Dec. 8, 1925. 1,564,855

L. D. JURS

APPARATUS FOR GROUNDING CONTAINERS IN THE DISTRIBUTION OF PETROLEUM PRODUCTS

Filed Jan. 15, 1923

Fig. 3.

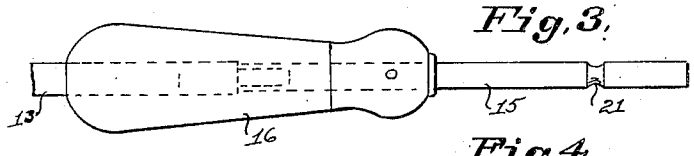


Fig. 4.

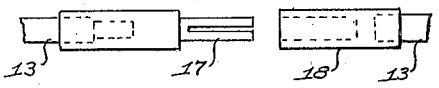
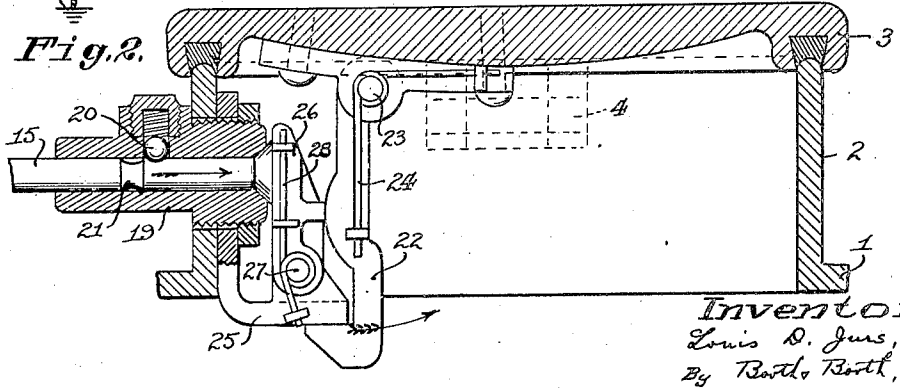


Fig. 1

Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR GROUNDING CONTAINERS IN THE DISTRIBUTION OF PETROLEUM PRODUCTS.

Application filed January 15, 1923. Serial No. 612,830.

To all whom it may concern:

Be it known that I, LOUIS D. JURS, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Apparatus for Grounding Containers in the Distribution of Petroleum Products, of which the following is a specification.

My invention relates to means for establishing electrical connection between a fluid distribution system and a container to be filled therefrom, and from both to the earth, during the distribution of inflammable liquids.

The object of my invention is to reduce the fire hazard in the distribution of inflammable liquids, such for example as the lighter petroleum derivatives, gasoline and engine distillate. In the conveyance and handling of such liquids, there is considerable danger from fire caused by electric sparks or discharges between slightly separated members of the distribution system which may have acquired static charges of different potential. Such charges may be formed by the friction of the flowing liquid, or by other causes, and, unless led away by suitable conductors, may increase to such values as to cause a spark at some dangerous point in the system, as for example between the end of a filling pipe and the tank which is being filled. If, however, a continuous metallic path is provided, including the tank or container being filled, the filling or conveying pipe system, and such path connected to earth, all electrical charges will be dissipated as formed, and no dangerous differences in potential can exist.

My invention will be hereinafter described as applied to an apparatus for protection against static discharges during the filling of a tank truck or tank car from a filling station or distributing system, but it is obvious that it may be applied without material change to any similar fluid transmitting system. Moreover, changes within the scope of the claims hereto appended, may be made in the form and construction of the apparatus as herein described, without departing from the spirit of the invention.

With this in view my invention will now be fully described with reference to the accompanying drawings, wherein:—

Fig. 1 is an elevation of a preferred arrangement of the apparatus embodying my invention.

Fig. 2 is a section, enlarged, of the tank filler cap and its latch mechanism.

Fig. 3 is an elevation of the latch operating and grounding plug.

Fig. 4 is an elevation of the separable connection in the grounding wires.

In the drawings, the reference numeral 1 designates a tank vehicle, having a filling opening 2 which is normally closed by a cap 3, mounted upon a hinge shown at 4 in Fig. 2. The distributing system for filling the tank vehicle 1 may have any number of outlets or filling pipes, but for the sake of simplicity only one such filling pipe is shown at 5 in Fig. 1 of the drawings. Said pipe 5 is adjustably supported in any convenient manner, as for example by a suspension member indicated at 5′, and is connected by the usual swivel joint 6 with the supply pipe 7. The customary removable filling spout or funnel is shown in dotted lines at 8.

