

W. M. FRASER.  
PUMP.

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1,200,337.

Patented Oct. 3, 1916.  
2 SHEETS—SHEET 1.

Fig. 1

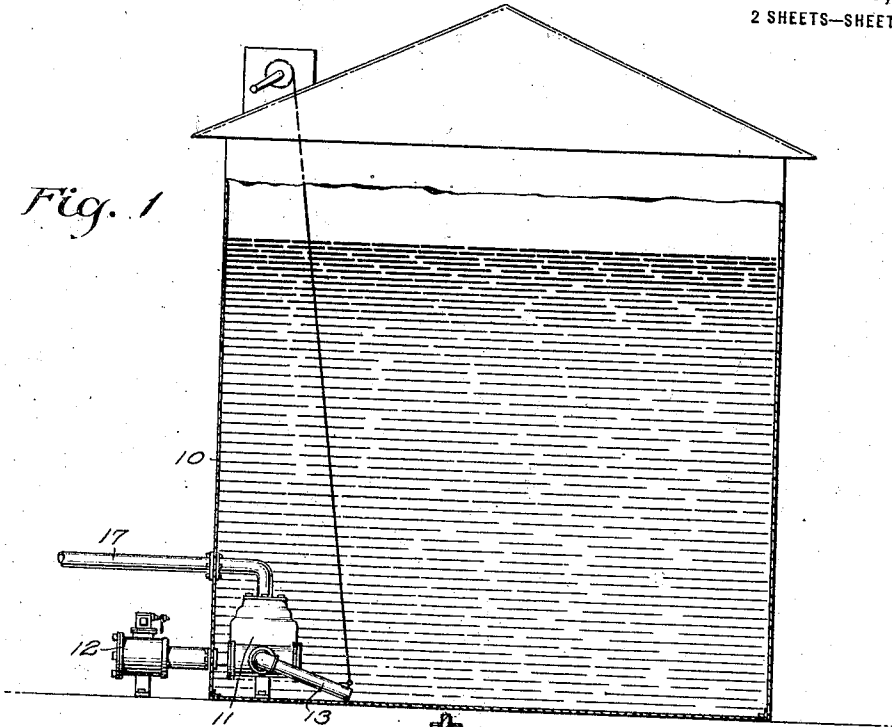
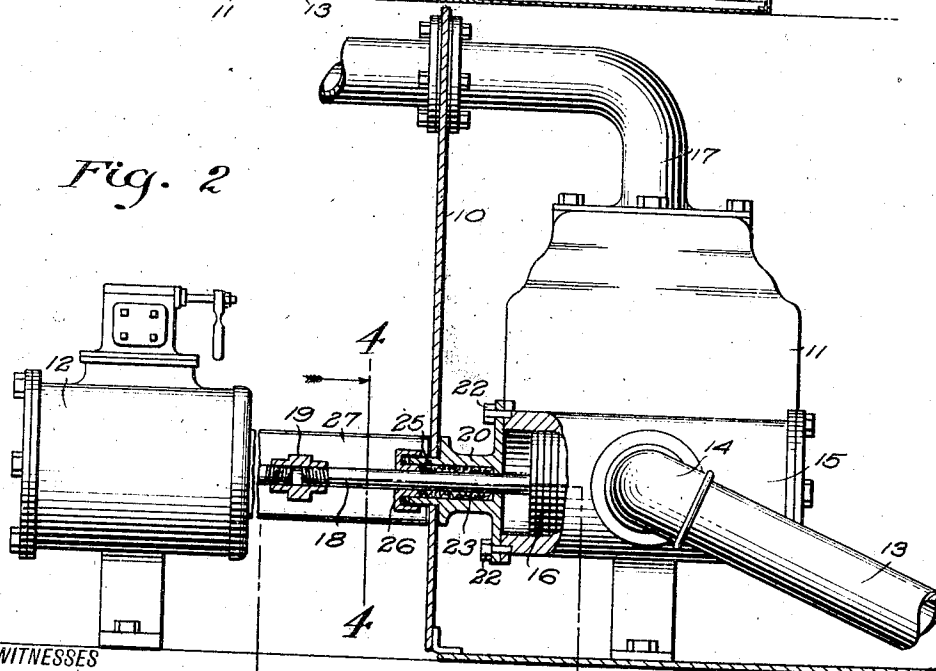


