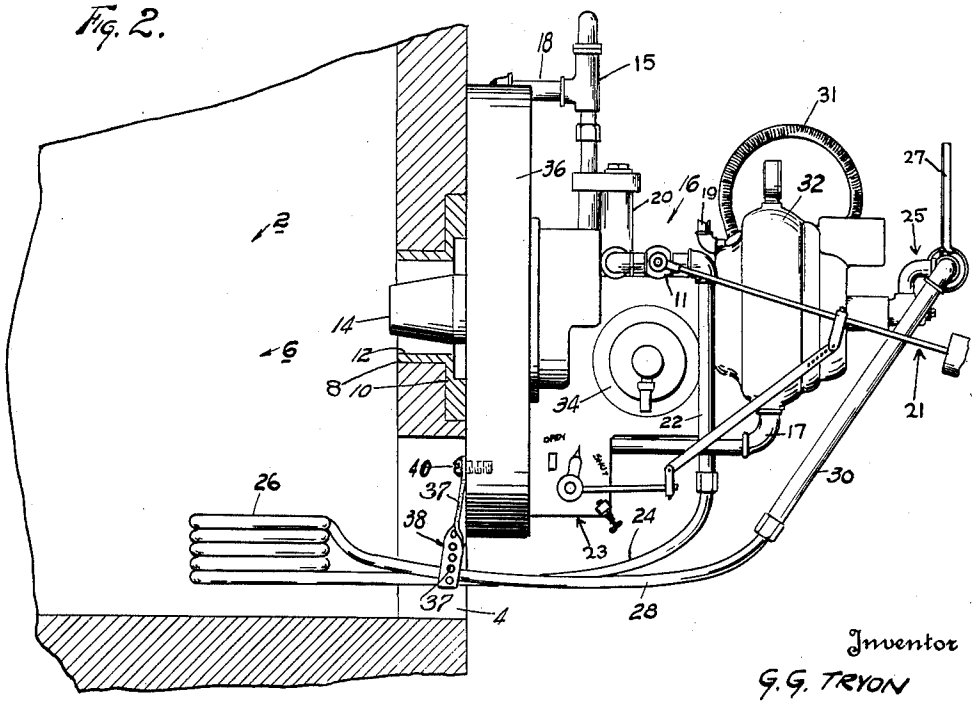


Fig. 2.



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Patented Jan. 16, 1934 1,943,750

UNITED STATES PATENT OFFICE

1,943,750

FLUID HEATER ECONOMIZER

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Application April 25, 1931. Serial No. 532,976

4 Claims. (Cl. 158—36)

My invention relates to fluid heaters, and more particularly to a fuel economizer associated with the burner of said heaters, whereby there is not only economy in the quantity of fuel consumed, but there is an increased volatilization of the fuel, an increased volume of the atomized spray, a perfect combustion, so there will be no carbon deposits whatever, either in the heater itself or in its flues, thus obviating periodic cleaning thereof, an absence of odor throughout the building where such a heater is installed, and a full and effective utilization of all the British thermal units obtainable from the fuel, it being possible to use a heavier grade of such fuel than is now used in heaters of this kind.

It accordingly is an object of my invention to provide a novel form of economizer adapted for use in connection with a conventional or novel form of burner, associated with a heater or liquid vaporizer of any preferred kind, comprising a means, which may be in the shape of a suitable coil, in fluid connection with the fuel supply and said burner, said coil being adapted to be projected into and removed from the firebox of said heater, a combined support and adjusting means for this purpose being also provided.

The above and further objects and advantages of my invention as will hereinafter more fully appear, I attain by the construction described in the specification and illustrated in its preferred form on the drawing, forming a part of my application.

Reference is had to the accompanying drawing, in which similar reference characters denote similar parts. In the drawings,

Fig. 1 is a fragmentary, part elevational and part perspective view of a heater to which my invention is applied, the burner of which is disclosed as swung away from said heater, and

Fig. 2 is a fragmentary part cross-sectional and part elevational view of the structure depicted in Fig. 1, the burner, equipped with my invention being swung into operative relation with the heater.

Describing my invention more in detail, in its broader aspects said invention comprises of a novel form of fluid heater economizer in which a means, preferably in the shape of a coil of a suitable number of turns is adapted to be swung into the firebox of a heater or liquid vaporizer, whereby the fuel delivered to a conventional or other form of fuel burner, is subjected to the vaporizing effect of the heat in said heater, to the end that said fuel shall more thoroughly be volatilized, and a greater volume of spray obtained, so that a perfect combustion thereof with maximum efficiency will be obtained.

