FIP8211 NR 36,959

Sheet 1-2 Sheets.

H. K. Kenyon.

Rotating Projectile.

No. 36959. Patented Nov. 18. 1862

Fig. 1.

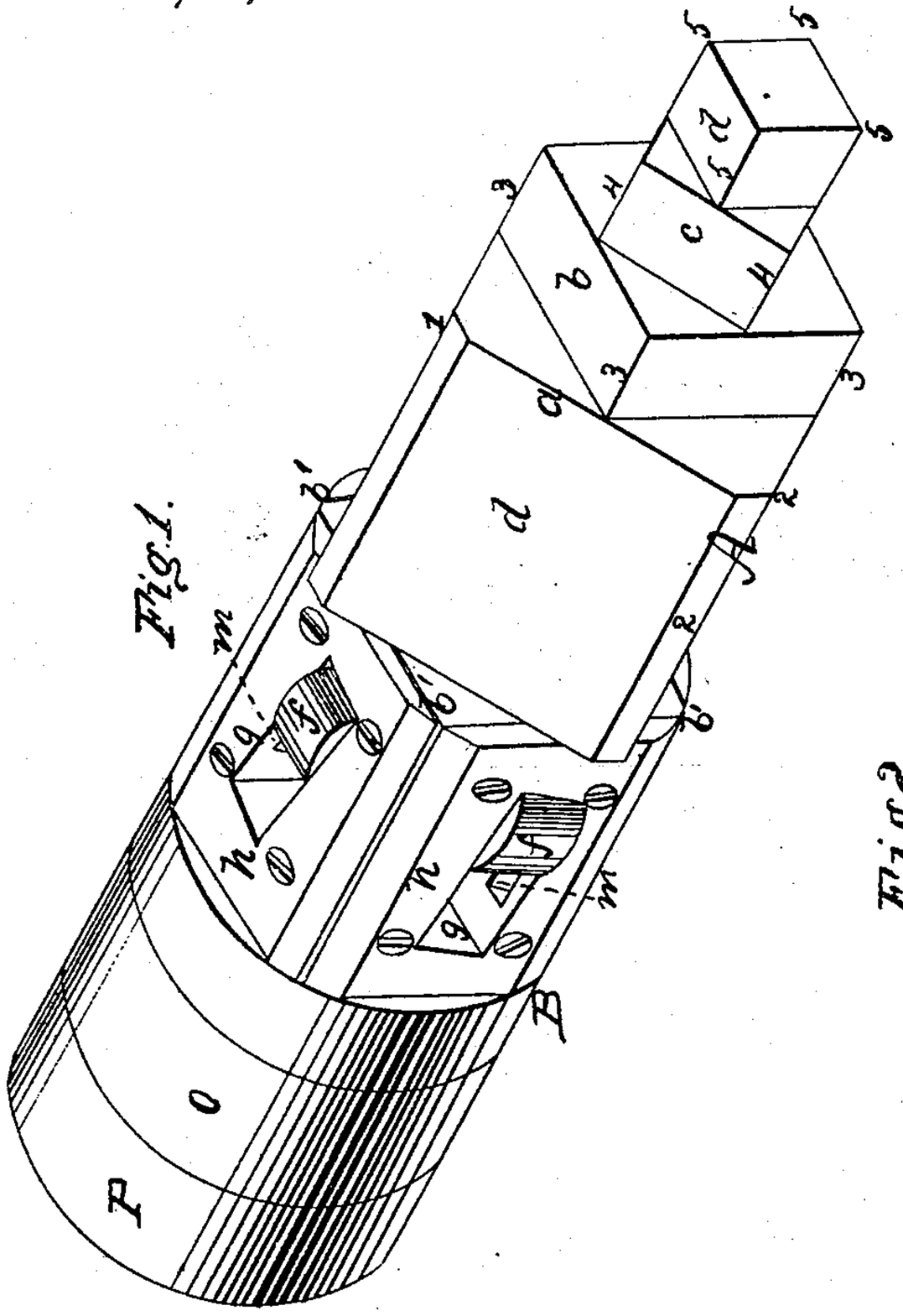
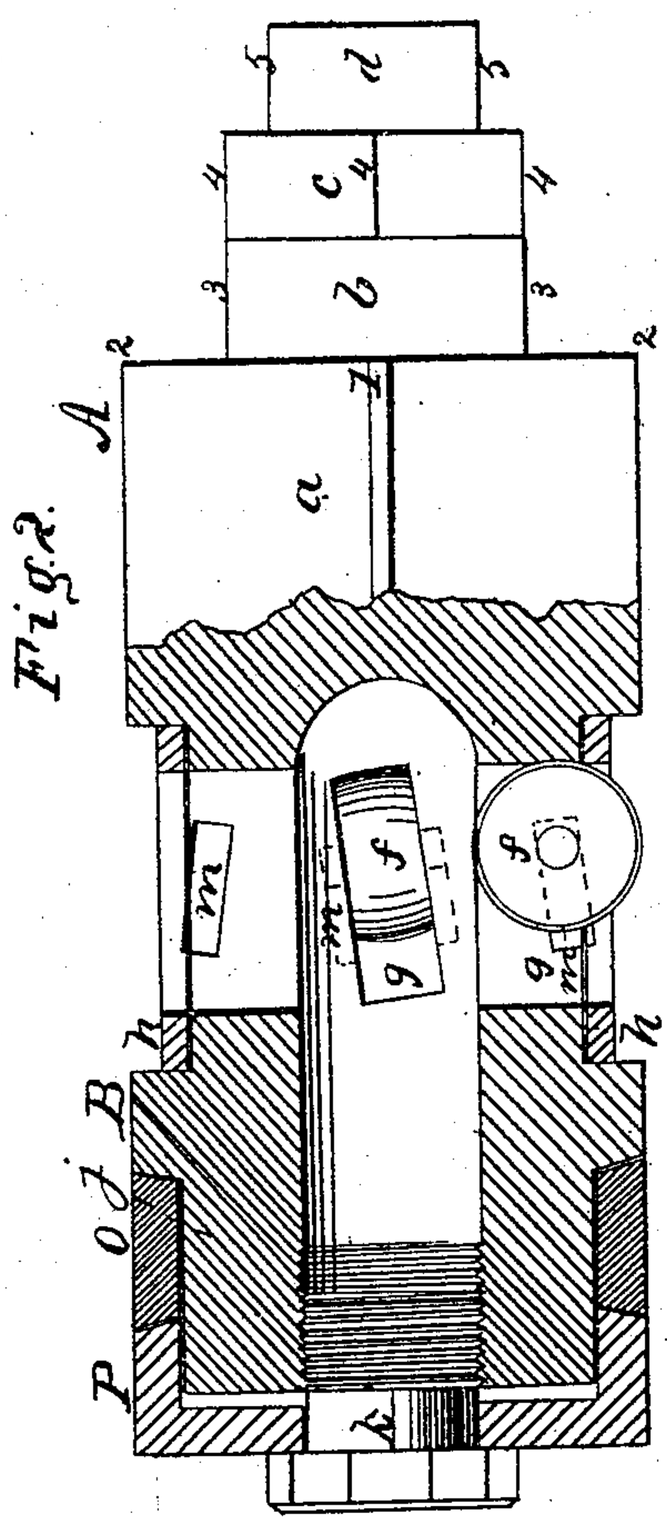


