Sept. 1, 1936. M. H. SINKS 2,053,114

ELECTRICAL CONNECTER

Filed March 24, 1933 2 Sheets-Sheet 1

Fig. 1

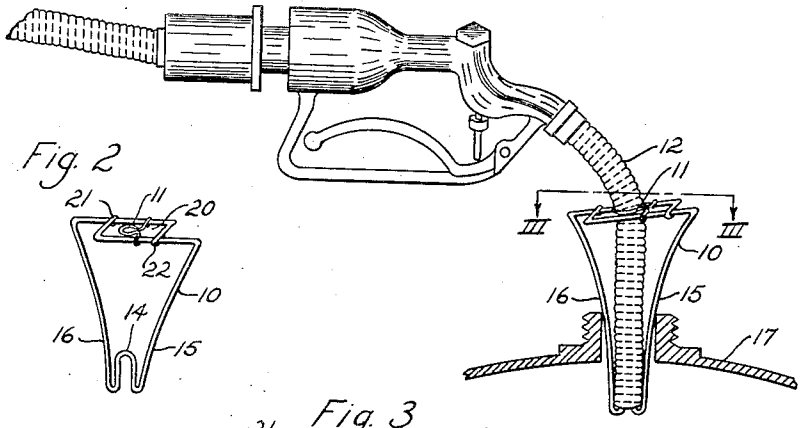


Fig. 2

Fig. 3

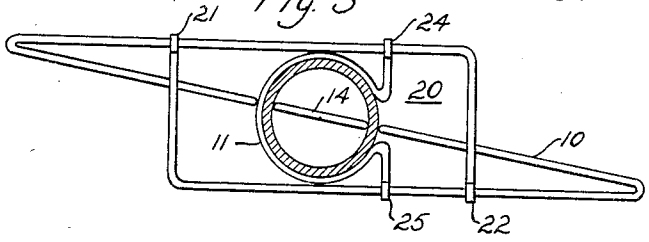


Fig. 4

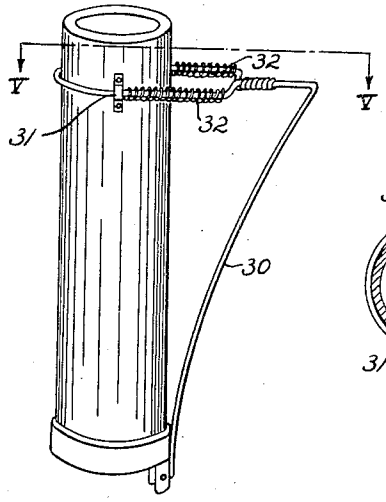
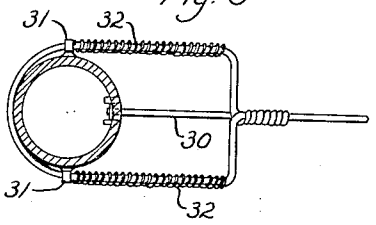


Fig. 5



WITNESS

Geo. H. Weeks

INVENTOR.
MORTON H. SINKS

BY George V. Woodling
ATTORNEY.

Sept. 1, 1936. M. H. SINKS 2,053,114

ELECTRICAL CONNECTER

Filed March 24, 1933 2 Sheets-Sheet 2

Fig. 6

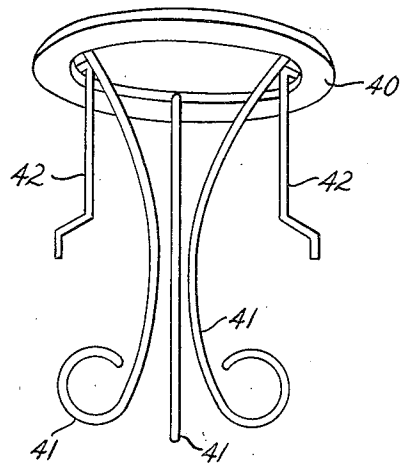


Fig. 7

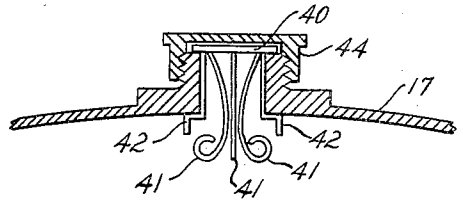
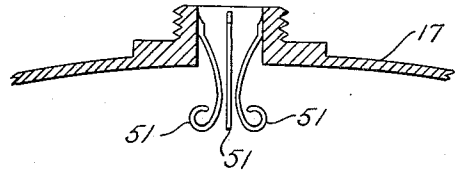


Fig. 8



WITNESS

Geo. H. Weaks

INVENTOR.