More specifically, my invention comprises any preferred form of heater or liquid vaporizer 2, provided with a clean out opening 4 in the firebox 6, said heater having also a suitable opening 8, equipped with protective flanged nipples 10 and 12 for the reception of a suitable nozzle, atomizer or spray 14 of the fuel burner, designated generally by the reference numeral 16.

The burner 16 may be of conventional or novel form, and may comprise, in addition to the nozzle or atomizer 14, a fuel pipe 19, leading from a source of fuel, and connected by means of suitable pipe connections to a strainer 20, then to the piping 22, to which may be connected by suitable nipple or other connections the pipe 24, in fluid connection with the coil 26 of any preferred number of turns, the other end of said coil having a pipe 28, in fluid connection with the pipe 30 leading to the burner 16, which has a suitable motor 32 with cable 31 adapted to operate in any preferred way the pump 34 and the blower 36, for supplying the needed amount of air to the nozzle 14 of the burner 16 to support combustion of the fuel. Since these features are more or less conventional, and merely enter into the combination with my invention, further description and illustration are not deemed needed.

The fuel to be burned enters a fuel passage surrounding the motor 32, from a pipe 19 leading to a source of fuel, and thence from said passage to a pipe 17 to the strainer 20, a suitable relief valve 15, having a relief outlet 18 being provided. From the strainer 20 the fuel is conveyed to the pipe 22, which has a control valve 11, operable by the lever and weight construction 21, simultaneously controlling the air inlet means 23, after which said fuel passes through the pipe 24, coil 26, pipes 28 and 30 to the inlet pipe connection 25, mounted on a suitable support 27, and thence through the burner to the nozzle 14.

For the sake of supporting the coil 26, and at the same time to provide a means for adjusting said coil with respect to the opening 4, a suitable combined support and adjusting means 38 is provided, which means may consist of a suitable perforated and twisted bar, of stout and preferably flexible material, provided with holes 37 and equipped with a combined adjustable and securing means 40, in the shape of an adjustable screw, which screw is adapted to be removed and inserted in any one of said holes 37

as desired. This construction permits the adjustment of the coil 26 with respect to the opening 4, so that said coil may be swung outwardly with the burner 16 so that said burner may be cleaned, adjusted and repaired.

The heat in the firebox 6 is utilized to heat the fuel in the coil 26 so that all available British thermal units in the fuel may be used, raising the efficiency of the burner to a marked degree, eliminating all carbon deposits in the heater and flues, all odor on the premises due to the smell of the fuel used, and insuring perfect combustion, it being possible to use a cheaper and heavier grade of fuel now in common use with such heaters and burners.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means.

I claim as my invention:

1. In a fluid heater economizer, including a conventional heater having the usual fire box associated therewith provided with an upper firing opening and a lower clean out opening, a fluid atomizer, fluid pumping and burner assembly for conveying a combustible mixture to said atomizer, pivotally connected to said heater adjacent said upper opening, the combination of a preheating coil, means for connecting said coil in fluid circuit with said atomizer, fluid pumping and burner assembly, said means including pipe extensions from said coil, whereby said coil, as said assembly is swung toward and away from said heater, will be inserted into or withdrawn from said fire box through said lower opening, for the purpose described.

2. In a fluid heater economizer, including a conventional heater having the usual fire box associated therewith, provided with an upper firing opening and a lower clean out opening, and a fluid burner, atomizer and fluid mixture assembly pivotally connected to said heater adjacent said upper opening, the combination of a preheating means comprising a coil having end pipe extensions connected in fluid circuit with said assembly, said coil, as said assembly is swung toward and away from said heater, will be inserted into or withdrawn from said fire box through said lower opening, for the purpose described, and means connected to said assembly and embracing said extensions for adjusting said coil with respect to said heater.

3. In a fluid heater economizer, including a conventional heater having the usual fire box associated therewith provided with an upper firing opening and a lower clean out opening, a fluid atomizer, fluid pumping and burner assembly for conveying a combustible mixture to said atomizer, pivotally connected to said heater adjacent said upper opening, the combination of a pre-heating coil, means for connecting said coil in fluid circuit with said atomizer, fluid pumping and burner assembly, said means including pipe extensions from said coil, whereby said coil, as said assembly is swung toward and away from said heater will be inserted into or withdrawn from said fire box through said lower opening, means for detachably connecting said extensions to said assembly, and a combined support and adjusting means embracing said extensions, whereby said coil may be adjusted with respect to said assembly.

4. In a fluid heater economizer, such as is defined in claim 1, characterized by a means for detachably connecting said extensions with said assembly, and means for adjustably supporting said coil with respect to said assembly, said means comprising a resilient perforated member, embracing said extensions, and an adjustable element adapted to be positioned in said perforations.

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