

(No Model.)

W. BOWMAN.
PROJECTILE.

No. 442,476.

Patented Dec. 9, 1890.

Fig 1

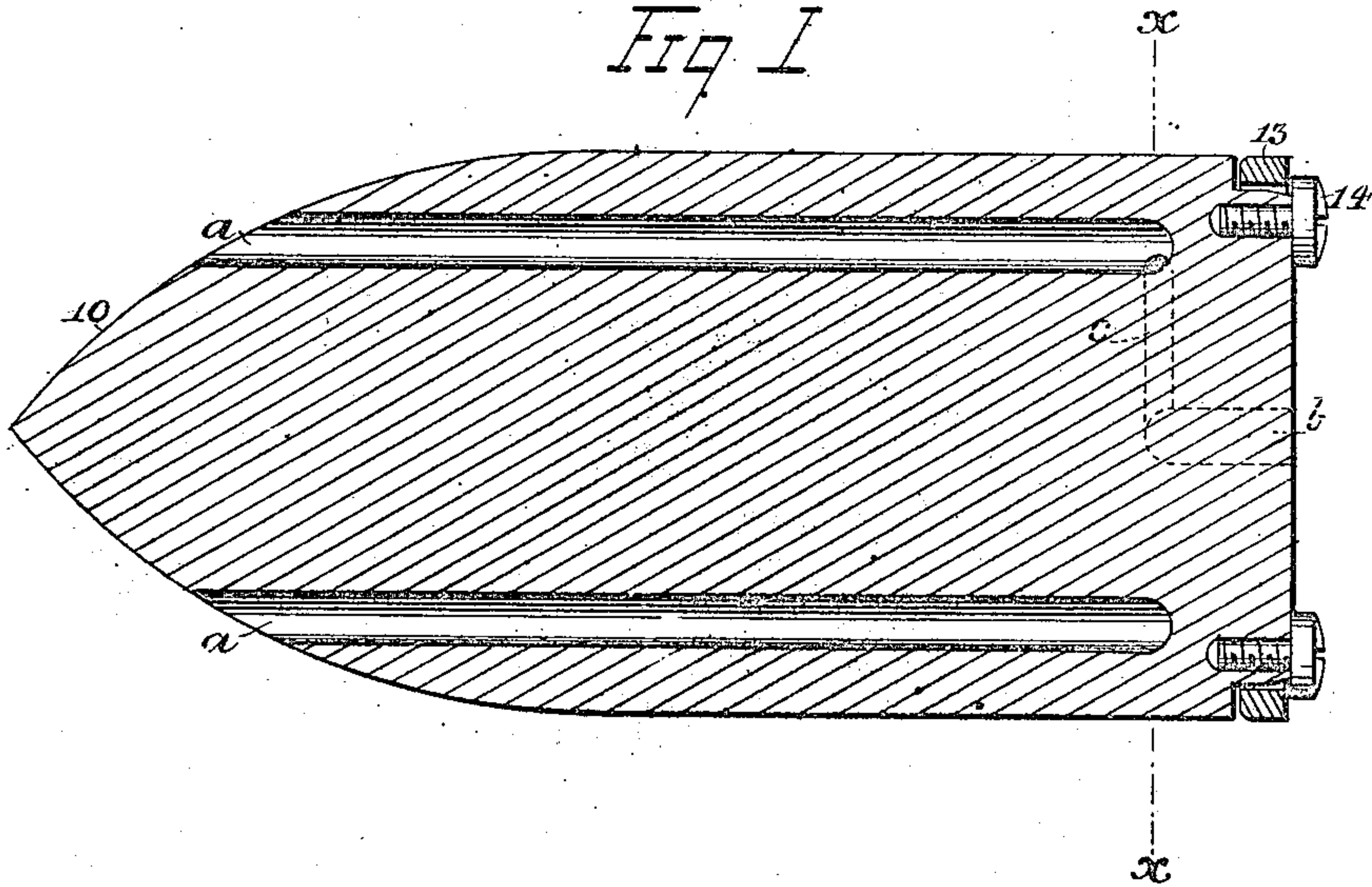


Fig 2

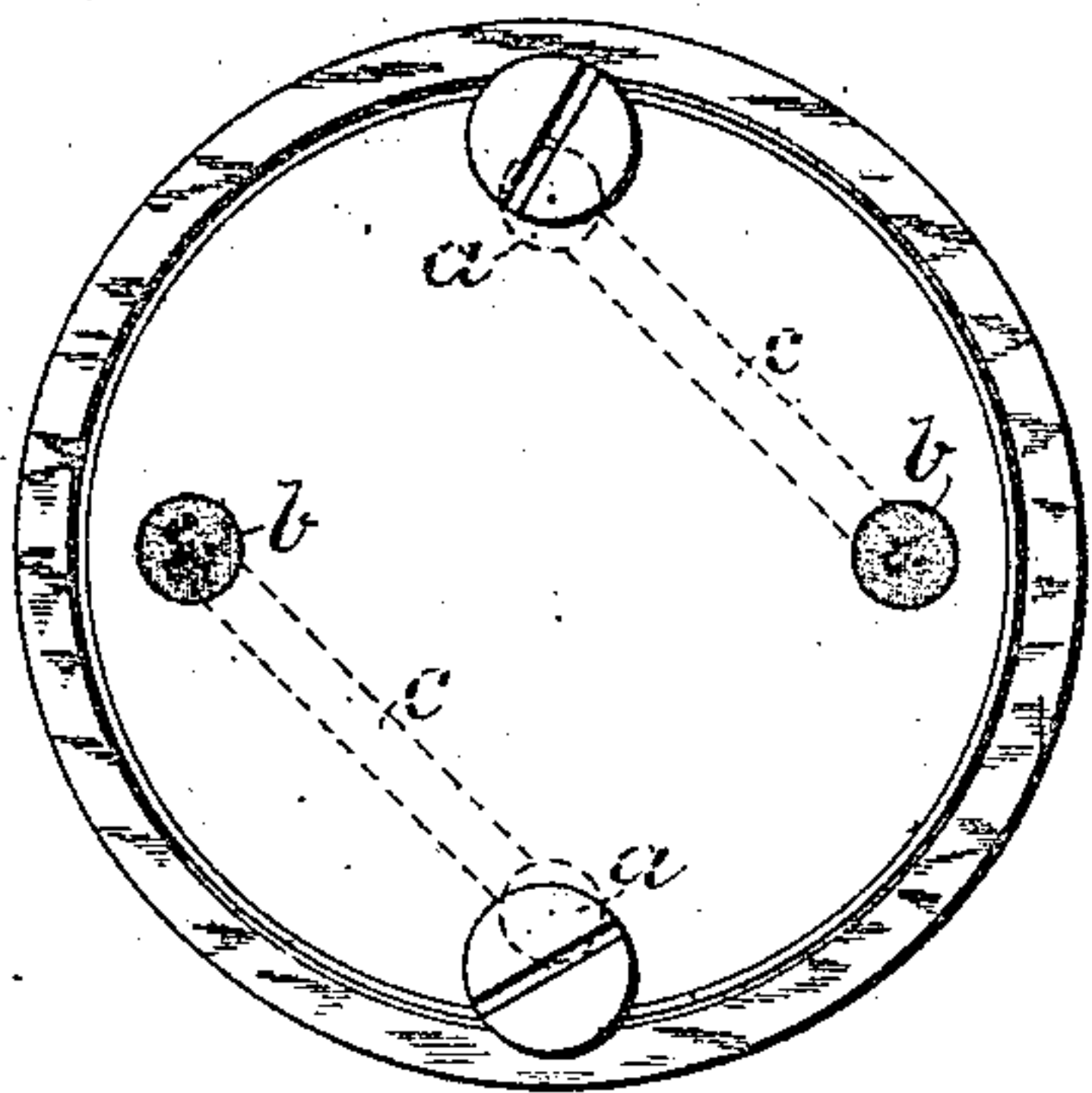