An electric conducting wire or cable 9 is connected to earth by any suitable connection shown conventionally at 10, and is electrically connected at its other end 11 with the filling pipe 5, preferably near the discharge end of the latter. The cable 9 is preferably supported in part from the filling pipe 5 by clamps 12. A second cable 13 is connected with the cable 9 at 14, and has at its free end a metal connecting plug 15, Figs. 1 and 3, provided with a handle 16. A separable connector comprising cooperating male and female members 17 and 18 respectively, as shown in Fig. 4, is preferably inserted in the cable 13, Fig. 1, to permit the removal of the latter.

The plug 15 is adapted to be inserted into a metal socket member 19, Fig. 2, fixed in and electrically connected with the rim of the tank filler opening 2. A spring pressed latch 20, co-operating with a groove 21 formed in said plug, serves to retain the latter in position within the socket member 19. Thus when the plug 15 is inserted in the socket member 19, the tank 1 and the filling pipe 5 are electrically connected together and to earth, by the cables 9 and 13.

The cap 3 of the tank filling opening is held closed by a latch 22, Fig. 2, pivoted to said cap at 23, and normally held in the

position shown by a spring 24. In this position said latch engages a fixed keeper 25 secured to the rim of the filling opening 2. A trigger 26 is pivotally mounted at 27 on said keeper, and is normally held in the position shown by a spring 28. When the plug 15 is inserted into the socket member 19, its end engages the trigger 26 and presses the latter inwardly, and said trigger, in turn, engages the latch 22 and moves it inwardly, freeing it from the keeper 25 and allowing the cap 3 to be lifted.

It will be seen that under normal conditions, assuming the connector 17—18 to be intact the cap 3 cannot be opened, to permit the filling of the tank 1, until said tank has been grounded, and connected electrically with the filling pipe 5, by means of the plug 15 and the cables 13 and 9. There is, therefore, no possibility of a difference of potential between said tank and the filling conduit system, which might result in a spark. As an additional precaution, the tank vehicle 1, when mounted on rubber tires, is preferably equipped with the usual drag chain 29, Fig. 1, one end of which is electrically connected with the frame of the vehicle and the other end allowed to drag upon the ground.

I claim:—

1. An apparatus for the described purpose comprising a container having a controllable filling aperture; an electrical conducting member for making electrical connection with said container; and means controlled by said conducting member for preventing the opening of said filling aperture before the said electrical connection is established.

2. An apparatus for the described purpose comprising a container having a filling aperture; a removable cover adapted to close said aperture; an electrical conducting member for making electrical connection with said container; and means controlled by said conducting member to prevent the removal of said cover before the said electrical connection is established.

3. An apparatus for the described purpose comprising a container having a con-

trolla[illegible] ducting membe[illegible] tainer to earth; and mea[illegible] said conducting member for preventing [illegible] opening of said filling aperture before the said electrical connection is established.

4. An apparatus for the described purpose comprising a container having a filling aperture; a cover adapted to close said aperture; a latch member for locking said cover; a removable electrical conducting member for connecting said container to earth; and devices controlled by said conducting member for operating said latch member.

5. An apparatus for the described purpose comprising a container having a filling aperture; a cover adapted to close said aperture; means for locking said cover; a socket member associated with said container; a removable electrical contact member adapted to cooperate with said socket member; means for electrically connecting said contact member to earth; and devices associated with said socket member and adapted to be operated by said contact member for releasing said cover locking means.

6. An apparatus for the described purpose comprising a container having a filling aperture; a fluid conduit system for filling said container; a cover adapted to close said aperture; means for locking said cover; a socket member associated with said container; a removable electrical contact member adapted to co-operate with said socket member; means for electrically connecting said contact member with said conduit system; and devices associated with said socket member and adapted to be operated by said contact member for releasing said cover locking means.

7. The combination with a vehicle tank having a filling opening, a closure for said opening, and a lock preventing removal of the closure, of a grounding device the application of which to the tank frees the closure of said filling opening from the lock.

In testimony whereof I have signed my name to this specification.

LOUIS D. JURS.