No. 628,182. Patented July 4, 1899.

A. & W. C. MEYER.

FOOT WARMER.

(Application filed Oct. 12, 1898.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

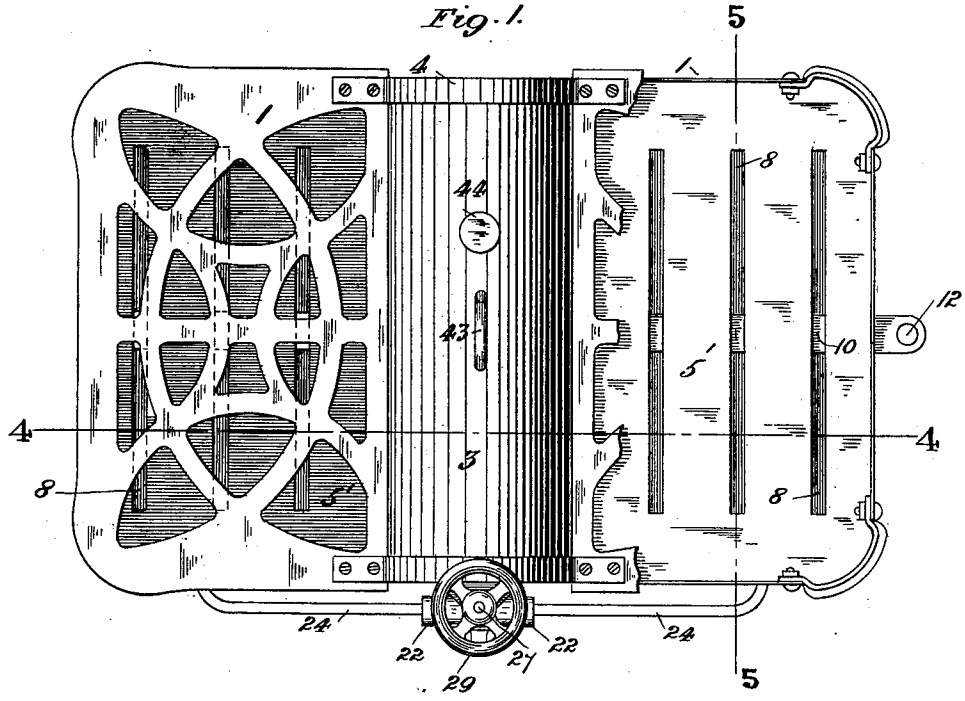

Fig. 2.

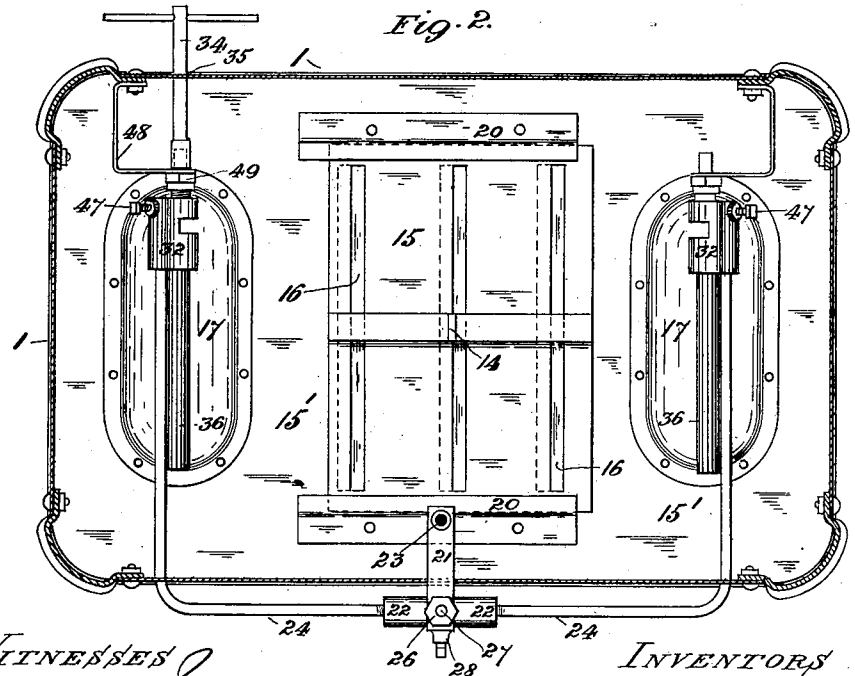

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Fig. 3.

