

Aug. 21, 1934.

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1,971,123

MEANS FOR FILLING INACCESSIBLE SPACES

Filed Jan. 21, 1932

2 Sheets-Sheet 1

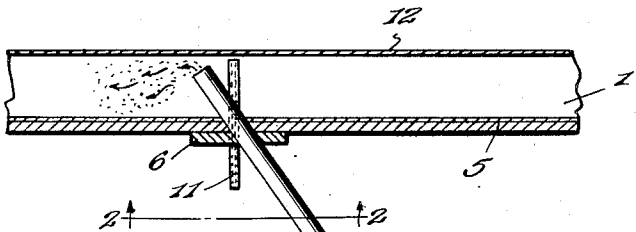
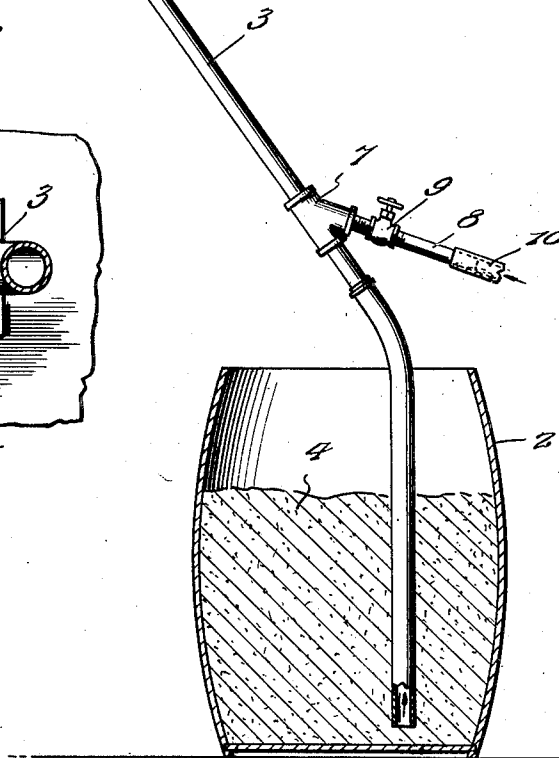
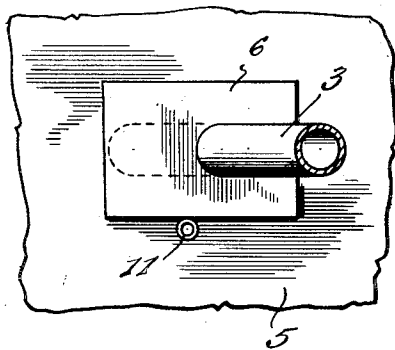


Fig. 1.

Fig. 2.



