

(No Model.)

D., J. & W. D. KELLY.
OIL TANK.

No. 469,356.

Patented Feb. 23, 1892.

Fig. 1.

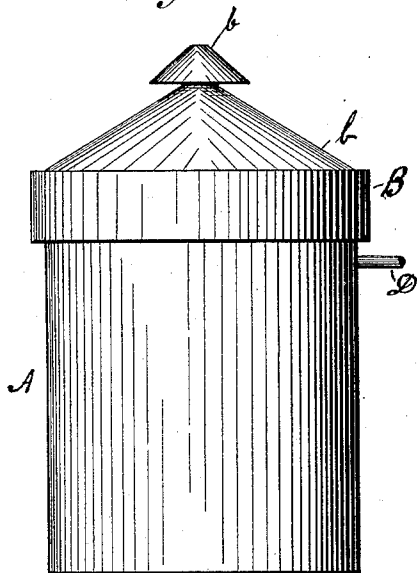


Fig. 2.

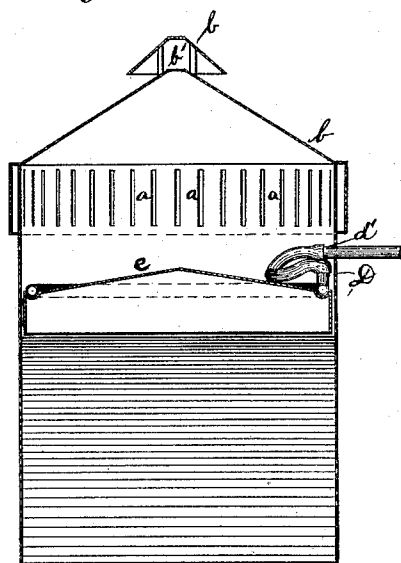


Fig. 3.

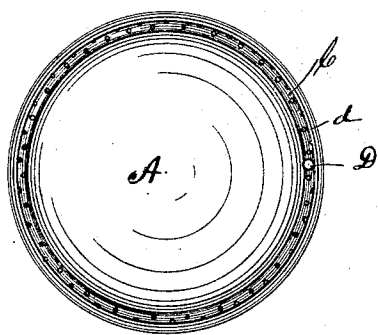
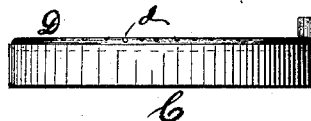


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

DANIEL KELLY, JOHN KELLY, AND WILLIAM D. KELLY, OF MUSKEGON, MICHIGAN, ASSIGNORS OF ONE-FOURTH TO J. W. STRONG, OF SAME PLACE.

OIL-TANK.

SPECIFICATION forming part of Letters Patent No. 469,356, dated February 23, 1892.

Application filed April 24, 1890. Serial No. 349,280. (No model.)

To all whom it may concern:

Be it known that we, DANIEL KELLY, JOHN KELLY, and WILLIAM D. KELLY, citizens of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Oil-Tanks, &c., of which the following is a specification.

Our invention relates to improvements in oil-tanks in general; but more particularly it has reference to tanks for storing large quantities of inflammable or gaseous liquids, crude oils, petroleum, varnishes, &c.; and it has for its object the construction of a tank for this purpose, which shall be free from all liability of explosion and will shield its contents from destruction by fire.

It is well known that gaseous or inflammable liquids—such as petroleum, crude oils, varnishes, &c.—when stored in closed vessels, are liable to explosion by reason of the formation of highly-inflammable gases in the tank above the liquid and that such explosion results in the total destruction of the tank and its contents, often causing great loss of life and the destruction of adjoining property. Such explosions are frequently due to the tank being struck by lightning, which ignites the accumulated gases, causing the explosion of the tank and also communicating fire to the oil. Hence it will be understood that if the gases are not allowed to accumulate there can be no explosion, and if the surface of the oil is shielded from the emanating gases firing of the oil will be avoided even though an explosion of the gases should occur.

With these ends in view our invention consists in certain features of novelty, hereinafter fully described in connection with the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of our improved oil-tank. Fig. 2 is a vertical sectional view thereof; and Figs. 3 and 4 are respectively a plan and a side elevation of our improved float, hereinafter more fully described.

A is the receptacle for containing the crude oil, petroleum, &c., which may be of any suitable form, size, and material, preferably of cylindrical form, as shown. At or near the

top of this receptacle are formed a number of vent holes or ports *a a*, through which the vapor or gas emanating from the contents of the tank and ordinarily collecting at the top thereof will escape into the atmosphere and thus prevent the presence of a large volume of gas in the tank at any one time. Upon the receptacle A is fitted a loose detached cover B, whose top part is preferably conical, as shown, and provided at its apex with a vent *b'*, over which is supported a suitable canopy or hood *b*, so that the ascending gas may escape freely, while rain, &c., is prevented from entering the tank. The lower part of the cover B is cylindrical, as shown, so as to form downwardly-projecting eaves or skirt, which is of slightly larger diameter than the receptacle A, and which completely covers the vents *a* in the upper edge thereof, thus preventing foreign objects from entering the tank and at the same time permitting the free egress of the gases.

