Aug. 20, 1935. D. MACLACHLAN ET AL 2,012,197

DRAW-OFF OR FILLING CONNECTION, PARTICULARLY FOR DRUMS, TANKS OR THE LIKE

Filed June 22, 1934

Fig. 1.

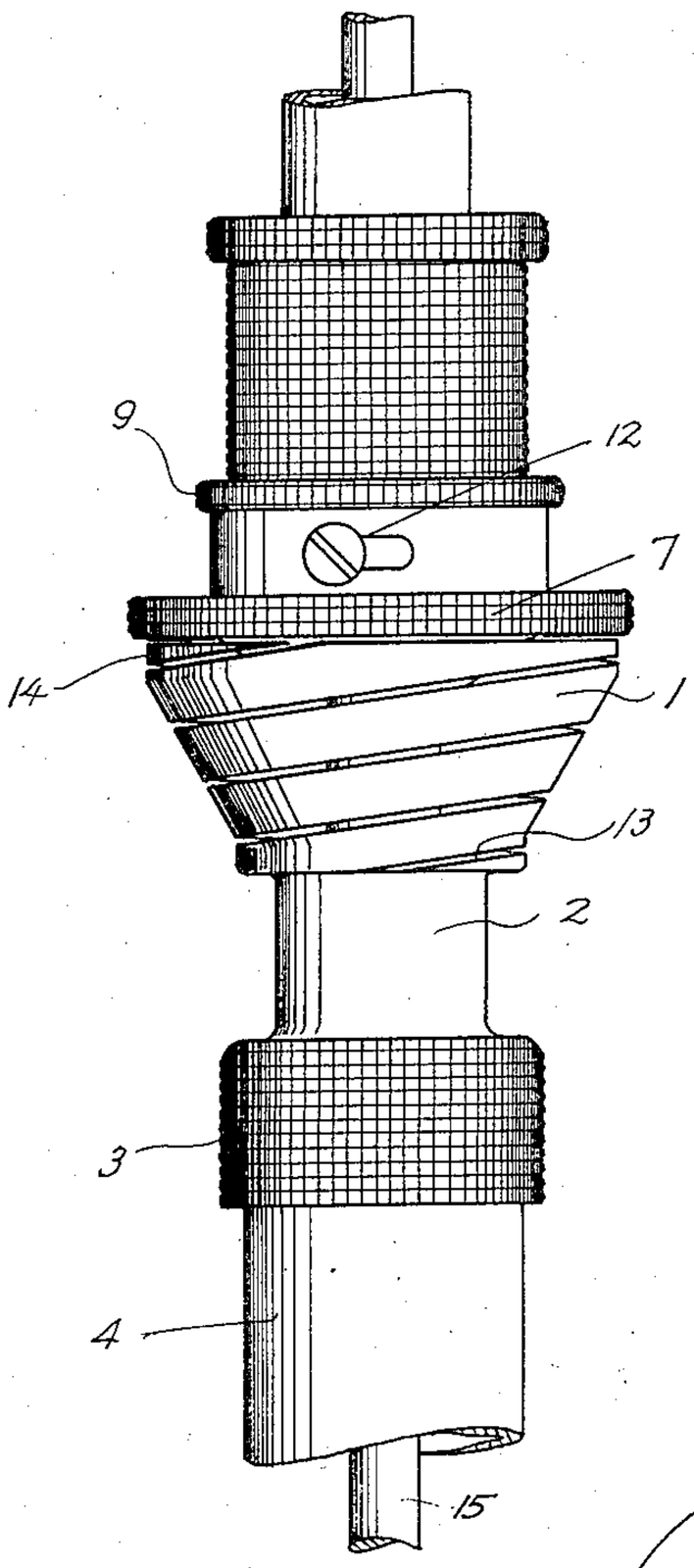


Fig. 2.

