

# UNITED STATES PATENT OFFICE.

WILLIAM P. GREENOUGH AND WILLIAM A. MORRISON, OF CAMBRIDGE,  
MASSACHUSETTS.

## IMPROVEMENT IN GRAPPLING-PROJECTILES.

Specification forming part of Letters Patent No. 183,457, dated October 17, 1876; application filed  
September 11, 1876.

*To all whom it may concern:*

Be it known that we, WILLIAM P. GREENOUGH and WILLIAM A. MORRISON, of Cambridge, of the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Grappling-Projectiles; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 denotes a side elevation, Fig. 2 a longitudinal section, and Fig. 3 an end view, of a projectile embodying our invention.

The article in question is to be discharged from a gun or cannon, and is for the purpose of carrying a rope over a stranded vessel, or from such to land.

In the drawings, A denotes a metallic shank, provided at its ends with two cylindrical heads, *a b*, to one of which (viz., *b*) a series of fluked arms, B, like the arms of an anchor, is hinged, the said arms being arranged in the head at equal distances asunder. There is fixed to the shank a set of springs, E, to bear against the arms, in order to force them away from the shank. Each arm, when at its outermost position, makes an acute angle with the shank and brings up against a shoulder, *c*. In advance of the series of fluked arms, and fixed to their head *b*, is an elastic bunter or wadding, C, composed of vulcanized rubber. Furthermore, there is to the shank and near its head *a* a swinging bail, D, applied so as to fold forward upon the shank, and made so as to be capable of being swung back into line with the axis of such shank. The bail, shaped or made as represented, is, when in use, to have a rope fixed to its end or eye *d*.

In using the projectile, it is to be inserted, bunter foremost, into a gun or cannon previously loaded with a sufficient charge of gunpowder. The charge, on being exploded, will act against the bunter and expand it into and against the bore of the piece, thereby rendering the charge more effective in discharge of the projectile than it would be without the bunter thereto.

The projectile, after passing from the gun, will turn so as to bring the bunter head foremost. The bunter will prevent injury to a ship or object should it be struck by the projectile. It also will operate to prevent injury to the projectile by the force of the blow as well as by that of the explosion of the charge used in expelling the projectile from a gun.

By having the two heads to the shank, the projectile becomes better balanced in its flight, and can be forced either end foremost from a gun.

We claim as our invention—

1. The grappling-projectile, substantially as described, consisting of the shank A, heads *a b*, series of fluked arms B, springs E, bunter C, and bail D, all arranged and applied essentially as set forth.

2. The combination of the shank A, provided with two heads, *a b*, with the series of fluked arms and their springs, arranged as specified.

WM. P. GREENOUGH.  
WM. A. MORRISON.

Witnesses:

R. H. EDDY,  
J. R. SNOW.