Jan. 16, 1945. B. WALKER 2,367,249

GRENADE THROWER

Filed Nov. 26, 1943

Fig. 1.

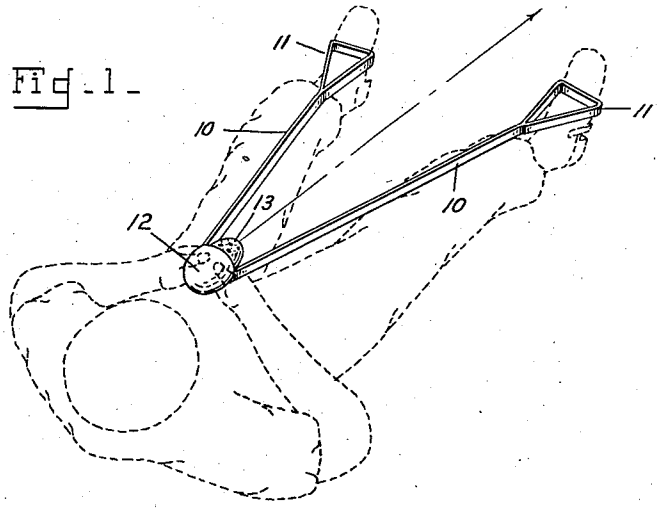


Fig. 2.

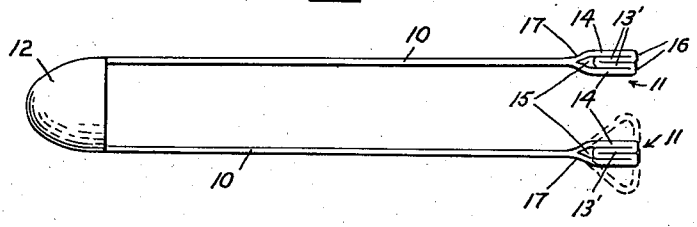
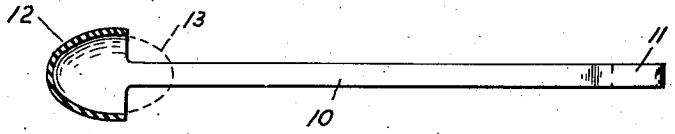


Fig. 3.



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Patented Jan. 16, 1945 2,367,249

UNITED STATES PATENT OFFICE

2,367,249

GRENADE THROWER

Brooks Walker, Piedmont, Calif.
Application November 26, 1943, Serial No. 511,878

4 Claims. (Cl. 124—17)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

The invention relates to means for facilitating the throwing of grenades manually and has for an object to enable the adaptation of the sling shot in a practical way to such use.

It is an important intent of the invention to present such a device which may be carried by the soldier without adding objectionably to the impedimenta of equipment, especially in consideration of the benefits derived from its use. It is also a purpose to present a device which may be readily carried on the person, and may be applied to various utilitarian purposes at times when combat is not imminent. It is also sought to eliminate need for any special mount elements or framing of rigid material, but to offer an article which consists essentially of only the elastic material necessary to enable the storing and release with accelerated motion force of kinetic energy as familiarly manifest in sling shots using rubber bands.

It is an important desideratum also to enable the use of the principle of the sling shot so that more than the force developed in an exclusively manual device may be applied to the propulsion of a grenade so that the grenade can be projected over considerably greater distances than when the strength of the hands and arms only of the user is available. It is therefore a specific design of the invention to provide a stirrup anchorage for elastic bands of a sling shot device, so that the article may have the feet of the user inserted in stirrups at the extremities of the bands, or so that the stirrups may be slipped over stakes or the like as anchorages.

A further consideration is the simplification of production of the elastics, stirrups and a receptacle for holding the grenade in the sling.

An important attainment of the invention is to enable the soldier to throw a grenade without exposing himself to view, even when intrenchments are not available, it being possible for the man to throw the grenade while lying prostrate, with ranges exceeding those practicable manually under the most favorable conditions.

Additional objects, advantages and features of invention reside in the construction, arrangement, proportions, and combination of parts involved in the embodiment of the invention, as will appear or be understood from the following description and accompanying drawing, wherein:

Figure 1 is a perspective view of one form of the invention, the body of a person using the same being indicated by dotted lines;

Figure 2 is an elevation of the sling in repose;

Figure 3 is a sectional view at right angles to Figure 2, showing the flat side of the band and the Figure 4 is a view similar to Figure 3 of a modification.

There is illustrated an elastic sling device comprising two elastic bands 10 of rubber or the like of a quality equal to that of pure natural rubber or caoutchouc moderately vulcanized or vulcanized so as to improve its elasticity and to utilize its capability of stretching to a good maximum. These bands are preferably of such cross sectional size and length as to tax the strength of the average man somewhat less than his maximum effort when pulling them both simultaneously to twice their length, using both hands at the outer ends while the base ends are anchored to or near the feet of such person. Integral stirrup loops 11 are formed at the base ends of the bands, and a receptacle 12 is located at the opposite ends of the bands, either attached or a separate material or, as illustrated formed integrally with the bands.

The receptacle may be of a size to fit loosely around a conventional United States service hand grenade 13 or to fit snugly enough thereon to hold the operating lever in safety position after the safety pin of the grenade has been pulled.

The stirrup loops are of sufficient size for the insertion of respective feet of the user therein as far as the instep, and the depth of the receptacle is sufficient to encompass the body of the grenade to a circumferential line slightly beyond the center of gravity of the grenade in the direction of projection of the grenade when the latter is fully inserted. The bands 10 may have a length such that when the stirrups are engaged on the feet of the user and the bands are in repose, the base of the receptacle will be in the neighborhood of 18 inches, more or less, from the soles of the feet engaged in the device.

