(No Model.)

A. KINDLEY.

FOOT STOVE.

No. 524,485. Patented Aug. 14, 1894.

FIG. 1.

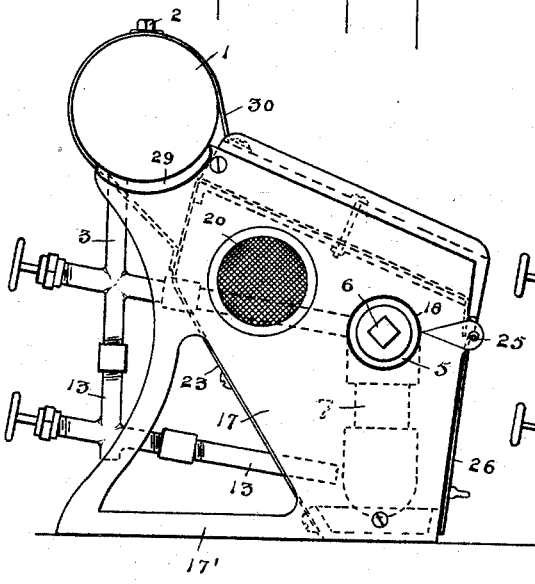


FIG. 2.

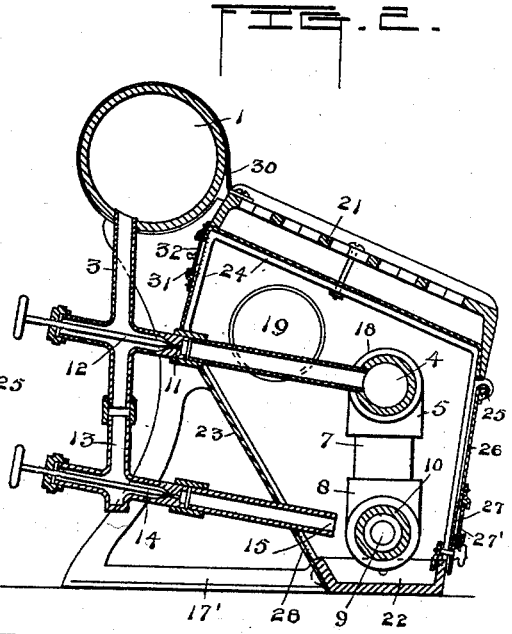
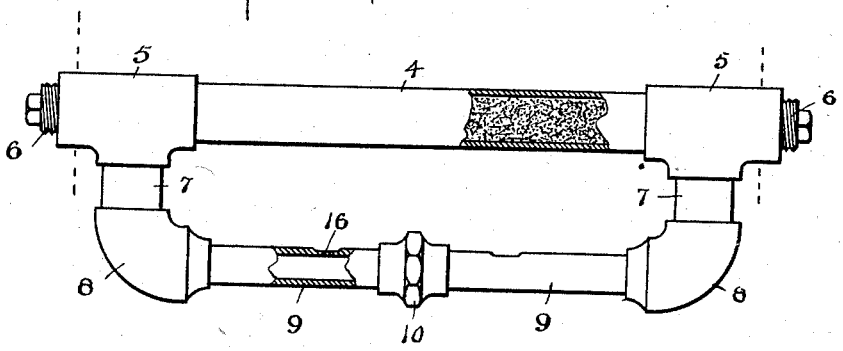


FIG. 3.



Witnesses
Arch. M. Catlin.
Frances H. Catlin

Inventor
Asa Kindley
by Benj. R. Catlin
Attorney

UNITED STATES PATENT OFFICE.

ASA KINDLEY, OF NEW HOLLAND, INDIANA.

FOOT-STOVE.

SPECIFICATION forming part of Letters Patent No. 524,485, dated August 14, 1894.

Application filed April 27, 1894. Serial No. 509,182. (No model.)

To all whom it may concern:

Be it known that I, ASA KINDLEY, a resident of New Holland, in the county of Wabash and State of Indiana, have invented certain new and useful Improvements in Foot-Stoves; and I 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 pertains to make and use the same.

The invention relates to foot stoves for vehicles and has for its object to provide a simple and efficient foot warmer adapted to the use of liquid fuel; and the invention consists in the construction hereinafter described and particularly pointed out.

In the accompanying drawings Figure 1 is an end elevation. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is a side elevation partly in section of a burner.

Numeral 1 denotes a reservoir for liquid fuel such as kerosine oil or gasoline and 2 a supply inlet for the same.

3 is a pipe to feed the fuel to a transverse pipe 4 having at each end a coupling 5 provided with a removable screw plug 6. Into each coupling 5 is screwed a short pipe 7 which is also connected to a coupling 8. The couplings 8 are joined by short pipes 9 to a coupling 10. The pipe 3 is bent as shown and has a needle valve passage 11 adapted to be closed by the valve 12. When the latter is opened, oil or gasoline flows not only through the needle valve passage down to the pipe 4, but also transversely past the valve into the bent pipe 13 and if valve 14 be open it flows to the exit or heating burner 15 adjacent to the coupling of the short pipes 9. The pipes are filled with porous or fibrous material adapted to strain the oil and retard its flow therein by capillary action.

