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3,201,098

PORTABLE HEATER

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Fig. 1

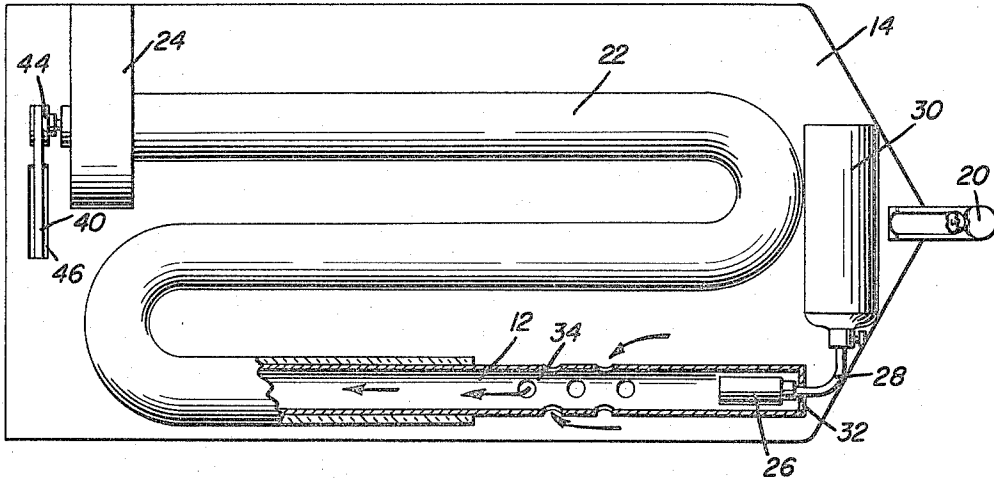


Fig. 2

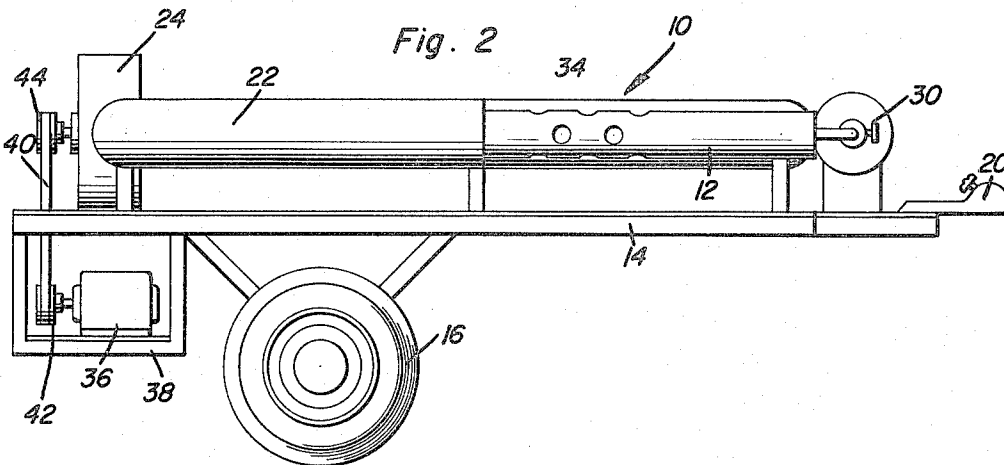
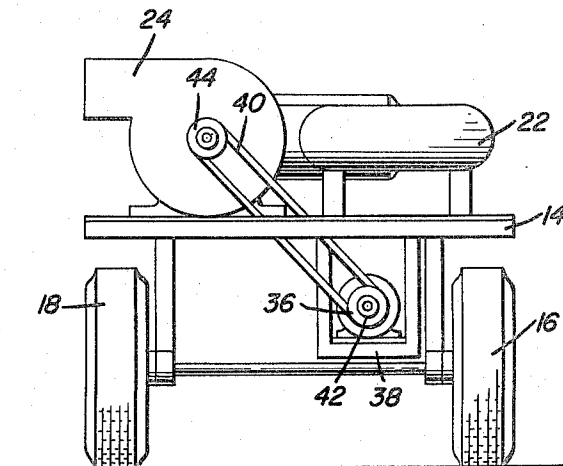


Fig. 3



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PORTABLE HEATER

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 1 Claim. (Cl. 263-19)

This invention primarily relates to a heater assembly which is adapted to be transported for use in various locations in an open field.

A portable heating unit is especially adapted for use where there is moving machinery of any kind that has to be heated before being moved or started. Using the heating unit of the present invention, equipment may be warmed or heated evenly where no open fire may be used, and the unit is especially adapted for use in an oil field where oil, salt water and fresh water lines or tanks may be frozen and cannot be thawed without being dismantled and conveyed to another area because of the inflammable oil and gas in and around wells.

Therefore, it is one of the primary objects of this invention to provide a portable heater having a burner and flame which is completely enclosed and insulated but yet is capable of a high B.t.u. output.

