J. F. LAMB.

LAMP PUMP.

APPLICATION FILED DEC. 31, 1908.

963,228. Patented July 5, 1910.

Fig. 1.

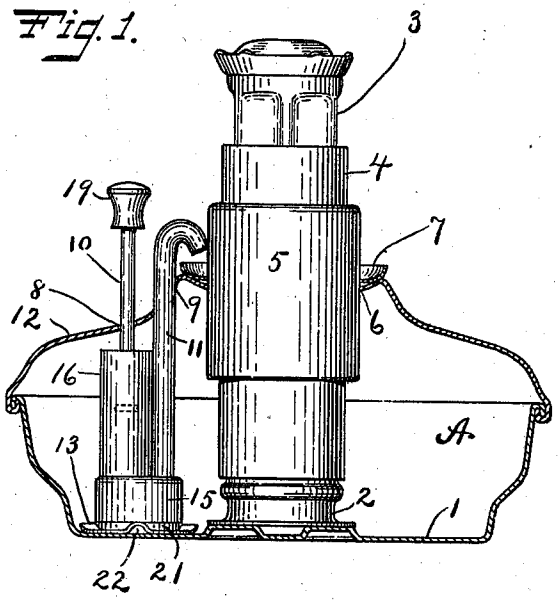



Fig. 2

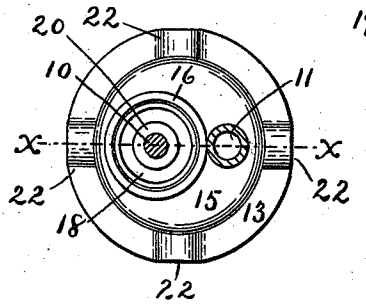



Fig. 3.

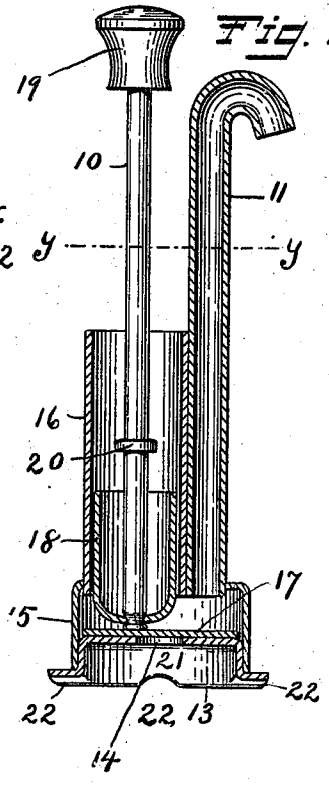
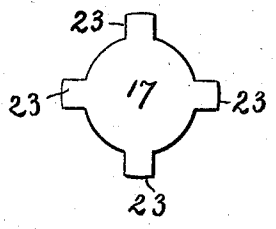



Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## LAMP-PUMP.

963,228. Specification of Letters Patent. Patented July 5, 1910.

Application filed December 31, 1908. Serial No. 470,179.

*To all whom it may concern:*

Be it known that I, JOSEPH F. LAMB, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Lamp-Pumps, of which the following is a specification.

My invention relates to improvements in lamp pumps and the objects of my improvements are efficiency and convenience in starting vapor lamps and to do this by a construction that is economical and reliable, all as will be hereinafter described.

In the accompanying drawings:—Figure 1 is a central vertical section of a font for a vapor lamp, with all other parts including my pump, in side elevation. Fig. 2 is an enlarged horizontal section of my pump on the line *y y* of Fig. 3. Fig. 3 is a vertical section of the same on the line *x x* of Fig. 2. Fig. 4 is a plan view of the valve used in my pump.

Similar reference characters refer to similar parts throughout the several views.

The lamp proper to which my pump has been applied is made substantially in accordance with Patent Number 904,239, of Nov. 17, 1908.

In Fig. 1 A, designates the font of a vapor lamp for containing alcohol or other liquid fuel suitable for a vapor lamp or heater. At the center of the base 1 of the font A, is attached a wick tube holder 2, supporting a wick tube 3 which extends vertically upward within a shutter 4 passing through a boss 5, fixed in the neck 6 of the lamp, all substantially as in the patent referred to, Number 904,239. Also there is provided an annular priming vessel 7, Fig. 1, surrounding the boss 5, for containing fuel to be burned for the purpose of generating vapor to facilitate the starting of the lamp.

The upper wall or roof 12 of the font A, is provided with two holes 8 and 9 respectively, for a pump piston rod 10 and discharge spout 11. A portion of the essentially flat interior surface of the bottom 1 of the font A, to one side of the centrally located wick tube holder 2, and suitably located below the holes 8 and 9 in the top wall 12 of the font, is utilized for the location of the base 13 of the pump. Said base 13 of my pump is preferably made of sheet metal circular in plan view, with a relatively large, upwardly formed boss 21 in the center having cylindrical side walls and flat horizontal top, with a hole 14 in the center. The bottom edge of the said boss 21 is turned outwardly so as to form a rim or flanged base proper of the said base 13 and is substantially horizontal except for four radial corrugations 22 forming recesses or passageways for fuel.

15 is a valve chamber cap, shaped generally like the boss on the base 13, with cylindrical side walls and flat top, the cylindrical walls adapted to fit over the cylindrical walls of said boss, and of such length that when mounted on said cylindrical walls of said boss, a valve chamber will be formed between said flat top and the top of the boss on the base 13, having two circular holes in said cap of different diameter, the larger adapted to receive the pump cylinder 16 and the smaller one adapted to receive the pump spout 11.