MORTON H. SINKS

BY George V. Woodling

ATTORNEY.

Patented Sept. 1, 1936

2,053,114

UNITED STATES PATENT OFFICE

2,053,114

ELECTRICAL CONNECTER

Morton H. Sinks, Cleveland Heights, Ohio

Application March 24, 1933, Serial No. 662,431

17 Claims. (Cl. 175—264)

My invention relates generally to the prevention of fire hazards caused by the discharge of static electricity, and more particularly to the prevention of the ignition of gasoline or other distillates as it is being transferred into a tank which is insulated from the ground.

When gasoline or other distillates are being poured into a tank that is insulated from the ground, the flow of the fluid from the nozzle and the formation of the vapor inside the tank produce static electricity, which charges the vapor and the metallic work of the tank. Therefore, in order to avoid the accumulation of static electricity, the nozzle on the filling hose should be kept constantly in contact with the tank so that the static electricity is continuously conducted to the ground as fast as it is generated. The hose used at service stations is metal lined or metal inserted and if properly installed constitutes a metallic connection from the pump to the filling nozzle and when the nozzle is in contact with the tank a complete electrical circuit is established from the tank to the ground which prevents the accumulation of static electricity. If it should happen that the proper mixture of gasoline vapors is present, ignition is almost certain to take place, unless a positive and continuous contact is maintained between the tank and the nozzle as the tank is being filled.

At the present time, gasoline station attendants are cautioned to observe carefully that this contact is made before they return to the pump and start the gasoline through the hose. The lack of diligence in observing this rule has caused many fatal accidents.

Therefore, an object of my invention is to provide for grounding a body that is insulated from the ground and thus prevent the accumulation of static electricity in or on the body.

Another object of my invention is to provide, while transferring gasoline into a tank, for grounding the tank to prevent the accumulation of static electricity.

A further object of my invention is to insure, while transferring gasoline into a tank, a good electrical contact between the nozzle and the tank.

A still further object of my invention is the provision of an electrical connecter which may be mounted upon a nozzle, and which, when the nozzle is inserted into the opening of a tank, makes a good electrical contact between the nozzle and the tank.

Another object of my invention is the provision of an electrical connecter which may be positioned within the opening of a tank and which, when a nozzle is inserted into the opening of the tank, makes a good electrical contact between the nozzle and the tank.

Other objects and a better understanding of my invention may be had by referring to the following description, taken in combination with the accompanying drawings, in which:

Figure 1 is an elevational view of my electrical connecter and is shown in combination with a nozzle and a fragmentary cross-sectional view of a tank;

Figure 2 illustrates an elevational view of my electrical connecter before it is mounted upon the nozzle;

Figure 3 is a plan view of my electrical connecter, in combination with a nozzle, taken along the line III—III of Figure 1;

Figure 4 is a modified form of my electrical connecter and is shown in combination with a fragmentary view of a nozzle;

Figure 5 is a plan view of the modified form of my electrical connecter, in combination with a nozzle, taken along the line V—V of Figure 4;

Figure 6 is a perspective view of another modified form of my electrical connecter that is disposed to fit into the opening of a tank;

Figure 7 is an elevational view of the modified form of my electrical connecter, illustrated in Figure 6, and is shown in combination with a fragmentary cross-sectional view of a tank, and

Figure 8 is modified form of the invention shown in Figures 6 and 7.

With reference to the drawings, particularly Figures 1, 2 and 3, my electrical connecter comprises the combination of a resilient wire 10 and a clamp 11 that resiliently grips the nozzle 12. As shown best in Figure 2, the resilient wire 10 is bent, at its lower end, to form an inverted U-shaped portion 14 which fits snugly into the lower end of the nozzle. From the inverted U-shaped portion 14, the wire 10 is bent upwardly and divergingly to form two sides 15 and 16, which, when the nozzle is inserted into the tank 17, electrically engage the inner periphery of the opening of the tank. From the sides 15 and 16, the wire 10 is bent inwardly and thence slidably interlocked together at its ends by means of loops 21 and 22, thus presenting an opening 20 to receive the nozzle 12. By means of this interlocked and slidable connection, the sides 15 and 16 are permitted to flex laterally and thus accommodate tanks having different size openings, and, at the same time, allow the nozzle 12 to be inserted a considerable distance into the tank 17.

As a means to securely fasten my electrical connecter on the nozzle 12, the interlocked and slidable upper end portions of the wire 10 are slidably engaged by loops 24 and 25 formed on the ends of the resilient clamp 11. This mounting is particularly adaptable to a flexible nozzle, such as the one shown in Figure 1, for the reason that the resilient clamp 11 is disposed to fit snugly around the circumferential grooves of the flexible nozzle. In addition, by reason of the fact that the clamp 11 is resilient, it is capable of fitting nozzles of different sizes. However, when mounting my electrical connecter upon a smooth nozzle, it is only necessary to file, or otherwise form, a groove or notch around the nozzle into which the resilient clamp 11 may be snapped.

