

(No Model.)

T. G. BENNETT.

PROJECTILE.

No. 354,376.

Patented Dec. 14, 1886.

Fig 1

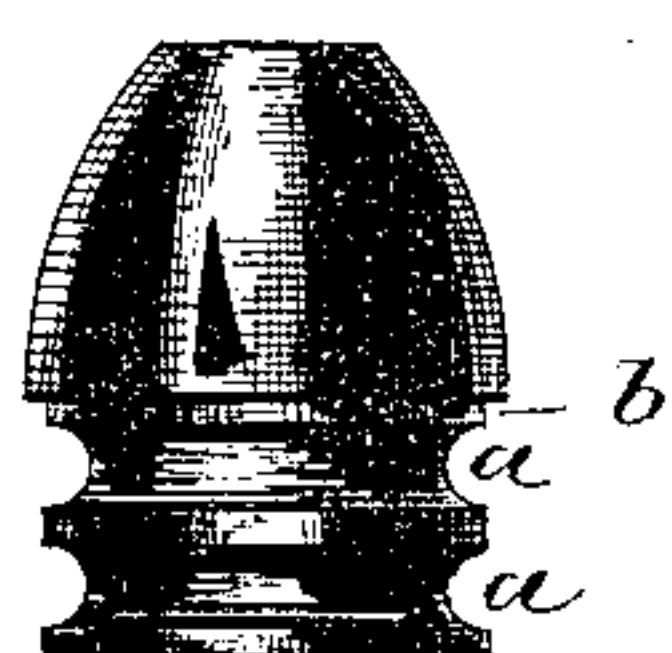


Fig 2

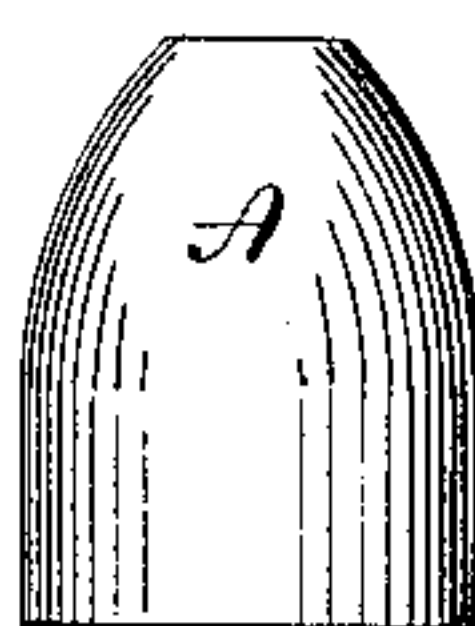


Fig 3

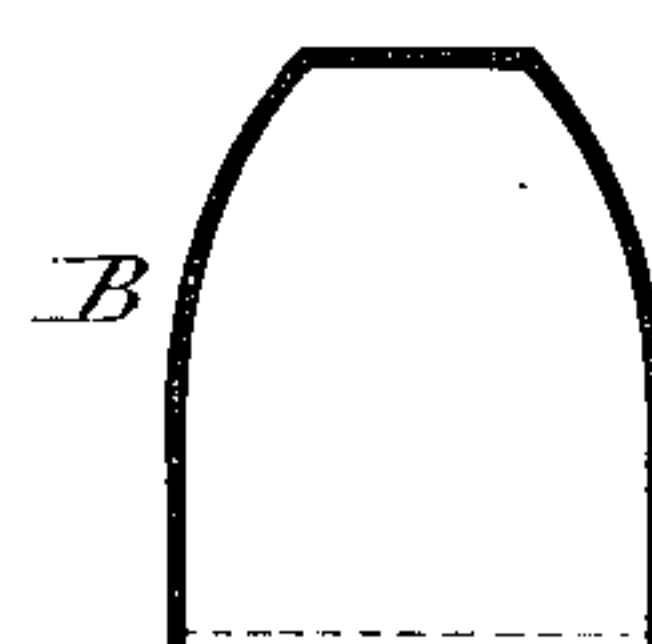


Fig 4

