Aug. 21, 1951 L. H. COOK 2,564,751

GRENADE

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Fig. 1.

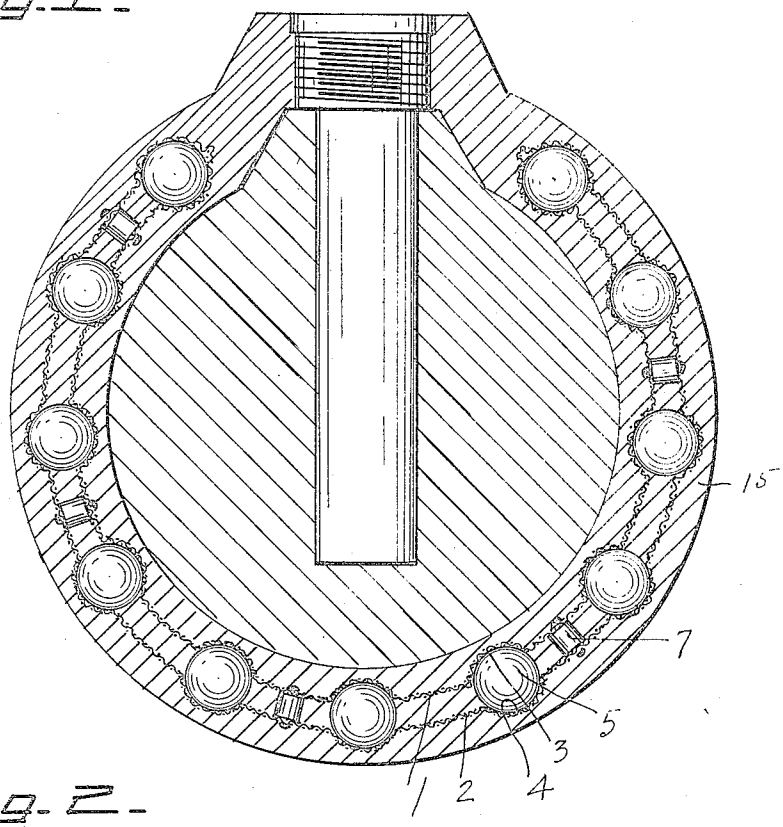


Fig. 2.

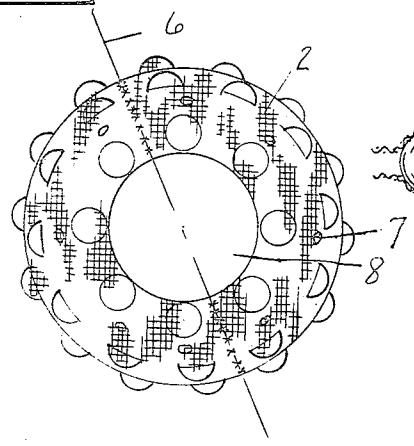
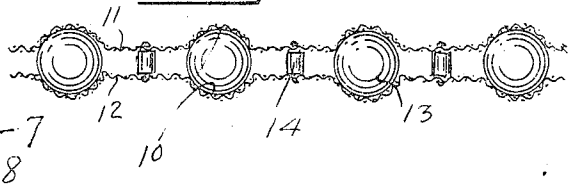


Fig. 3.



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GRENADE

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2 Claims. (Cl. 102—64)

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This invention relates to a grenade and has for one of its objects a method of forming the walls of a grenade with preformed members or projectiles so that the latter will be held in properly spaced relationship in said walls during molding or casting of the latter.

Another object of the invention is the provision of an improved grenade that is relatively light in weight as compared with conventional grenades of similar size, and which grenade is more effective than conventional grenades within the same range.

Conventional grenades of the offensive type generally have a molded body or shell of iron or steel that contains the explosive material. They may be of the percussion type or fuse type as desired. The shell is usually formed with crossing grooves to form lines of weakness along which lines the walls are supposed to break whereby the material between such lines will form fragments that are the intended projectiles. These grenades are too heavy to be easily thrown with any degree of accuracy except after considerable practice and even then a full arm swing must be used which undesirably restricts the accuracy and range.

Furthermore, conventional hand grenades are relatively small and their effectiveness depends greatly upon whether or not the walls of the shell will actually break up into the intended number of fragments. Thus breakage is not uniform and the fragments that do result from breakage are of shapes that offer practically the maximum resistance to the air, thus very rapidly falling off in velocity after explosion of the grenade.