Fig. 2.



Witnesses

Inventor

Henry K. Kenyon.

by Mason, Fenwick & Lawrence.

Attys

UNITED STATES PATENT OFFICE.

HENRY K. KENYON, OF STEUBENVILLE, OHIO.

IMPROVEMENT IN GIVING ROTATION TO ORDNANCE PROJECTILES.

Specification forming part of Letters Patent No. **36,959**, dated November 18, 1862.

To all whom it may concern:

Be it known that I, HENRY K. KENYON, of Steubenville, in the county of Jefferson and State of Ohio, have invented a new and useful Improvement in Rotating Projectiles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, formiing part of this specification, in which—

Figure 1 is a perspective view of my improved projectile. Fig. 2 is a longitudinal section of the same. Fig. 3 is a view illustrating the operation of my invention within a cannon.

Similar letters of reference in the several figures indicate corresponding parts.

The nature of my invention consists in a peculiar formation of the forward or penetrating end of the projectile, whereby increased certainty of the penetration of metal armor is secured.

It consists, second, in the formation of the circumference of projectiles with oblique self-adjusting friction-rollers, so that the projectile in the act of passing from the bore of the cannon will, by frictional contact upon the plain surface of the bore, be caused to rotate, the same as is the case with projectiles fired from rifled ordnance.

To enable others skilled in the art to make and use my invention, I will describe it minutely with reference to the drawings.

