Aug. 29, 1950 A. P. OSIUS 2,520,559

PORTABLE PUMPING APPARATUS

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FIG. 1.

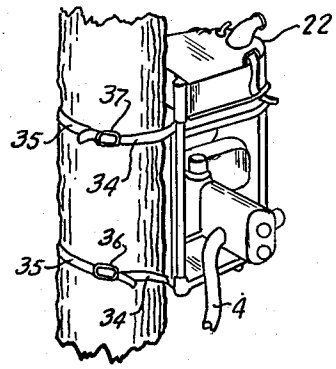

FIG. 6.

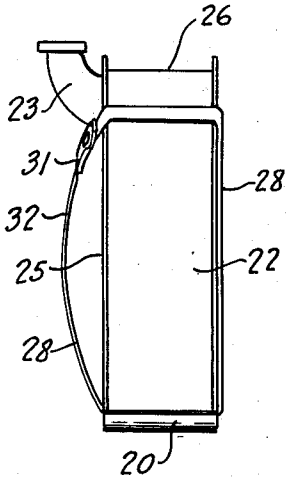

FIG. 2.

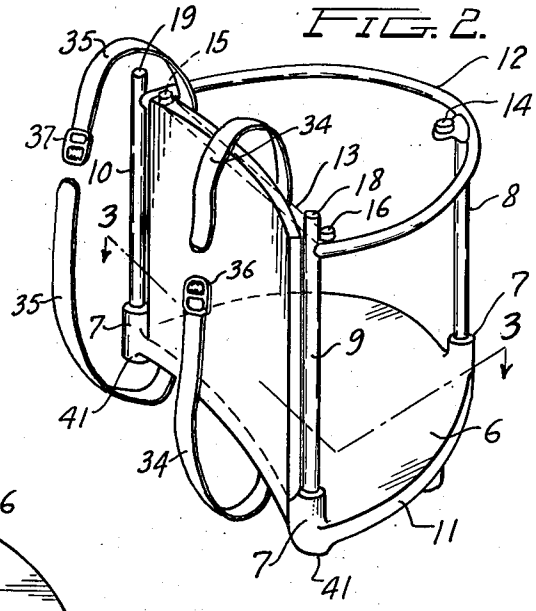

FIG. 3.

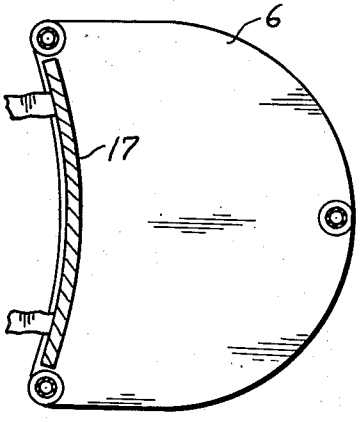

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FIG. 4.

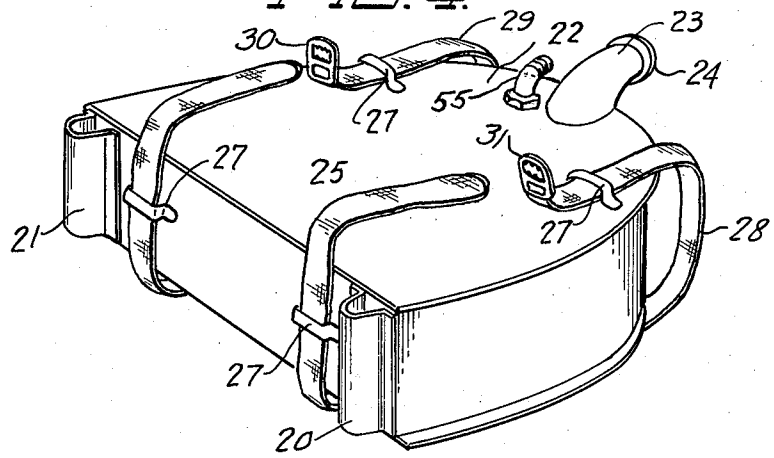


FIG. 5.