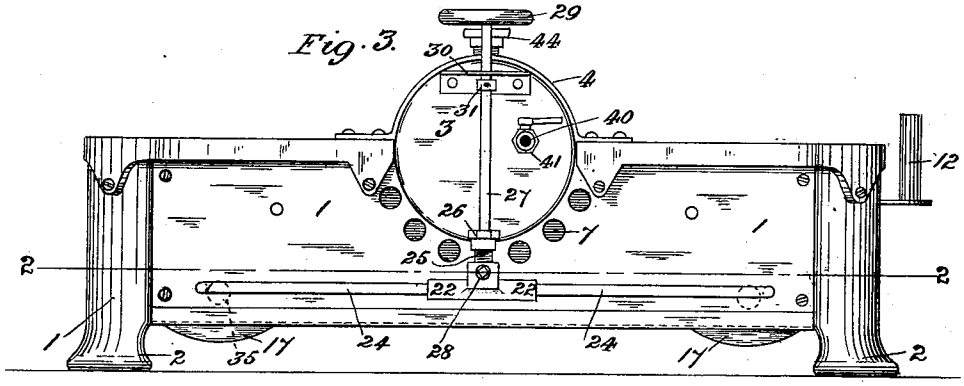

Fig. 4.

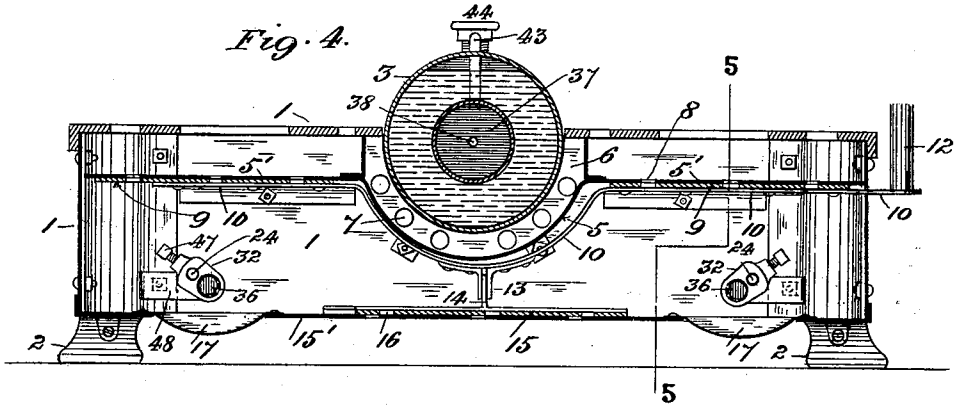

Fig. 5.

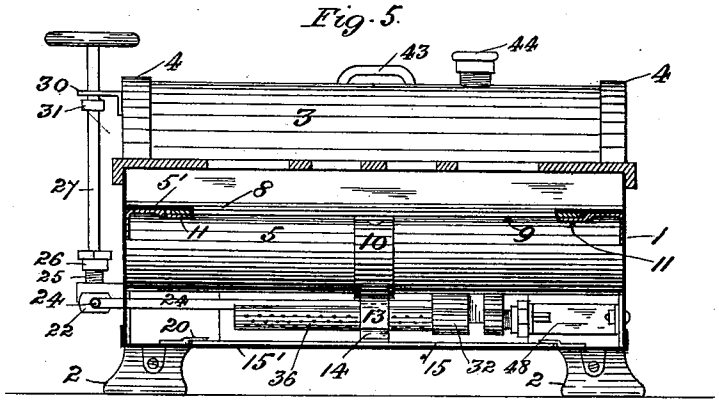

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Fig. 6.

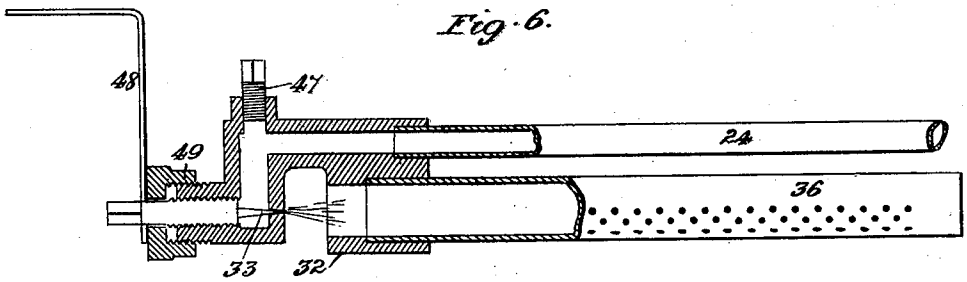


Fig. 7.