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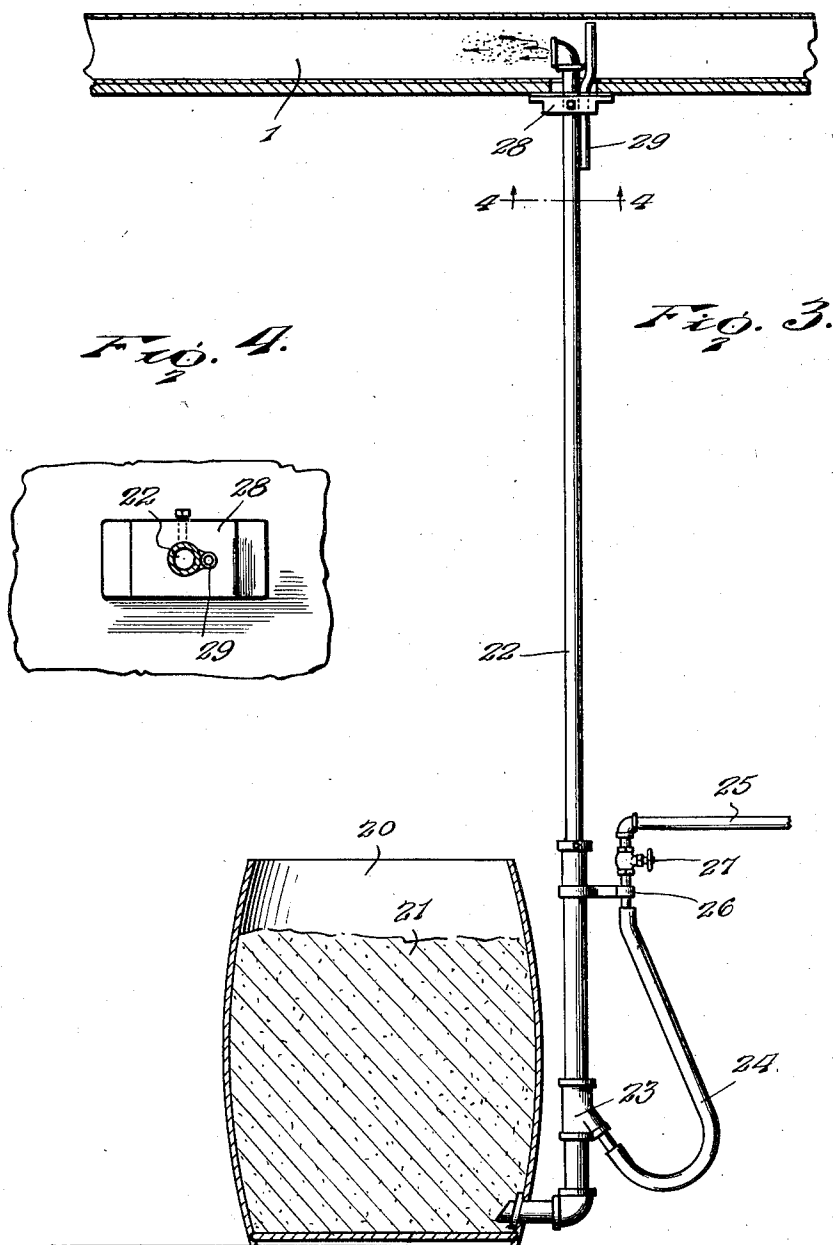
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MEANS FOR FILLING INACCESSIBLE SPACES

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1,971,123

MEANS FOR FILLING INACCESSIBLE SPACES

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Application January 21, 1932, Serial No. 588,027

3 Claims. (Cl. 302—59)

The object of this invention is to deliver granular or powdered material into spaces which are not readily accessible. The invention is designed more particularly for delivering granulated cork into spaces which are designed for heat insulation, as the spaces between decks and under the roofs of refrigerator ships and cars, which spaces are extensive and at their ends and corners are inaccessible to the human hand or to ordinary tools. The invention provides means whereby the material is blown into remote corners and other spaces and is packed therein so as to completely fill the space, and means is provided to vent the space so that air may escape therefrom as the space is filled with the comminuted material. The invention is illustrated in the accompanying drawings and will be hereinafter fully described, the novel features being particularly pointed out in the appended claims.

In the drawings, Fig. 1 is a view partly in elevation and partly in section of an apparatus embodying the invention,

Fig. 2 is an enlarged section on the line 2—2 of Fig. 1,

Fig. 3 is a view showing a modification,

Fig. 4 is a section on the line 4—4 of Fig. 3.

