

H. L. DODGE.  
SAFETY DEVICE FOR TANKS.  
APPLICATION FILED MAR. 21, 1914.

Patented Oct. 12, 1915.  
2 SHEETS—SHEET 1.

1,156,469.

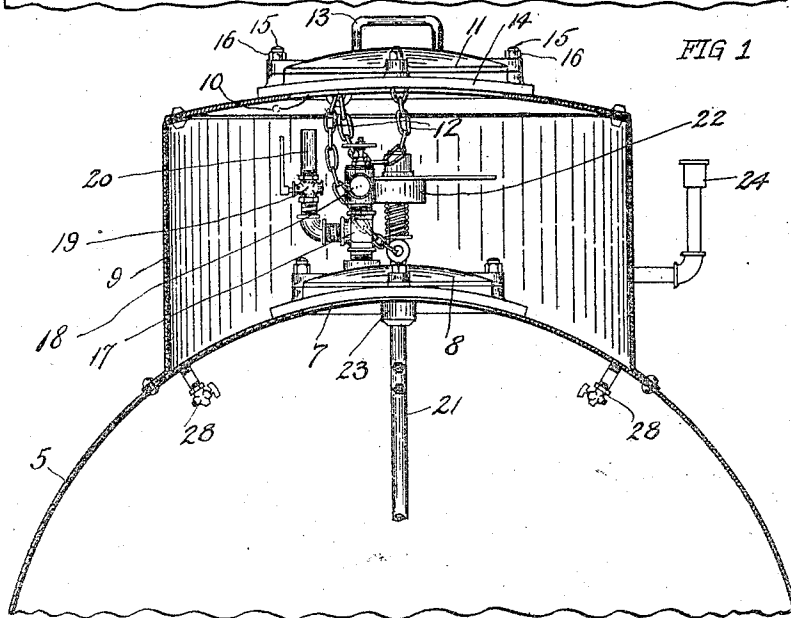
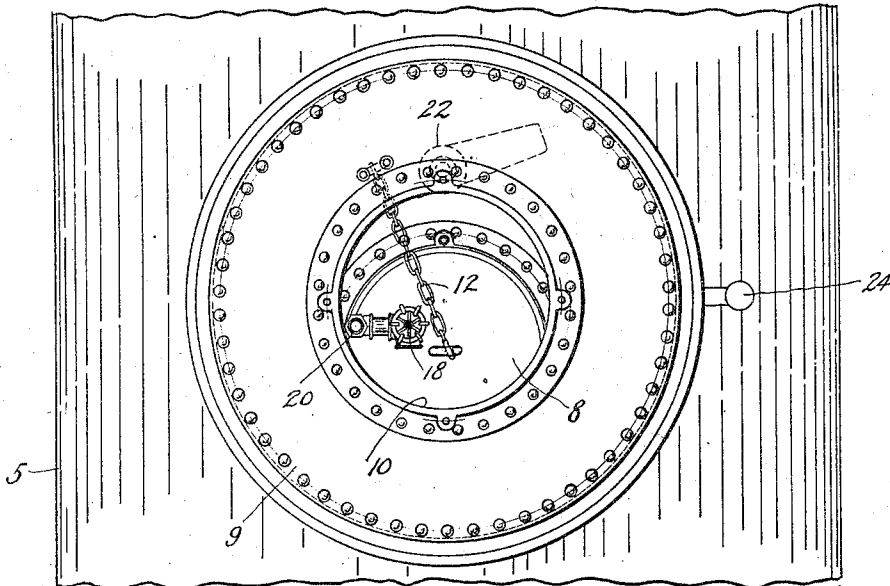


FIG 2.

