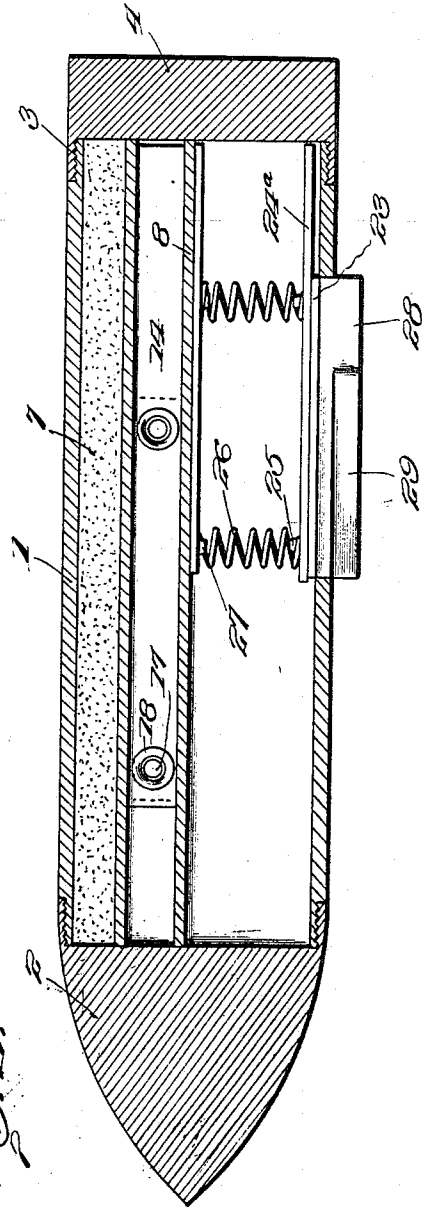


1,277,942.

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John S. Lee, Attorneys.

Patented Sept. 3, 1918.
2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

JOHN M. KAYLOR, OF PENDLETON, OREGON.

PROJECTILE.

1,277,942.

Specification of Letters Patent.

Patented Sept. 3, 1918.

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To all whom it may concern:

Be it known that I, JOHN M. KAYLOR, a citizen of the United States, residing at Pendleton, in the county of Umatilla and State of Oregon, have invented certain new and useful Improvements in Projectiles, of which the following is a specification.

This invention relates to projectiles and more particularly to a projectile for employment in breech loading cannon, rifles, and similar pieces of ordnance in which the projectile is separate from the explosive charge by which it is propelled.

It is one aim of the invention to provide a projectile so constructed that the trajectory will be greatly reduced so that in sighting the piece from which the projectile is to be fired it will be unnecessary, as at present, to elevate the muzzle of the piece to a considerable angle in order to reach the mark. In other words, the projectile embodying the present invention is so constructed that it will travel in substantially a straight line until its speed has become materially reduced.

In the accompanying drawings:

Figure 1 is a side elevation of the projectile embodying the present invention.

Fig. 2 is a vertical longitudinal sectional view therethrough.

Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 1.

Fig. 4 is a vertical transverse sectional view on the line 4—4 of Fig. 1.

Fig. 5 is a front end view of the projectile in place within the breech of a cannon, the barrel of the latter being shown in transverse section.

The projectile embodying the present invention comprises a hollow cylindrical body 1 having fitted to its forward end a nose 2 of the usual form and having threaded on to its rear end, as at 3, a cap 4, which may be removed for the purpose of gaining access to the interior of the projectile in assembling the parts thereof or in repairing any parts which may become broken or damaged in the handling of the projectile before firing.

For a purpose to be presently explained, the body of the projectile is divided interiorly into horizontal and vertical compartments by removable partition plates as will now be described. Interiorly the wall of the body is formed with oppositely located longitudinally extended grooves 5 and other

grooves 6 which are parallel to and are located below the grooves 5. A partition plate 7 has its lateral edges slidably fitting in the grooves 5 and a similar plate 8 has its lateral edges slidably fitting in the grooves 6 and thus between the said plates 7 and 8 there is formed a compartment 9. Opposite its under side the body is formed interiorly at opposite sides of its vertical middle with longitudinally extending parallel grooves 10 in which are seated the lower edges of partition plates 11, the upper edges of said plates seating in grooves 12 formed in the under side of the plate 8 directly above and parallel to the grooves 10. Thus a compartment 13 is provided below the compartment 9 and it will be understood that the space within the body of the shell or projectile and exterior to the compartments 9 and 13 may be filled with a suitable explosive charge, for bursting the projectile, as clearly shown in Fig. 4 of the drawings. The wall of the body of the projectile is further formed with longitudinally extending slots 9^a communicating with the compartment 9 at the opposite sides thereof, and with a longitudinally extending slot 13^a communicating with the compartment 13.