Fig 3

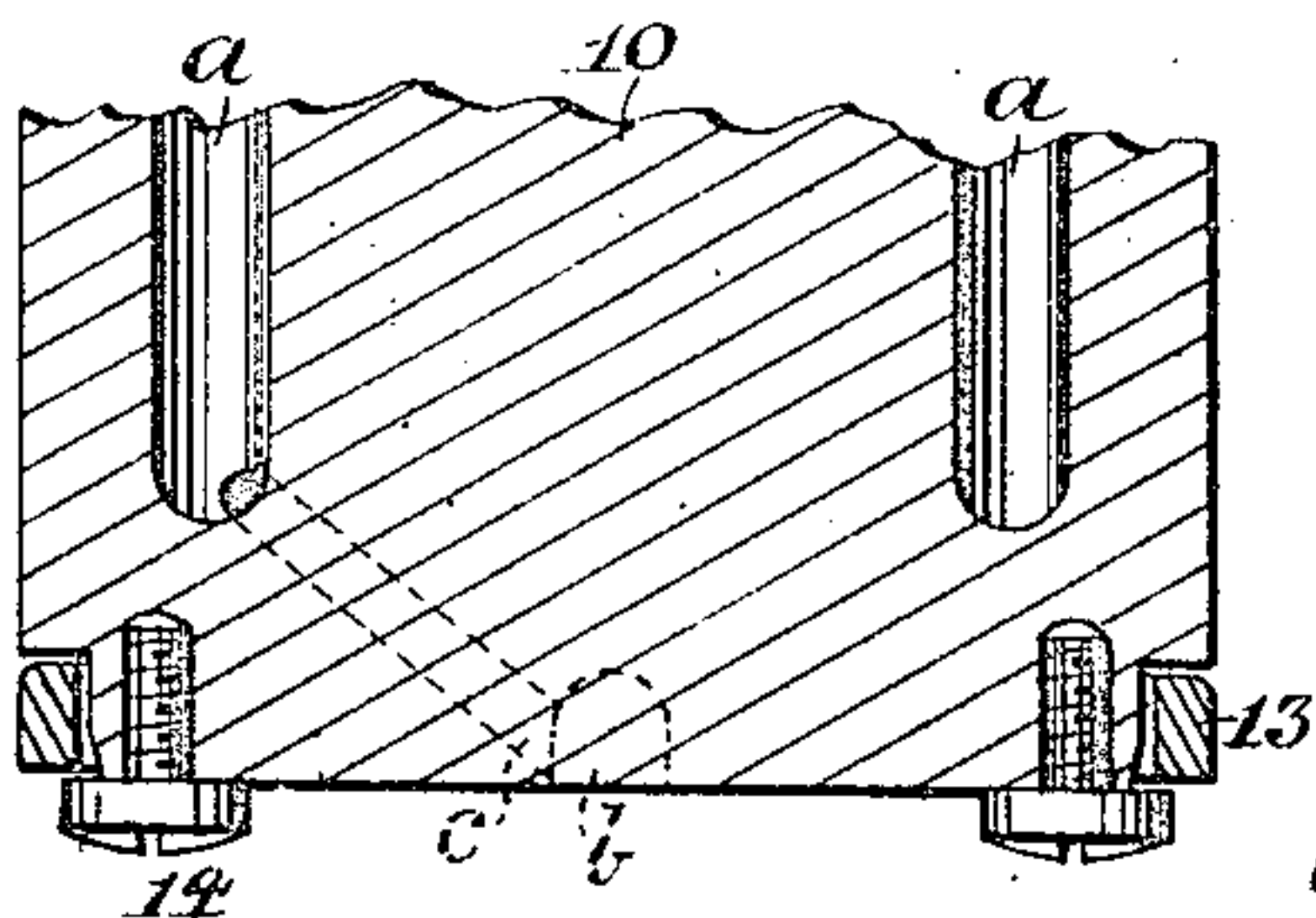
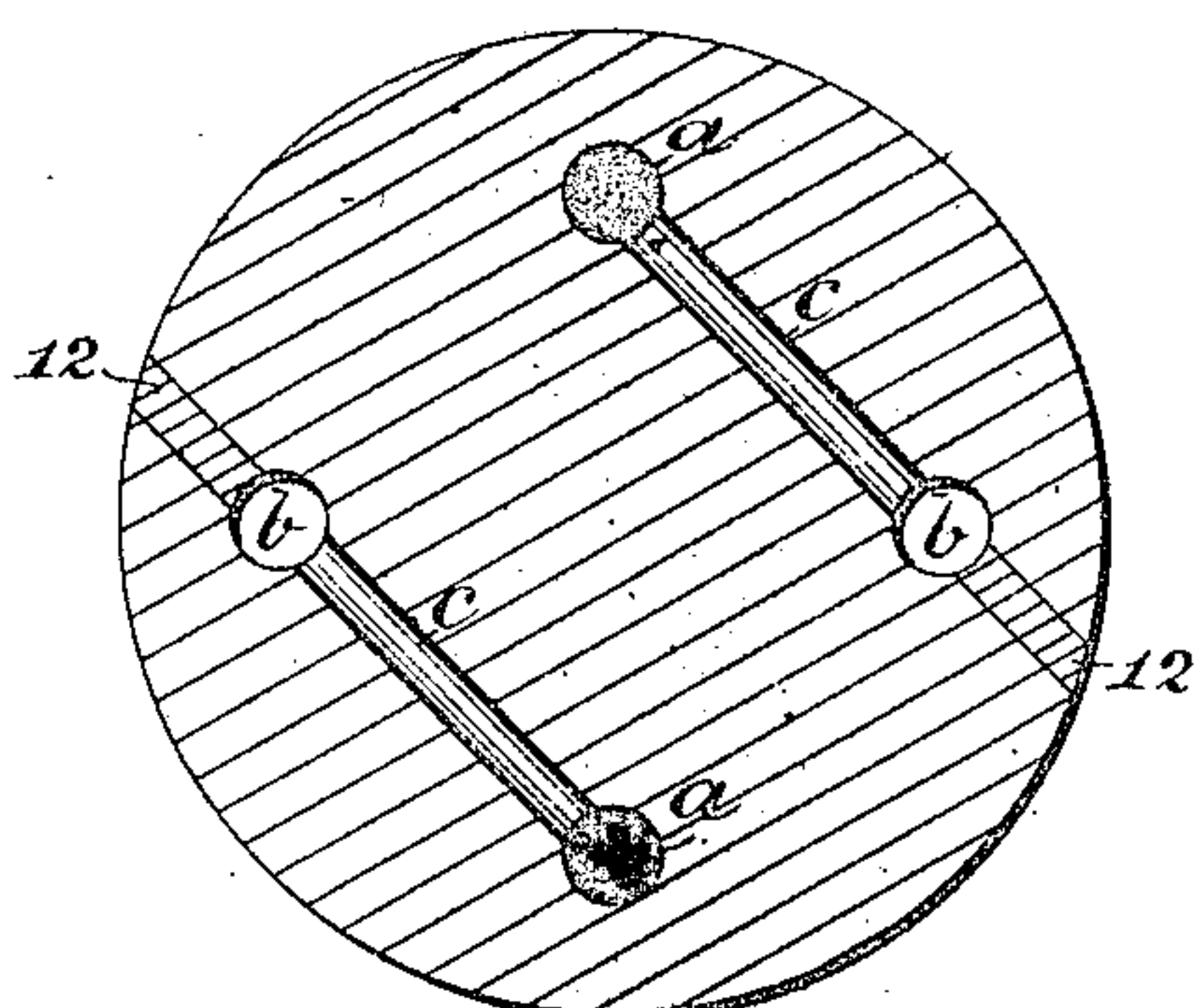


