

S. E. NEAL.
TANK OR RECEPTACLE FOR HOLDING LIQUID FUEL OR OTHER COMBUSTIBLE LIQUIDS.
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1,364,786.

Patented Jan. 4, 1921.

Fig. 1.

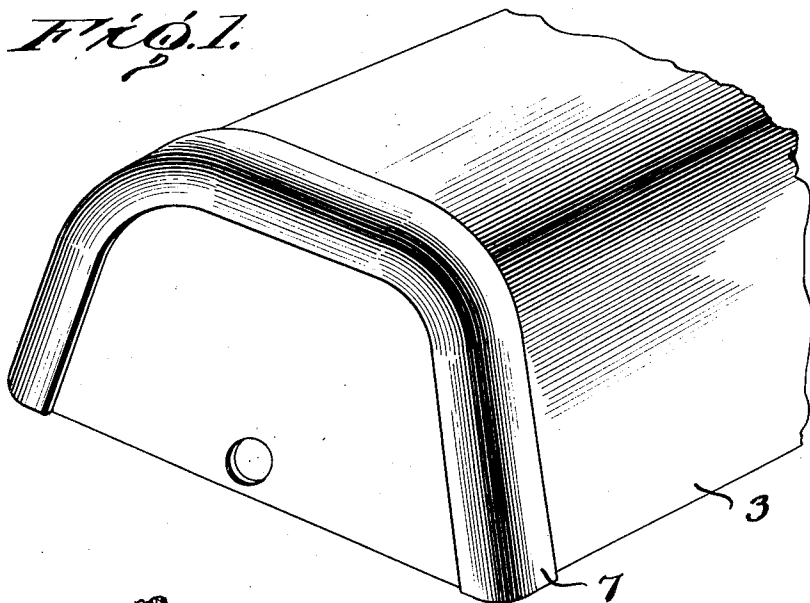


Fig. 2.

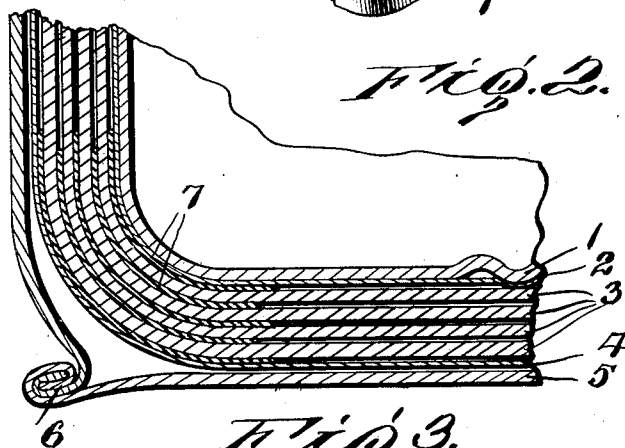
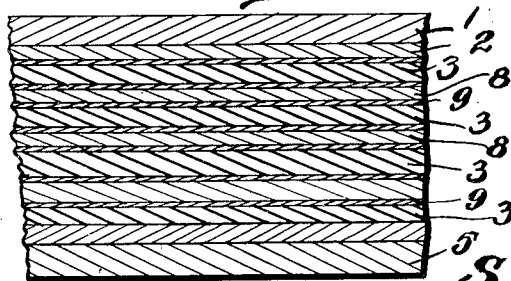


Fig. 3.



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TANK OR RECEPTACLE FOR HOLDING LIQUID FUEL OR OTHER COMBUSTIBLE LIQUIDS.

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Specification of Letters Patent.

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Application filed June 24, 1919. Serial No. 306,479.

To all whom it may concern:

Be it known that I, SAMUEL ERIC NEAL, a subject of the King of Great Britain and Ireland, and residing at 34 Homefield road, Chiswick, London, W. 4., England, have invented certain new and useful Improvements in Tanks or Receptacles for Holding Liquid Fuel or other Combustible Liquids, of which the following is a specification.

This invention relates to tanks or receptacles for holding liquid fuel or other combustible or other liquids and is especially designed for use in the construction of petrol tanks that are to be carried upon aeroplanes or which are located in other situations where they are liable to be pierced by bullets or incendiary or other projectiles.

The object of the present invention is to improve the construction of such tanks or receptacles in order to reduce to a minimum the liability for the tank to be completely pierced by a bullet or other projectile, to prevent the escape of liquid should the tank be pierced and to limit the size of opening pierced in the tank by preventing the latter from being burst or seriously damaged by the pressure which is ordinarily set up when the tank is suddenly pierced.