The projectile embodying the invention is provided with sustaining wings which project through the slots 9^a, and with a stabilizing fin which projects through the slot 13^a, the sustaining wings tending to cause the projectile to travel in a straight line and the stabilizing fin tending to hold the projectile to a direct forward course or path during its flight and to prevent lateral canting or turning thereof. Each of the sustaining wings comprises a flat relatively thin body 15, of a length and thickness to fit snugly and yet slidably through the respective slot 9^a, and a transverse head 16 located at the inner end of the wing and extending at right angles to the plane thereof. The heads 16 of the wings are of a height to extend between the partition plates 7 and 8. Disposed against the inner faces of the heads 16 of the sustaining wings 15 are bearing plates 14 each provided with a suitable number of studs 17 which are engaged by the ends of compression springs 18, the said springs extending transversely between the bearing plates and serving to normally hold the wings projected through the slots 9^a, as clearly shown in Fig. 4 of the

drawings, the outer or remote faces of the heads resting against the inner side of the wall of the body of the projectile. By reference to Fig. 3 of the drawings it will be observed that the bearing plates 14 extend toward the butt end of the shell or projectile to such distance that their rear ends will be substantially in contact with the cap 4 so that the plates will not be liable to become rearwardly displaced when the projectile is fired from the piece and also in order that access may be readily had to the said plates for assembling and disassembling the parts of the projectile.

The sustaining wings are of a width greater than the width of the respective slots 8 so that a portion of each wing, indicated by the numeral 19, will project beyond the outer surface of the body 1, due to the force exerted by the springs 18. The projecting portion 19 of each sustaining wing is formed upon its under side with a positive sustaining surface 20 which is inclined downwardly from the forward end of the wing to the rear end thereof along a straight line and continuously, and the other side of each wing is formed with a negative surface 21 which is inclined downwardly from a point rearwardly of the middle of the portion 19, to the rear end thereof. Due to the provision of the surfaces 20 and 21, the projectile in its travel will be caused to follow a substantially straight line or path as will be readily understood. Inasmuch as the wings 15 are held projected outwardly through the medium of the springs 18, they may be forced inwardly when inserted into the breech of the cannon or the like until the outer edges of their portions 19 are flush with the outer surface of the body 1 of the projectile, this edge being preferably curved or rounded as indicated at 22, so as to, as stated, be flush with the outer surface of the body when the wings are forced inwardly.

The stabilizing fin is indicated by the numeral 23, and is provided at its upper edge with a head 24 which corresponds to the head 16 of either of the sustaining wings 15, and which head rests normally against the inner side of the wall of the body 1. A bearing plate 24^a is disposed against the inner side of the head 24 and corresponds to the bearing plates 14 and is formed or provided with a number of studs 25 which are engaged by the lower ends of compres-

sion springs 26, the upper ends of the said springs engaging similar studs 27 upon the under side of the plate 8. The fin 23 is of a height greater than the depth of the slot 13^a and consequently its lower edge portion projects below the under side of the projectile or body 1, as indicated by the numeral 28, and this portion 28 has its opposite side faces beveled so as to form surfaces 29 which occupy planes diverging rearwardly from the forward end of the fin. The beveled surfaces 29 terminate short of the rear end of the fin, as clearly shown in Fig. 2' of the drawings. As illustrated in Fig. 5 of the drawings, in which figure the piece of ordnance is indicated by the numeral 30, the stabilizing fin projects into a groove 31 formed in the bottom of the bore of the piece, and by reason of this fact the projectile in leaving the muzzle of the piece will be in plumb position or in other words, in such position that its sustaining wings will be horizontal or nearly so, and the stabilizing fin will be vertical. It will be understood that the sustaining wings and stabilizing fin may be readily inserted into place or removed for repairs, due to the provision of the removable partition plates.

Having thus described the invention, what is claimed as new is:

1. A projectile comprising a body having slots formed in the opposite sides thereof, sustaining wings slidably fitted within the slots and having their edge portions projecting beyond the outer surface of the body of the projectile, and resilient means arranged between the wings for holding the same projected.

2. A projectile comprising a hollow body divided interiorly by transverse upper and lower partitions to form an explosive charge receiving chamber and a compartment from which the charge is excluded, the wall of the projectile being formed with slots extending longitudinally thereof and located at the opposite sides of the said compartment, sustaining wings slidably fitted in the slots and each having a base at its inner edge, and a spring disposed between the said wings and bearing at its opposite ends against the bases of the wings and yieldably holding the wings projected through the slots.

In testimony whereof I affix my signature.

JOHN M. KAYLOR. [L. S.]