WITNESSES

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INVENTOR

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ATTORNEY

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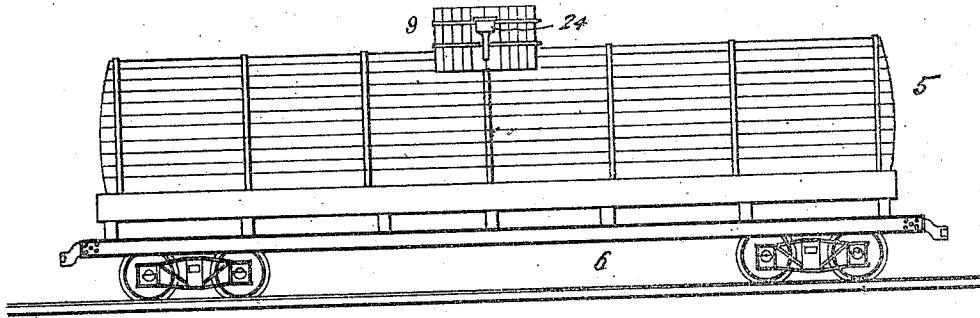


FIG. 3.

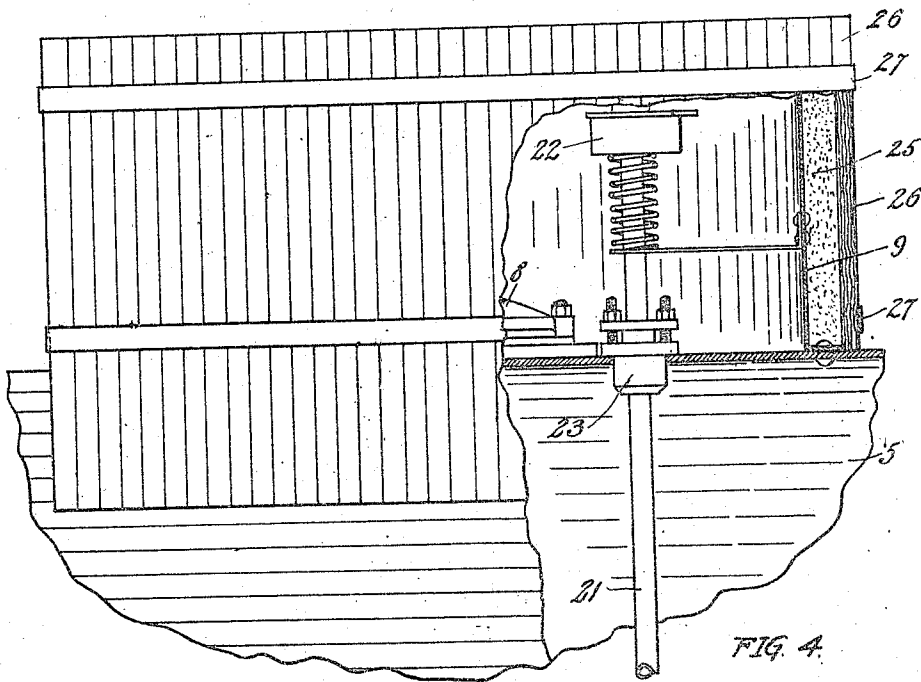


FIG. 4.

WITNESSES  
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# UNITED STATES PATENT OFFICE.

HENRY L. DODGE, OF STOCKTON, CALIFORNIA.

## SAFETY DEVICE FOR TANKS.

1,156,469.

Specification of Letters Patent.

Patented Oct. 12, 1915.

Application filed March 21, 1914. Serial No. 826,266.

*To all whom it may concern:*

Be it known that I, HENRY L. DODGE, a citizen of the United States, residing at Stockton, in the county of San Joaquin and State of California, have invented certain new and useful Improvements in Safety Devices for Tanks, of which the following is a specification.

This invention relates to safety devices for tanks employed for transporting liquids which expand when the temperature thereof increases.

It is the object of the invention to provide a tank having a dome into which the liquid, when it expands beyond the capacity of the tank, passes, thus preventing bursting or injury of the tank.

The invention also has for its object to provide novel and improved means for venting the tank to insure a free discharge of the liquid contents thereof.

In the accompanying drawing forming a part of this specification, Figure 1 is a plan view of a fragment of the tank showing the cover of the dome removed; Fig. 2 is a cross-section of the dome and a part of the tank, showing in elevation the relief valve and other mechanism, to be presently described, located inside the dome; Fig. 3 is a side elevation of the complete tank and the car on which it is mounted, and Fig. 4 is an elevation of the dome, partly broken away.

