July 2, 1968 O. H. KLINGBERG 3,390,942

PORTABLE FUEL BURNER ASSEMBLY

Filed June 16, 1966 3 Sheets-Sheet 1

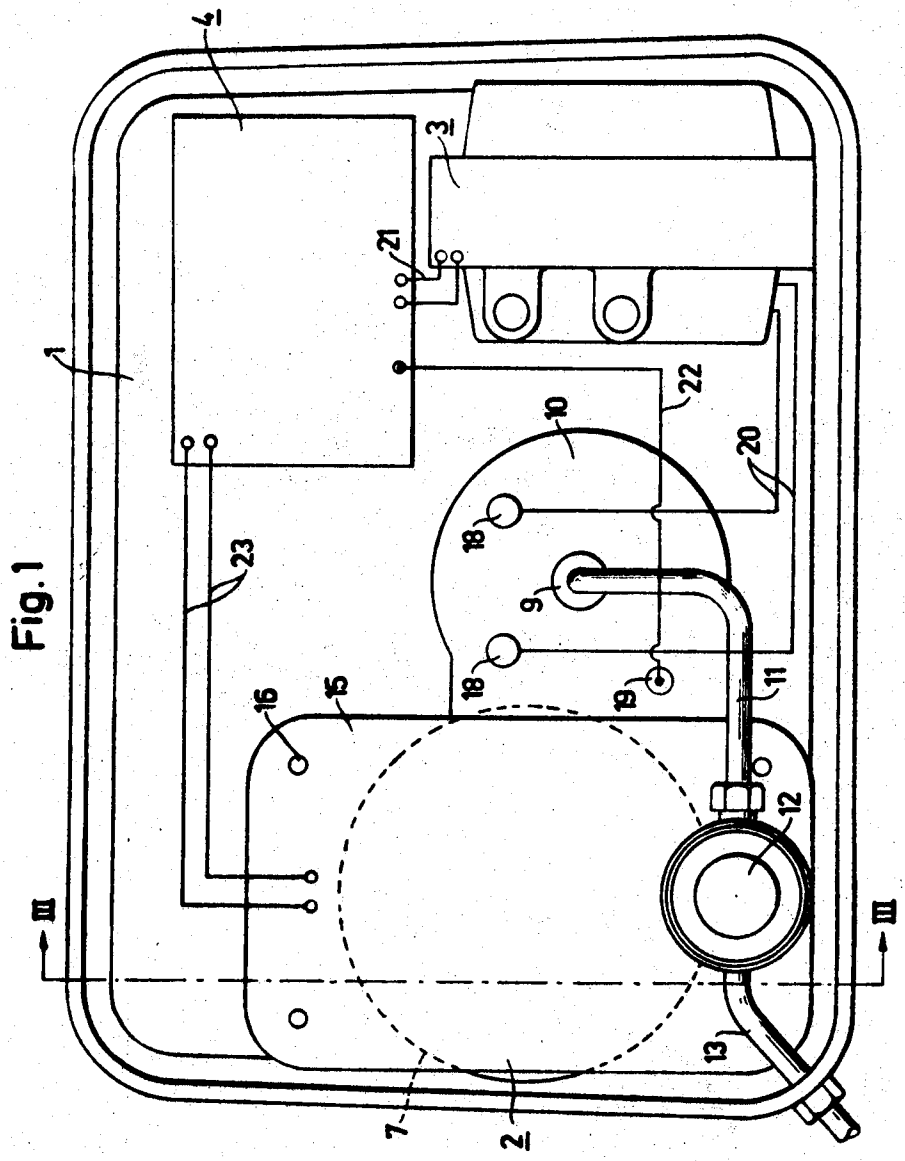


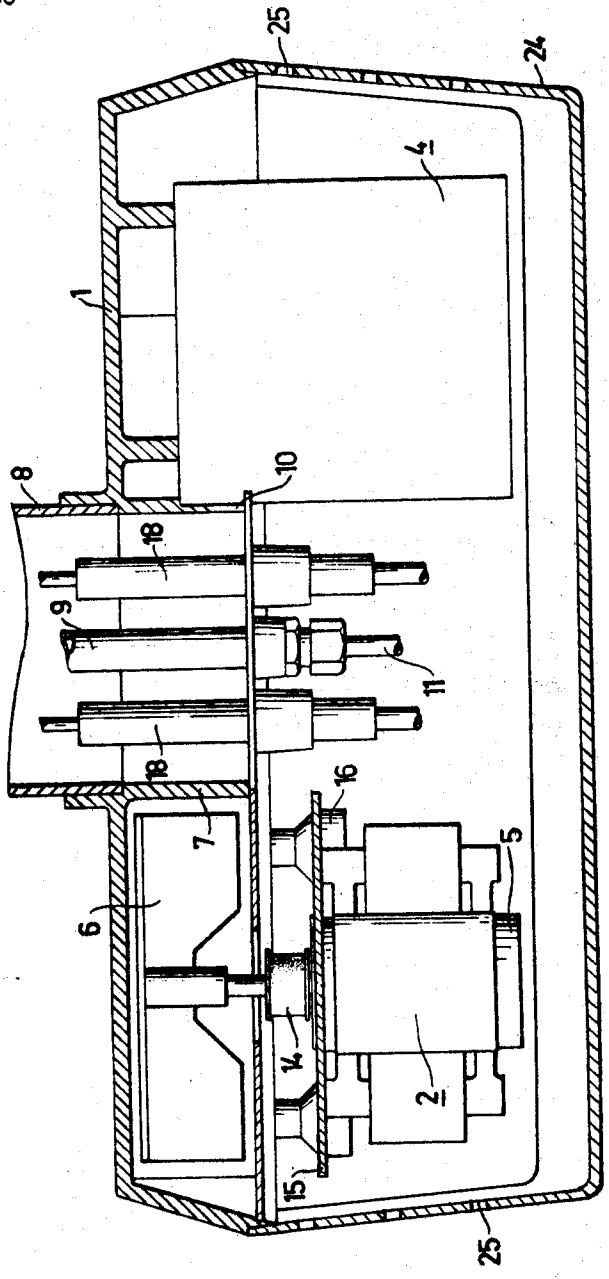
Fig. 1

July 2, 1968 O. H. KLINGBERG 3,390,942

PORTABLE FUEL BURNER ASSEMBLY

Filed June 16, 1966 3 Sheets-Sheet 2

Fig. 2

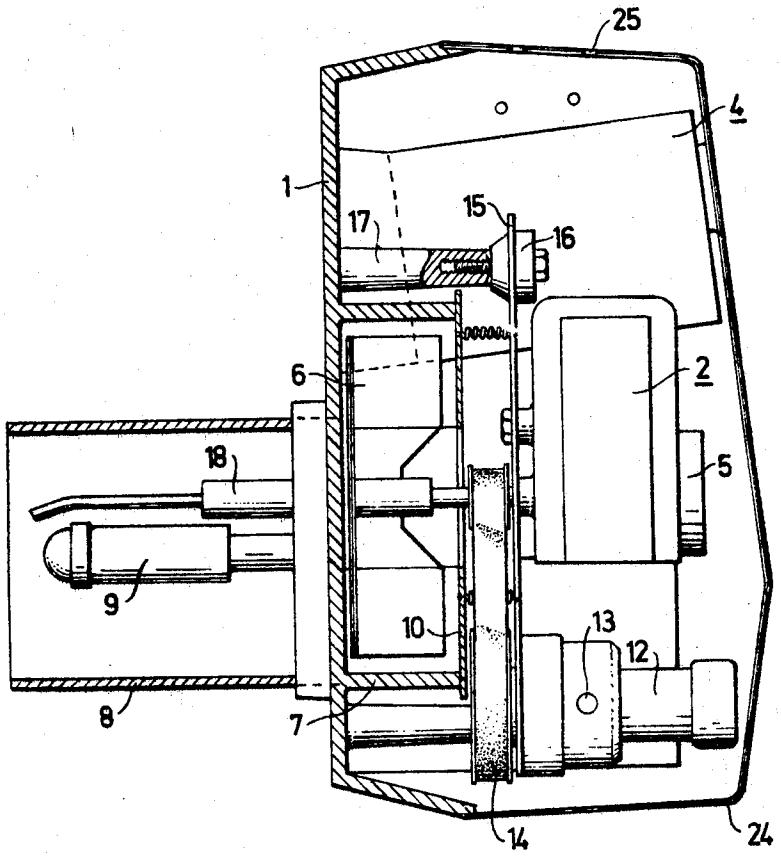


July 2, 1968 O. H. KLINGBERG 3,390,942

PORTABLE FUEL BURNER ASSEMBLY

Filed June 16, 1966 3 Sheets-Sheet 3

Fig. 3



United States Patent Office 3,390,942 Patented July 2, 1968

3,390,942

PORTABLE FUEL BURNER ASSEMBLY

Olof Herbert Klingberg, Lindesberg, Sweden, assignor to Lindesbergs Industri Aktiebolag, Lindesberg, Sweden, a corporation of Sweden

Filed June 16, 1966, Ser. No. 558,049
Claims priority, application Sweden, June 16, 1965, 7,974/65
2 Claims. (Cl. 431—114)

ABSTRACT OF THE DISCLOSURE

A portable fuel burner assembly removably mounted on a heater or furnace combustion chamber opening and removable as a whole or by subassemblies thereof. The assembly comprises a base plate with a removable subassembly of a first plate on the base plate with a fuel pump, an electric motor and a second plate defining with the base plate a chamber in which a fan driven by the motor is disposed. The second plate mounts a fuel nozzle and ignition electrodes for igniting fuel from the nozzle. Electrical