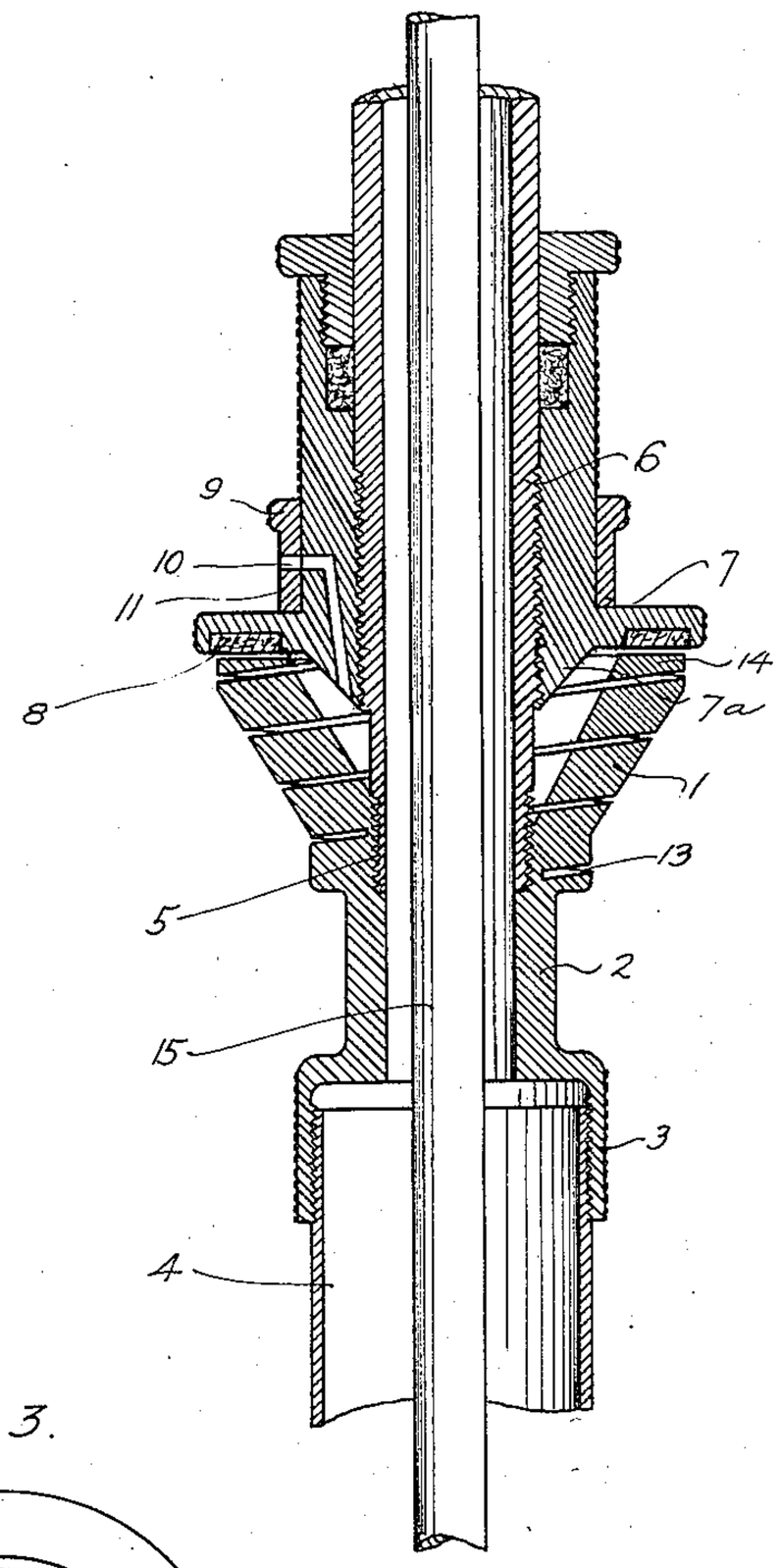
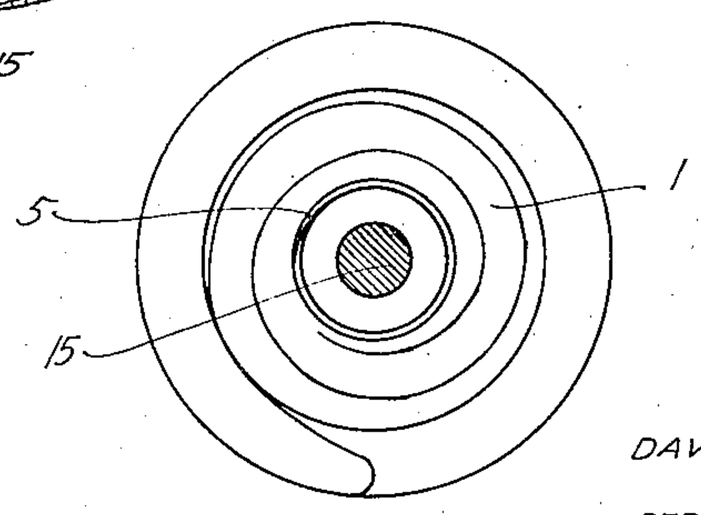


Fig. 3.



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Patented Aug. 20, 1935 2,012,197

UNITED STATES PATENT OFFICE

2,012,197

DRAW-OFF OR FILLING CONNECTION, PARTICULARLY FOR DRUMS, TANKS, OR THE LIKE

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Application June 22, 1934, Serial No. 731,950.
In the Union of South Africa May 14, 1934

8 Claims. (Cl. 221—85)

This invention relates to an improved draw-off or filling connection, particularly for drums, tanks or the like containing inflammable or readily vaporizable liquids.

