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PROTECTIVE CASE FOR EXPLOSIVE CONTAINERS

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Fig. 1.

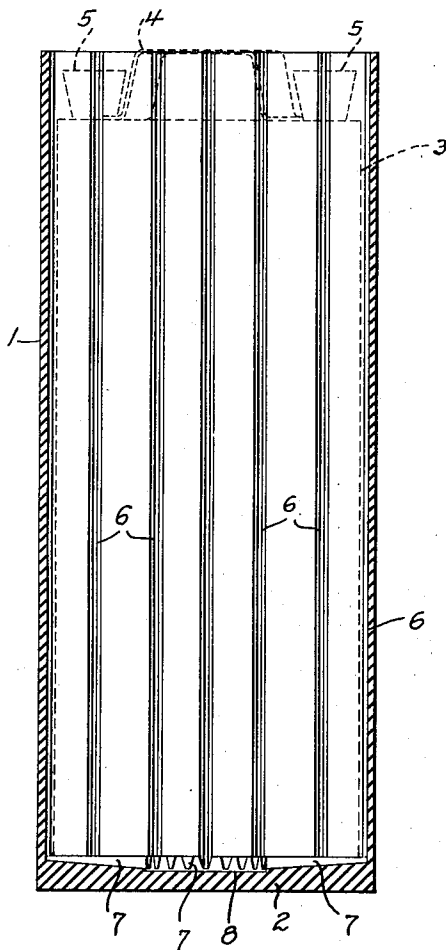
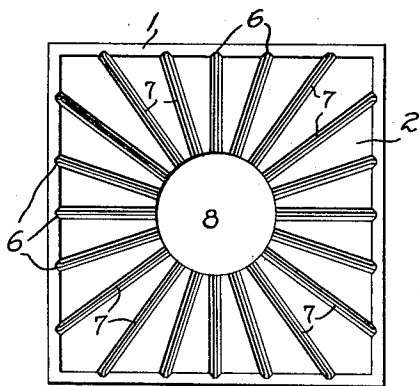


Fig. 2.



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UNITED STATES PATENT OFFICE.

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PROTECTIVE CASE FOR EXPLOSIVE CONTAINERS.

Application filed October 6, 1922. Serial No. 592,738.

To all whom it may concern:

Be it known that I, JOHN WILLIAM BALLEW, a citizen of the United States, residing at Tulsa, county of Tulsa, and State of Oklahoma, have invented certain new and useful Improvements in Protective Cases for Explosive Containers, of which the following is a full, clear, and exact description.

This invention relates to an improvement in protective cases for explosive containers such as those used for nitro-glycerine.

It is well known to those familiar with the handling of high explosives such as nitro-glycerine that fatal explosions frequently occur during transportation of the explosive, which are caused by the jolting and bumping of the containers together or against some rigid or non-resilient object. Such explosions are frequently caused by the overflow or leakage of the explosive fluid from the containers. This runs down between the containers to the floor of the car or vehicle transporting the goods and when the containers are jolted the impact between them or between them and the floor of the vehicle causes the liquid to explode which results in the explosion of the liquid in the containers.

To minimize the danger of explosions the container has been protected in a case having its walls made of thick, soft rubber molded to conform to the shape of the container. The containers are shipped in these rubber cases and when they have reached their destination the containers are removed from the cases and the latter returned to the shipper so that they may be used again. The cases are formed rectangular or box shaped and have no handles or other projections so that they may be packed tightly together to prevent loss in shipping space and also to prevent excessive jolting. The metal cans or containers are provided with a handle at the top but their sides are free from projections so that they may fit the cases with as little lost space as possible. It is desirable, however, to provide sufficient space between the can and protective case to permit the can to be easily inserted in and withdrawn from the case. As the can only is provided with a handle it is necessary that there should be a sufficiently loose fit so that the weight of the case will hold it down upon the floor of the vehicle

while the can is being withdrawn, and to accomplish this it has been found necessary to provide quite a considerable space between the can and case, for if this is not done, beside the frictional contact that would result there would be considerable suction produced which would result in the case being drawn up with the can. The filled can is very heavy and must be lifted high to free it from the case and it is not convenient to hold the case down while the can is being lifted.

