

July 6, 1926.

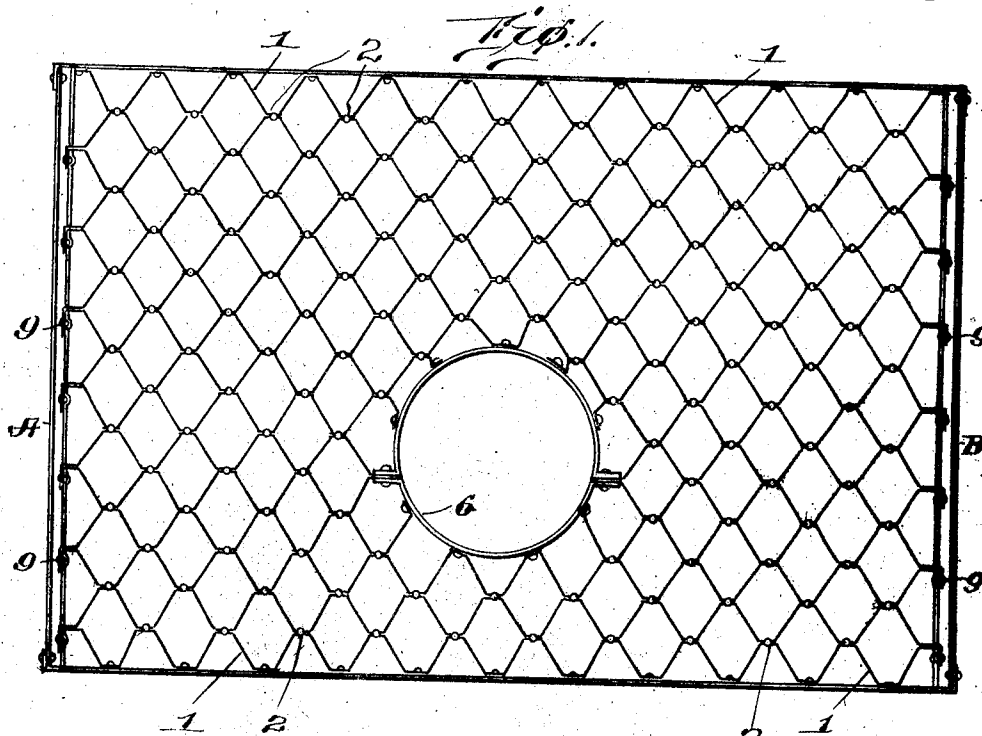
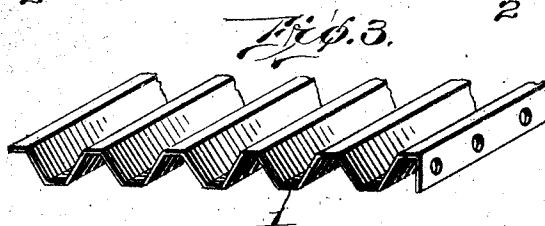
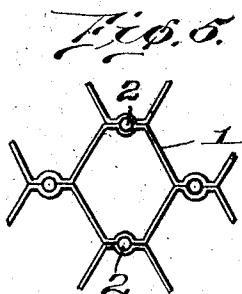
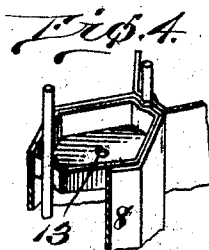
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CRASHPROOF FUEL TANK