One object of the invention is to provide a draw-off or filling connection which will eliminate or reduce as far as possible free contact of the inflammable liquid or the like with the outer atmosphere and thus reduce, for example, the risk of fire. A further object of the invention is to enable a firm air-tight joint to be made at the connection in all cases whether or not the hole or opening in the container or the like is large or small.

According to the invention, the draw-off or filling connection comprises a central tube or conduit one end of which is formed or associated with a tapering or other helix and the other end of which is provided with a clamping flange, the arrangement being such that the helix can be threaded through an opening in the container or the like so that by screwing or forcing down the said flange, the edge or wall of the container surrounding or adjacent to the opening therein can be gripped between said flange and the outer convolution of the helix.

Preferably, the flange is fitted with a leather or other washer or otherwise made so as to effect an air-tight joint with the edge or wall of the container. The screw thread or helix on the central tube or conduit may be integrally or otherwise connected therewith only at its lower or inner end and may extend upwards or outwards so that it surrounds but does not touch the upwardly or outwardly extending portion of the tube or conduit. Preferably, the free or outer end of the helix is tapered so that the corresponding convolution presents a surface parallel to the edge or wall of the container. The innermost convolution of the helix may likewise be tapered so that engagement with the edge of the opening in the container may be effected readily.

In accordance with a further feature of the invention, the flange screwed or axially movable on the central tube or conduit may be provided with a passage for the inlet or outlet of air or vapour into or from the container or the like and may be provided with a hit-and-miss or other valve to control such passage.

A preferred embodiment of my invention, as applied to a hand pump for drawing off paraffin from a sealed can, will now be described, by way of example, with reference to the accompanying drawing, in which:—

Fig. 1 is a side view of the embodiment, showing also adjacent parts of the hand-pump;

Fig. 2 is a vertical half-section corresponding to Fig. 1, the section being taken through said figure parallel to the plane thereof;

Fig. 3 is a plan view corresponding to Fig. 1, with the clamping flange and associated upper parts removed.

Referring to the drawing:—

The connection comprises a metal helix 1 of divergent funnel shape formed integral with the upper end of a tubular cap 2 whose lower end 3 is threaded upon the top of the barrel 4 of the hand pump. Such cap 2 has its upper end interiorly screw-threaded at 5 so as to receive the lower screwed end of a tube 6 upon which is threaded a flange 7 adapted to be moved towards or away from the upper end of the helix 1 by screwing the tube 6 and cap 2 relatively to each other. The lower surface of the flange 7 is recessed to accommodate a leather or other packing ring 8, and its inner portion is provided with a conical part 7a so as to make the connection self-centering with respect to the opening in the container in which it is inserted.

A valve ring 9 is rotatably mounted on the flange 7 so that an aperture 10 therein can be turned into or out of register with the adjacent end of an air passage 11, within limits permitted by the pin-and-slot arrangement 12.

In use, the paraffin can (not shown) has a hole cut therein by cutters of the ordinary "tin-opener" type (not shown) fixed on the bottom end of the pump barrel 4, whereafter the barrel is lowered into the can and rotated so as to engage the slot 13 between the convolutions of the helix 1 with the edge of the hole. Such rotation results in the helix being completely threaded into the can until the upper surface of the top convolution 14 lies under the top of the can. The flange 7 is then screwed down so as to grip the top of the can firmly between such flange and the helix 1. Paraffin can then be withdrawn from the can by operation in known manner of the pump rod 15 without risk of fire, the only communication between the interior of the can and the atmosphere being through the small passage 11.

Various modifications may be made in the connection without departing from the scope of the invention. For example, the helix may be formed integral with the tube 6 instead of the cap 2, and in either case may be made integral with such part 6 or 2 from head to foot, the bottom of the helical slot 13 between the convolutions being made throughout of a diameter

not greater than that of the hole in the container or the like.

While the invention has been described with reference to draw-off or filling connections of a detachable or temporary nature, it may also be applied to such connections made as a permanent part of a drum, can or the like, e. g. as part of a motor car petrol tank or as a part of a drain or branch from an oil pipe or sump; and such drums, cans, tanks, pipes, sumps or the like to which the connection is temporarily or permanently applied are referred to in the claims simply by the term "container".

As will be understood, the invention enables large diameter joints to be effected at relatively small diameter holes, and the larger jointing surfaces thus made available provide greater security against air or other leakage than would be otherwise possible.