Fitted within the receptacle A, so as to completely fill its cross-section and cover the entire surface of its contents is a float C. This float is preferably hollow and air-tight and composed of metal and fits the receptacle snugly, but is sufficiently loose to permit it to rise and fall with the fluctuation of the level of the contents of the tank. Arranged around the center edge of the float C is a pipe D, provided at suitable intervals with vents or perforations *d d*, arranged to discharge the contents of the pipe immediately at the juncture of the float and side of the receptacle. The pipe D is provided with an elbow, as shown, which is connected by means of a hose *d'* or other adjustable or flexible connection with a steam-pipe, chemical engine, water-supply or other suitable source of fire-extinguishing fluid, (not shown,) the object of the flexible connection being to permit the float to rise and fall without interference from the pipe. As shown in Fig. 2 of the drawings, the top side of the float is so formed that its outer edge is on a level with the side wall of the float in order that the fire-extinguishing fluid will readily run to the side of the float and descend between it and the side of the receptacle should there be any space at that point. To accomplish this, the top of the float

may be slightly convexed; but in order to make it very effective we prefer to make the top conical, as shown. With this form of float the fire-extinguishing fluid is directed and retained at the only possible point of combustion—viz., the juncture of the float and receptacle—and it is readily seen that much less extinguishing-fluid is required to accomplish the desired result than would be necessary were the float concave or even flat on top.

The oil, &c., having been stored in the receptacle A, the float will of course ride on its surface and rise and fall with it and practically cut off completely all communication between the upper part of the tank where the gas is liable to collect and the oil under the float. The gas or vapor will rise in the space between the float and cover and ordinarily will escape into the external atmosphere *via* the vents in the side of the receptacle and top of the cover. If, however, an explosion of the gas should occur, which under the circumstances could only be slight, the loose detached cover would simply be raised or blown off without doing any damage whatever to the tank. The flame of the explosion will of course be cut off by the float and the contents of the tank thus saved from destruction. However, if ignition of the oil should take place it could only occur at the edge of the float; but any damage from this source may be prevented and the fire readily checked by turning on a supply of fire-extinguishing fluids through the pipe D, thereby cutting off completely all communication between the oil and fire.

Our invention is particularly adapted to the placing of fuel-oil in factories without endangering the factory, which is the case with the tanks at present employed.

While we have shown the tank of circular form, it may be made in any desired shape or style, and in case the walls are irregular the float will be made to suit said formation, and it may be provided with guides and pulleys to insure its perfect freedom in adjusting itself to levels. In the event large tanks are used, in which the covers are very large and difficult to replace, we make the cover so as to fit rigidly to the tank and provide the cover with suitable openings or lights having loose covers, so that when a slight explosion occurs the loose covers over the openings will be thrown off, similar to the whole loose cover, as before described, and the same result accomplished.

Having thus described our invention, what we consider as new therein, and desire to secure by Letters Patent, is—

1. In an oil-tank, the combination of the receptacle A, having a float fitting therein, and a loose detached cover provided with a hooded vent, substantially as described.

2. In an oil-tank, the combination of the receptacle A, having the vent-holes *a* near its top, and a loose cover fitting on said receptacle and having downwardly-extending eaves or skirt covering said vent-holes, substantially as set forth.

3. In an oil-tank, the combination of the receptacle A, having the vent-holes *a* at top, and the loose cover having a conical top provided with a hooded vent-hole and downwardly-extending eaves or skirt covering said vents *a* and being of larger diameter than the receptacle, substantially as set forth.

4. In an oil-tank, the combination of the receptacle A, an air-tight float fitting within the said receptacle and completely covering the entire surface of the oil therein, the extinguisher-pipe extending around the outer edge of said float and having vents arranged to discharge fire-extinguishing fluids at the juncture of the float and receptacle, and a loose cover on said receptacle, substantially as set forth.

5. In an oil-tank, the combination of the receptacle, a cover fitted loosely thereon, a float fitting within said receptacle and having a conical top, and the pipe D, arranged around the outer edge of said conical top and having vents arranged to discharge fire-extinguishing fluid at the juncture of the float and receptacle, substantially as set forth.

6. In an oil-tank, the combination of the receptacle A, having the vents *a* near its top, a cover fitting loosely on said receptacle and having downwardly-projecting eaves or skirt covering said vents *a* and being of larger diameter than the receptacle, a float fitting within said receptacle and having a conical top, a pipe extending around the outer edge of said conical top and having vents adapted to discharge fire-extinguishing fluids at the juncture of the float and receptacle, and a flexible hose connected to said pipe and extending through the side of the tank, substantially as set forth.

7. In an oil-tank, the combination, with the receptacle, of a float fitting within said receptacle and a pipe for fire-extinguishing fluids arranged over said float, said float having a top or cover even with its sides, upon which extinguishing-fluids are discharged and over which the same run to the juncture of the float and the receptacle, substantially as set forth.

In witness whereof we have hereunto set our signatures in presence of two witnesses.

DANIEL KELLY.
JOHN KELLY.
WM. D. KELLY.

Witnesses:

N. F. EMMONS,
C. B. W. CUNNINGHAM.