Fig. 2



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 6

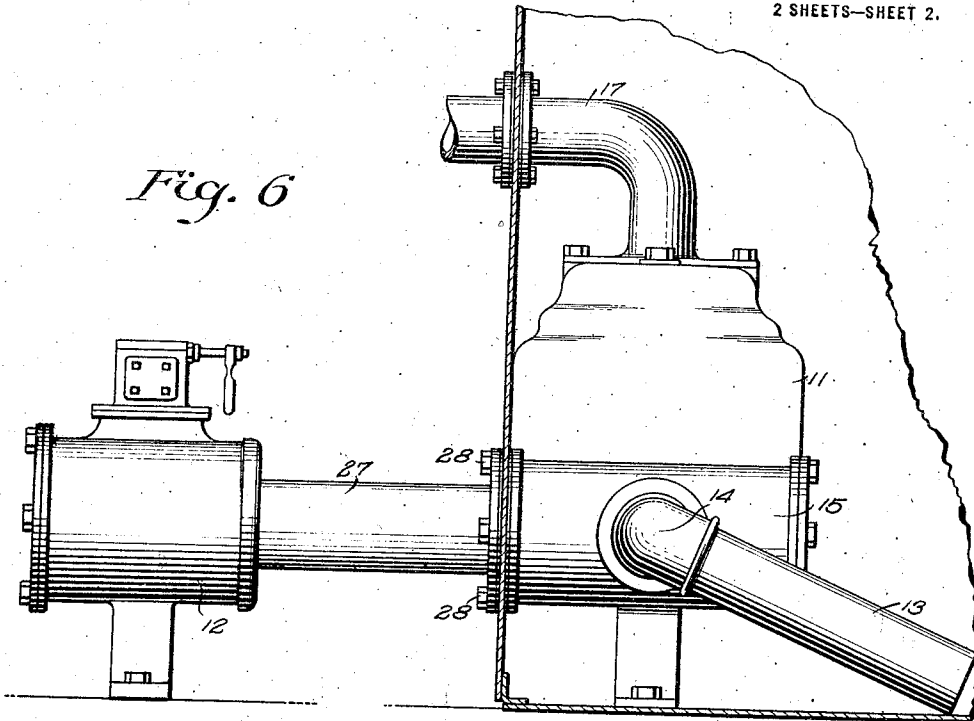


Fig. 3

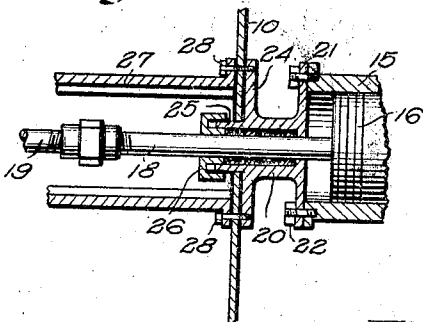


Fig. 4

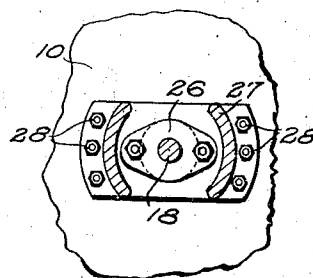
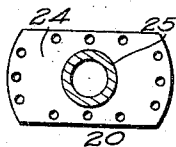


Fig. 5



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## PUMP.

1,200,337.

Specification of Letters Patent.

Patented Oct. 3, 1916.

Application filed July 28, 1915. Serial No. 42,260.

*To all whom it may concern:*

Be it known that I, WILLIAM M. FRASER, a citizen of the United States, and a resident of Perth Amboy, in the county of Middlesex and State of New Jersey, have invented a new and Improved Pump, of which the following is a full, clear, and exact description.

This invention relates to a combination pump and tank adapted to contain and dispense liquids, and is more particularly adapted for containing and dispensing viscous liquids at high temperatures.

The primary object of my invention is to provide improvements in the manner of handling liquids contained in the tank, and to overcome some of the difficulties now experienced, more especially when viscous liquids are to be pumped. For instance, when viscous, asphaltic, bituminous material is to be pumped from a tank in a heated state, the pump being outside and adjacent to the tank, much difficulty is often experienced in getting the flow of liquid started through the pump properly. The liquid while passing through the suction line will cool down unless special provision is made, and often becomes so solidified as to completely close the line. To overcome or prevent this, it has been necessary to apply heat to the suction line, either by direct fire, steam or other means.

Difficulty is also had by way of the pump having air within the same, rendering it difficult for the pump to get good suction and necessitating air venting.

By far the greater trouble when handling viscous liquids is experienced in getting proper suction. Once the liquid gets started through the pump, and the pump is cleared of air, comparatively little trouble is incurred in forcing liquid through the discharge. These difficulties are intensified by the necessity of clearing the line and pump after every delivery of the heated material, so that the heated, viscous material will not chill and harden in the pump and lines.

