Sept. 29, 1953 A. E. KANODE ET AL 2,653,541

CONTAINER FOR INFLAMMABLE LIQUIDS

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Fig. 1.

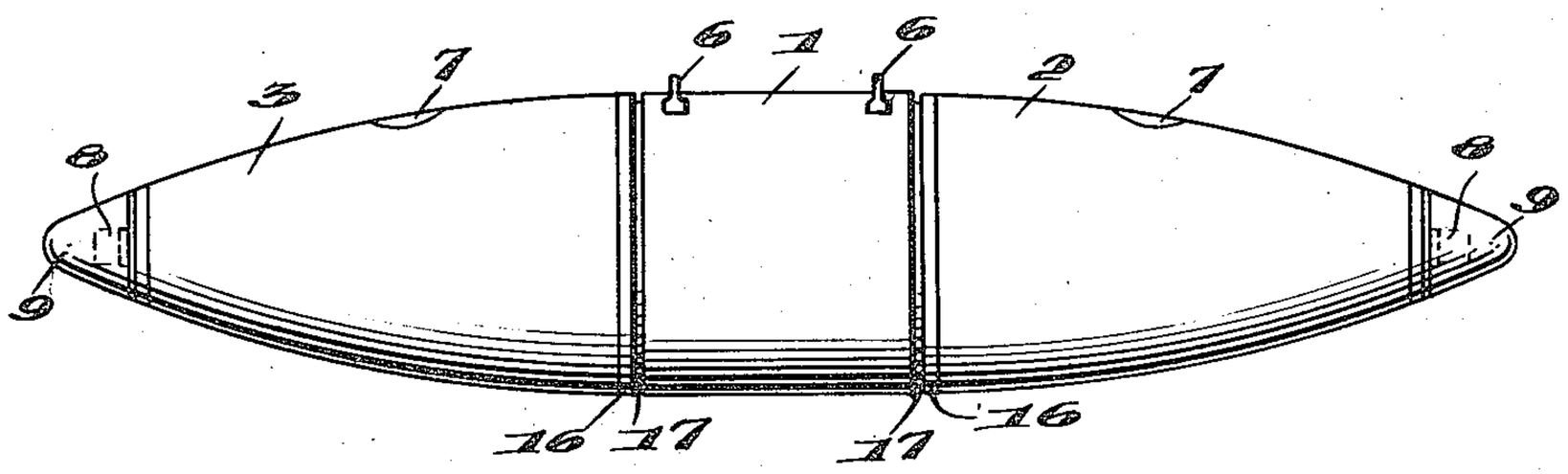

Fig. 2.

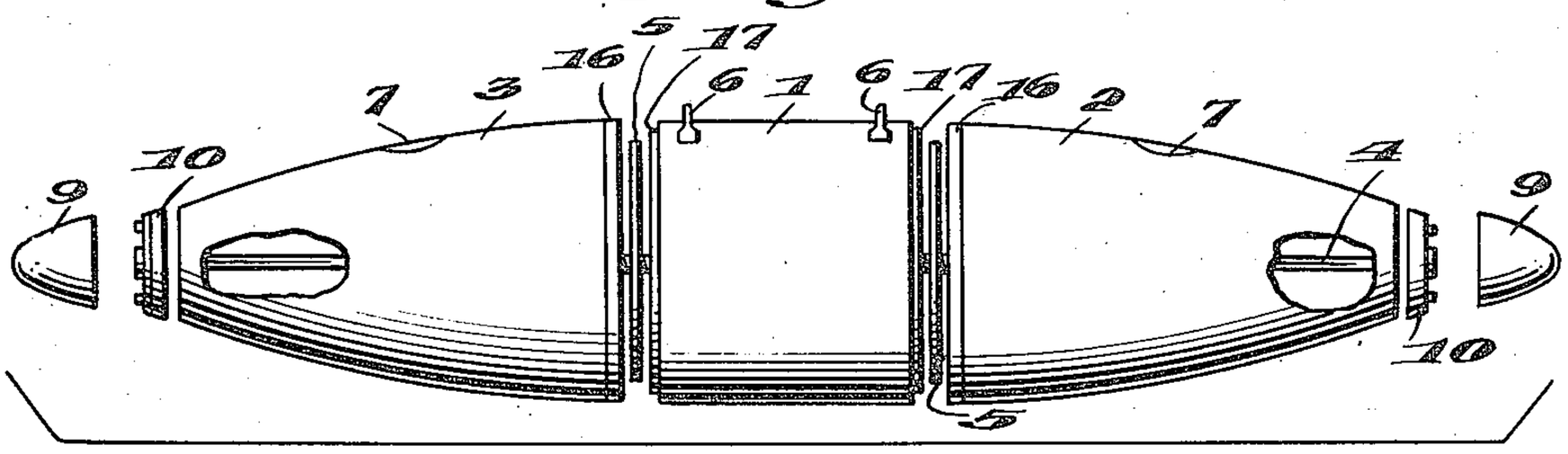

Fig. 5.