In the drawings, the reference numeral 1 indicates a space between decks or other structural elements of a refrigerator car or ship which space is to be filled with some heat-insulating material. According to the present invention, the material to be deposited in the space 1 is stored or provided in a container 2 which may be a barrel or other vessel of any preferred form. There is also provided a pipe 3 the ends of which are open and the lower end of which is to be inserted into the cork or other material, indicated at 4, so that the end of the pipe will be disposed near the bottom of the container but spaced therefrom. The upper end of the pipe is inserted through an opening provided therefor in the lower wall 5 of the space which is to be filled and a collar or flange 6 is formed on or secured around the pipe to bear against the underside of said wall 5 and thereby prevent the leakage of air around the pipe and the opening in the wall. At a convenient point above the container 2, a Y-coupling 7 is inserted in the pipe 3 and connected to the branch of this fitting is a pipe 8 provided with a regulating valve 9, of any approved form, and connected by a hose or other flexible connection 10 with a blower or air compressor. The blower or air compressor may be of any approved form and is not illustrated as it forms no part of the present invention. A vent pipe 11 is fitted through the wall 5, adjacent the

upper end of the delivery pipe 3, and the ends of this pipe are open with the lower end being disposed below the wall and the upper end close to the upper wall 12 of the space to be filled so that the air within the space may escape as the space is filled.

The operation will, it is thought, be readily understood. An air blast is delivered through the pipe 8 and the coupling 7 and will rise through the pipe 3 to escape through the upper end of the same, the force of the blast being regulated by manipulation of the valve 9 in an obvious manner. The draft through the pipe 3 caused by the air blast rising through the same will create a suction at the lower end of the pipe so that air above the container will tend to flow into the pipe through the lower end thereof and the cork or other material will consequently be sucked into the pipe and caused to flow upwardly therethrough to escape through the upper end of the same. The force of the blast will, of course, be sufficient to carry the finely divided or powdered material to the remote corners and angles of the insulating space and as the material collects and packs in the space, the air therein will escape through the vent pipe 11, as will be understood. After the space has been entirely filled, the pipe 3 and the vent pipe 11 are withdrawn and the openings through which they were fitted may be filled in any desired manner.

The apparatus is obviously exceedingly simple in construction and operation and will speedily and efficiently deliver the insulating material into the space which is to be filled so that the operation will be highly economical.

In Fig. 3, the container 20, holding the cork or other material 21, is provided with an opening in its side near its bottom through which the lower end of the conveyor pipe 22 is fitted, as shown. Near its lower end, a Y-coupling 23 is fitted in the pipe and to this coupling is attached one end of a flexible pipe 24, the opposite end thereof being attached to the end of an air blast pipe 25 which is supported on the pipe 22, as indicated at 26, and equipped with a regulating valve 27.

The upper end of the pipe 22 is disposed within the space to be filled and a sealing flange or collar 28 is secured on the pipe to cover the opening through which the pipe passes. A vent pipe 29 is welded to the side of the pipe 22.

Having thus described the invention, I claim.

1. An apparatus for the purpose set forth comprising a container for comminuted material, a delivery pipe having one end disposed in the con-

tainer near the bottom thereof and its opposite end adapted to be inserted through the wall of a space to be filled, a sealing flange surrounding the pipe and bearing against said wall, a coupling in said pipe between the ends thereof, an air blast pipe connected to said coupling, and a relatively short vent tube of less cross sectional diameter than the delivery pipe adapted to be inserted through the wall of the space to be filled at said delivery pipe with its outer end depending from said wall and with its inner end disposed adjacent to and spaced from the opposite wall.

2. An apparatus for the purpose set forth comprising a pipe for delivering by fluid pressure finely divided material from a source of supply into a space to be filled through an outlet portion of the pipe which enters the said space through an opening in a wall for delivering the material in a predetermined direction, and a vent

tube entering said space through the said wall adjacent the said pipe and terminating in spaced relation to a wall of the space remote from the opening.

3. An apparatus for the purpose set forth comprising a pipe for delivering by fluid pressure finely divided material from a source of supply into a space to be filled through an outlet portion of the pipe which enters the space through an opening in a wall, a sealing flange for the opening carried by said pipe, and an air vent tube having its end portions extending from opposite faces of the flange, the inner end portion of the tube being disposed transversely of the outlet of the pipe and being of a length to extend through the space to be filled and terminate close to another wall in spaced relation to the outlet of the pipe.

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