The invention consists in a tank or receptacle for holding combustible or other liquids, the walls of which are formed from a combination of an inner metal lining and one or more layers of rubber or like material separated by or combined with one or more layers of fabric and inclosed between two or more layers of ply-wood, calico, canvas, felt, baize or the like.

The invention also consists in an inner lining of the above character which is made of corrugated metal or material and has its corners rounded off, so as to allow for the expansion which may take place owing to the pressure which is ordinarily set up when a tank or receptacle holding a liquid is suddenly pierced.

The invention also consists in a tank or receptacle of the above character in which the rubber and fabric layers are covered or coated with soft soap, glycerin or any of the so-called anti-puncture compositions or tire fillers of commerce or other like viscous material.

The invention also consists in a tank or receptacle of the above kind in which the composite wall is completed by an outer layer of metal gauze, net or mesh, strong canvas, or

by an outer perforated or corrugated metal plate.

The accompanying drawings illustrate various improvements in accordance with the invention.

Figure 1 is a perspective view of a tank partly broken away and embodying the improved wall construction.

Fig. 2 is an enlarged section view taken through the wall, and

Fig. 3 is a similar view of a slightly modified form of a wall construction.

Referring now more particularly to the drawing there is provided a petrol tank for use upon aeroplanes wherein the walls of the tank comprise an inner lining 1 of suitable metal of any convenient thickness; a layer 2 of canvas or 3-ply wood, felt, baize or the like adjacent to the inner lining, one or more layers 3 of india-rubber or similar sheet material arranged next to the layer 2. On the other side of these layers 3 there is arranged another layer 4 of canvas or 3-ply wood, calico, felt, baize or like material, and the whole is completed by an outer layer or lining 5 of metal plating, open wire mesh, net gauze, strong canvas treated, if necessary, with rubber or a perforated metal plate, the layers being held in position by flanging the outer edge portions of the metal as shown at 6; by providing covering strips or the like, or by interlacing the gauze at the meeting edges. At the corners of the tank and between the outer layers 3 are arranged rubber strips 7 for reinforcing purposes.

As shown in Fig. 3, the layers 3 are separated by or combined with layers 8 of soft calico, ramie cloth, or other similar fabric, and the rubber layers or the fabric layers are coated as at 9 with soft soap, glycerin or any of the so-called anti-puncture compositions or tire fillers of commerce, such as have been proposed in connection with pneumatic tires, or other similar viscous substance or material.

It will be found that a tank or receptacle constructed in the manner above indicated possesses the very great practical advantages that it is much more difficult to pierce with a projectile than tanks or receptacles of ordinary construction, while if it is pierced the inner lining offers a minimum of resistance to the projectile and the composite wall tends to close up after piercing in order to prevent the escape of the liquid from the receptacle and, moreover, the material em-

ployed in the construction of the layers 3 will result in a considerable decrease in the area of the aperture made and the outer layer or lining will be found to prevent the
5 tank, if pierced, from being seriously damaged by the pressure set up when a liquid-containing receptacle is suddenly pierced.

This latter feature constitutes an important advantage when a construction in accordance with my invention is employed for
10 petrol tanks that may be released from an aeroplane, since owing to the absence of any tendency for the wall to spread upon being pierced it is possible to reduce very considerably the amount of inclination that
15 must ordinarily be given to such releasable tanks, whereby the capacity of the tank may be very considerably increased.

In place of using the fabric and rubber as
20 separate layers, I may use fabric coated on one or both sides with rubber of any desired thickness.

It is to be understood that the foregoing details of construction are given by way of

example only, as I may modify the number 25 of layers of the various materials employed, the quality and texture of the materials and the manner in which the layers are arranged relatively to one another, in any manner that may be found to give most satisfactory
30 results in practice.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

A tank for combustible or other liquids 35 wherein the walls are composed of an inner metal lining, an outer metal covering, a plurality of layers of rubber between the lining and covering, inner and outer fabric layers intimately contacting with the outer
40 surface of the rubber layers and contacted by the metal lining and covering, a plurality of fabric layers separating the rubber layers, and the fabric layers and the rubber layers being coated with a viscous material. 45

In testimony whereof I have signed my name to this specification.

SAMUEL ERIC NEAL.