May 31, 1927. 1,630,496

W. H. MARSHALL ET AL

DIPPING CONTAINER FOR EXPLOSIVE CARTRIDGES

Filed Oct. 25, 1924

Fig. 1.

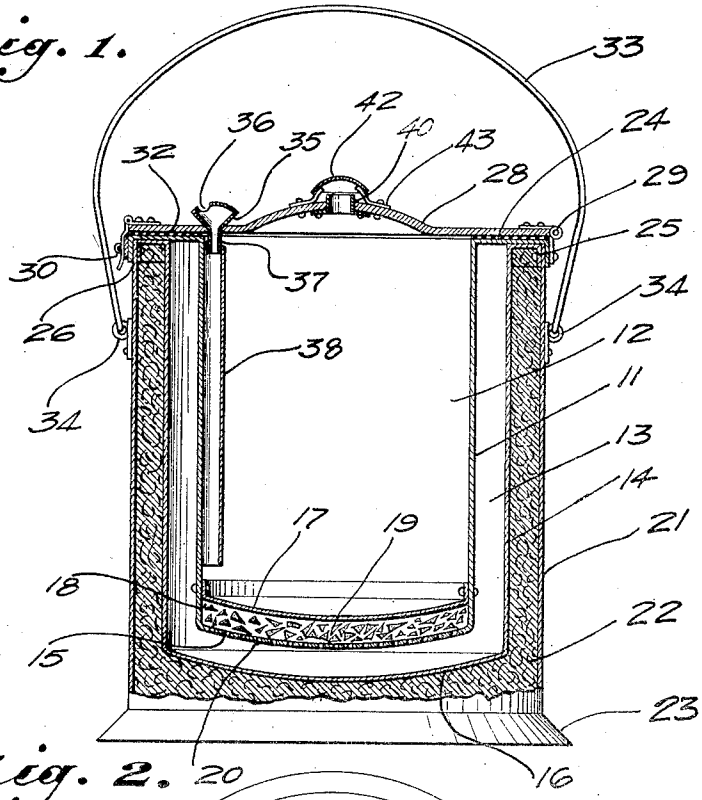
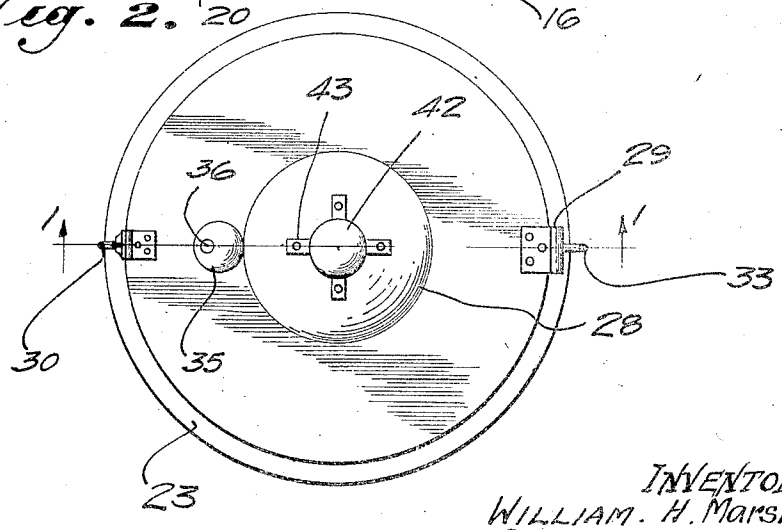


Fig. 2.



INVENTORS:
WILLIAM. H. Marshall.
ROBERT. H. KILLGORE
LUTHER E BEDORTHA.
BY.
Fred W. Lamm
ATTORNEY.

Patented May 31, 1927. 1,630,496

UNITED STATES PATENT OFFICE.

WILLIAM H. MARSHALL, ROBERT J. KILLGORE, AND LUTHER E. BEDORTHA, OF DENVER, COLORADO, ASSIGNORS, BY MESNE ASSIGNMENTS, TO PUROX COMPANY, OF DENVER, COLORADO, A CORPORATION OF COLORADO.

DIPPING CONTAINER FOR EXPLOSIVE CARTRIDGES.

Application filed October 25, 1924. Serial No. 745,824.

This invention relates to the art of blasting with liquid oxygen, and it particularly concerns dipping containers which may be of especial applicability in this art.

At the present time explosives known as liquid oxygen cartridges are used extensively in blasting because of the safety thereof in transportation and usage. The cartridges contain a certain absorptive material which must be saturated with liquid oxygen before they become explosive. These cartridges, according to general practice, are saturated with liquid oxygen on the job in what are commonly called dipping containers.