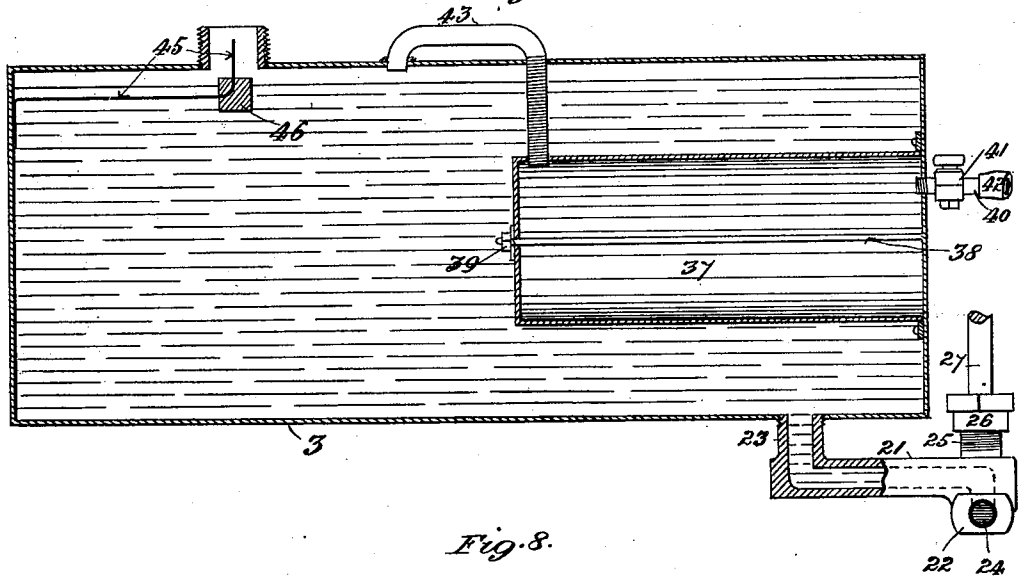
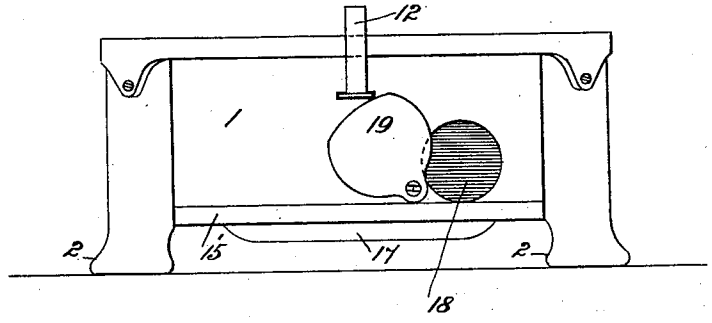


Fig. 8.



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UNITED STATES PATENT OFFICE.

AUGUST MEYER AND WILLIAM C. MEYER, OF ADDIEVILLE, ILLINOIS.

FOOT-WARMER.

SPECIFICATION forming part of Letters Patent No. 628,182, dated July 4, 1899.

Application filed October 12, 1898. Serial No. 693,327. (No model.)

To all whom it may concern:

Be it known that we, AUGUST MEYER and WILLIAM C. MEYER, citizens of the United States, residing at Addieville, in the county of Washington and State of Illinois, have invented certain new and useful Improvements in Foot-Warmers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention has relation to improvements in foot-warmers; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a top plan of the device, the supporting-grating on one side being broken away to show the interior register. Fig. 2 is a horizontal section on line 2 2 of Fig. 3. Fig. 3 is a front elevation of the device. Fig. 4 is a longitudinal vertical section on line 4 4 of Fig. 1. Fig. 5 is a transverse section on line 5 5 of Fig. 4. Fig. 6 is a detail longitudinal section of the burner-support. Fig. 7 is a longitudinal sectional detail of the oil-tank and air-chamber confined within the same; and Fig. 8 is an end view of the frame proper, showing the hand-hole in the vertical wall at that end, (there being a corresponding hand-hole at the opposite end,) the oil-tank being omitted from this view.