Fig 4

WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM BOWMAN, OF ATCHISON, KANSAS.

PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 442,476, dated December 9, 1890.

Application filed May 21, 1889. Renewed September 3, 1890. Serial No. 363,845. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BOWMAN, of Atchison, in the county of Atchison and State of Kansas, have invented a new and Improved Projectile, of which the following is a full, clear, and exact description.

This invention relates to the construction of projectiles, the object of the invention being to so construct the projectile that a rotary motion will be imparted thereto by the force generated by the projecting explosive, and that, too, without rifling or grooving the bore of the gun; and to the end named the invention consists, essentially, of a projectile formed with parallel longitudinal passages that are in communication with transverse passages, said transverse passages being tangential to an imaginary circle that is concentric with the axis of the projectile, all as will be hereinafter explained, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a central sectional view of a projectile embodying my invention. Fig. 2 is a view of the butt-end of the projectile. Fig. 3 is a cross-sectional view on line *x x* of Fig. 1, and Fig. 4 is a central sectional view of a portion of a projectile embodying a modified arrangement of the bores.

In the drawings, 10 represents a solid projectile in which there are formed two or more bores *a*, that are parallel with the axis of the projectile. The bores *a* run from the forward conical end of the projectile inward to a point just past that to which two or more bores *b* extend, said bores *b* extending forward from the projectile butt.

The bores *a* and *b* are connected by small bores *c*, that are tangential to an imaginary

circle that is concentric with the peripheral face of the projectile. In the construction shown in Figs. 1, 2, and 3 the bores *c* are formed by boring in from the outside face of the projectile, plugs 12 being afterward inserted to close all exit except through the bores *a*.

Instead of forming the bores *c* as just described, they might be formed by boring inward from the bores *b*, as shown in Fig. 4, this method avoiding the use of the plugs.

Although not positively essential, I prefer to provide a gas-check 13, which may be held to place by set-screws 14.

In operation a portion of the gases generated by the explosive pass through the passages *c* into the passages *a*, and bearing upon the walls of said passages act to turn the projectile, the principle being that of "Barker's mill."

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

1. A projectile having passages extending entirely through it from end to end, the said passages near the butt-end of the projectile extending transversely for a short distance, substantially as herein shown and described.

2. A projectile having longitudinal bores extending inward from each end and connected near the butt-end of the projectile by transverse bores, substantially as described.

3. A projectile provided with the longitudinal bores *a*, extending from the forward end of the projectile to within a short distance of the butt, the transverse bores *c*, connected with the bores *a*, and the short longitudinal bores *b*, connected to the transverse bores *c*, substantially as herein shown and described.

WILLIAM BOWMAN.

Witnesses:

ROBERT M. KEATING,
CONRAD WEBER.