I find that the foregoing described electrical connecter, while it is flexible and resilient to accommodate different-sized openings in tanks, is sufficiently stable to withstand any unnecessary rough usage incident to carelessly handling the nozzle by jamming it into the opening of the tank or by allowing it to fall upon the ground.

In Figures 4 and 5, I illustrate a modified form of my invention in that the electrical connecter may be manufactured and sold as a permanent part of the nozzle, whereas, in the first described form, the connecter may be manufactured and sold separately from, and then subsequently applied to, the nozzle. As illustrated, this modified form of my invention comprises a resilient wire 30 pivotally connected, at its lower end, to the bottom of the nozzle, and slidably looped, at its upper end, around the barrel of the nozzle. For the purpose of stabilizing the resilient wire 30, that part of the wire which loops around the barrel of the nozzle is supported by two side brackets 31 suitably formed on the side of the nozzle. These brackets also constitute stops for the two springs 32, which resiliently bias the wire 30 away from the barrel of the nozzle. In this manner, when the nozzle is inserted into the opening of a tank, the resilient wire 30 engages the inner periphery of the opening of the tank and thus positively insures a good electrical contact between the nozzle and the tank.

With reference to Figures 6, 7, and 8, I represent a still further modified form of my invention. In this form, the invention comprises an annulus 40 that is disposed to set upon the upper peripheral edge of the opening of the tank 17, three depending resilient wires 41 which engage the nozzle as it is inserted into the opening of the tank, and two resilient clips 42 which secure the electrical connecter within the opening of the tank. As shown, the lower part of the resilient clips 42 is bent outwardly to provide a catch for hooking the inner surface of the tank 17. Thus, when mounting this form of the invention into the opening of a tank, it is only necessary to squeeze the two resilient clips 42 inwardly to clear the opening of the tank, and then press downwardly upon the annulus 40. When the lower ends of the clips 42 catch the inner surface of the tank the electrical connecter is locked into its place. The annulus 40, while it is sufficiently strong to support the depending wires 41, is relatively thin so that it does not interfere with the fastening of the cap 44 upon the opening of the tank. While I have shown three depending resilient wires 41 and two resilient clips 42, it is to be understood that any suitable number of these parts may be employed.

The same principle of the invention is employed in Figure 8, except that the depending resilient wires 51 are permanently fastened to the inner wall of the opening of the tank. Any suitable means such as welding may be employed to connect the depending wires 51 to the inner wall of the tank. This form of the invention may be manufactured and sold as a fixed part of the tank, whereas the form shown in Figures 6 and 7 may be manufactured and sold separately from the tank, and subsequently applied thereto.

In all the forms of my invention, since a good electrical contact is established between the nozzle and the tank, no static electricity can possibly accumulate in or on the metal work of the tank for the reason that the tank is continuously grounded to the earth as the tank is being filled. The path of the grounded path may be traced from the metal tank, through my electrical connecter, the nozzle, the metal lined hose, the pump and thence to the earth.

Since certain changes in my invention may be made without departing from the spirit and scope thereof, it is intended that all matters contained in the foregoing description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim as my invention:

1. The combination with a tank having an opening and a nozzle adapted to be inserted into and withdrawn from said opening, of a smooth and resilient element for directly contacting the tank and the nozzle to establish a good electrical contact between the tank and the nozzle, said element being disposed, beginning at a place where it is engaged by the inserted portion of the nozzle, to extend towards the edge of the opening and with a gradual and positive slope until it contacts the edge of the opening, and being further adapted to flex automatically and to allow the nozzle to be inserted or withdrawn from the opening in a free manner and at the same time maintaining a resilient and uninterrupted electrical contact until the electrical contact is finally broken by the withdrawal of the nozzle.

2. An electrical connecter for establishing a good electrical contact between a nozzle and a tank having an opening adapted to receive said nozzle comprising a smooth resilient element connected to the portion of the nozzle inserted into the said opening, said element being disposed, beginning at the place where it is connected to the inserted portion of the nozzle, to extend towards the edge of the opening and with a gradual and positive slope until it contacts the edge of the opening, and being further adapted to flex automatically and to allow the nozzle to be inserted and withdrawn from the opening in a free manner and at the same time maintaining a resilient and uninterrupted electrical contact until the electrical contact is finally broken by the withdrawal of the nozzle.

3. An electrical connecter for establishing a good electrical contact between a nozzle and a tank comprising a resilient element having one portion thereof adapted to fit into the end of the nozzle and having another portion thereof adapted to extend divergingly therefrom.