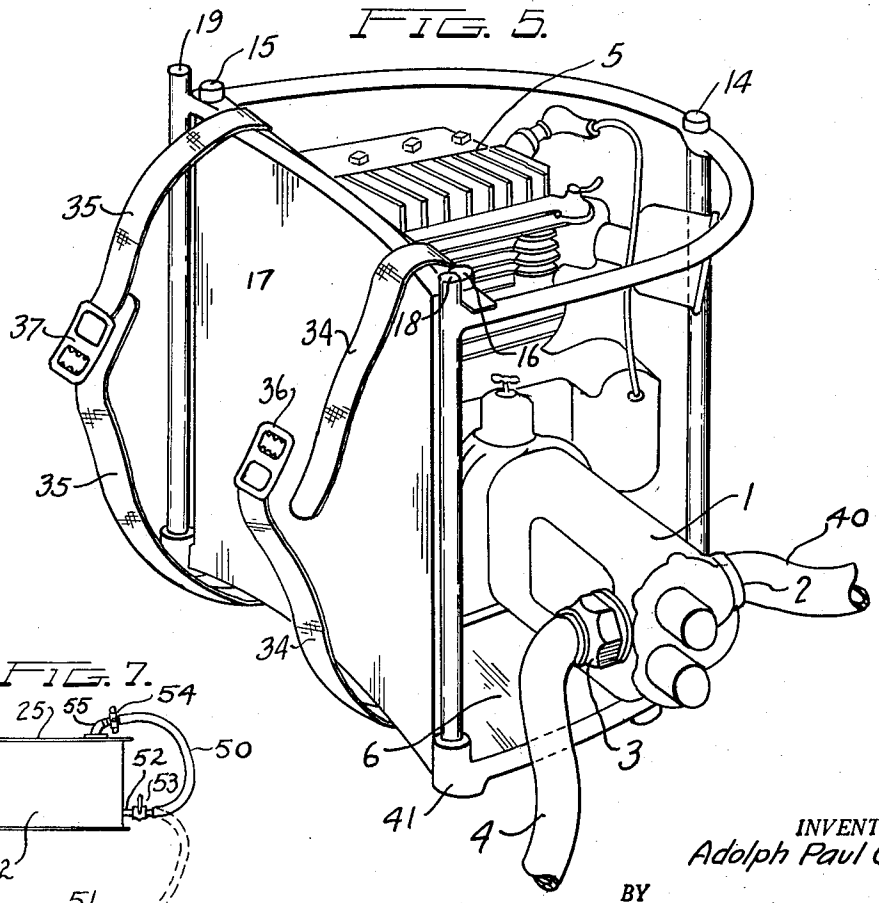
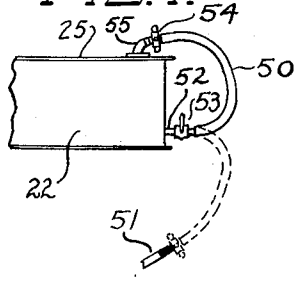


FIG. 7.



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PORTABLE PUMPING APPARATUS

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3 Claims. (Cl. 103—218)

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This invention relates to a portable pumping apparatus.

It is an object of this invention to produce a portable pumping apparatus which is particularly useful in fighting forest fires. To this end the pumping apparatus, including the power unit, is constructed so that it is light enough in weight to lend itself readily to transportation on the back of a man. The liquid fuel container is separate from the power and pumping unit assembly but is arranged so that it can be conveniently and quickly assembled to the power and pumping unit.

The invention also contemplates a portable pumping apparatus which is efficient in use and which will function under many and diverse conditions.

In fighting forest fires it is common practice to set the pump up near a stream, lake, or source of water and then run, in some instances, several thousand feet of hose up to the fire line. In dragging the hose from place to place while fighting the fire, pulling force is often applied through the hose upon the pumping apparatus. Thus, the pulling and tugging at the hose has the tendency to upset the pump and render it inoperative. It is an object of this invention to produce a portable pumping apparatus which is sturdy and which will maintain itself right side up even though a considerable pull is exerted through the hose on the pumping apparatus.

The invention also contemplates a portable pumping apparatus which is nicely adapted to fit upon the back of a man without discomfort to the man while being transported.

In the drawings:

Fig. 1 is a perspective view showing my pumping apparatus assembled to a tree while in operation.

Fig. 2 is a perspective of the frame which supports the pump and engine power unit.

Fig. 3 is a view along the line 3—3 of Fig. 2.