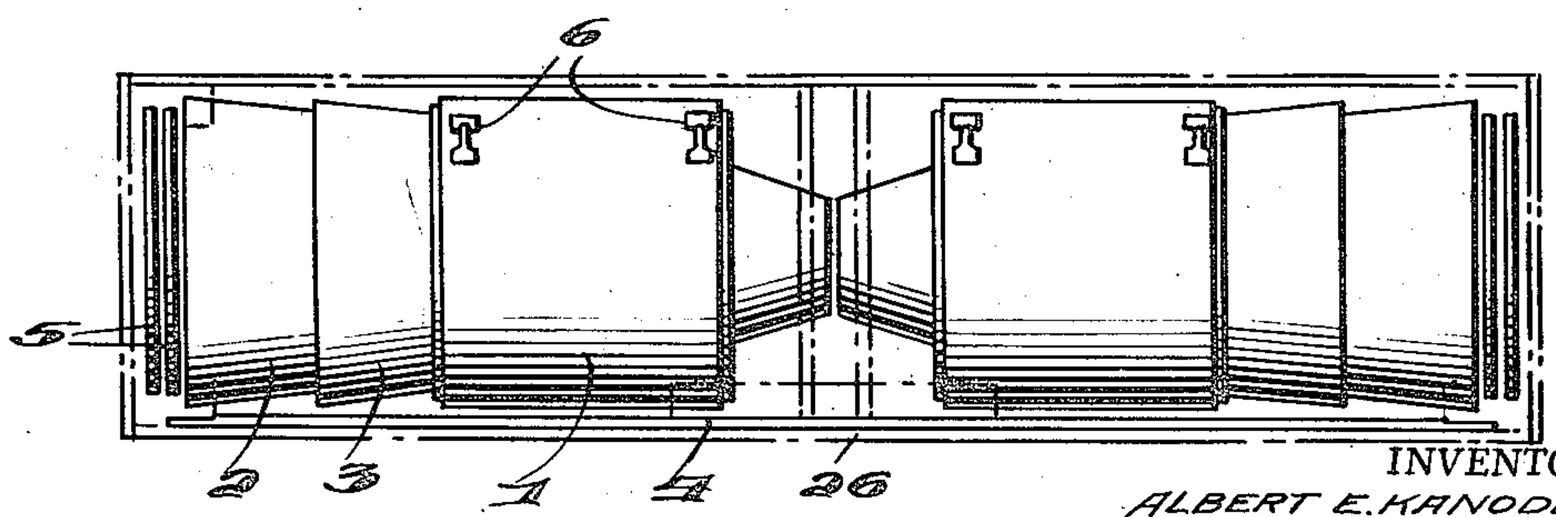

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Fig. 3.