The part A, which constitutes a steel point, of my projectile is constructed with a series of rectangular punches, *a b c d*. The punch *a* is the largest of the series, and presents two corners, 1 1, in line with the vertical axis of the part B of the projectile, and two corners, 2 2, in line with the horizontal axis thereof. The length of the punch *a* is about two inches, more or less, as occasion may demand. The shoulders *b' b'* at the base of the punch *a* are very shallow, and will not interfere with the passage of the projectile through the plating when it has penetrated to that extent. The next succeeding punch, *b*, which is smaller than *a*, is formed so as to present sharp corners 3 3 at the center of each of the flat sides of punch *a*, and is about three-fourths of an inch in length. The next punch, *c*, is smaller than *b*, and is formed so as to have its corners 4 4 4 4 in line with the corners 1 1 2 2 of the punch *a*; and the punch *d*, which is the first entering portion of the steel point, is formed so as to have its corners 5 5 in line with the corners 3 3 of the punch *b*. It will be observed that the punches decrease in size just sufficient to admit of this converse position of the corners and still not have the corners extend beyond the flat sides of the preceding or succeeding punch. By thus having the corners of the respective punches stand in the relation to one another, as described, in connection with the formation of the point of the projectile with a series of different-sized punches, the liability of the point failing to penetrate the object it strikes, for want of a hold upon it, is greatly lessened, it being obvious that one or another of the corners will be likely to secure a hold, and that the small punch will enter more readily than a large one, and, having entered, the resistance offered to the succeeding punches will be far less than if the small aperture had not been punched previously. The whole practical value and utility of this part of my invention is due to the specified arrangement of the corners of the different punches, this arrangement presenting less resisting metal than when the sides of the several punches are parallel or when the punches are formed of a series of concentric cylinders of different or gradually-increased diameters.

On that part of the projectile which is in rear of the series of punches four friction-rollers *f f f f* are arranged, said rollers being set in oblong cross-shaped recesses *g g*, cut in flattened parts of the projectile. The recesses are diagonal or oblique to the longitudinal axis of the projectile, and those portions, *m*, which receive the journals of the rollers rise on an incline as they run back. The recesses are long enough to admit considerable play back and forth, both of the rollers and their journals. Screw-plates *h h h h*, which are diagonally slotted, confine the rollers in position in the recesses, but do not interfere with their revolution and longitudinal oblique travel therein. The lead packing O to the projectile is fitted round a reduced portion, *j*, and confined by means of a ring-cap, P, which bears against it through the action of a screw-

plug, *k*. There is a slight space left between the projectile and the ring-cap when the parts are screwed together, so that the lead shall be expanded sufficiently to prevent windage. I make no other use of the lead, depending wholly upon the friction-rollers for the impartation of a rotary motion to the projectile. This office they perform by reason of their oblique or diagonal set and their impingement upon the plain bore of the cannon. It is obvious that when the projectile is forced into the gun or cannon the friction-rollers will run forward in the slots or recesses *g g*, as indicated in Fig. 3 at X, and thus allow a ready entrance of the projectile to its seat; and it is also obvious that when the projectile is fired from the cannon the friction-rollers will run backward in the recesses, as indicated at X′, and in doing this the incline planes of the journal-supports will cause the rollers to rise and act with a firm impinging resistance to the escape of the projectile upon the bore of the cannon, and thus insure a forcible rotation of the projectile during its flight in the air, the commencement of which motion taking place in the cannon. The material of which the rollers are formed being softer than the gun-metal and the rollers having every freedom to turn on their journals, although acted upon by the most powerful impacting force, there is no injury done to the gun by reason of the friction which is necessarily induced by the wedging action which occurs between the bore of the cannon and the friction-rollers of the projectile.

In the drawings I have shown a hollow long projectile with steel punch-point; but my invention for producing rotation may be applied to round balls and to balls made wholly of cast or wrought iron. So, also, may my compound punch-point be connected to projectiles, large or small, rotated in ordinary ways.

The friction-rollers *f* in the line of their axes should have their circumferential surface struck from the axis of the projectile, so that a conformity thereof to the bore of the cannon shall be secured.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The specified relative arrangement of the corners of the respective sections of the punch-point of the projectile, for the purpose set forth.

2. Constructing that part of the projectile in rear of the compound punch-point with cross or other similar shaped oblique recesses *g m*, when the parts *m* of said recesses rise on an incline, in combination with sliding, rising, and descending rollers *f*, substantially as and for the purpose set forth.

HENRY K. KENYON.

Witnesses:

WILLIAM KENYON,

GUSTAVE DIETERICH.