The object of our invention is to construct a foot-warming stove in which the fuel used is a liquid hydrocarbon—such as gasolene, kerosene, petroleum, or the like—special attention being had to the mechanism for effecting the even distribution of the heated air-currents and products of combustion, to the location of the burners, to the mechanism for feeding and delivering the fuel to the latter, and to other details of construction whose purpose and function will be better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents an open ornamental frame resting on legs 2, the frame supporting at its middle an oil-tank 3, preferably cylindrical in shape, the tank being held securely in the depressions formed in the frame for its reception by straps 4, embracing the opposite ends of the cylinder and secured to the frame. Protecting the oil-tank along the under surface is a shield 5, the latter being removed from the tank sufficiently to leave an air space or chamber 6, through which air is free to circulate, finding ingress and egress through openings 7, formed in the opposite vertical walls of the frame. The shield 5 is extended laterally or outwardly on each side in the form of a perforated plate 5′, forming the stationary member or section of a register, with the elongated openings 8 of which are adapted to register the corresponding openings of the sliding section or member 9 of said register, the members 9 being coupled by a yoke 10, spanning the shield 5. The shield is secured to the walls of the frame by rivets or in an equivalent manner, the opposite longitudinal edges of the extensions or plates 5′ being riveted to the horizontal members 11 of angle strips or plates carried by the frame, the spaces between the said members 11 and the plates 5′ thus forming ways, within which the movable members 9 of the register are adapted to slide. The movable or sliding members of the register are controlled from the outside of the frame by a handle 12, whose shank, which is but an extension of the yoke 10, passes through the wall of the frame. The medial portion of the yoke 10 is provided with a fork 13, between the members of which is adapted to be received an arm 14, carried by the movable section of a register 15, the openings 16 of which are adapted to aline with corresponding openings of the detachable bottom 15′, which serves as the stationary section or member of said register. Said bottom 15′ is secured at the corners to the legs of the frame by screws or otherwise and is provided on each side of the center with hollow depressions or dish-shaped receptacles 17 directly under the burners, as will presently appear. Access to said receptacles is had through hand-holes 18, formed in the end walls of the frame, the holes being adapted to be closed by pivoted disks or plates 19. The depressions 17 serve to receive a few drops of gasolene or other hydrocarbon which may be ignited, this initially heating the burners to better assist in starting a blaze in the hydrocarbon particles sprayed into the burners, as will more fully hereinafter appear. The slid-

ing member of the register 15 is so mounted that as the upper register 9 is closed the register 15 is opened, and vice versa. The register 15 slides in ways formed by the strips 20, secured along the inner surface of the bottom 15'.

Screwed or otherwise driven into the under peripheral wall of the tank 3, at one end thereof, is a pipe-coupling comprising hollow arms 21 22 22, the arm 21 being the one which leads directly into the tank, the shield being cut away to accommodate the screw-threaded nipple 23, carried by said arm. To the outer ends of the arms 22 22 are coupled the adjacent ends of the feed-pipes 24, which convey the oil to the burners, as will presently appear. At the junction of the arms 21 22 22 and along the outside of the frame is formed a nipple 25, to which is secured the hollow plug 26, serving as a stuffing-box or gland for the stem 27 of a screw-valve of ordinary construction, by which the flow of the oil to the pipes is controlled. The coupling can be cleaned from the outside by unscrewing a plug 28, screwed into the coupling in alinement with the passage in the arm 21. The upper end of the stem 27 is provided with a hand-wheel 29, the stem passing through a bracket 30, secured to the frame and being provided with a limiting-collar 31 below the arm of the bracket, the collar serving to arrest or limit the degree to which the valve and stem can be unscrewed. The pipes 24 run along the wall of the frame a suitable distance. Then they are bent inwardly and passed through openings in the frame-wall, the inner deflected portions of the pipes running parallel to the end walls of the frame and occupying a position on each side of the center of the bottom register and approximately to one side of the longitudinal center of the dish-shaped receptacles 17. The ends of the inner deflected portions of the pipes are coupled to the hollow and substantially U-shaped burner-supports 32, the outer arm of each of which is provided with an ordinary needle-valve 33, whose outer polygonal head can be operated by a key 34, inserted through an opening 35, formed in the wall of the frame, (and shown by dotted circles in Fig. 3,) the inner arm of each burner-support serving to support a hollow burner-tube 36, the lower peripheral wall of which is perforated. The pressure above the oil in the tank serves to drive the oil past the needle-valve and inject the hydrocarbon in the form of a fine spray (see Fig. 6) into the hollow burner, the oil taking fire and burning through the openings formed in the walls of said burner. The burners are located directly over the dish-shaped receptacles for a purpose already designated.