With the present invention the walls of the grenade carry preformed uniform sized projectiles that are not bonded with the material of the walls, but that are free to separate from the walls upon breakage of the latter, and said projectiles are preferably spherical so as to offer little resistance to the flight through the air. The walls are of relatively light material as compared with iron or steel, therefore the grenade may be made much lighter than heretofore without reducing the effectiveness. In fact its effectiveness is increased over the conventional grenades.

The making of a grenade of the type herein disclosed and as above explained presents problems, the solution of which is believed to constitute invention. For example, a practical method of holding the walls or projectiles in uniform spaced relation, or in any predetermined

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spaced relation, and so as to be imbedded equally deep or equally shallow within the cast or molded shell of the grenade is accomplished by this invention, and has heretofore been attempted, but with little success if any insofar as I am aware.

Other objects and advantages will appear in the description and in the drawings.

In the drawings,

Fig. 1 is an enlarged sectional view through a grenade of this invention.

Fig. 2 is a reduced size elevational view showing the means for holding the projectiles properly positioned during casting.

Fig. 3 is a fragmentary sectional view showing a pair of flat screens with the projectiles between them preparatory to casting metal about the projectiles or preparatory to forming the screens in some shape other than flat.

It will be seen in Fig. 2 that a circular opening 8 is preferably left in one side of the assembled screens, which opening permits passage of the desired detonating mechanism or fuse, etc. into the area enclosed by the inner screens.

Another possible procedure is the forming of opposed recesses 10 in flat screens 11, 12 (Fig. 3) for sealing opposite sides of balls 13 therein. These screens may be held in contact with the balls 13 by rivets 14 or by spacers spot welded at their ends to the screens or in any other desired manner. After the flat sheets in the form of a "sandwich" with the balls 14 therebetween are formed they may be bent to the desired semi-spherical contour or to whatever shape is desired. The balls will not become dislodged due to the recesses in which they are seated.

If a spherical grenade is desired as shown in Fig. 1, the spherical cage like that of Fig. 2 may be spacedly supported within an outer spherical mold form by conventional chaplets and the sand core for the grenade may be similarly supported within the cage. This is conventional molding practice and is not shown.

The molten or moldable material 15 that is to form the walls of the grenade is then flowed into the mold, flowing through the mesh openings in the screens to fill the spaces between the screens and balls, and also the spaces between the screens on the mold forms. If desirable, portions of the balls may project from the outer sides of the finished grenade so that its outer sides are knobby or roughened thereby facilitating grasping the grenades by the fingers for throwing. In such instances the outsides of the grenades may resemble the illustration of Fig. 2. Any desired

pattern may be formed in the outer surface of the grenade, the pattern corresponding with the inside contour of the outer mold form.

The material 15 is preferably a light metal, such as magnesium, and the size of the grenade may be about that of a baseball. In as much as the specific gravity of magnesium is only about 1.74 as compared with about 7.85 which is that of iron or steel, and as the explosive 16 within the grenade may be only a few ounces, it is seen that the weight of the grenade having three or four score of projectiles or steel balls thereon, each of destructive size, can be provided that can be thrown like a baseball and with substantially the same range and accuracy. Even plastic material could be used for the walls of the grenade, although the possible destructive results of fragments of the magnesium or other metal would appear to make the metal preferable.

In casting the walls, an opening 17 concentric with opening 8 is provided thereon, which opening may be threaded to receive any conventional detonating mechanism generally designated 18. For safety reasons these are preferably of the fuse type instead of the percussion type, but as this invention is not concerned with the type used the mechanism is merely illustrated in semi-diagrammatic form.

It is to be understood that the illustration and description are not intended to be restrictive of the invention, but are merely illustrative of preferred forms thereof.

I claim:

1. A grenade having molded walls containing metal members therein substantially uniformly spaced apart, the material of said walls being of substantially lower specific gravity than the material of said members and of a lower melting point than that of said members, said members being spherical steel balls, and concentric generally spherical spaced screens in said walls formed with opposedly opening pairs of opposite partially spherical recesses within which opposite sides of said balls are seated spacing said screens apart with the said screens holding said balls against shifting relation to each other.

2. A grenade having molded walls of magnesium containing steel projectiles held therein by said magnesium and concentric, spaced, hollow elements formed from screening between which said projectiles are held in spaced relation against shifting during the molding of said walls.

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