It is an object of this invention to provide a dipping container which is convenient for a workman to carry from place to place, as he is engaged in placing the cartridges for blasting.

Devices of this character are usually provided with a cartridge dipping chamber which is very thoroughly heat insulated so as to reduce as much as possible evaporation of the liquid oxygen contained therein.

It is an object of this invention to provide means facilitating the introduction of liquid oxygen into the cartridge dipping chamber of the device.

It is a still further object of this invention to provide means for insuring a thorough and complete saturation of the cartridges.

It is another object of the invention to provide a swingable cover arrangement which allows the ready insertion of cartridges to be saturated into the dipping chamber.

It is another object of the invention to provide an evaporating gas outlet, having means for deflecting gas as it escapes from the dipping chamber, the purpose of this being to prevent the gas from striking the hand of the operator carrying the device.

Other objects and the specific advantages of the invention will be made evident hereinafter.

Referring to the drawings which are for illustrative purposes only,

Fig. 1 is an elevational sectional view of a dipping container embodying the features of the invention, taken substantially on a line indicated at 1—1 of Fig. 2.

Fig. 2 is a plan view of Fig. 1

As shown in the drawings an inner circular wall 11 provides a dipping chamber 12 which is arranged to receive liquid oxygen explosives for the saturation thereof. Around and below the chamber 12 is an evacuated space 13, which is provided between the chamber wall 11 and an intermediate circular wall 14 and a bottom 15 of the chamber wall 11 and the bottom 16 formed integral with the circular wall 14. A false bottom 17 is secured near the bottom of the chamber 12 so as to provide a space 18 in which an absorptive material, such as the charcoal, indicated at 19, is placed, this charcoal being for the purpose of absorbing any gas which may form in the vacuum chamber 13, when the charcoal is cooled by the liquid oxygen in the chamber 12. The breathers 20 are provided in the bottom 15 which furnishes communication between the evacuated space 13 and the absorptive space 18. Between the intermediate wall 14 and an exterior wall 21 and below the bottom 16 is placed an insulating material 22 which assists the evacuated space 13 in preventing heat from reaching the dipping chamber 12. The lower portion of the wall 21 is flared at 23 so as to provide a base for the container. In the upper end of the wall 11 there outwardly extends a radial wall 24 and from the upper end of the intermediate wall 14 there outwardly extends a radial flange 25, this flange being secured as shown at 26 to the outer wall 21.

For closing the top of the dipping chamber 12, we provide a cover 28 which hinges at 29 and which may be provided with a suitable locking arrangement 30 for closing the cover 28 tightly against a suitable gasket 32.

To facilitate manual transportation of the container, there is provided a suitable bail 33 which is secured to the exterior wall 21 of the container by means of suitable fixtures 34. To contribute to the facile pouring of liquid oxygen into the chamber 12, we provide an ingression member in the form of a funnel 35, having a pouring opening 36. Extending from the funnel portion 35 through the cover 28 to the interior of the chamber 12 is a spout portion 37. For insuring a complete saturation of the cartridges which may be placed in the chamber 12, we provide a means in the form of a

tube 38 which may be secured on the inside of the wall 11 in any suitable manner, this tube being for the purpose of directing the liquid oxygen as it enters through the spout 37 to the extreme bottom of the chamber 12. When liquid oxygen is poured through the funnel 35, it is conveyed directly to the bottom of the chamber 12 by the tube 38 which insures the filling thereof from the bottom

Gas evaporating from the liquid oxygen in the chamber 12 may egress through an exit tube 40, which is secured to and extends through the top 28 to the exterior thereof, as shown in Fig. 1. To prevent the gas from striking a hand of a workman carrying the receptacle by the bail 33, we provide a deflector member in the form of an inverted dish 42, which is secured above the exit tube 40, as shown in Fig. 1, by means of suitable strap members 43.

The use of our device may be substantially as follows:

On the job, cartridges may be placed into the chamber 12 after first releasing the lock 30 and swinging the cover 28 on the hinge 29 out of closing position into opened position. After the cartridges are placed in the chamber 12, the cover is again closed as in Fig. 1, and liquid oxygen may be introduced into the chamber. This is done by pouring the liquid oxygen into the funnel 35 through the opening 36, the liquid passing through the spout 37 through the tube 38 to the extreme bottom of the container 12 filling the chamber from bottom to top. Any gas evaporating from the liquid oxygen may escape through the tube 40 and is deflected by the inverted dish 42. It will be seen that this dish 42 deflects the gases in such a manner that they cannot strike the hand of a person carrying the container by the bail. After the cartridges are sufficiently saturated with liquid oxygen, they are removed therefrom and inserted into cartridge receiving bores along with the necessary detonating caps. It should be understood that these bores are sometimes a distance apart, and it is essential that a dipping chamber be provided which may be readily transported from bore to bore.