Filed Dec. 14, 1922

2 Sheets-Sheet 1



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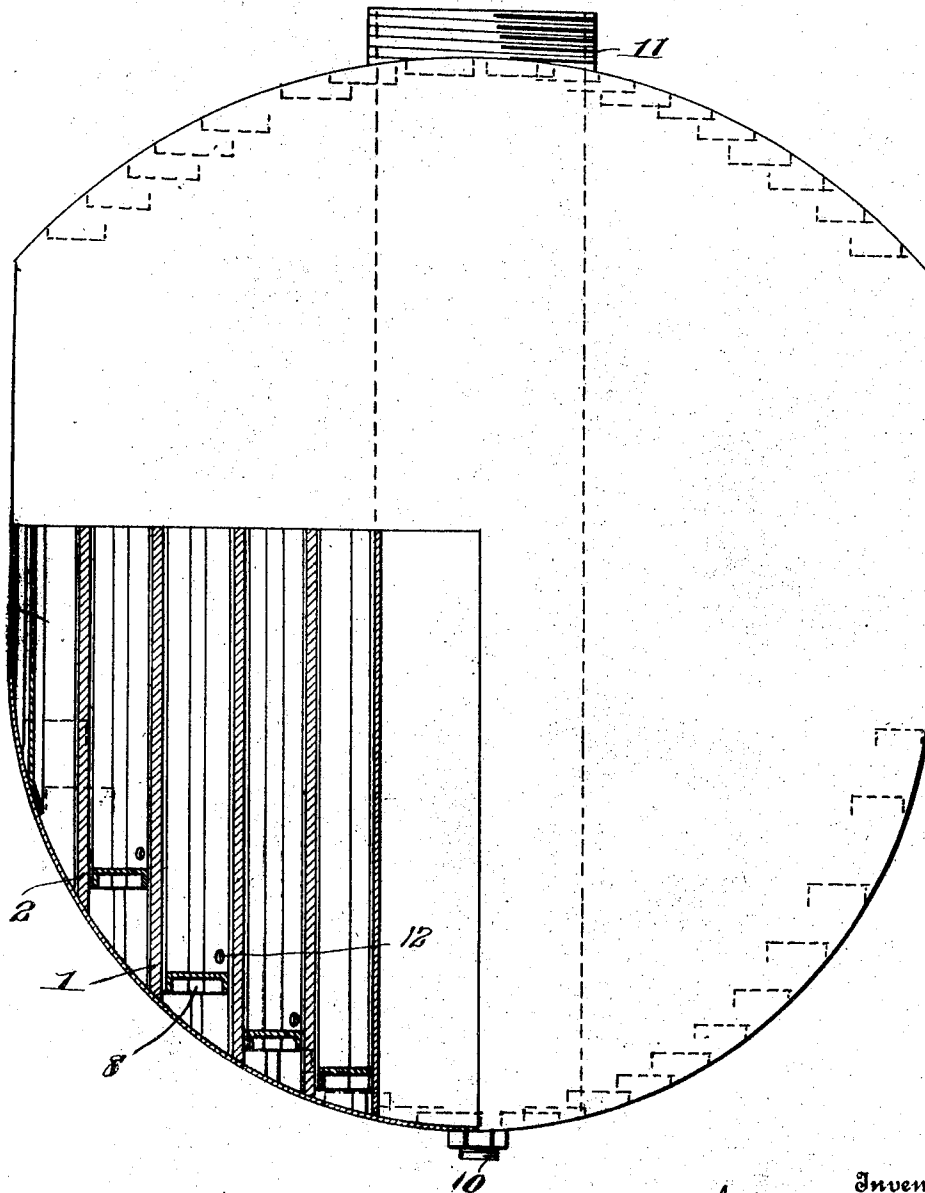
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2 Sheets-Sheet 2

Fig. 2.



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UNITED STATES PATENT OFFICE.

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CRASHPROOF FUEL TANK.

Application filed December 14, 1922. Serial No. 606,872.

This invention relates to fuel tanks in general and more particularly to a tank which is so designed as to greatly resist rupture under shock or pressure and if ruptured to permit a minimum of fuel leakage therefrom.

The necessity for the use of such a tank as is above described for fire prevention in motor vehicles and particularly in aircraft is so well known that its various applications need not be dealt with in detail.

It is an object of my invention to provide a fuel tank internally braced in such a manner as to make it almost crash-proof in all but extraordinarily severe accidents.

It is a further object of my invention to provide a tank in which a main reservoir is surrounded by a plurality of smaller reservoirs so that in case of an accident which is severe enough to crash the outer walls of the tank only that fuel will escape rapidly which was in the smaller reservoir thus broken.

It is a further object of my structure as discussed in the preceding paragraph to diminish the destructive effect of a bullet passing through such a tank. In a fuel tank of the usual construction the hole caused by the entrance is usually a small one while the hole caused by its exit is much larger due, principally, to the pressure wave built up in the liquid fuel due to the passage of the bullet therethrough. By my construction, as will be readily seen, each of the small reservoirs is of such narrow cross section that it would be possible for the bullet in its passage to build up a compression wave of any great or destructive magnitude.

