

W. COUSINS.  
Projectile.

No. 48,371,

Patented June 27, 1865.

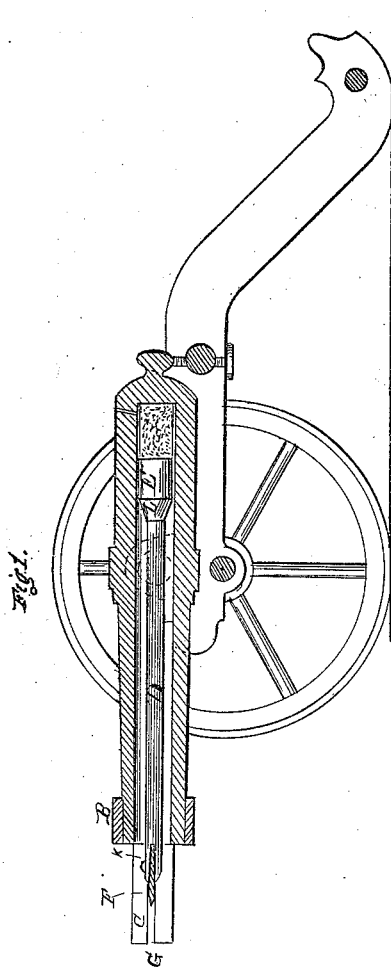
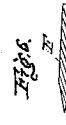
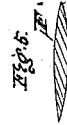
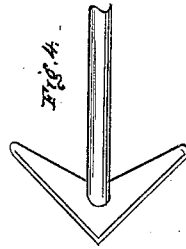
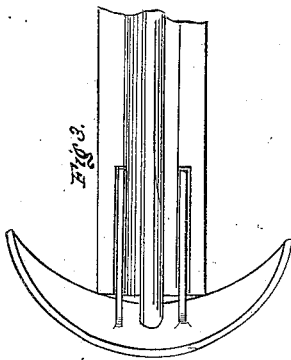
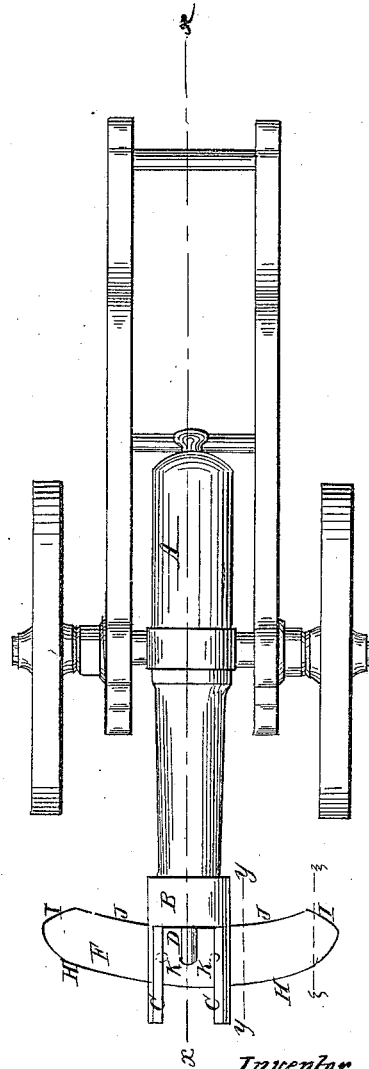


Fig. 2.



Witnesses  
Rev. Joseph  
Wm. Brown

Inventor  
Wm. Cousins  
per Munroe & Co  
attorneys

# UNITED STATES PATENT OFFICE.

WILLIAM COUSINS, OF NEW YORK, N. Y.

## IMPROVEMENT IN ARROW PROJECTILES FOR ORDNANCE.

Specification forming part of Letters Patent No. **48,371**, dated June 27, 1864.

*To all whom it may concern:*

Be it known that I, WILLIAM COUSINS, of No. 405 East Ninth street, in the city, county, and State of New York, have invented a new and useful Improvement in Projectiles for Ordnance; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a projectile made according to my invention inserted within and ready to be discharged from a cannon, the latter being drawn in section on the line *x* of Fig. 2. Fig. 2 is a plan view of the cannon, with the blade of the projectile extending beyond its muzzle. Figs. 3 and 4 are views of modifications of my projectile. Fig. 5 is a section of the blade thereof, taken on the transverse line *z* of Fig. 2. Fig. 6 is a section of the blade, taken on the line *y* of Fig. 2.

Similar letters of reference indicate like parts.

This invention consists in a new projectile formed of a blade or cutter connected to a ball whose diameter should be equal to the bore of the ordnance from which it is to be fired, and which is caused to move in a level plane throughout its whole flight.

A represents a smooth-bore field-gun mounted upon a carriage.

B is a ring fitted on its muzzle, to which it is to be secured by screws or other suitable device.

C C are guides extending from opposite sides of the ring beyond the muzzle, each of them being slotted, as at G, their whole length, or up to the muzzle of the piece.

F is a blade of metal sharpened on its front edge, H, and along its ends I. The blade may be of a curved or any suitable form.

K K are pins projecting from each side of the blade, and placed at such a distance on either side of the rod or axis D of the projectile as will bring them against or near the inner surfaces of the guides C.

The blade F is connected by a rod, D, to a ball, E, whose base-line is in a plane at right

angles with the axis of the bore of the gun, and which is connected to the rod D by a neck, L, of gradually-increasing diameter, so that in its flight the resistance of the air against the ball will be the least possible. The rod D is so connected to the ball as to be coincident with its axis and with the axis of the bore of the piece, and the center of the slots G in the guides are also coincident with the axis of the bore. The blade F is to be of equal area and weight on either side of the center of rod D, and its front and back edges are to be straight, and its sides to be of equal magnitude, so that when in flight it will not incline to either side from the plane in which its flight began. Its ends I may be more or less sharp, and its back edge, J, may be blunt or square, but should be thinner than the thickness of the blade along the center of its longitudinal axis. The blade may be formed upon any suitable curve, and its front and back edges may be drawn on concentric curves, or upon curves of unequal radii, as illustrated in Fig. 3, or may be of arrow-head shape, as illustrated in Fig. 4; and instead of the guides C and ring B the blade may be armed with guides projecting backward therefrom in lines parallel with the rod D, in which case grooves should be cut in the muzzle of the gun to receive such guides; but the construction shown in Fig. 2 is preferable.

My projectile can be used with any smooth-bore gun, and the only addition required to be put on it to fit it for use is the ring and guides C, the ring being slipped on the outside of the muzzle and locked thereon by screws or otherwise, so as to bring the slots of the guides C C in line with a plane passing through the axis of the bore. When the cannon is to be used with ordinary projectiles the ring may be removed, or it may be kept thereon until convenience demands its removal.

A projectile constructed as above described flies accurately toward its mark without oscillations or declinations of either end of its blade, the trajectory of the blade being constantly parallel with the plane passing through the center of the bore of the piece and the centers of the slots G.

The length of the blade may be about twenty

ty-four inches for a gun of three-inches bore, and about thirty inches for a gun of four-inches bore.

The ball E may be solid, or it may be a shell which shall be caused to explode by concussion or by a time-fuze.

I claim as new and desire to secure by Letters Patent—

The combination of the elongated projectile D E F and guides B C, constructed and operating in the manner and for the purposes specified.

WILLIAM COUSINS.

Witnesses:

M. M. LIVINGSTON,  
JAMES P. HALL.