To insure enough driving pressure for the oil, we provide the tank 3 with an air-chamber 37, held against the front end or head of the tank by a stay-bolt 38, provided at its free end with a tightening-nut 39, which forces the chamber firmly against the head of the tank. The outer end of the chamber is provided with an air-pipe 40, controlled by a valve 41, to the open end of which pipe can be attached a hose 42, into which may be blown a quantity of air from the lungs, thereby filling the air-tank with a moderate quantity of compressed air, after which the cock 41 is closed and the hose detached. Leading from the upper wall of the air-chamber and passing through and above the tank is a bent pipe 43, whose free open end terminates in the oil-tank just below the surface of the upper peripheral wall thereof and above the level of the oil to which the tank is normally filled. The oil is filled from the top after the removal of the screw-cup 44, the height of the oil being indicated by the free end of a wire 45, to which a float 46 is attached. In starting the burners it is apparent that the compressed air with which the air-chamber is filled will be communicated to the space above the oil through the bent tube 43, forcing the oil to the burners. After the force of the air has been exhausted the vapors generated above the oil by the heat of the flame will perform by their expansive tendency the function performed by the initial pressure of air, so that there will always be enough pressure behind the oil to force the same in the form of spray into the hollow burners. Each burner-support 32 is provided at a point opposite the needle-valve with a screw-plug 47, which upon removal enables one to clean the interior of the said support.

The present device, though specially termed a "foot-warmer," may be employed as a heating-stove for general purposes, such as heating hall-rooms, bath-rooms, and so on. When it is desired to direct the heat-currents upward, so as to get the full benefit of the burners, then the upper registers are opened, the lower register closing, and when the upper register is closed the heat-currents escape laterally from the frame through the bottom register.

The inner deflected portions of the oil-supply pipes are sufficiently rigid to retain the outer ends of the needle-valves 33 in alinement with the openings 35, through which the keys 34 are inserted for manipulating the same; but as an additional precaution we support the free ends of said pipes by angle-brackets 48, one arm of each bracket being secured to the wall of the frame and the other arm embracing the stem of the needle-valve immediately below the polygonal head of the same and bearing against the face of the stuffing box or gland 49 of said valve.

Having described our invention, what we claim is—

1. A foot-warmer, comprising a suitable frame, an oil-tank located centrally therein whereby a foot-rest is formed on either side thereof, suitable burners located within the hollow of the frame, oil-supply pipes leading from the tank to the burners, controlling-valves for the oil, and registers both below

and above the burners for regulating the course of the heat-currents, substantially as set forth.

2. A foot-warmer, comprising a suitable frame, an oil-tank carried by the same, burners connected to said tank, means for feeding the oil to said burners, an upper register, a lower register located below the burners, connections between the two sets of registers, whereby upon the closing of the upper register the lower register shall open, and vice versa, when the upper is opened, the lower one is closed, substantially as set forth.

3. A foot-warmer comprising a suitable frame, an oil-tank mounted centrally over the same, a shield secured below the tank at a suitable distance therefrom, thereby leaving an air-space between the shield and tank, lateral and outward extensions forming a part of or carried by said shield, said extensions being perforated and forming the stationary members of a suitable register, sliding members coöperating with said stationary members, a yoke spanning the shield and connecting said sliding members, a bottom plate carried by the frame below the burners and having a central perforated portion forming the stationary member of a lower register, a sliding member for said stationary member, the sliding member of the lower register being connected to the yoke, whereby upon the movement of the sliding members of the upper registers, a corresponding movement shall take place in the lower register, the parts being so adjusted that with the closing of the upper register the lower shall be opened, and vice versa, suitable burners located in the chamber between the registers and disposed on either side of the tank, the parts operating substantially as and for the purpose set forth.

4. In a foot-warmer, a suitable frame, an oil-tank mounted on the same, a pipe-coupling communicating with the bottom of the tank and having hollow arms disposed along the outside of the frame, pipes leading from said arms along the walls of the frame and thence deflected inwardly through the walls and disposed beneath the cover of the frame, burners located at the inner ends of the arms, a screw-valve having a stem disposed along the outside of the frame and operating in a stuffing-box carried by or forming a part of the coupling, a bracket for the upper end of the stem, a collar carried by the stem below the bracket and a hand-wheel secured to the stem, the parts operating substantially as and for the purpose set forth.

5. In a foot-warmer, a suitable bottom, having a central perforated or open portion forming the stationary section of a register, and hollow or dish-shaped depressions on either side thereof for receiving an initial quantity of combustible material, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

AUGUST MEYER.
WILLIAM C. MEYER.

Witnesses:
EMIL STAREK,
GEORGE L. BELFRY.