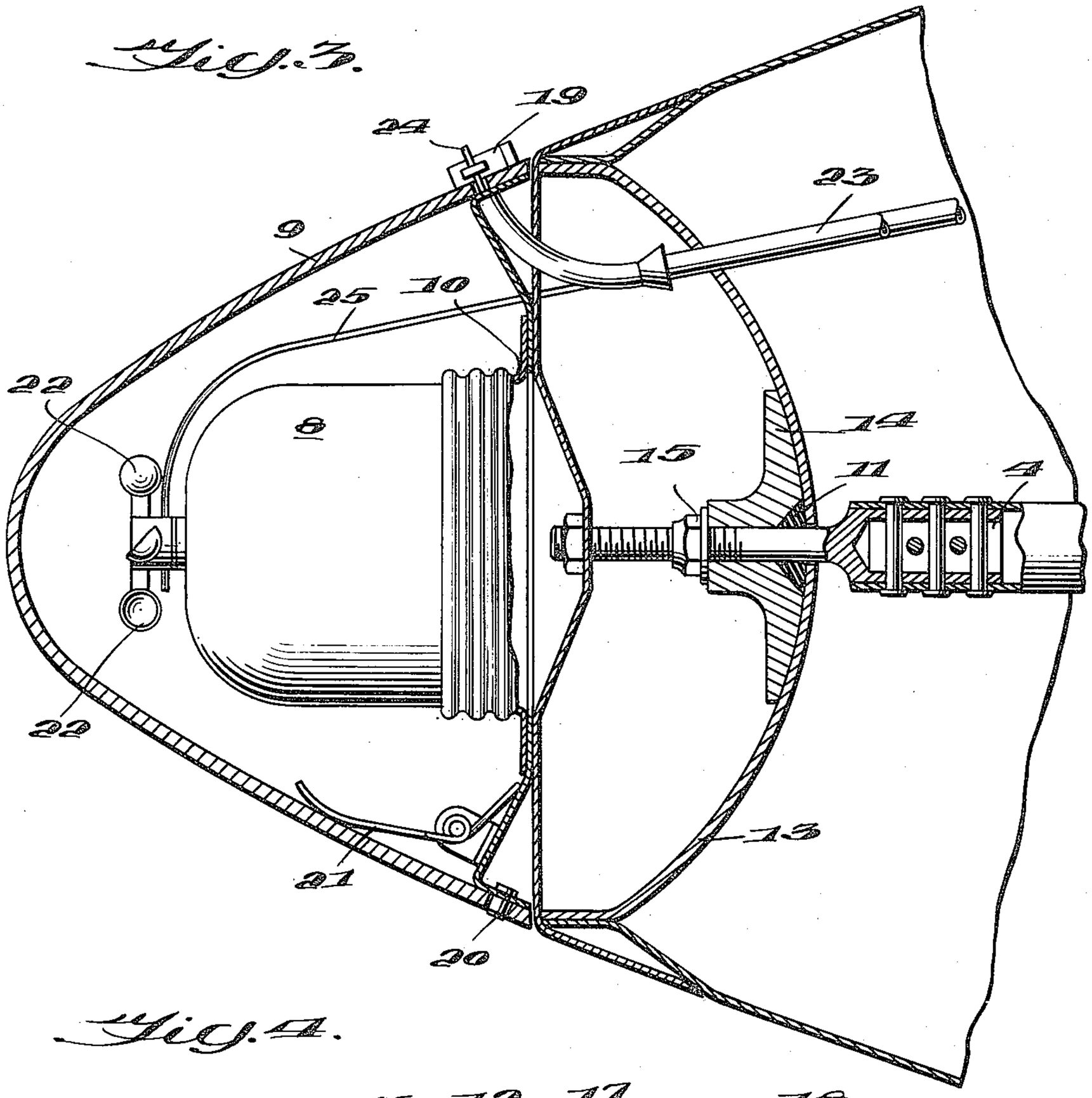
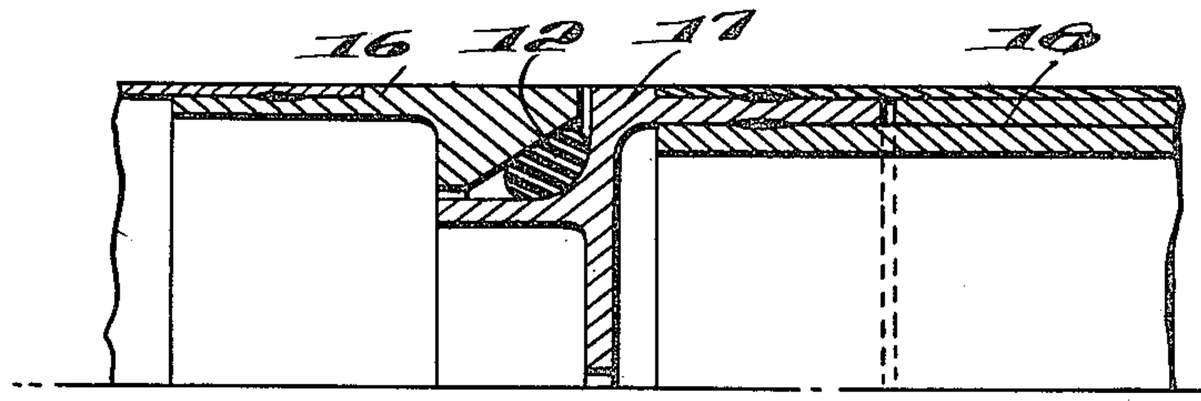


Fig. 4.



