

No. 814,378.

PATENTED MAR. 6, 1906.

E. M. JOHNSON.
PROJECTILE.

APPLICATION FILED JUNE 7, 1905.

Fig. 1.

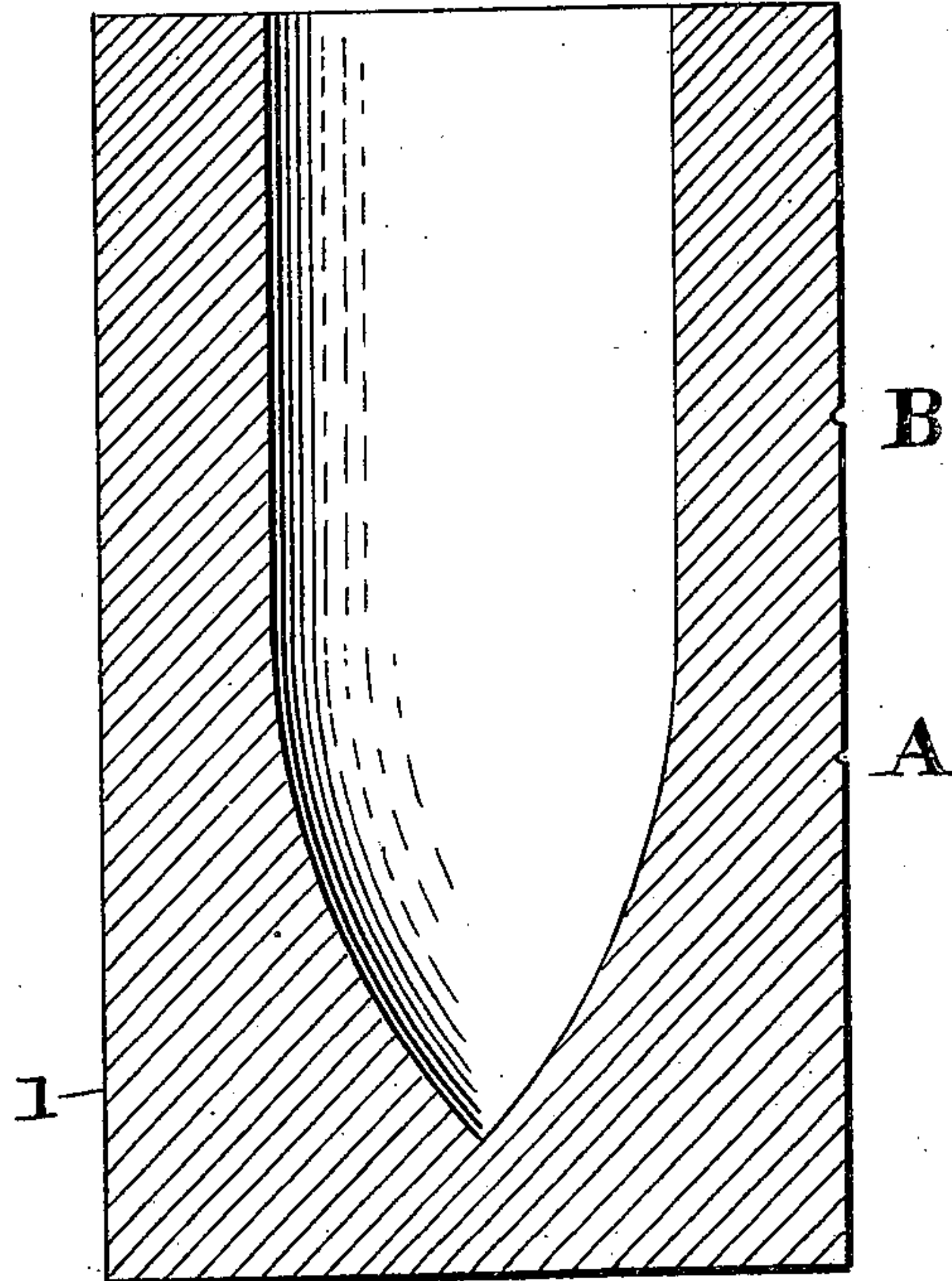
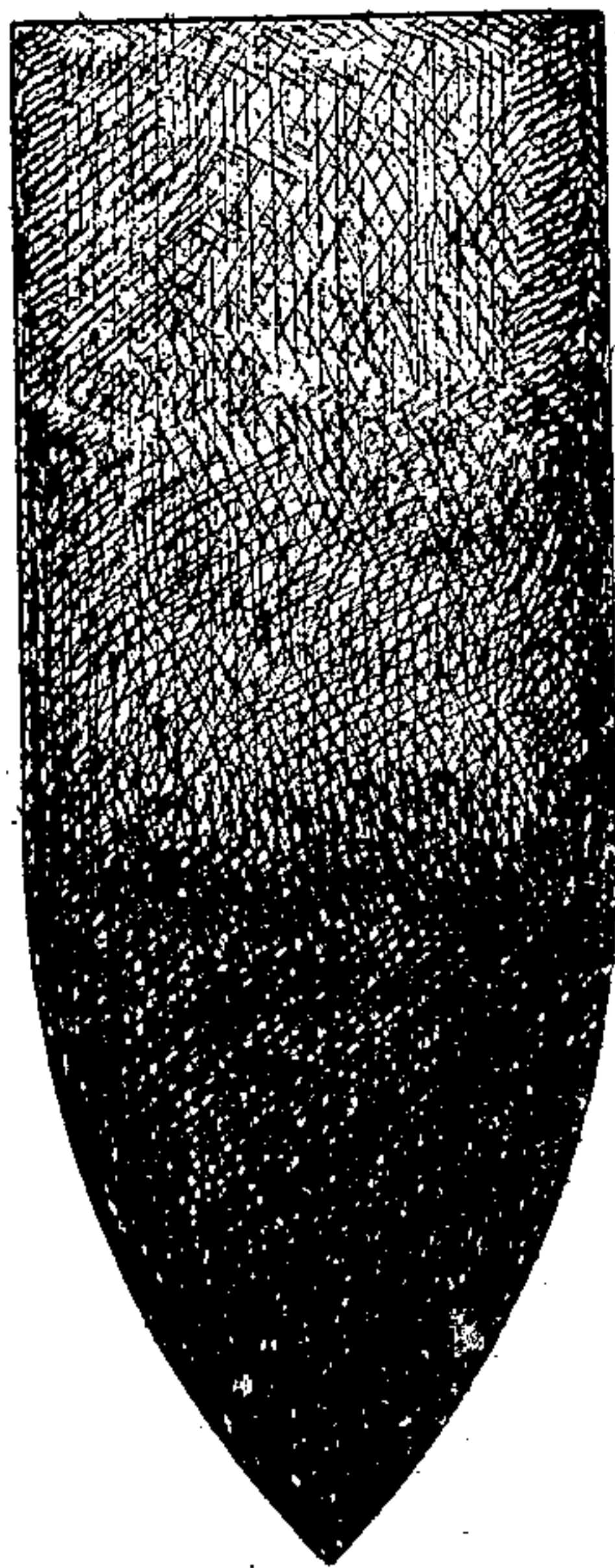


