J. A. STEINMETZ.

GRENADE.

APPLICATION FILED OCT. 9, 1917.

1,276,434. Patented Aug. 20, 1918.

Fig. 1.

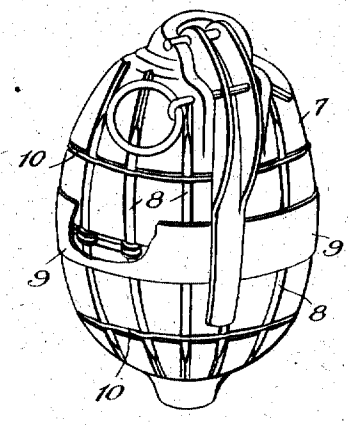


Fig. 2.

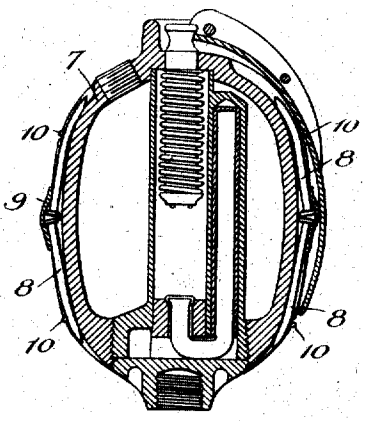


Fig. 3.

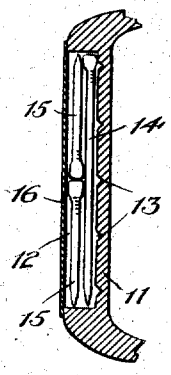


Fig. 5.

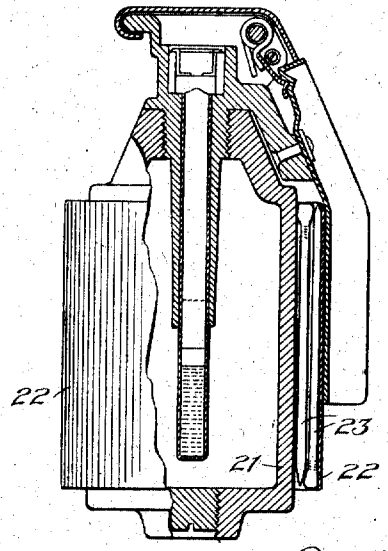


Fig. 4.

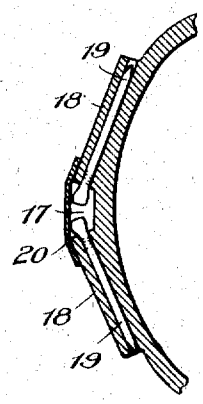
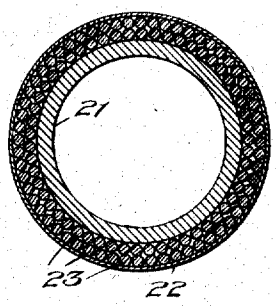


Fig. 6.



Witness

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GRENADE.

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To all whom it may concern:

Be it known that I, JOSEPH A. STEINMETZ, a citizen of the United States, and resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Grenades, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention has for its object increasing the destructiveness of hand grenades carrying high explosives while avoiding danger of premature explosion.

With powerful explosives, it is found that cast iron traversed by intersecting breaking grooves is not satisfactory for the reason that the extreme suddenness and violence of the explosion pulverizes most of the metal or breaks it into fragments too small to be properly effective, and for this reason shells of this type are now often made of annealed metal. The fragmentation of this metal is uncertain and such shells cannot be depended upon to produce invariably a very great number of pieces all adapted for destructive work. In accordance with my invention grenades of usual or simple special type have the shell wall provided with a larger number of heavy distinct wire nails, or short tough rods, which are scattered in every direction by the explosion.

In the accompanying drawings,

Figure 1 represents a common form of grenade provided with nails or wire fragments in accordance with my invention.

Fig. 2 is an axial section of the same grenade.

Fig. 3 shows in axial section part of a different form of shell.

Fig. 4 is a similar figure illustrating a third form of grenade.

Fig. 5 is a side view, partly in section, showing a fourth embodiment of my invention.

Fig. 6 is a cross sectional view of the grenade of Fig. 5.

In Figs. 1 and 2, 7 represents a grenade shell having the usual intersecting grooves, and in these are placed tough rods or wire nails 8, preferably in two oppositely turned sets with heads abutting at the equatorial groove and with points extending well out toward the polar regions of the shell. These are held in place by a central band 9 of suitable material, tin being satisfactory, and by wire bands 10 lying partly in grooves which are parallel to and at some distance from the equatorial groove. When the grenade is to be thrown, the operator ignites by well known means a timed fuse shown in the drawing but not in itself a part of my invention, nor even of a preferred type, since it is not entirely safe. It is to be observed that the band 9 is pressed into approximate conformity with the surface which it covers and that the wires, taking a straight course from nail to nail, lie in the intermediate portion of the grooves and never accidentally get out of place.

Where shells can be made specially, they may be of the form shown in Fig. 3, that is they may have a nearly cylindrical central portion 11 provided with a broad circumferential recess 12 in the bottom of which are breaking grooves 13 analogous to those of Figs. 1 and 2. In this recess are placed side by side a set of long nails 14 and, outside these, two sets of shorter nails 15, and the recess is closed by a band 16 of tin or other suitable material.

Another construction is shown in Fig. 4 where the shell has a large equatorial groove 17 between two heavy annular portions 18 which are perforated in meridional planes to receive straight, oppositely turned nails 19, extending directly from the central groove. The groove may be covered by a thin nail-retaining band 20 although if suitable nails are properly inserted each set may retain the other set in place. Each nail-receiving perforation is the equivalent of a breaking groove.

Figs. 5 and 6 show a grenade having a cylindrical body 21 which may be of light metal and which is surrounded by a concentric ring or band 22, and in the annular space between the two are placed two or more sets of oppositely turned heavy nails 23 extending approximately from end to end of the cylindrical body. If the last of the mass of nails are driven into place by strong force, as by a hammer, all the nails will be frictionally held and no special retaining devices are necessary or desirable.

The preferred form of exploding devices, here shown, is not of my invention, but as in the first form such devices are illustrated to show that my devices do not interfere with the use of the more common forms of grenade devices. In several of the forms short lengths of tough wire may be used instead of nails or headed pieces. The ring or band

22 is shown as of a width equal to a nail's length, but obviously it may be of less width or even be mere wire or wires.

What I claim is:

1. The combination with a grenade of a series of short independent tough wire rods, secured around the peripheral portion of the grenade by means destructible by explosion of the grenade.

2. The combination with a grenade, of an annular series of wire nails or the like distributed around the body of the grenade, and a suitable band encircling the grenade and holding the nails in place.

3. The combination with a grenade having an external equatorial breaking groove with nail-receiving perforations extending oppositely from said groove, and a band covering said groove and preventing accidental escape of any nail which may be in any perforation.

4. The combination with a suitable grenade and a larger readily ruptured, concentric ring, of a series of distinct lengths of wire placed in the annular space between the grenade and ring.

5. The combination with a suitable grenade and a larger concentric ring, of a series of distinct short, tough rods forced into and approximately filling the annular space between the grenade and ring and frictionally retained in place.

In testimony whereof I hereunto affix my signature.

JOSEPH A. STEINMETZ.