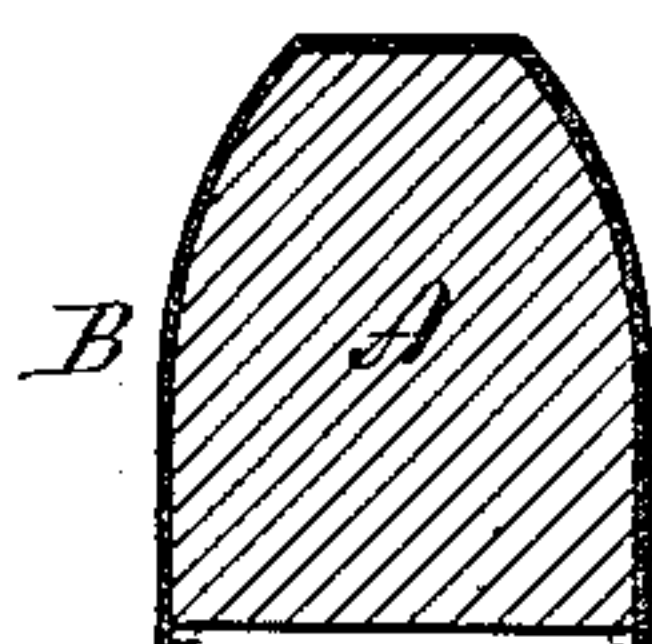


Fig 6

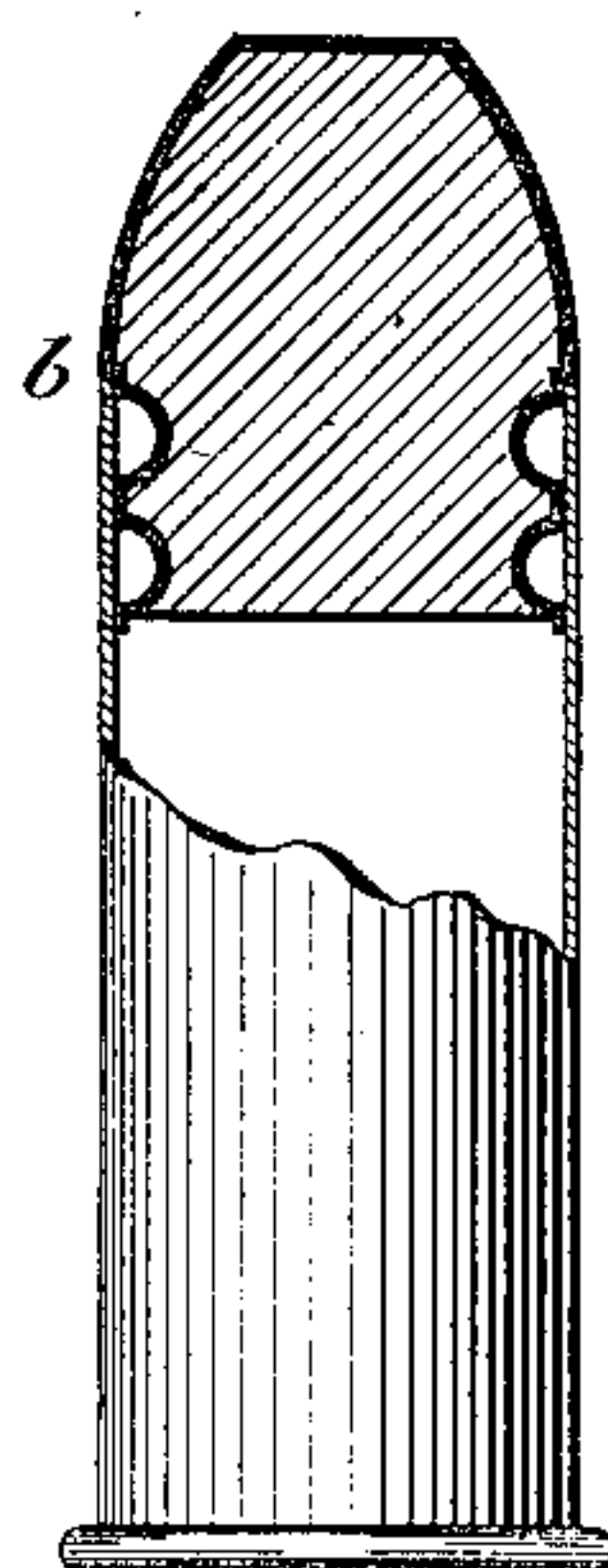
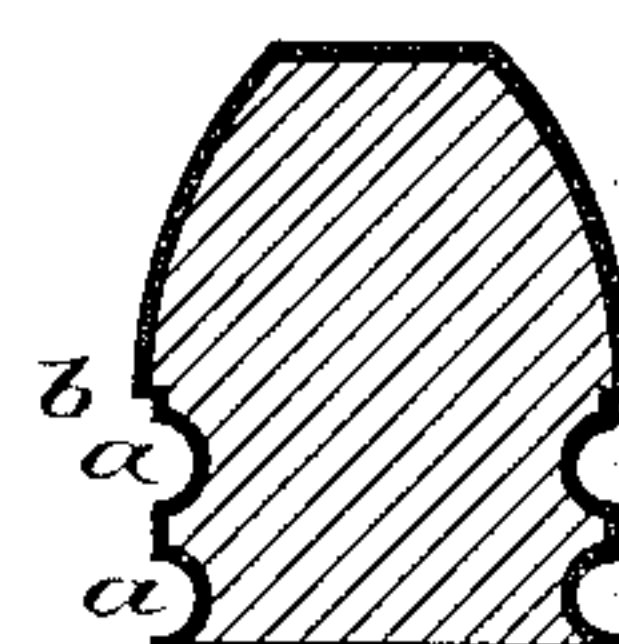


Fig 5



Witnesses.
J. H. Shumway.
John C. Earle

Thomas G. Bennett.
By atty. *Inventor*
John C. Earle

UNITED STATES PATENT OFFICE.