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CONTAINER FOR INFLAMMABLE LIQUIDS

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2 Claims. (Cl. 102—6)

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This invention relates to fire bombs and more particularly to the features of construction of such bombs for use on high performance fighter airplanes.

The externally mounted containers for inflammable liquids that may be used as fire bombs on an aircraft of the type mentioned above, must have certain qualifications alien to the ordinary design. It is necessary to mount the bomb exteriorly, usually under the main wing structure, because of the limited space available in the fuselage; thus, the exposed bomb must be capable of withstanding the forces to which it is subjected by the conditions of high speed flight. Monocoque construction of conventional fire bombs will not permit those desirable qualities, mentioned hereabove, to be incorporated into the design, whereas the fire bomb of this invention offers a novel solution to the problem, representing the ultimate in simplicity of design and strength.

A conventional fire bomb with its conventional features of construction would be totally unsatisfactory with respect to weight if it were designed to be externally mounted and used in the manner described above. It may be further pointed out that excessive weight is not the only disadvantage of this type of construction. The spasmodic and erratic detonation of the conventional bomb is in a large part due to its design features concerning ignitor location and operation. Also, storage and shipping of this type fire bomb is made difficult because the shape of its component parts prevents compact packaging. It is a laborious job to assemble a fire bomb featuring the conventional design, thus requiring too much time, and even then the parts are very apt to be bent out of shape or otherwise made useless by distortion of the tapped holes, etc.

It is an object of this invention to provide a lightweight, low cost, dependable fire bomb which may be assembled with a minimum of time and effort.

Another object of this invention is to facilitate storage and crating by designing the component parts so that they may be telescoped into a compact package.

Another object of this invention is to provide a bomb capable of withstanding high speed flight when exteriorly mounted.

Another object of this invention is to provide a fire bomb which may be readily formed without requiring special fabricating machinery.

A further object of this invention is to provide a bomb which may be used with existing installations and conform in other respects to conventional bombing equipment, and techniques.

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Further and other objects will become apparent from the accompanying description and drawings which form a part of this disclosure and in which like numerals refer to like parts.

Figure 1 is a view of the assembled bomb.

Figure 2 is an exploded view of the bomb.

Figure 3 is a fragmentary sectional view of the end assembly through the tip portion of the bomb.

Figure 4 is a fragmentary sectional view showing the arrangement for making a fluid-tight joint between sections.

Figure 5 shows two complete bombs, unassembled and crated.

The fire bomb pictured in Figure 1 can best be described by referring to Figures 2, 3 and 4. The cylindrical center section 1 and the two conical end sections designated as nose section 2 and tail section 3, are secured together by a tie rod 4. Removable reinforcing panels 5 are secured to center section 1. Supporting lugs 6 are mounted on center section 1. Filler caps 7 cover openings in nose section 2 and tail section 3. At the outer end of the end sections 2 and 3, an ignitor 8, shown in Figure 1, is secured to the bomb by tie rod 4, through ignitor base 10. Transparent plastic fairing caps 9 are attached to ignitor base 10 covering ignitors 8.

Conical end section 2 or 3 is built up from two identically formed sheets making up the top and bottom halves; their shapes being developed from 50% of the leading edge of the symmetrical airfoil, N. A. C. A. 66_3-.020. A pressed bulkhead 13 is seam-welded to the two sheets at the small end of the cone section. A large ring 16 which holds annular ring gasket 12 also is seam-welded to the opposite or base end of the two sheets. Ring 16 is formed with a bevel facing generally inwardly of the section for seating gasket 12. The lapped edges of the upper and lower sheets are seam-welded.

Center section 1 is a cylinder consisting of one rolled sheet with a lapped edge. Identical rings 17 are resistance seam-welded to the ends of the cylindrically formed sheet with an extension provided thereon to allow reinforcing panels 5 to be mounted. Rings 17 are provided with an L-shaped seat facing generally outwardly of said section for seating gasket 12. The lapped edges of the sheet are seam-welded and a sway brace reinforcing sheet 18 is added to the inside surface of the cylinder by spot welding. Supporting lugs 6 are then seamed to the reinforced surface providing means by which the bomb is mounted.

