

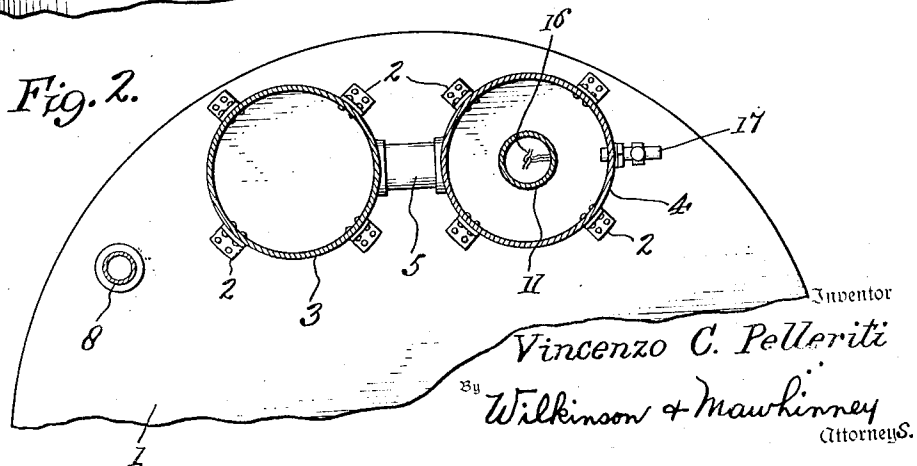
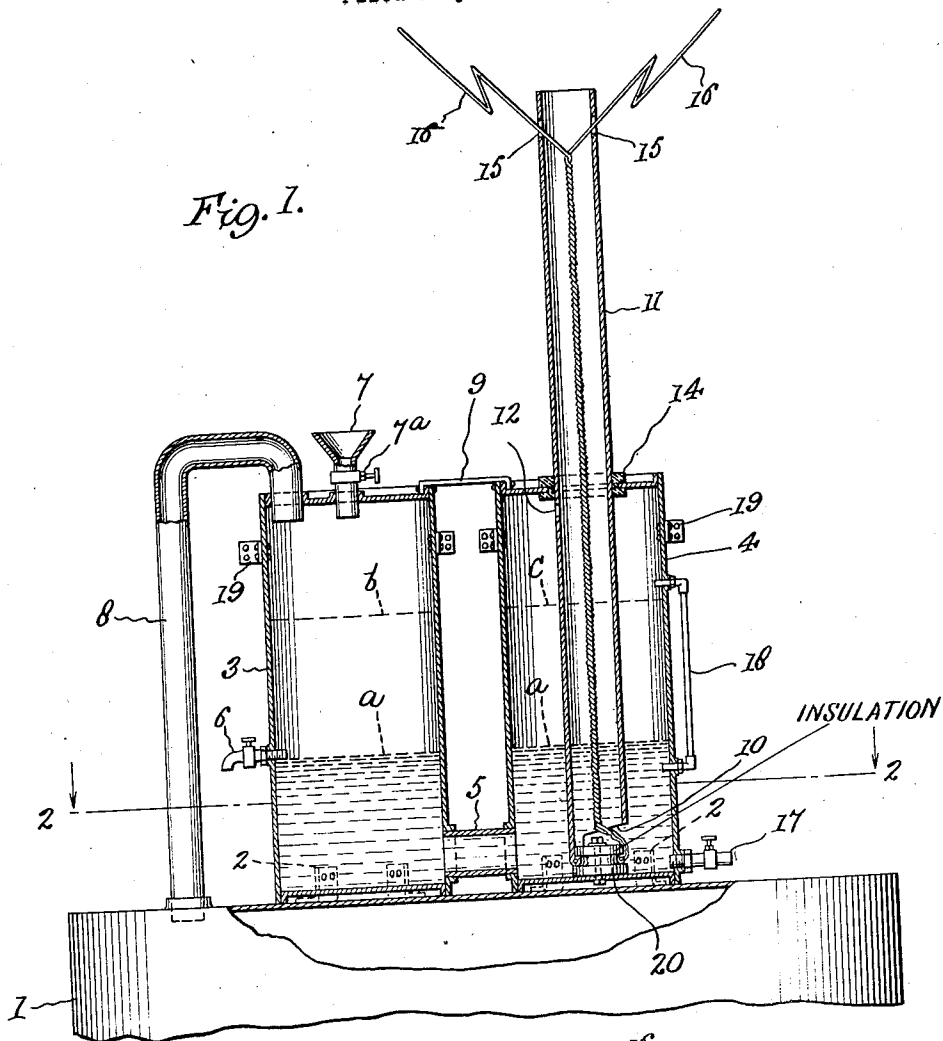
Sept. 18, 1934.

V. C. PELLERITI

1,974,034

FIRE PREVENTION DEVICE FOR STORAGE TANKS

Filed July 15, 1932



UNITED STATES PATENT OFFICE

1,974,034

FIRE PREVENTION DEVICE FOR STORAGE TANKS

Vincenzo Carmelo Pelleriti, Tripi, Italy

Application July 15, 1932, Serial No. 622,702

1 Claim. (Cl. 220—85)

The present invention relates to improvements in fire prevention device for storage tanks, and has for an object to provide an improved device for preventing ignition of the vapors and fumes given off from inflammable liquid contained in storage tanks and the like.

As constructed today, vapor vents at the tops of fuel and other storage tanks gives rise to continuous danger from fire apt to destroy human lives and valuable property. The ignition or firing of these vapors is caused principally by lighting.

It is an object of the invention to eliminate this danger zone above and about the tank, to reduce the fire hazard and to promote safety of inflammable liquids contained in storage tanks.