17 is the valve for my pump, being a loose or unattached disk valve of thin sheet metal or other suitable material, having four radial side arms 23, Fig. 4, the diametrical dimension over the arms being such as to permit the valve to fit loosely within the inside of the cylindrical walls of the valve chamber cap 15.

11 is the pump spout, of tubing, curved over at the upper end to form a nozzle, the lower end fitting the smaller hole in the flat top of the valve chamber cap 15.

16 is the pump cylinder, formed of tubing, of dimensions to fit the larger hole in the flat top of the valve chamber cap 15 with the lower end of the said cylinder opening into the valve chamber within the cap.

18 is the pump piston, being a cup piston, of outside diameter to fit the cylinder 16 formed of tubing with one end rounded over and closed except for a perforation at the center adapted to fit the piston rod 10 at a point of reduced diameter.

10 is the pump piston rod, adapted to receive at the upper end a knob or handle 19, a collar 20 along the length, and the piston 18 at the lower end, the said lower end being of reduced diameter fitted loosely in the perforation at the lower end of the piston 18, after which the lower end of the piston rod is headed over leaving the piston loosely mounted on the said piston rod 10, so that the long cup piston 18 will not cramp or bind within the cylinder in case the piston

rod is not moved in exact alinement with the cylinder.

20 is a collar mounted on the piston rod 10 to limit the motion of said rod.

19 is a knob or handle mounted on the upper end of the piston rod 10 for convenience in operating the piston rod and piston.

The outwardly extending flanges of the base 13 of the pump are attached to the bottom of the lamp font A by soldering, or otherwise, the space between the boss on the base 13 and the bottom of the font A forming an intake chamber, connected with the surrounding space in the font A by four ducts or conduits formed between the corrugations in the base 13 of the pump and the bottom 1 of the font A, so that liquid will freely enter said intake chamber from the surrounding space in the font A through said ducts or conduits.

The valve chamber cap 15 is mounted on the boss of the base 13 so as to form a valve chamber, inclosing the valve 17, adapted to close the hole 14, which serves as a port connecting the intake chamber with the valve chamber. The valve 17 is maintained in position over the port 14 by the radial arms with which it is provided bearing on the interior cylindrical walls of the valve cap, the spaces between the arms forming passageways for liquid passing from below to above the valve 17. The spout 11 is fixed at its lower end in the smaller hole in the flat top of the valve chamber cap 15 in any proper manner, and in like manner the cylinder 16 is secured by its lower end in the larger hole in the valve chamber cap 15.

When it is desired to start the lamp, and for this purpose a supply of fuel is required in the priming vessel 7, said supply is transferred from the interior of the font A to said priming vessel by reciprocating the pump piston rod 10 by means of the handle 19. During the upward movement of the piston the pressure of the surrounding liquid in the font and the suction of the piston forces open the valve 17 and allows the liquid to flow into the valve chamber through the port 14, following up the piston 18 in its upward movement and filling the space in the cylinder below the piston. On the return or downward movement of the piston the pressure given to the piston is transmitted through the liquid to force the valve down and close the port 14 in case the valve has not already closed the port by gravity, so that with the continued downward movement of the piston, the liquid is forced up through the discharge spout into the priming vessel 7.

It is not necessary to have the cup piston 18 fit the cylinder tightly, because the piston is so long that after the liquid in the font or receptacle has once passed up into the cylinder above the piston, the liquid above and around the piston will form a packing to make the piston fit tightly enough for the purposes of pumping liquid the short distance required for a lamp pump.

I claim as my invention:—

1. A lamp pump having in combination a base 13 comprising a central boss constituting an intake chamber, a flanged base extending outwardly from the lower edge of said boss constituting a base proper, radial corrugations 22 in said base proper constituting passageways leading to said intake chamber, a port 14 in the top of said boss, a valve chamber cap 15 having side walls fitting said boss, extending above said boss and forming therewith a valve chamber, and having a top wall adapted to receive and support a cylinder 16 and a spout 11.

2. In a lamp pump, a cup piston joined to the piston rod by a flexible joint formed by providing a hole in the end of the piston to fit loosely over the end of the piston rod, the said end being reduced in diameter and headed over, to loosely confine the piston on the said rod.

3. In a lamp pump, a pump base inclosing an intake chamber, and provided with flanged edges having radial corrugations forming liquid passageways for the passage of liquid from the surrounding space to said intake chamber, the top of the said base having a hole forming a port for passage of liquid from the intake chamber, a valve chamber cap mounted on said base and forming therewith a valve chamber, a disk valve with guide arms within said valve chamber, separate pump cylinder and discharge spout mounted on said valve chamber cap, and a piston and piston rod for said cylinder.

4. In a lamp pump, a pump base inclosing an intake chamber provided with flanged edges, radial corrugations in said flanged edges forming liquid passageways for passage of liquid from the surrounding space to said intake chamber, the said base having a hole in its top forming a port for passage of liquid from the intake chamber, a valve chamber cap mounted on said base and forming therewith a valve chamber, a disk valve with guide arms within said valve chamber, separate pump cylinder and discharge spout mounted on said valve chamber cap, and a cup piston and piston rod connected together by a flexible joint.

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