Still another object of this invention resides in the fact that the heater has been made highly portable in that it may be transported to various locations of use in one movable piece.

Yet another object of this invention resides in the fact that there is little danger of exhaust fumes emanating from said heater as a high percentage of fresh air is adapted to be mixed with the burner fuel and ignition thereby insuring complete combustion of the fuel.

A still further object of this invention is to design a portable heater wherein the static pressure built up within the heated tubes is at a minimum thereby precluding any explosive mixture accumulating within the heated tubes.

A still further object of this invention is to design a portable heater wherein the static pressure built up within the blower or discharge tubes will not affect the burning of the burner in any manner.

Another object of this invention is to provide a heater of the character indicated whereby air volume, air velocity, temperature, efficiency and B.t.u. output may be varied.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a top plan view of the portable heater unit comprising the subject matter of the instant invention with certain portions of the heater tubes shown in section for the purposes of description and clarity.

FIGURE 2 is a side view in elevation of the portable heater unit shown in FIGURE 1.

FIGURE 3 is an end elevational view of the portable heater assembly as seen from the left hand end of FIGURE 1.

Referring now to the drawing in detail, the portable heater unit 10 comprises an S-shaped heat conveying duct 12 mounted for transportation upon a flat bed 14 of a vehicle trailer. The flat bed 14 is adapted to be transported along the ground surface by means of a pair of wheels 16 and 18 suspended from the bed 14 and further com-

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prises a hitch 20 whereby the bed 14 may be attached to a suitable motorized vehicle.

The heating duct 12 is surrounded by suitable insulation 22 precluding any heat exchange from the interior of the tube 12 with the surrounding cool air. Attached to one end of the tube 12 is a rotary type blower 24 which pulls air through the duct 12 and expels it to the area being heated. At its other end, the duct 12 encloses a suitable burner head 26 which is attached through a conduit 28 to a fuel supply 30 mounted upon the bed 14. Primary combustion supporting air enters adjacent the burner head 26 through a restricted opening such as 32 formed in one end of the duct 12. Secondary combustion supporting air and air which is to be heated enters the duct 12 through a series of apertures 34 formed in the duct 12 in an uninsulated portion adjacent the burner head 26. Therefore, upon actuation of the blower 24, air will be drawn through the S-shaped duct 12 and expelled to the heated area. The air is heated by means of the burner head 26 and complete combustion of the gases within the duct is assured due to the high percentage of fresh air being introduced into the system upstream but adjacent the burner head. This will eliminate the danger of excessive exhaust fumes being expelled from the device. Also, because of the blower 24 inducing low pressure within the duct 12, there can be no accumulation of excessive gases within the tube whereby the danger of an explosion is substantially precluded. The fresh air which is pulled into the heater through the apertures 34 travels in such a direction so as not to extinguish the flame of the burner head 26 and it should also be appreciated by placing the burner head within the enclosed duct 12, the heater may be used in areas where an open fire is undesirable, such as in oil fields.

A suitable electric or gas powered motor 36 may be suspended on the frame 38 on the underside of the bed 14 to drive the blower 24. The connection is made through an endless flexible belt 40 connected to the motor shaft and blower shaft through a pair of pulleys 42 and 44. The belt 40 is adapted to extend through a slot 46 formed in the bed 14.

It should thus be appreciated that a highly effective and efficient portable heater has been disclosed. The B.t.u. capacity may be changed by varying either the size of the pipe used in the heater construction or by varying the size of the burner. Also, by selecting the proper blower speed and size, the amount of heat may be varied. Due to the S-shaped duct, the length of the heating pipe can be made such that the flame of the burner cannot be drawn into the blower itself, thus precluding any burning of the elements used in the blower and increasing its life and efficiency.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

In combination with a bed, a heater assembly comprising a continuous elongated heat conveying duct mounted on said bed and including inlet and outlet terminal end portions, fuel injection means disposed in the inlet termi-

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nal end portion of said duct, blower means supported from said bed and including an air inlet and an air outlet, the outlet terminal end portion of said duct being communicated with the inlet of said blower means, said inlet terminal end portion of said duct including a restricted combustion supporting air inlet means formed therein upstream of said fuel injection means, said duct, downstream of said fuel injection means but adjacent the latter, having a plurality of laterally opening circulating and supplemental combustion air inlets formed therein and spaced longitudinally of and circumferentially about said duct, said inlet terminal end portion and the adjacent portions of said duct in which said supplemental combustion air inlets are formed being of substantially constant cross-sectional area and defining a straight passage for maximum mixture of supplemental air with the combustion of fuel from said fuel injection means where-by maximum combustion of said fuel may be achieved, drive means carried by said bed for driving said blower

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means, said heat conveying duct being surrounded by insulation material for a substantial portion of its length, said insulation material being disposed entirely downstream of said supplemental combustion air inlets.

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