From the foregoing description it will readily be seen that the device described may be very readily and conveniently carried from place to place by a workman. The device is very thoroughly insulated against heat by the evacuated chamber 13 and the insulated portion 22. The pouring arrangement described provides a very convenient means for the pouring of the oxygen and insures that the cartridges will be thoroughly saturated by directing the liquid to the extreme bottom of the chamber 12. By conducting the liquid oxygen directly to the bottom of the chamber, the absorptive material is first cooled, which cooling immediately causes an absorption of any gases in the space 13, thereby creating a better vacuum and a more efficient insulation. Another advantage of conducting the liquid to the bottom is that the gases evaporating therefrom pass around and permeate the cartridges, and the cooling values are utilized. It will be seen that the pouring of the liquid over the cartridges would cause an excessive evaporization and most of the gas would escape unused and wasted. A ready insertion and removal of the cartridges is provided by the swingable cover arrangement of the device. A workman carrying the container is protected against the cold escaping gases by the novel form of deflector arrangement of the invention.

Our invention has another pronounced superiority which saves considerable time, labor and liquid oxygen. In open containers, the cartridges will naturally float and bob up when the liquid is poured into the container. The necessity of forcing the cartridges back in place takes time and labor, and causes interference to the pouring of the liquid which allows excessive evaporation thereof. In our device, the cover of the dipping container retains the cartridges in place and, therefore, the labor and time consumed in forcing them back into place is obviated, this also saving liquid as evaporation is reduced when time is saved.

We claim as our invention:

1. A dipping container for explosive cartridges comprising: walls forming a dipping chamber; a hinged cover for said container; a member carried by said cover through which liquid oxygen may be introduced into said dipping chamber; and means for directing said liquid oxygen to the bottom of said chamber.

2. A dipping container for explosive cartridges as in claim 1 in which said means comprises a tube mounted on the wall of said chamber, said tube extending from said member to a point adjacent to the bottom of said chamber.

3. A dipping container for explosive cartridges comprising: walls forming a dipping chamber; a cover for closing an open end of said dipping chamber; a tube mounted on a side wall of said dipping chamber for directing a fluid to the lower end of said dipping container; and a funnel having a spout carried by said cover, said spout aligning with said tube when said cover closes the open end of said dipping container.

4. A dipping container for explosive cartridges comprising: walls forming a dipping chamber; walls forming an evacuated space around said dipping chamber; means for absorbing any gas which may be present in said evacuated space; and means for introducing a liquefied gas into said chamber

so that it will be directed into cooling relation with said absorbing means immediately upon entering said chamber.

5. A dipping container for explosive cartridges comprising: walls forming a dipping chamber; walls forming an evacuated space around said dipping chamber; absorptive material carried between said dipping chamber and said evacuated space in communication with said evacuated space; and means for introducing a liquefied gas into said chamber so that it will be directed into juxtaposition with said absorptive material immediately upon entering said chamber.

6. A dipping container for explosive cartridges comprising: walls forming a dipping container; means for introducing a liquid gas into said dipping container; walls forming an outlet through which gas may pass from said dipping chamber; a bail whereby said dipping container may be carried; and a deflector for deflecting gas passing through said outlet so that it will not contact a person's hand carrying said dipping container by means of said bail.

7. A dipping container for explosive cartridges comprising: walls forming a dipping container; means for introducing a liquid gas into said dipping container; walls forming an outlet through which gas may pass from said dipping chamber; a bail whereby said dipping container may be carried; and an inverted dish-shaped deflector for deflecting gas passing through said outlet so that it will not contact a person's hand carrying said dipping container by means of said bail.

8. A dipping container for explosive cartridges comprising: walls forming a dipping chamber, said dipping chamber having an open end through which articles may be placed therein; a cover for closing said open end of said dipping chamber after said articles have been placed in said dipping chamber; means carried by said cover for introducing a liquid gas into said dipping chamber after said articles have been placed in said dipping chamber and said cover has been placed in position to close said open end of said dipping chamber; a bail secured to said walls forming said dipping chamber by which said dipping container may be carried; and a deflector secured above an outlet opening formed in said cover.

In testimony whereof, we have hereunto set our hands at the city and county of Denver, State of Colorado, this 10 day of October, 1924.

WILLIAM H. MARSHALL.
ROBERT J. KILLGORE.
LUTHER E. BEDORTHA.