This bomb or container must be fluid tight and to accomplish this, resilient annular or O-ring

gaskets 11 and 12 are employed as shown in Figures 2 and 3. After arranging sections 1, 2, and 3 in an assembling position and seating annular ring gaskets 11 and 12 between rings 17 and 16, which are welded to said sections as described previously, and between bulkheads 13 and beveled washers 14, the sections are ready to be drawn tightly together. Tie rod 4 extends through a beveled washer 14, through annular ring gasket 11, through an opening in bulkhead 13 and continues on until it emerges at the opposite end of the bomb through an identical sealing arrangement. An ordinary nut 15 then screws over the threaded ends of tie rod 4, securing sections 1, 2, and 3 and effecting a seal at all joints. Tie rod 4 extends beyond nut 15 to provide a mount for ignitor 8. The transparent plastic fairing cap 9 shown in Figure 2 is fastened to the ignitor base 10 to protect ignitor 8 from external forces. Permanently attached arming wire housings 23 are welded to the inside wall of end sections 2 and 3 extending therethrough to ring 16. Arming wires 24 and 25 extending through housings 23 provide a means for detaching cap 9 and for arming the bomb when the bomb is released. Cap 9 is held on one end by arming wire clip 19 and on the other end by a supporting stud 20 with a spring release 21. When arming wire clip 19 is detached by pulling arming wire 24 therefrom, cap 9 is ejected by spring release 21 allowing air to contact the small blades 22 on ignitor 8. Simultaneously with the release of cap 9, arming wire 25 is pulled loose from ignitor 8 permitting blades 22 to rotate.

The advantages of this fire bomb are evidenced in the cylindrical and conical sections by virtue of their features of construction and assembly. The end sections are identical and are interchangeable. The cylindrical center section makes it possible to use a longer center section in the event more volume is desired. Filler caps in both end sections allow filling if desired, or a choice of the more convenient position for single filling. There are no raw edges of sheet metal to injure personnel or become bent out of shape before assembly. There are no tapped holes to become clogged or burred to cause delay and scrappage. The bomb may be suspended from either end forward using existing installations and conforming in other respects to conventional bombing equipment and techniques. Unassembled, these bombs may be crated in pairs in a suitable crate 26, shown in dash lines in Figure 5, for storage or shipping in a minimum of space, providing a complete installation for one airplane.

It is to be understood that certain changes, alterations, modifications and substitutions can be made without departing from the spirit and scope of the appended claims.

We claim as our invention:

1. A container structure such as that used for fire bombs, comprising a nose section, a center section and a tail section, said center section being substantially cylindrical, said nose and tail sections being substantially circular in cross-section with a substantially conical exterior shape, bulkheads welded to said end sections and being concave inwardly thereof, said sections being provided with annular seating rings circumferentially attached to the open ends thereof, and annular ring gaskets placed therebetween for providing a fluid-tight seal between said sections, a tie rod extending axially through said sections and said bulkheads, annular sealing ring gaskets and washers having compound bevels formed thereon fitting around said tie rod outwardly of said bulkheads, said compound bevels mating the surfaces of said bulkheads and said sealing ring gaskets, nuts threadedly engaging said tie rod for securing said sections and said seals in fluid-tight relationship, said container being provided with supporting lugs attached thereon, openings formed in said container for filling, closure means for said openings when filled, and removable caps attached adjacent the end sections for reducing drag.

2. A fire bomb structure comprising a nose section, a center section and a tail section, said center section being substantially cylindrical, said nose and tail sections being substantially circular in cross-section with substantially conical exterior surfaces, bulkheads formed at the small ends of said end sections being concave inwardly thereof, annular rings forming the open ends of said sections, said annular rings on said end sections having beveled surfaces facing generally inwardly of said sections, and said annular rings on said center section having L-shaped seats facing generally outwardly of said sections, annular ring gaskets interposed between said annular rings being held tightly therebetween, a tie rod extending axially through said sections and said bulkheads, annular sealing ring baskets and washers having compound bevels formed thereon fitting around said tie rod outwardly of said bulkheads, said compound bevels mating the surfaces of said bulkheads and said sealing ring gaskets, nuts threadedly engaging said tie rod for securing said sections and said seals in fluid-tight relationship, reinforcing panels fastened to said annular rings within said center section, said container having supporting lugs attached thereon, openings formed in said container for charging, closure means for said openings when charged, means for detonating said charge attached to said tie rod adjacent the end thereof, a removable cap protecting said detonating means.

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