It is another object of the invention to provide an improved device for conveying the vapors from the tanks to a remote point through a high stack or tube and to cause breathing of the tank, or the intake of air thereto, through the same confined path which provides exit for the inflammable vapors from the tank.

A still further object of the invention is to provide in this path surging bodies of water or like liquid which will form a fire trap and arrest the spreading of fire back into the vapor space of the storage tank.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claim appended hereto.

In the drawing, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a fragmentary side view of a storage tank for inflammable liquids, partially broken away, and shown partially in section with the improved device shown in section above the same, and

Figure 2 is a similar view taken on the line 2—2 in Figure 1.

Referring more particularly to the drawing 1 designates generally a storage tank or other receptacle adapted to contain inflammable liquid of a volatile nature. Usually such tanks are provided with vent pipes for permitting of the passing off of the inflammable vapors into the surrounding atmosphere, but I dispense with such vent pipe and instead convey off the vapors and provide for intake of air through the improved device which comprises two containers 3 and 4. These containers may be of metal or other appropriate material and they are preferably of similar size and capacity although this is not

essential and they are elongated side by side in close proximity being connected together at their lower portions by a connecting pipe 5. The containers 3 and 4 may be situated upon the tank 1 and held thereby by the angle irons 2 or other supports.

One of the tanks 3 is provided with a funnel 7 entering through its upper portion and having a valve 7^a. The funnel admits water into the tank 3. This water flows through the connection 5 into the companion tank 4 so that the water will normally lie in a common horizontal level indicated at *a* in the drawing. The water may be displaced by the incoming air into the receptacle 3 up to the level indicated *b*; or by the outcoming vapors into the container 4 up to the level indicated at *c*.

A tube or pipe 8, which has its lower end in communication with the vapor space of the tank 1, is formed into an elbow at its upper end and projects down through the top of the container 3 whereby to admit the vapors from the tank 1 directly into the upper portion of the container 3. The diameter of the communicating pipe 5 is preferably one-third larger than the diameter of the pipe 8. A spigot 6 in the tank 3 serves as a gauge to arrive at the proper water level. This spigot 6 may be left open while the tanks are being filled through the funnel 7 and when water begins to run out of the spigot 6, the spigot and the valve 7^a are closed as sufficient water has been placed in the tanks. The level will also be shown on the glass gauge 18.

A stack or tube 11 extends up through and beyond the container 4. This stack is open at its upper end and it is also provided with a lateral opening 10 in its lower end adjoining an insulator 20 which insulator receives and supports the stack 11 out of contact with the metallic bottom of the container 4. An insulating ring 14 surrounds the stack 11 where the same passes through the top of the container 4 so that the stack is completely insulated from the container.

The stack 11 is provided with an opening 12 below the top of the container 4 and in communication with the upper portion of the vapor space of said container 4. The stack 11 is further provided with lateral openings 15 near the top thereof. A pair of copper or other wires 16 project out said openings 15 in divergent relation and are twisted together down through the stack 11, being attached to the insulator 20 in well known manner. The lightning will thus be led through the wires to the insulator 20. A drain 17 is provided near the bottom of the container 4 to per-

mit drawing off of the water in both containers. The gauge 18 serves as an indicator showing the container 4 to be two-thirds full when under pressure and one-third under normal conditions. The normal conditions are indicated by the level a. This level fills both tanks to one-third their capacities.

Fastening means 19 may also be provided for the upper portions of the tanks whereby to secure same to a side wall whenever permissible.

In the use of the invention, the inflammable vapors will rise through the tube 8 and enter the upper portion of container 3 above the column of water therein. As the vapors accumulate, the pressure thereof will displace the body of the water in the lower portion of container 3 across into container 4, thus moving up the column of water in container 4 to the level c. Thereupon the vapors, which now wholly occupy the container 3, may bubble up through the large column of water in the second container 4 and thence issue out through opening 12 in the stack 11, which carries the inflammable vapors to a great and safe height above the tank 1, where the same cannot be accidentally ignited by careless use of matches or other fire sources and which will cause conflagrations, if any, to exist at a point remote from the tank 1. Such conflagration will be prevented from spreading downwardly into the tank 1 even when the tank breathes in air to satisfy its partial vacuum because of the presence of the water in the two containers 3 and 4. Such water will quench any fire descending through the stack.

When partial vacuum occurs in the tank 1 the atmospheric pressure acting down the stack 11, through opening 12 and upon the upper surface of the body of water in the second container 4

will displace the water body completely into the first container 3 up to the level b; and thereafter atmospheric air may bubble up through this body of water into the vapor space of the first container 3 and thence down the tube 8 to the tank 1. Thus the body of water in the two communicating containers 3 and 4 will surge back and forth in obedience to conditions of vapor pressure or partial vacuum existing in the vapor space of the storage tank 1. The mobility of this liquid will be very free through the large pipe 5. The tanks may be held together by the strap or other connection 9.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claim.

What is claimed is:—

In fire prevention device for storage tanks, a pair of closed containers communicating at their lower portion, a body of water in said containers and free to surge back and forth in said containers, means for determining the quantity of water in said containers, means placing the upper portion of one container in communication with the vapor space of the tank, a tall stack communicating with the upper portion of the other container and projecting upwardly to a great height above said containers and opening into the outside atmosphere at a point remote from said containers, and means engaging the lower end of the stack and the lower portion of the other container for holding the stack in upright position.

VINCENZO CARMELO PELLERITI.

40

115

45

120

50

125

55

130

60

135

65

140

70

145

75

150