Fig. 4 is a perspective of the gasoline tank disassembled from the engine and pumping units but in position to be dropped or placed upon the power and pumping unit frame.

Fig. 5 is a perspective of the entire pumping apparatus minus the fuel tank but in position to receive the fuel tank.

Fig. 6 is a side elevation showing the fuel tank in upright position both for filling and transporting on the back of a man.

Fig. 7 is a detail showing the fuel hose connections with the tank.

Referring more particularly to the drawings it

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will be seen that my pumping apparatus comprises a gear pump generally designated 1 having a water intake 2 and discharge outlet 3 to which the hose 4 is connected. The pump is driven by an internal combustion engine generally designated 5. Pump 1 and engine 5 are mounted upon, and secured to, a platform 6. The platform 6 can be made from metal either in sheet or cast form and preferably takes the form of a thin casting of one of the lighter metals, such as aluminum, magnesium, or their alloys.

The platform 6 has three sockets 7 formed integral therewith. Upright tubular posts 8, 9 and 10 are fixed in sockets 7. Posts 8, 9 and 10 are secured or fixed in the sockets 7 by any suitable means, such as by pins or welding. The periphery 11 of platform 6 is substantially U-shaped. A U-shaped tubular frame 12 is welded or otherwise secured to the top of front post 8 and adjacent the tops of the rear posts 9 and 10. A reinforcing cross piece 13 of channel shape extends across the rear of U frame 12 and is secured at each end to the ends of frame 12 and to posts 9 and 10 preferably by welding.

Frame 12 carries three rubber pads 14, 15 and 16 adjacent the top of each of the post members. A thin metal panel member 17, preferably curved or of arcuate section, encloses the space defined by the rear posts 9 and 10, the upper cross piece 13 and the lower rear edge of the platform 6. Panel 17 can be welded to the frame members or secured thereto by screws. Panel 17 is curved or arcuate in section not only so that it will fit snugly to the back of the man who is transporting the pumping apparatus, but also so that the apparatus can be secured to a tree as explained below.

The vertical posts 9 and 10 have portions 18 and 19 which project above frame member 12. These projections 18 and 19 telescope with the U socket members 20 and 21, respectively, of the fuel tank 22 and serve to both locate and retain tank 22 in position upon the rubber pads 14, 15 and 16 when the tank is assembled in operative relation with engine 5. Sockets 20 and 21 also serve as legs for supporting the tank 21 while it is being filled through filler tube 23 provided with cap 24. Filler tube 23 is arranged so that when the tank is positioned in horizontal position upon frame 12, filler tube 23 will project upwardly from the then uppermost side 25 of the tank and when the tank is positioned vertically for filling or while being transported on the back of a man, the filler tube will also project upwardly slightly above the top 26 of tank 22 so that fuel will not be spilled.

Tank 22 is provided with a plurality of eyelets 27 along each side of the tank through which straps 28 and 29, provided with buckles 30 and 31, are passed. When the ends of the straps 28 and 29 are secured in the buckles, sufficient slack is left in the straps to form loops 32 through which the arms of the man carrying the tank can be passed so as to hold the tank on the transporter's back. As shown, Fig. 6, the loops 32, e. g., are formed on the top side of the tank but quite obviously can, if desired, be formed on the bottom side of the tank.

In view of the fact that the entire pumping apparatus is designed so that it is readily portable, it is desirable that the apparatus be as light as possible. Lightness is achieved by making the frame, fuel tank, as well as the engine and pump preferably of lighter metals such as aluminum, magnesium, and their alloys. For transporting the engine and pump unit the frame member is provided with straps 34 and 35 having buckles 36 and 37. When the end of strap 34 is connected to buckle 36 and the end of strap 35 connected to buckle 37 slack is left in the straps to provide loops through which the arms of the man transporting the apparatus can be passed, the loops serving to retain the engine and pump unit on the back of the carrier.

When pumping water for fighting a forest fire, for example, it is desirable to secure the pumping apparatus in an upright position so that it cannot be tipped over. This can be accomplished by securing the pumping apparatus to a tree. In such case the back panel 17 being curved will assist in fitting the pumping apparatus to the contour or curvature of the tree trunk. In such case the end of strap 34 is passed through buckle 37 on strap 35 and the end of strap 35 is passed through buckle 36 on strap 34 to form two horizontal loops about the tree trunk 38 which securely holds the pumping apparatus in place. This same arrangement permits the use of the upper loop as a tote or headline and the use of the bottom loop about the waist of the person carrying the apparatus as a steadying strap or loop.