The detachable plugs which close the ends of pipe 5 can be removed and said pipe cleaned out without detaching the same, or the several pipes and couplings can be separated if desired. It is most important that the pipe 4 be made accessible for purpose of cleaning the same and that its filling be made easily removable since it is more liable to become clogged with matter strained from dirty oil used in some cases and which first comes in contact with the straining material in said pipe.

16 indicates minute burner orifices in the short pipes 9.

The pipes above described are supported in a skeleton frame having end plates 17 provided with supporting feet 17′ and having holes 18 to receive the screw plugs 6. Exits for the escape of the products of combustion are provided at 19 and these are protected by caps 20 composed of rings filled with wire cloth.

The end plates 17 are joined on their upper edges by a grate 21 and at their lower edges by plate 22 which on its upper surface is hollowed out to form an oil receptacle in which asbestos fiber or other refractory absorbent may be placed.

A sheet metal back 23 is secured to screws, or in any convenient manner, to the edges of the end plates and to the flanges 24 formed on the inside thereof. The sheet metal is bent and continued down past the ends of the flanges and below the pivots 25 of a door 26.

27 denotes air draft openings in the door covered with wire cloth and provided with a sliding shield 27′. The object of this wire cloth guard at various points is to prevent the escape of flame and the accidental ignition of clothing, straw or other material.

28 denotes the inlets in the sheet metal back adjacent to the burner pipe which are covered with wire cloth.

The reservoir is supported in the suitably shaped brackets 29 on the end plates and 30 are straps for binding the reservoir to the brackets.

31 denotes a series of openings in the sheet metal back adjacent to the reservoir and 32 a sliding plate to close the same. The purpose of these latter openings is to permit the heating of the reservoir at will by the products of combustion under certain conditions. As they are situated at the top of the combustion chamber the products will escape from them when open more freely than from the lower exits 27.

To secure initial heat both valves are opened. The flow of oil through the lower valve 14 and bent pipe 13 on its way toward the exit 15 near the burner pipes 9 being unobstructed it can be quickly lighted at 15 to heat the several pipes and particularly the perforated pipes 9. These will be sufficiently

hot by the time oil has percolated through the porous material to the orifices in said latter pipes to vaporize it. The flow through pipes 13 can then be cut off by closing valve 14, and valve 11 can be regulated to supply sufficient oil (or gasoline) to maintain a suitable flame at each burner perforation in pipes 9. Air will enter through the openings 31 in the back plate and may be admitted through the door by uncovering the wire-cloth-filled openings therein. The products of combustion will escape at 27. In case a heavy oil is used or in case it is stiffened by a very low temperature the exits 31 can be opened and the reservoir warmed by the hot products which under such circumstances impinge against it. In case of extreme cold or if heavy oil is used both valves and all the air and combustion exits may be opened whereupon a part of the oil will be vaporized in the pipes 9 and in coupling 10 and a part will be delivered through the lower pipe 13 and burned at its lower end.

It is obvious that the stove and particularly its exterior frame could be made of sheet metal entirely but I prefer cast metal both for the reason that it is better able to endure the rough treatment which it may receive in a sleigh, wagon or other vehicle, and for the further reason that it absorbs more heat from the lighted burners. The sheet metal is interposed between the burner and the grate to prevent the upward escape of the flames and gases. But such sheet metal guard is quickly heated and it readily radiates its heat to and through the grate.

It is not essential to all the advantages of my stove that the several pipes composing it or connected with it be made in parts and coupled in the particular manner described.

Having thus described my invention, what I claim is—

1. In a foot warming stove, the frame and its plates constituting a burner case, the inclined grated cover, the oil reservoir supported on the frame near the upper edge of the grate, the oil pipes provided with a burner communicating through said pipes with the reservoir and situated below the grate and within the casing, and a guard between the burner and grate inclined upwardly to direct products of combustion toward the reservoir, and away from objects placed immediately on the grate, substantially as set forth.

2. In a foot warming stove, the frame and its plates constituting a burner case, the inclined grated cover, the oil reservoir supported on the frame near the upper edge of the grate, the oil pipes provided with a burner communicating through said pipes with the reservoir and situated below the grate and within the casing, a guard between the burner and grate inclined upwardly to direct products of combustion toward the reservoir and away from objects placed immediately on the grate, and exits, one or more, for the products of combustion situated in the case in proximity to the oil reservoir, substantially as set forth.

3. In a foot warming stove, the frame and its plates constituting a burner case, the inclined grated cover, the oil reservoir supported on the frame near the upper edge of the grate, the oil pipes provided with a burner communicating through said pipes with the reservoir and situated below the grate, and a guard situated under the grate and having supplemental exits adjacent the reservoir provided with a damper, substantially as set forth.

4. A foot warming stove comprising a burner-inclosing case, an oil reservoir supported above the case, an air inlet situated near the bottom of the case, a burner, a burner-heating and vapor-igniting oil receptacle, said burner and oil receptacle being situated near the air inlet, an exit for products of combustion from the case adjacent to the oil reservoir, said exit and inlet being filled with wire gauze, and a support for the feet above said exit, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ASA KINDLEY.

Witnesses:
AARON SINGER,
OLIVER H. BOGUE.