The cleaning is ordinarily done by blowing air or other gaseous medium under pressure through the suction line and pump. Under certain conditions this blowing out is necessary, and under all conditions it is generally advisable.

With the foregoing and other objects in view, the invention consists in the arrangement and combination of parts hereinafter

described and claimed, and while the invention is not restricted to the exact details of construction disclosed herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings in which like reference characters designate corresponding parts in the several views, and in which—

Figure 1 is a vertical sectional diagrammatic view of a liquid containing tank indicating the relation of my improved pumping apparatus thereto; Fig. 2 is an enlarged view of the pump and showing the tank in section; Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 2; Fig. 4 is a transverse section on the line 4—4 of Fig. 2; Fig. 5 is an outer face view of the coupling member applied against the inner wall of the tank, the spud portion being in section; and Fig. 6 is a view corresponding somewhat to Fig. 2 but showing a slightly modified arrangement.

From what has been stated above, it will be observed that I provide a novel combination of tank 10 designed to contain and dispense heavy viscous liquids, and a pump therefor having the liquid end 11 thereof on the inside of the tank and the power end 12 thereof outside of the tank and otherwise as independent from the liquid end as possible with respect to the movement of the liquid from the tank and the application of power to the pump. Without unnecessarily limiting the device to any particular form of pump cylinder or piston, or to any particular type of motor for operating the same, I show for illustration a liquid intake pipe 13 mounted upon an elbow 14 to swing vertically around a horizontal axis and leading to a cylinder 15 of the liquid end of the pump and within which is arranged a reciprocating pump piston 16. The outlet 17 of the pump may be directed in any suitable manner through the wall of the tank or elsewhere.

The power end of the pump as illustrated comprises a steam cylinder 12 within which is a reciprocating piston, the rod 18 of which may be jointed at 19 for convenience in assembly of the parts, having reference to the fact that one part of the pump is on one side of the wall of the tank and the other part on the other side.

In the preferred embodiment of the invention I arrange the liquid end of the pump at some distance inwardly from the

wall of the tank, as shown in Figs. 1, 2 and 3, and thereby I prevent any chilling effect upon the liquid end of the pump from the atmospheric condition on the outside of the tank. The means I prefer to employ to make the connection of the parts through the tank wall consists of the following members: At 20 I show a spool-like thimble having a flange 21 at its inner end secured rigidly by means of bolts 22 or the like to the end of the pump cylinder 15 and having a central hole through which the piston rod 18 passes. The interior of the thimble is cored out to receive suitable packing material 23, and surrounding the same and spaced outwardly from the flange 21 is a plate or flange 24 adapted to clamp squarely against the tank wall on its inner surface. The thimble also includes a spud 25 which is projected directly through the tank wall and to the outer end of the spud is secured a gland cap 26. The frame 27 of the steam engine is clamped by means of holes 28 or their equivalent through the tank wall and squarely against the flange 24 above described.

I show in Fig. 6 the liquid end of the pump 11 with its cylinder 15 fitted squarely against the inner surface of the tank, while occupying the position above described in connection with the plate or flange 24. The pump frame 27 is therefore fitted more directly to the liquid end of the pump through the wall and by means of the connections 28 just described. This arrangement of pump and tank is also well adapted for handling volatile liquids, such as naphtha or ammonia because it is difficult to pump such liquids

with a pump at a distance from the tank, especially when the suction head is very great. It is also well adapted for handling sulfuric acid of a high degree of purity, since such acid does not attack the metal of the pump at a place where the liquid remaining in the pump cannot absorb moisture and weaken.

I claim:—

1. The combination with a tank for hot viscous liquids, of pumping mechanism therefor comprising the liquid end of the pump having a reciprocating piston within the tank, a reciprocating steam motor on the outside of the tank, a piston rod leading from the steam motor to the pump piston through the tank wall, and liquid-tight connections between the pumping mechanism and the pump wall.

2. The combination with a tank for containing and dispensing hot viscous liquids, of a liquid pump within the tank and spaced inwardly from the wall thereof, a spool-like thimble having one end connected to the pump cylinder and the other end fitted squarely against the tank wall, said thimble including also a spud projecting through the wall, a reciprocating steam engine on the outside of the tank, a piston rod leading from the engine through said spud and thimble to the liquid pump, and means to rigidly secure the steam engine to the outer surface of the tank wall around said spud, substantially as set forth.

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Witnesses:

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