March 17, 1925. 1,529,885

W. J. HANDLEY ET AL

HEATER

Filed Feb. 21, 1924

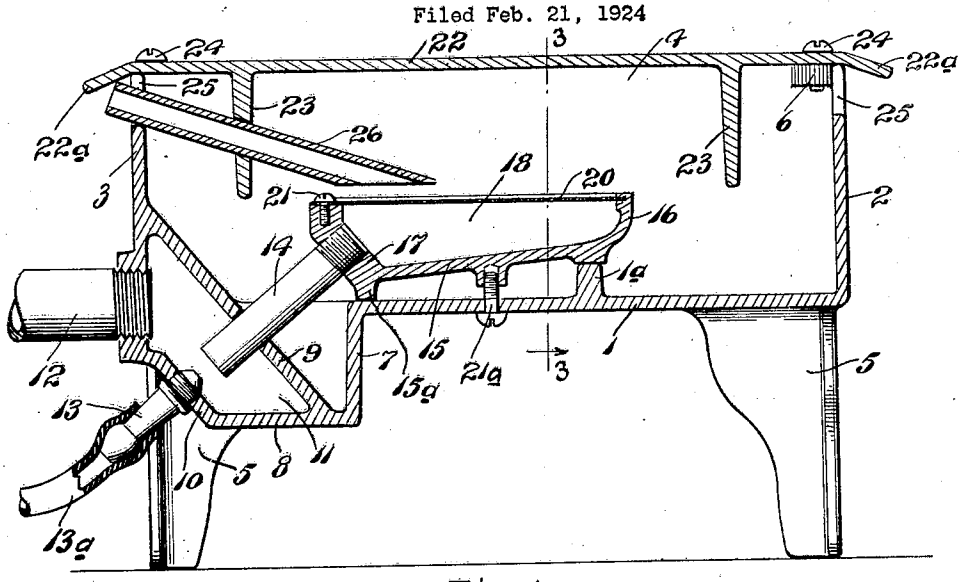


Fig. 1.

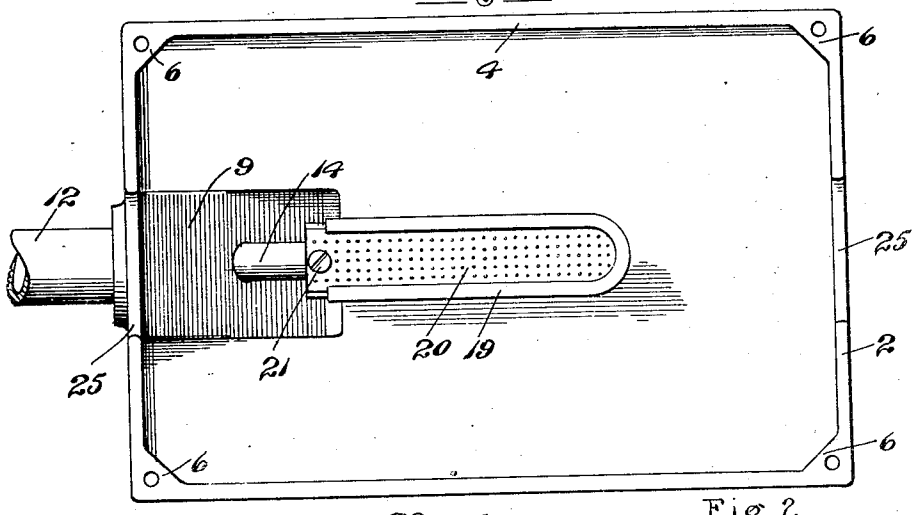


Fig. 2.

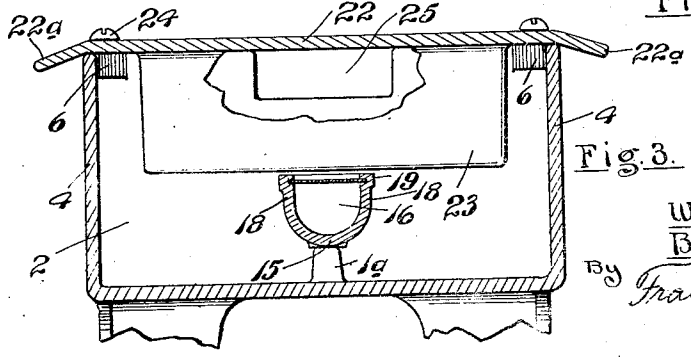


Fig. 3.