Fig. 2.



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PROJECTILE.

No. 814,378.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ELIAS M. JOHNSON, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented new and useful Improvements in Projectiles, of which the following is a specification.

This invention has relation to projectiles; and it has for its object the provision of certain improvements whereby I am enabled to provide a projectile having a point composed of high carbon steel—that is to say, hard steel or steel of a maximum carbon content—and a base composed of softer steel or steel of less carbon content than that forming the point and graduated from the upper part to the extreme lower end or base, while retaining the requisite hardness, strength, and homogeneity for all intents and purposes.

The invention therefore consists of a projectile having certain structural characteristics necessary to carry out the aforesaid purposes, all as is hereinafter more fully disclosed, and particularly pointed out by the claims.

In the drawings hereto annexed and forming part of this specification, Figure 1 is a mold having thereon certain indicia or lines contributory to the carrying out of my invention. Fig. 2 is a side elevation of my improved projectile.

In the disclosure of said invention I provide a mold 1, preferably of the outline indicated or shown, which, however, as such is not necessary to the practice of the invention.

I take metal or steel of the greatest density or hardness—that is, steel of a maximum carbon content—and after conversion into the melted or molten state pour off the same into the mold until the poured metal or steel reaches the mark or line A, or what is termed the "bourrelet." While this apportionment of the metal is still liquid or molten a metal of a softer grade, of less density or hardness, or, in other words, steel having a less carbon content than that forming the point, is poured along with the continued pouring of the metal of the initial hardness or density into the mold until this mixture thus formed has reached the mark or line B, when the pouring of the metal of initial hardness is discontinued. It will be noted, however, that the pouring of the hard metal is gradually diminished, while the pouring of the softer

metal is proportionately increased, so that when the point or line B has been reached the mass or bulk of metal will practically be all soft metal. The pouring of the softer metal, however, is continued in the completion of the formation of the projectile.

As the resultant of the foregoing the base or subsequent portion of the projectile is produced of a softer grade of metal than that of which the point is formed, while possessing the requisite toughness for all desired ends, and yet providing for the making of the point of the usual or maximum density or hardness. Also it is noted that by the comingling of the metals and the gradating the pouring of the single or tapering-off metal as aforesaid the point of mergence or where the softer and harder metals blend does not possess the relative brittleness or weakness, as would otherwise be the case, as is apparent, whereby the same is possessed of greater coherence and homogeneousness.

It may be stated, furthermore, that by my invention I secure a projectile that is not liable to become impaired to any degree by the torsional strain to which it is subjected through inertia or other tendencies or means, thus maintaining its high penetrative power under all of the severe conditions to which it is subjected before striking an object on and after firing.

I claim—

1. A projectile having its point or effective portion formed of steel of a maximum carbon content and a maximum hardness, and its base portion formed of a softer grade of steel or metal having a less carbon content than the first-mentioned portion the carbon gradually decreasing in quantity from the effective portion to the base portion.

2. A projectile having its point formed of steel of a maximum carbon content and maximum hardness and the base portion formed of an admixture of a softer metal of less carbon content, said carbon gradually decreasing in quantity from the point to the base.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

ELIAS M. JOHNSON.

Witnesses:

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WALTER CLEVELAND.