controls and an ignition transformer are mounted on the base plate. A cover is provided over the assembly with apertures located to direct air flow over the various components along paths such that the components are kept cooled. A flame tube is mounted on the base plate and extends into the combustion chamber of the heater or furnace when the assembly is in use. The first plate is mounted resiliently to isolate vibrations of the fuel pump and fan. Thus the entire fuel burner assembly is readily removable and the subassembly, the transformer and the electrical controls are removable independently or with the assembly on a whole.

In modern oil firing assemblies for fuel oil burners especially for use in heaters for cottages and the like it is generally a requirement that when defects occur in the devices the parts therein ought to be rapidly replaced or alternatively that one can easily replace the whole equipment or assembly with a spare equipment for avoiding servicing the assembly at the place in question, which nowadays is very expensive. Thus it is desirable to make the units included in an oil burner device easily dismountable for the owner so that he himself is able to take parts with him to a service station for adjustment or replacement whereby the costs in such cases will be considerably lower. Also it is desirable to arrange the unit within a small space which, on account of the heat generation, hitherto has been very difficult. The present invention has for its object to solve these problems in a simple and suitable manner.

A burner-assembly or arrangement according to the present invention is essentially characterized in that the oil burner as well as fan, oil pump and electrical control devices are arranged on a common base plate from which the oil burner projects. The plate is adapted to be arranged at for instance on the opening of a furnace door; all of the units mounted on the base plate being easily detachably mounted.

Preferably the fan, fan motor, pump and burner including ignition electrodes constitute a detachable unit and the ignition transformer another detachable unit and the electrical control device a third detachable unit. Preferably the base plate is provided with a cover enclosing the units. The cover is such that the combustion air to the fan is sucked through perforations or the like in the cover so that the units in question are effectively cooled thereby.

The present invention will be described in detail with reference to the accompanying drawings in which FIG. 1 shows an embodiment of the invention in a view towards the mounting side of the base plate with cover removed, FIG. 2 is a view in horizontal section and FIG. 3 is a section along the lines III—III in FIG. 1.