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Patented Mar. 17, 1925. 1,529,885

UNITED STATES PATENT OFFICE.

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HEATER.

Application filed February 21, 1924. Serial No. 694,202.

To all whom it may concern:

Be it known that we, WILLIAM J. HANDLEY and BURTON R. LARAWAY, citizens of the United States of America, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Heaters; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a heater which is particularly adapted to be used in automobile garages and in which gaseous fuel may be used to supply the heat. It is designed that this heater shall be placed directly under the engine of the automobile or other motor vehicle in position that the heat radiated from the heater shall affect the oil carried in the crank case of the engine and also sufficient heat shall be transmitted to the radiator and the transmission casing that the water in the former and grease or oil in the latter may be kept in liquid or semi-liquid condition, as well as the oil in the crank case which will always be kept liquid when the heater is operating.

It is evident that a burning fuel directly below an engine of an automobile which uses gasoline as a fuel must be safe-guarded in every way, particularly as the gasoline many times leaks from the engine carburetor and drops therefrom to the floor and being very volatile, evaporates and mixes with the air with a likelihood of producing a burning or exposive mixture. Furthermore the matter of economy in consumption of fuel by the heater is a very important item, this fuel consumption necessarily being made as low as possible, otherwise the cost of operation will be prohibitive.

It is a primary object and purpose of our invention to produce a heater which is absolutely safe against fire danger irrespective of how much gasoline or other fuel of similar character may come in contact with or be positioned adjacent it. Also one with which a low consumption of fuel is had sufficient to keep the temperatures under an automobile engine high enough for the safeguarding of the engine from freezing up either in its water, oil or greases, the heater being designed for this purpose only and not for the heating of the entire inner atmosphere of a garage. A still further object is to produce this heater in simple form so that its cost of manufacture is low, making it possible to market the same at a low price. These and various other objects, with constructions for attaining the same will appear as understanding of the invention is had from the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is a vertical longitudinal section taken centrally of the heater of our invention.

Fig. 2 is a plan of the heater with the upper covering plate removed, and

Fig. 3 is a transverse vertical section on the plane of line 3—3, of Fig. 1.

Like reference characters refer to like parts in the different figures of the drawing.

In the construction of the heater, a receptacle or body member is provided, made of cast iron, preferably, having a horizontal bottom 1, ends 2 and 3, and sides 4 and supported by depending legs 5 cast with the body. The body, preferably is rectangular in shape, and at the upper corners thereof is provided with inwardly extending lugs, adapted to have threaded openings made therethrough for the connection of screws in fastening the cover plate thereto.

At the central portion of the bottom 1 and at one end thereof, a downwardly recessed portion is formed with a vertical back 7 and a bottom 8, an integral partition 9 extending at an angle to the vertical and horizontal between the end 3 and said bottom 8, the lower edges of the end 3 and end of the bottom 8 being integrally connected by a section 10 substantially paralleling the partition 9. There is thus enclosed between the end 3, partition 9, bottom 8 and section 3, a chamber 11 into which an air conducting pipe 12 leads, below which a gaseous fuel inlet plug 13 also leads into the chamber, a tube 13ª being connected to the plug 13 to furnish the gaseous fuel. It is evident that fuel and air are both carried to the chamber 11 in which a combustible mixture of the same occurs.