Other objects of my invention will appear as the accompanying specification progresses and my device will be illustrated in the accompanying drawings in which:—

Fig. 1 is a top plan view of my device with the upper outer wall removed.

Fig. 2 is an end view of the same partly in section showing in dotted lines the central reservoir and the cell end closures.

Fig. 3 is a view of one of the cell forming sheets.

Fig. 4 shows the cap for sealing the ends of the cells.

Fig. 5 shows a detail of the method of joining the cells together.

Referring with greater particularity to the drawings, it will be noted that my device is constructed as follows.

Mounted upon and extending between side walls A and B are a plurality of formed metal sheets 1 such as is shown in detail in Fig. 3. These metal sheets are secured to the side walls by any suitable means such as rivets 9 and fluid tight connections made therewith.

The sheets are assembled in the tank by placing each formed sheet on its predecessor with its formed surface reversed so that a plurality of hexagonal cells as shown in Fig. 1 will be formed. These sheets may be secured to each other and to rods 2 which extend throughout the length of the sheets, or may be merely held in place by the tight fit between the sheets and the rods.

The hexagonal cells are sealed at their upper ends by means of suitable caps 8 as shown in Fig. 4, similar sealing caps being also provided for the lower ends of the cells. One hole 13 as shown in Fig. 4 is provided in the sealing caps for the lower ends of the cells.

A main fuel reservoir or well 6 is located at approximately the center of the tank and is suitably provided with rivets for securing it to its adjacent metal sheet ends.

A suitable drain or outlet 10 is provided for the tank at the base of this well and a suitable filler opening 11 is also provided for filling the tank.

A small opening 12 is provided near the base of each cell to connect it to its neighboring cell and to other cells, and thence to the central reservoir. A set of air openings 13 is provided for ingress of air to permit the egress of the fuel.

From the foregoing it will be seen that a blow of such strength as to fracture one of the cell walls will only permit egress of fuel from that relatively small fracture plus the relatively slow egress of fuel from other cells leading through the very small openings in the bases of the cells.

The cells thus constructed lend great structural strength to the whole tank assembly and render a crashing of the tank unlikely. Further, the cells are of such small cross-sectional area as to prevent the building up of a destructive pressure wave in the fuel contained therein.

I do not wish to limit my invention to the specific embodiment shown in this specification, but contend that it is entitled to all the broad applications of the principles involved.

I claim:—

1. In combination, in a fluid fuel tank, a casing, a centrally located main reservoir for initially receiving said fuel, a plurality
5 of cellular reservoirs mounted concentrically about said main reservoir and within said casing, apertures in the walls of said reservoirs allowing distribution of said fuel from said main to said cellular reservoirs and al-
10 lowing interdistribution among said cellular reservoirs.
2. In combination, in a fluid fuel tank, a casing, a centrally located cylindrical main reservoir, a plurality of cellular reservoirs
15 mounted concentrically about said main reservoir and within said casing, each of said cellular reservoirs being connected at its upper and lower extremity to said casing, aper-
20 tures arranged in the walls of said reservoirs allowing distribution of said fluid fuel from said main to said cellular reservoirs and allowing interdistribution among said cellular reservoirs.
3. In combination, in a fluid fuel tank, a casing, a centrally located cylindrical main
25 reservoir, a plurality of cellular reservoirs mounted concentrically about said main reservoir and within said casing, each of said cellular reservoirs being connected at its upper and lower extremity to said casing, aper-
20 tures arranged in the walls of said reservoirs allowing distribution of said fluid fuel from said main to said cellular reservoirs and allowing interdistribution among said cellular reservoirs, the latter being provided
35 with additional apertures for the admission of air for pressure precautional purposes.
4. In combination in a fuel tank casing, a central reservoir mounted in said casing, a
40 plurality of rods attached to the ends of said casing, and a number of sheets of formed metal of generally corrugated construction having a series of depressions to receive part
45 of said rods, said rods and sheets forming tubular cells extending substantially the full length of said casing.

In testimony whereof I affix my signature.

ALBERT C. FOULK.