4. An electrical connecter for establishing a good electrical contact between a nozzle and a tank comprising a resilient element having one portion thereof adapted to fit into the end of the nozzle and having another portion thereof adapted to extend divergingly therefrom, and

having a third portion thereof adapted to engage the barrel of the nozzle.

5. An electrical connecter for establishing a good electrical contact between a nozzle and a tank comprising a resilient element having an inverted U-shaped portion adapted to fit into the end of the nozzle and having another portion thereof adapted to extend divergingly therefrom.

6. An electrical connecter for establishing a good electrical contact between a nozzle and a tank comprising, in combination, a smooth and resilient element connected to one portion of the said nozzle, and extending divergingly from, the nozzle for directly contacting the tank and the nozzle to establish a good electrical contact between the tank and the nozzle, and means for connecting the diverged portion of the element to another portion of the nozzle.

7. An electrical connecter for establishing a good electrical contact between a nozzle and a tank comprising, in combination a resilient clamp adapted to engage the nozzle, and a resilient element having one portion adapted to be connected to the end of the nozzle and having a second portion adapted to engage the resilient clamp.

8. An electrical connecter for establishing a good electrical contact between a nozzle and a tank comprising an annulus supported by the tank, and an element connected to the annulus and positioned to engage the nozzle when it is inserted into the tank.

9. An electrical connecter for establishing a good electrical contact between a nozzle and a tank having an opening comprising, in combination, an annulus supported upon the periphery of the opening of the tank, and a resilient element connected to the annulus and positioned to engage the nozzle when it is inserted into the tank.

10. An electrical connecter for establishing a good electrical contact between a nozzle and a tank having an opening comprising, in combination, an annulus supported upon the periphery of the opening of the tank, a resilient element connected to the annulus and positioned to engage the nozzle when it is inserted into the tank, and means for securing the annulus upon the periphery of the opening of the tank.

11. The combination with the inner surface of the opening of a container and a nozzle, of resilient means connected to the inner surface of said container and extending laterally of said opening into the path of the nozzle so as to electrically contact the portion of the nozzle inserted into the opening of the container.

12. The combination with a nozzle and a container having an opening, of resilient means supported by said container, the said resilient means being extended laterally of said opening into the path of the nozzle so as to electrically contact the portion of the nozzle inserted into the opening of the container.

13. The combination with a container having an opening and a nozzle adapted to fit into the opening, of a resilient element per se for directly contacting the nozzle and the container to establish a good electrical contact between the container and the inserted nozzle, said element being disposed, beginning at a place where it is engaged by the inserted portion of the nozzle to extend towards the edge of the opening and with a gradual and positive slope until it contacts the edge of the opening, and being further adapted to flex automatically and allow the nozzle to be inserted or withdrawn from the opening in a free manner and at the same time maintaining a resilient and uninterrupted electrical contact until the electrical contact is finally broken by the withdrawal of the nozzle.

14. The combination with a container having an opening and a nozzle adapted to fit into the opening, of a slender and smooth spring member for directly contacting the nozzle and the container to establish a good electrical contact between the container and the inserted nozzle, said spring member being disposed, beginning at a place where it is engaged by the inserted portion of the nozzle to extend towards the edge of the opening and with a gradual and positive slope until it contacts the edge of the opening, and further adapted to flex automatically and allow the nozzle to be inserted or withdrawn from the opening in a free manner and at the same time maintaining a resilient and uninterrupted electrical contact until the electrical contact is finally broken by the withdrawal of the nozzle.

15. The combination with a container having an opening and a nozzle adapted to fit into the opening, of a resilient and smooth wire for directly contacting the nozzle and the container to establish a good electrical contact between the container and the inserted nozzle, said resilient wire being disposed, beginning at a place where it is engaged by the inserted portion of the nozzle to extend towards the edge of the opening and with a gradual and positive slope until it contacts the edge of the opening, and being further adapted to flex automatically and allow the nozzle to be inserted or withdrawn from the opening in a free manner and at the same time maintaining a resilient and uninterrupted electrical contact until the electrical contact is finally broken by the withdrawal of the nozzle.

16. The combination with a container having an opening and a nozzle adapted to be introduced into said opening, of a supporting member mounted upon said container and a contacting member attached to said supporting member, said contacting member being extended laterally of said opening into the path of the nozzle introduced so as to electrically contact said nozzle.

17. The combination with a container having an opening and a nozzle adapted to be introduced into said opening, of a contacting member connected to and supported by said container and being extended laterally of said opening into the path of the nozzle introduced so as to electrically contact the said nozzle.

MORTON H. SINKS.