The can is generally provided with two openings at the top that are left open and it frequently occurs that during transportation of the nitro-glycerine some of it jolts out and runs down between the can and the case. The thick-walled soft rubber case acts as a shock absorber to cushion the can as it jolts and jars about in transit and thereby minimizes the danger of explosions of this overflow. However, it will be readily appreciated that the looser the fit between the can and the case the more violent will be the jolting and accordingly the greater will be the danger of explosions.

The object of my invention is to increase the protection afforded by the case and to facilitate an easier removal of the can from the case, and also a saving in shipping space.

The precise nature of my invention will be best understood by reference to the accompanying drawing it being obvious, however, that various changes may be made in details of construction of the case without departing from the spirit and scope of my invention as set forth in the appended claims.

Referring to the drawings,

Fig. 1 is a sectional elevation of the protective case showing the can in dotted outline in position therein; and

Fig. 2 is a plan view of the case.

The case comprises the four side walls 1 and the bottom 2. It is preferably used without a cover, but one may be provided if desired. The can 3 represents any desired can and in the present instance is the usual tin can having a handle 4 and two top openings 5-5. It fits within the case so that the openings fall a little below the top. The case is formed of relatively thick sheets of soft rubber which are preferably built around a form and molded to provide a one piece structure in the usual manner.

The sides of the case on the interior are

provided with grooves 6 which may be cut, molded, or otherwise formed. They should extend down the can from a point a little above the opening in the can. In the present instance they are shown vertical and extend from the top to the bottom of the case. The size of the grooves will depend somewhat upon the thickness of the rubber wall and should not be so deep as to unduly weaken the case, but should be in size and number sufficient to take care of the overflow or leakage and to permit enough air to enter the case, so that as the can is being withdrawn the gradually increasing space beneath it will be instantaneously filled with air entering through these grooves so that there will be little or no suction effect during the withdrawal of the can. The grooves thus enable the case to be made much more nearly the size of the can with only enough space between the two to prevent frictional contact, thereby saving in the rubber stock of which the case is made as well as providing increased shipping space. Moreover with a minimum space there will be less jolting between the can and the case, and the liquid will more readily take to the grooves.

The bottom of the case is provided with grooves which receive the liquid and serve to separate it from contact with the bottom of the can thereby preventing any possibility of explosion by concussion. In the present instance the grooves 7 are formed from the outer edge of the bottom in registry with the respective grooves in the side walls and converge toward and terminate in a centrally disposed depression 8 into which the liquid from the grooves finally runs.

From the foregoing it will be seen that the case provides more shipping space and greater safety as well as a saving in the material of which it is composed. Also it is comparatively easy for a single workman without any assistance to lift the can free from the case where there is a much closer fit than could be permitted if the grooves were not provided.

Having thus described my invention what I claim and desire to protect by Letters Patent is:—

1. A resilient liquid non-absorbing sheet rubber protective case for cans containing explosives, provided with one or more grooves in its side walls opening into the interior of the case for the reception of the leakage or overflow from the can.

2. A resilient liquid non-absorbing sheet rubber protective case for cans containing explosives, provided with one or more grooves in its side walls and bottom wall, opening into the interior of the case for the reception of the leakage or overflow from the can.

3. A resilient liquid non-absorbing sheet rubber protective case for cans containing explosives, provided with grooves in its side and bottom walls, opening into the interior of the case, the grooves in the bottom wall being in registry with the respective grooves in the side walls, said grooves being for the reception of the leakage or overflow from the can.

4. A resilient liquid non-absorbing sheet rubber protective case for cans containing explosives, provided with grooves extending down the sides of the can and along the bottom to a depression provided in the bottom, said grooves and depression opening into the case for the reception of the leakage or overflow from the can.

5. A protective case for cans containing explosives, of sufficient loose fit to prevent friction by contact when the can is withdrawn from the case but of sufficiently tight fit to cause a partial vacuum to be created below the can as it is being withdrawn and one or more grooves in the side walls of and opening into the case to admit air beneath the can to prevent any appreciable vacuum being formed during the withdrawal of the can.

Signed at Tulsa, in the county of Tulsa, and State of Oklahoma, this 29th day of September 1922.

JOHN WILLIAM BALLEW.