I claim:—

1. A draw-off and filling connection for a container having an opening provided therein, comprising, in combination, a central conduit adapted to pass through said opening, a helical strip connected only at its lower end with said conduit and having its convolutions extending freely in gradually increasing diameter up and around said conduit, a clamping flange member provided on said conduit, and means whereby the part of said container surrounding said opening can be firmly gripped between the flange of said flange member and the resilient upper convolutions of said helical strip, to form a gas-tight joint between the interior of said container and the atmosphere.

2. A draw-off and filling connection for a container having an opening provided therein, comprising, in combination, a central conduit, a helical strip connected at one end to said conduit, and having its convolutions extending in gradually increasing diameter up and around said conduit in such manner that a helical slot extending inwards throughout its length to the surface of said conduit is provided, a clamping flange provided on said conduit, means disposed centrally within said flange and top convolution of the strip for effecting self-centering of the connection with respect to said opening, such means being penetrated by a passage connecting the interior of said container with the atmosphere, means whereby the part of said container surrounding said opening can be firmly gripped between said flange and top convolution of the strip to form a gas-tight joint between the interior of said container and the atmosphere, and valve means for controlling the flow of air through said passage.

3. A draw-off and filling connection for a container having a circular opening provided therein, comprising, in combination, a central conduit adapted to pass through said opening, a helical strip connected at its lower end with said conduit and having its convolutions extending in increasing diameter up and around said conduit in such manner that the distance between the outermost edge of the top convolution and the remote side of the tube is substantially equal to the diameter of said opening, a clamping flange member screw-threaded on said conduit and having a passage therein connecting the interior of said container with the atmosphere, and means whereby said member can be screwed so as firmly to grip between its flange and the resilient upper convolutions of said helical strip, the part of said container surrounding said opening, to form a gas-tight joint between the interior of said container and the atmosphere.

4. A draw-off and filling connection for a container having an opening provided therein, comprising, in combination, a central conduit adapted to pass through said opening, a hollow frusto-conical member coaxial with said conduit, said member being connected at its end of smallest diameter with said conduit and having the interior portion of its end of largest diameter spaced from the conduit and of a diameter larger than said opening, said frusto-conical member having a helical slot extending from one end to the other to serve as a screw for introducing the connection into the opening, said slot extending laterally through the wall of the frusto-conical member to avoid increasing the diameter of the opening in the container as the same is threaded into said opening, and means cooperating with the large end of said frusto-conical member for securing the connection to the wall of said container.

5. A draw-off and filling connection for a container having an opening provided therein, comprising, in combination, a central conduit adapted to pass through said opening, a hollow frusto-conical member coaxial with said conduit, said member being connected at its end of smallest diameter with said conduit and having the interior portion of its end of largest diameter spaced from the conduit and of a diameter larger than said opening, said frusto-conical member having a helical slot extending from one end to the other to serve as a screw for introducing the connection into the opening, said slot extending laterally through the wall of the frusto-conical member to avoid increasing the diameter of the opening in the container as the same is threaded into said opening, and a clamping member threadedly mounted on said conduit adapted to cooperate with the largest end of the frusto-conical member to secure the connection to the wall of the container.

6. A draw-off and filling connection for a container, having an opening provided therein, comprising, in combination, a central conduit adapted to pass through said opening, a hollow frusto-conical member coaxial with said conduit, said member being connected at its end of smallest diameter with said conduit and having the interior portion of its end of largest diameter spaced from the conduit and of a diameter larger than said opening, said frusto-conical member having a helical slot extending from one end to the other to serve as a screw for introducing the connection into the opening, said slot extending laterally through the wall of the frusto-conical member to avoid increasing the diameter of the opening in the container as the same is threaded into said opening, a clamping member threadedly mounted on said conduit adapted to cooperate with the largest end of the frusto-conical member to secure the connection to the wall of the container, and means carried by said clamping member for centering said conduit in said opening.

7. In a device of the character described, a conduit adapted to be inserted in an opening in a wall of a container, a resilient helical member secured at one end to said conduit and having its other end free for resilient movement, said member being adapted to be screwed through the opening in the container wall into the interior of the container, and means carried by said conduit exteriorly of said container for holding the free end of said resilient member against the

interior of the container wall and adapted to cooperate with said resilient member for securing said device to said container wall.

8. In a device of the character described, a conduit adapted to be inserted in an opening in a wall of a container, a resilient helical member of frusto-conical configuration having its end of smallest diameter secured to said conduit and its end of largest diameter free for resilient movement relative to said conduit, said member being adapted to be screwed through the opening in the container wall into the interior of the container, and means carried by said conduit exteriorly of said container for holding the free end of said resilient member against the interior of the container wall and adapted to cooperate with said resilient member for securing said device to said container wall.

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