The arrangement shown on the drawings comprises a base plate **1** on which are arranged a fan-burner unit **2**, ignition transformer **3** and an electrical control device **4**. The fan and burner unit **2** consists of a motor **5**, which drives a fan **6** which in turn is mounted in a drum **7** made in one piece with the base plate and which guides the air laterally into a burner tube **8** thereby obtaining a rotating turbulence flow of air in the tube. Within the burner tube **8** an oil fuel jet **9** is arranged which is connected to a plate **10** at the end of the tube **8**; an elongation of said plate constituting one wall of the fan drum **7**. The jet **9** is, by means of a conduit **11**, connected with a fuel pump **12** which in turn is connected to a container for oil fuel (not shown) by means of a conduit **13**. The pump **12** is driven by means of a toothed belt **14** by the fan motor **5**. The entire unit **2** now described is arranged on a plate **15**, which by means of connecting screws **16** is detachably arranged on a bracket **17** projecting from the base plate. Two ignition electrodes **18** are mounted on the plate **10** together with a photocell **19** both of which project into the burner tube **8**. The ignition electrodes **18** are, through detachable lines **20**, connected to the ignition transformer **3**. From the ignition transformer **3** conductors **21** are connected to the electrical control unit **4**. The photocell **19** is, via line **22**, also connected to the control unit as well as the fan motor by means of lines **23**. When loosening the plate **15** by unscrewing the screws **16** the fan motor together with the fan and the fuel pump will be brought together with the plate **10** and parts connected thereto. As appears in the drawings the units in the arrangement are very easily accessible and easily detachable from the base plate **1** whereby inspection as well as service may be easily carried out. Over said units a cover **24** is arranged which is provided with air inlet holes **25** which are arranged such that combustion air suctioned by the fan **6** passes over the ignition transformer **3** and the electrical control unit **4** as well as around the fuel pump and the back side of the burner tube **8** whereby effective cooling is obtained in this way of the units situated inside the cover.

In addition the arrangement functions such that the electrical control device **4** controls the start of the fan motor and supply of electrical current to the ignition electrodes as well as control of the combustion by the photocell **19**.

In order to minimize the pump fluctuations of oil fuel into the mouth piece **9** it may be preferable to insert a fluctuation damping device in the supply line **11** between the jet **9** and the fuel pump **12**.

What is claimed is:

1. For use on a heater or furnace and the like having a combustion chamber, a portable fuel burner assembly mounted in use removable as a whole unit and comprising a base plate on which is mounted said fuel burner assembly, said fuel burner assembly comprising a subassembly detachably mounted on said base plate on a common side of said base plate removable jointly with said fuel burner assembly and independently thereof, said subassembly comprising a first subassembly comprising a first plate detachably mounted on said base plate, a fuel pump removably mounted on said first plate, a fan having an electric motor mounted on said first plate, a second plate attached to said first plate defining jointly with said base plate sidewalls of a chamber within which said fan is disposed, a fuel nozzle and ignition electrodes for igniting fuel discharged from said fuel nozzle removably mounted on said second plate extending toward and away

from another side of said base plate opposite to said common side, electrical control means and an ignition transformer for said ignition electrodes mounted removably on said base plate, a removable cover cooperating with said base plate to enclose said fuel burner assembly having air inlet openings in communication with said chamber and in position to direct in cooperation with said subassembly the flow of air along paths maintaining cool components of the subassembly and said transformer and control means, a flame tube on said base plate extending axially from said another side disposed in communication with said chamber and circumferentially about said fuel nozzle and said ignition electrodes, said flame tube disposed extending in operation into said combustion chamber when said assembly is in use on a heater, means mounting said first plate resiliently on said base plate to isolate vibrations of said fuel pump and said fan, whereby the entire fuel burner assembly is readily removable from said heater for complete replacement thereof and said subassembly, said transformer and said electrical means

are removable independently without removal of the unit as a whole.

2. A portable fuel burner assembly according to claim 1, in which said base plate, said first plate and said second plate are disposed in a suspended condition substantially in parallel vertical planes in use, and said second plate is between said first and base plate spaced therefrom, said chamber being disposed laterally relative to an extension of the longitudinal axis of said flame tube on one side of said extension of said axis, and said transformer and electrical control means on an opposite side of said extension of said axis.

References Cited

UNITED STATES PATENTS

2,262,525	11/1941	De Lancey	158—76
2,311,404	2/1943	Macchi	158—76
3,252,497	5/1966	McGillis	158—77

JAMES W. WESTHAVER, *Primary Examiner.*