While the bands are illustrated as flattened in cross section, they may be otherwise shaped in section as found expedient or desirable.

The walls of the receptacle, when formed integrally with the bands 10 are preferably as thick or thicker than the flat bands, so as to minimize stretching of the material of the receptacle under projecting use.

It will be noted that, as shown in Figure 2, the stirrups lie with the outer loop parts 13' infolded between the inner side parts 14, all lying in close flat fitting relation. Each stirrup is caused to automatically assume this close folded form by the inherent elasticity of the material and the stresses set up therein when opened to receive the foot, by vulcanizing the stirrup portion while in such folded position. This produces a reentrant central fold 15 in the outer half of the loop forming the stirrup and lateral projecting loops 16 midway of each side of the loop and a base fold 17 whereby the inner side parts 14 are caused to press flat against the interposed infolded parts 13'.

In use, the soldier may engage his feet in respective stirrups and with grenades in convenient reach lies on his back, with one hand holding the receptacle, without tension on the bands. With the other hand he inserts a grenade and its operating lever in the receptacle with the bouchon portion projected from the receptacle, exposing the safety pin and the ring on the latter by which it may be extracted. If the receptacle fits loosely around the grenade it is desirable that the operating lever of the grenade be so located that it will lie in a plane with the axis of the grenade at right angles to the plane including both bands 10 and it is then grasped in the first mentioned hand so as to hold the lever depressed. The receptacle would hold the lever to prevent its detachment or firing operation, however, even if not depressed by the grasp of the user. The grenade may also be inserted with the lever outside the receptacle and extending rearwardly beside the receptacle so that it may be grasped under the thumb or fingers of the user at the same time that the receptacle is grasped.

The grenade being placed, as indicated, and while held with the receptacle in one hand, the safety pin is extracted, arming the grenade.

The grenade may be retained in this armed condition for a time in case of a moving target until the latter is in good range, and then with both hands the receptacle and grenade are grasped and drawn rearward placing the bands 10 under a tension sufficient to project the grenade over the proper distance. Care is taken to keep the legs spread apart so as to afford a good clear way for movement of the projectile and receptacle between the feet. Upon release then of the receptacle from the grasp of the hands the contraction of the bands will draw it forward with accelerated motion so as to propel the grenade on a line representing the resultant of the forces communicated by the bands 10. On the latter account, in order to enable a fair approximation of correct azimuth, it is desirable ordinarily that the feet be equally spaced on opposite sides of the axis of the trunk of the user, and the receptacle drawn back on a vertical plane including that axis, and that the body be so positioned that the axis will be as near as possible in the desired azimuth plane. However, with experience aiming with fair accuracy will be possible with modification of the specific practice last described.

By elevating the feet, the trajectory may be varied, and by providing a foot rest such as a log, or boxes, the trajectory may be changed by raising or lowering the receptacle while the bands 10 are under throwing tension.

In order to minimize looping of the bands during contraction, the bands may be tapered as at 10', Figure 4, from the receptacle to the beginning of the stirrups so that strain of the bands will continue during contraction in such manner that the whole length of both will be kept under tension until full contraction has occurred. The portions of the bands next the receptacle would then recover first from distension, but would be kept taut by recovery continuing in the forward portion, until the bands have contracted to their minimum length. The final action in such case would also be such as to change the direction of inertia in the material of the bands giving it elements of direction divergent from the line of flight of the grenade whereby possible tendency of loops of the bands otherwise to become interposed in the path of the grenade is counteracted.

Thus, each band may be a continuous annular band to which the cup formed in any conventional way may be attached conventionally and the parts of the band distant from the cup will constitute a stirrup loop into which the feet of the user may be inserted, the device then being applied to use and functioning substantially in the same manner as above described.

Shaping of the cup to facilitate gripping or the provision of hand holds or finger holds may be carried out as found expedient or required for the uses contemplated.

While I have disclosed my invention specifically in the best embodiment known to me, it will nevertheless be understood that modification of the form proportions arrangement and combination of elements and parts, substitution of materials and equivalents, mechanical and otherwise may be made without departing from the spirit of the invention as particularly defined in the appended claims, wherein;

I claim:

1. A thrower for grenades and the like consisting of two elastic stretchable bands each having a foot-receiving stirrup at one extremity, and a projectile receiving receptacle connected to the opposite ends of the bands, the material of each stirrup being formed with a reentrant central fold and lateral projecting folds, whereby the outer part of each stirrup when free assumes an infolded position within the inner side parts of the stirrup under inherent stress of the material at said folds.

2. A thrower for grenades and the like consisting of two elastic stretchable bands each having a foot-receiving stirrup at one extremity, and a projectile receiving receptacle connected to the opposite ends of the bands, the material of each stirrup being formed with a reentrant central fold and lateral projecting folds, whereby the outer part of each stirrup when free assumes an infolded position within the inner side parts of the stirrup under inherent stress of the material at said folds, said inner part being formed with side portions joined at a base fold whereby the side portions assume a closed position flat against said infolded parts.

3. A high power catapult for grenades, consisting of a pair of elastic bands each adapted to be stretched to a length approximately the distance from the foot of the user to his waist, said bands exceeding in normal operative contractile force the manual force capable of being exerted between the hands of an operator, a launching pocket connected to the bands at one end, the opposite end of each band having a stirrup loop thereat of sufficient size to receive the foot of an operator therethrough.

4. The structure of claim 3 in which said pocket is of a size and depth to fit snugly around a conventional hand grenade so as to confine the arming lever thereof when otherwise free, whereby upon projection of a grenade from the pocket, the lever will be freed and the grenade firing device permitted to operate.

BROOKS WALKER.