C. ARRICK.

Projectile for Ordnance.

No. 160,071. Patented Feb. 23, 1875

Fig. 3.

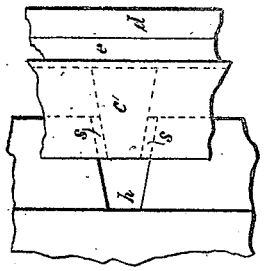


Fig. 1.

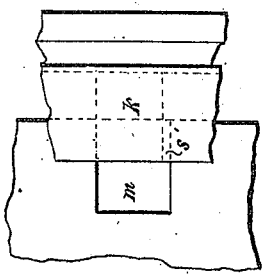
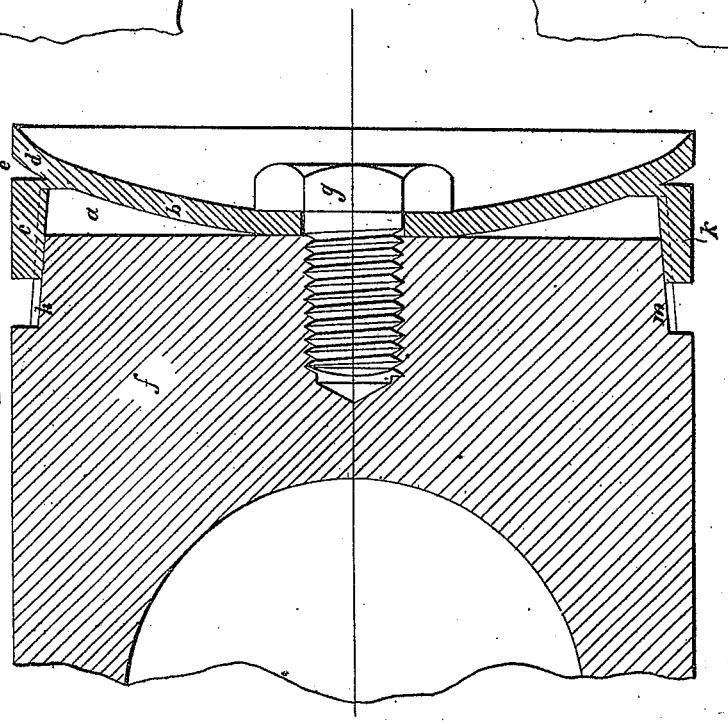


Fig. 2.



WITNESSES

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CLIFFORD ARRICK, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PROJECTILES FOR ORDNANCE.

Specification forming part of Letters Patent No. 160,071, dated February 23, 1875; application filed January 13, 1875.

To all whom it may concern:

Be it known that I, CLIFFORD ARRICK, of Washington, District of Columbia, have invented a Projectile, of which the following is a specification:

My invention consists in an improvement upon what is popularly known among ordnance experts as the "Eureka Projectile," secured to me by Letters Patent of the United States No. 47,078, March 28, 1865, and has for its object a more complete utilization of that device.

The soft-metal shoe, which distinguishes the "Eureka Projectile" from others of the same class, accomplishes its function by an arbitrary compound expansion, whereby, under the immediate action of the gunpowder gases and the superior *vis inertia* of the iron body of the projectile, the requisite adjustment by a radial suppression of windage, and the necessary impression of the grooved bore upon a suitable substance, is accurately and simultaneously guaranteed.

Figure 2 of the drawings exhibits substantially my original arrangement for accomplishing this result, wherein *f* is a sectional view of the iron body of the projectile, and *b*, *d*, and *c* of its expanding parts. The method of securing the latter to the former, as shown in my said patent, was by a clinch; but the wrought-iron screw-bolt *g* is believed to be necessary to the safe operation of my improvement.

Different methods of preventing any axial movement of the sabot independently of the iron body of the projectile, and also of relieving the air-chamber *a*, have been suggested; but Fig. 1 of the drawings represents the plan heretofore adopted in connection with the Eureka sabot, wherein one or more rectangular grooves, *m*, corresponding blocks *k*, and air-passages *s'*, irregular in their dimensions, and for the mere purpose of facilitating its escape, have been used; but my improvement relates to the means shown in Fig. 3, wherein one or more tapering grooves, *h*, tapering blocks *c'*, and air-passages *s s* are to be substituted, and for the further purpose of controlling and regulating such escape, and if need be, in some measure at least, finally arresting the same, as hereinafter more particularly set forth.

Manifestly, the displacement of the air from the chamber *a* must precede its final collapse, and that, by increasing or diminishing the means of escape, its resistance thereto may be more or less intensified. It is equally apparent that the block *c'* may be so constructed that, as such collapse progresses, the tapering passages *s s* will be rapidly diminished in dimension, or so that, at any desired stage thereof, the same may be entirely suppressed. In this wise the movement of the Eureka sabot will be met by a constantly increasing resistance, and an air-chamber of limited capacity between the brass and iron be preserved to the end; and so, if otherwise expedient, any complete conjunction thereof be wholly prevented.

It is suggested also that the inside of the plate *b*, as well as the base of the iron body of the projectile, either at the cast or in the lathe, may be provided with annular grooves, corrugations, or other angular surfaces, whereby, under the force of the discharge, and as the former is brought to a bearing upon the latter, there may be established between the two a great number and variety of smaller air-chambers, from which thereafter it will be impossible to expel the air, and whereby any continuous conjunction of the brass and iron will, in like manner, be prevented.

It is also proposed, in aid of my improvement, to extend the part *b* more nearly to the center of the iron body *f* than heretofore, as shown in Fig. 2, and hence to extend the air-chamber *a*, and for the purpose of giving greater scope and efficiency thereto as an elastic cushion; also, to increase somewhat the expansibility of the lip *d* by a slight change of the radiuses on which it is intended to move, and so as to guarantee, under ordinary and non-exceptional intensities of pressure, a perfect impression of the rifled bore without closing entirely the space *e*, and so that there may be maintained at that point an increasing resistance to compression and a remaining space.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The projectile provided with a tapering groove, *h*, and sabot or cup *b*, provided with tapering block *c'*, when combined and adapted for operation as shown and described.

CLIFFORD ARRICK.

Witnesses:

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W. M. TEMPLETON.