A tube 14 of smaller diameter than the air inlet tube 12 is designed to carry the mixed air and fuel from the chamber 11 to

a burner mounted on and above the bottom 1 of the body, the tube passing through the partition 9 and extending upwardly at an angle to the horizontal. The burner has a bottom 15, ends 16 and 17 into the latter of which tube 14 is threaded, and sides 18, said sides and the end 16 at their upper edges being formed with a thickened flange 19 in which a groove is cut on the inner sides for the slidable reception of a thin plate 20 in which a large number of small holes are made. This encloses an interior space in the burner of comparatively large capacity for holding the combustible mixture, and the cross sectional area of the passage in the tube 14 is larger than the combined areas of the openings in the plate 20 so that there is always some pressure serving to force the mixture through the openings in plate 20, the passage therethrough being even and uniform; and the mixture of air and fuel is complete in the chamber 11, so that no additional air is required for complete combustion. The flame at the upper side of the burner is that produced by complete combustion, no air comes from the outside except through the pipe 12, and no ignition of gasoline fumes can be had from this burner in service, as all movement of the gases of combustion is away from the flame and there is no movement of any gases toward the flame except the mixed gas and air passing thereto to feed the same through the openings in plate 20.

A cover plate 22, preferably of cast iron is located over and closes the upper side of the body, it having two spaced apart baffle members 23 cast therewith and depending downwardly into the body substantially parallel with the ends 2 and 3. Screws 24 passing through the plate into the lugs 6 serve to releasably connect the plate to the body. Each end 2 and 3 has a portion left out at its upper edge and substantially midway between the ends thereof, making openings 25 under the overhanging edge portions 22^a of the cover plate 22 for the escape of the exhaust gases of combustion. A tube 26 passes through one of said openings and thence downwardly and inwardly through one of the baffles 23, its lower end coming above the upper side of the plate 20. This is for the purpose of lighting the burner, the gas when first turned on escaping from the burner through the plate 20 and upwardly through the tube so that it can be readily lighted at the outer end of the tube.

From this construction, it is apparent that a simple but very effective heater is produced fully capable of operating in the manner set forth in the general statement of the invention. That is, an absolute safeguard against igniting any of the fuel used with the engine is present, there being no possibility of combustible gases or liquids being carried to the burner flame from the outside. In fact, the current of inert exhaust gases of combustible passing through the openings at 25, serves as a smother to flame, putting the same out at once. Volatile and highly inflammable fuel may be used around the heater without danger, in fact may drip thereon from the engine. In practice the air pipe 12 extends about thirty inches from the body to which it is attached. This precludes any escape of inflammable material therefrom.

The burner is mounted on a lug 1^a cast with the bottom 1 and a lug 15^a cast with the burner bottom 15, with an attachment provided by the screw 21^a, as shown in Fig. 1. The assembly of the parts is simple and easy. The invention is defined in the appended claims and is to be considered as comprehensive of all forms of structure coming within their scope.

We claim:

1. A heater comprising a body member having bottom, ends, and sides, said ends at their upper edges being formed with openings, a cover releasably connected to said body member and closing the upper side thereof, an elongated burner located within said body including a plate at the upper side of the burner having a plurality of small openings therethrough, a mixing chamber formed at one end of the body member, a pipe connecting the mixing chamber and burner, an elongated pipe of larger diameter than the first pipe leading from the outside to the mixing chamber, and means for conducting gaseous fuel into said mixing chamber, substantially as described.

2. A heater comprising a body member having a bottom, ends and sides, said ends at their upper edges being formed with openings, a cover connected to and closing the open upper side of the body member, said cover having depending baffles formed therewith and located adjacent the ends of the body member, a burner located within the heater, means for supplying mixed air and fuel to the burner in proportions for complete combustion of the fuel, and a tube passing through the baffle at one end of the heater with its inner end located directly over the burner, and its outer end located substantially in an opening in one of the ends of the body member, substantially as and for the purposes described.

3. A heater comprising a body having bottom, sides, ends and a cover, an elongated burner mounted on and above said bottom, a mixing chamber at one end of the body enclosed by a part of one end, a bottom portion, and a partition cast integral with the bottom of said body, a pipe connecting the mixing chamber and burner, said burner having a plate at its upper side

formed with a large number of small openings therethrough, an air inlet pipe leading into the mixing chamber from the outside, and a gaseous fuel conduit also leading into the mixing chamber from the outside, there being openings in the body adjacent the cover thereof for escape of the exhaust gases of combustion formed within the body by burning the fuel therein.

In testimony whereof we affix our signatures.

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