It will be noted also that the intake end 2 of pump 1, to which is connected the intake line 40, and the outlet 3 of the pump, to which is connected the outlet line 4, are positioned close to platform 6. Thus, any pull exerted on the pump through hose 4 is exerted near the ground well below the center of gravity of the engine and pump unit and therefore less likely to upset the pumping apparatus. In other words, placing the pump 1 with its outlets and hose connections close to the ground gives the pumping apparatus stability. Platform 6 also has cast or formed therewith short legs 41 opposite sockets 7 which dig into the ground and also give the pumping apparatus stability.

The internal combustion engine 5 is a standard one cylinder gasoline engine and pump 1 is also a standard gear type pump and therefore neither the engine nor the pump 1 will be specifically described. It should be noted, however, that pump 1 is connected to the engine 5 immediately above platform 6 and therefore close to the ground. This locating of the pump 1 close to or adjacent to platform 6 contributes to lowering the center of gravity of the entire pumping apparatus which also gives stability to the same.

Tank 22 is provided with a flexible fuel line 50 which can be readily connected to the inlet fitting 51 of the float bowl of the carburetor of engine 5 when tank 22 is mounted upon the frame in operative relation. One end of fuel line 50 is connected to outlet fitting 52 for tank 22 controlled by the manually operated valve 53. The other end of flexible hose 50 is provided with a female connection 54 which, when the engine is operating, is connected to the male carburetor fitting 51. When tank 22 is disassembled from the engine for transporting of the same, fuel line 50 is disconnected from the carburetor by unscrewing female connection 54. Line 50 is now connected to male outlet fitting 55 on the tank by screwing female connection 54 on to fitting 55. Thus, when the tank is being transported, there is no chance for fuel spilling out of the same. When hose 50 is disconnected from fitting 55, fitting 55 serves as an air vent to tank 22 thereby preventing the formation of a vacuum in tank 22 which would stop the flow of fuel to the engine. Thus, this arrangement obviates any element of human error in forgetting to open the vent. As a matter of fact, tank 22 cannot be connected to the engine without opening vent 55. Failure to open an air vent to the fuel tank is a common failure in the operation of the present type of internal combustion engine driven pumping apparatus. Failure to open the air vent in the fuel tank causes a vacuum lock which cuts off the flow of the fuel to the engine.

I claim:

1. A portable liquid pumping apparatus for pumping liquid from one point remote from said apparatus to another point remote from said apparatus comprising in combination a frame including a platform adjacent the lower edge of the frame and adapted to rest upon the ground, a pump and an internal combustion engine for driving said pump mounted upon said platform, and a rear vertical panel for the frame member adapted to rest against the back of the person transporting the apparatus, and a pair of looped members positioned adjacent the sides of said panel through which the arms of the person transporting the pumping apparatus may be passed to secure the apparatus on the back of the carrier, each of the looped members being a strap extending vertically along the vertical sides of the back panel and provided with means for connecting the ends of the straps to form vertical loops, the said straps also being arranged so that the upper ends of the straps can be connected to form a horizontal loop and the lower ends of the straps can be connected to form a horizontal loop adapted to pass around a vertical support member such as a tree to which the pumping apparatus can be secured.

2. A portable liquid pumping apparatus comprising a platform, a liquid pump and an engine for driving the same mounted on said platform, a plurality of vertical posts extending upwardly from said platform, an upper frame member secured to the upper ends of said posts, a removable fuel tank supported on the upper frame member, sockets on said fuel tank arranged to telescopically engage the upper ends of some of said posts to retain the tank on the frame for supplying fuel to the engine.

3. A portable pumping apparatus comprising in combination a frame having a platform adjacent the base of the frame, a liquid pump and a motor for driving the pump mounted on the platform, said frame extending above the said engine and pump, a support on the top of the frame, a removable fuel tank adapted to rest upon the support above the engine, means carried by the tank and frame for connecting the tank and frame

when the tank is resting upon the frame, said means comprising a plurality of pins and sockets carried by the tank and frame member which telescope when the tank is positioned upon the frame.

ADOLPH PAUL OSIUS.

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