Referring specifically to the drawings, 5 denotes a tank employed for transporting oil and other liquids, said tank being mounted on a car 6 as shown in Fig. 3. In the top of the tank is an opening 7 provided with an air-tight cover 8. Mounted on top of the tank, over the aforesaid opening and its cover, is a dome 9 in the top of which is an opening or man-hole 10 provided with an air-tight cover 11. The opening 10 is large enough to allow the cover 8 to pass there-through. To prevent loss of the covers 45 when they are removed from their positions, they are attached to chains 12 secured to the top of the dome on the inside thereof. The outside of the cover 11 has a handle 13 to facilitate its application to and removal 50 from the opening 10.

The cover 11 seats on an annular flange 14 encircling the opening 10 and it is fastened by studs 15 and clamped down tight against the flange by nuts 16 screwed on the studs. 55 A gasket may be interposed between the cover and the flange to make an air-tight

joint. The cover 8 is fastened down in the same manner as the dome cover.

Into the cover 8, from the top thereof, is screwed a T 17 to the top branch of which is connected a relief valve 18 the outlet of which opens into the dome 9. The relief valve communicates with the interior of the tank through the T. To the side branch of the T is connected a valve 19 to the inlet end 65 of which latter is connected an upright pipe 20 which terminates close to the top of the dome.

At 21 is indicated the usual tank-valve rod which extends down through the tank 5 to the outlet valve in the bottom thereof. The valve rod passes through the top of the tank into the dome and has inside the latter the usual actuating means 22. In the top of the tank is a stuffing box 23 with the usual 75 packing and gland through which the valve rod passes as shown in Fig. 4. The dome 9 is also equipped with the usual relief valve 24. The tank 5 and the dome 9 are surrounded by an insulation 25 located between 80 the outside thereof and wooden staves 26 held in place by hoops 27 as shown in Figs. 3 and 4. This insulation is not shown in Figs. 1 and 2.

In operation, the relief valve 18 is set to 85 open to a predetermined pressure and the tank is filled as usual and the covers 8 and 11 are fastened down in place. Now, if, from an increase in temperature, the pressure and volume of the liquid in the tank 90 increases to a point where it opens the relief valve, the liquid and the excess pressure will pass from the tank into the dome, the dome being large enough to take care of the volume of liquid which might be forced out of 95 the tank. This liquid is retained in the dome and prevented from flowing back into the tank, and it will probably be found in good condition when the car arrives at its destination. After the tank has been emp- 100 tied, the liquid in the dome can be drawn off through valved outlets or cocks 28 opening into the tank. When liquid is drawn from the tank some provision must be made for preventing a vacuum in the tank. This is 105 done by removing the cover 11 and opening the valve 19, whereupon air is allowed to pass into the tank. The tank may thus be vented without removing the cover 8. The air valve and its connections are so located 110 in the dome that the liquid in the latter does not interfere with the venting action.

Having described my invention, in such manner, that all versed in the art to which it pertains, may be able to build and construct it by reference to these specifications and drawings, pertaining thereto, what I desire to secure by United States Letters Patent is as follows:—

1. The combination of a tank having an opening, a cover for said opening, a dome mounted on the tank over the opening and its cover, the top of the dome having an opening, a cover for the dome opening, a relief valve establishing communication between the tank and the dome, and a valved outlet from the dome into the tank.

2. The combination with a tank having a top opening, a removable cover for said opening, a dome mounted on the tank over the opening and its cover, the top of the dome having an opening, a removable cover for the dome opening, a relief valve in the dome, said valve having a connection with the tank cover opening into the interior of the tank, and an air vent valve coupled to said connection.

3. The combination with a tank having a

top opening, a removable cover for said opening, a dome mounted on the tank over the opening and its cover, the top of the dome having an opening, a removable cover for the dome opening, a relief valve in the dome, said valve having a connection with the tank cover opening into the interior of the tank, an air vent valve coupled to said connection, and a valved outlet from the dome into the tank.

4. The combination with a tank having a top opening, a removable cover for said opening, a dome mounted on the tank over the opening and its cover, the top of the dome having an opening, a removable cover for the dome opening, a relief valve in the dome, said valve having a connection with the tank cover opening into the interior of the tank, and a valved outlet from the dome into the tank.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY L. DODGE.

Witnesses:

OLIVE LAMASNEY,  
CHARLES H. YOUNG.