THOMAS G. BENNETT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
WINCHESTER REPEATING ARMS COMPANY, OF SAME PLACE.

PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 354,376, dated December 14, 1886.

Application filed March 23, 1885. Serial No. 159,725. (No model.)

To all whom it may concern:

Be it known that I, THOMAS G. BENNETT, of New Haven, in the county of New Haven and State of Connecticut, have invented a new
5 Improvement in Projectiles; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and
10 which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the bullet complete; Fig. 2, a side view of the body of the bullet without the casing; Fig. 3, a vertical section
15 of the casing; Fig. 4, a vertical section of the bullet with the casing set upon it; Fig. 5, a vertical central section of the bullet complete; Fig. 6, a vertical central section of the bullet as set into the shell.

20 This invention relates to an improvement in projectiles for small-arms, such as are usually made from lead. In the use of this class of projectiles several difficulties are experienced, such as leading the barrel, displacement of the
25 bullet in the shell, upsetting or injury of the point in transportation; or in magazine-arms, where several cartridges are arranged in the magazine, and so that the head of one abuts upon the point of the bullet of the next. These
30 and many other difficulties arise from the soft nature of the lead.

The object of my invention is to avoid the difficulties attending the use of lead bullets.

35 The body A of the bullet is made from lead or other suitable material, and of the usual shape, as seen in Fig. 2, but of slightly less diameter than required for use in the arm. B, the inclosing-case, (see Fig. 3,) is struck from
40 sheet metal, its interior corresponding to the exterior of the bullet, but preferably of a little greater depth, and so that set over the bullet the edge at the rear or open end will extend slightly beyond the rear end of the bullet.

45 The best method of introducing the bullet is to swage it into the shell—that is, by forcing it into the shell while the shell is held in a die, and so that the force applied to the bullet will expand it to completely fill the shell, and so as
50 to securely unite the two; but the bullet may be formed and otherwise set into the casing.

If the casing is of greater depth than the bullet, the projecting edge is turned down upon the base of the bullet, as shown in broken lines, Fig. 4. Thus inclosed the bullet is sub-
55 jected to the grooving operation, which forms annular grooves *a a* in its base portion, and at the same time a shoulder, *b*, forward of the grooves, as seen in Fig. 5. The casing and bullet are reduced in diameter from the shoulder rearward corresponding to the thickness
60 of the shell to which the bullet is to be applied.

The grooves *a a* receive the lubrication in the usual manner of applying such lubrication to lead bullets, and so as to serve to lubricate the barrel in the passage of the bullet
65 through it.

The shoulder *b* serves to locate the bullet in the shell, as seen in Fig. 6. This shoulder being protected by the casing prevents the shearing
70 action of the shell upon the bullet, common in the use of lead.

The annular grooves *a a* in the casing or harder metal *g* greatly strengthen the body of the bullet.
75

The copper casing is sufficiently ductile to permit it to enter the rifled bore of the barrel, and be readily brought to a shape corresponding to the ribs and grooves in the barrel, and because of the copper casing being harder
80 than the bullet there is very much less or no liability of the surface of the bullet being stripped in passing through the twist of the barrel; hence the liability to lead is entirely
85 avoided.

The grooves in the bullet contain a lubricant for the inner surface of the barrel, to give perfect freedom in the passage of succeeding bullets through the barrel.

90 In cartridges with bullets thus constructed there is no liability of upsetting the bullet in transportation, or in the magazine of arms where bullets are arranged one upon another, and so that the head of one comes upon the point of the next, as is the case with lead
95 bullets, the harder metal casing being able to withstand the upsetting action of the column of cartridges.

Another great advantage in the use of bullets of this construction is in what are com-
100

monly called "dummies"—that is, cartridges in which the explosive material is omitted for practice, as in schools, or experiments with fire-arms. Where a cartridge with a lead bullet is employed the bullet soon becomes indented or injured, so as to make the dummy practically useless, and constant replenishing is required, whereas with a bullet of lead covered with a hard-metal casing, as I have described, and with the shoulder *b*, to locate the bullet at the mouth of the shell, the bullet is not liable to such injury or displacement.

While in some cases the turning over of the rear end of the shell onto the bullet is desirable, it may be omitted, the formation of the shoulder or of the groove either being sufficient to retain the shell in its place.

While I prefer to apply the casing to the body from the front rearward, this may be reversed, the casing closed at its rear end, and the bullet introduced through its mouth, and the mouth closed thereon.

I claim—

A bullet consisting of a lead body, a hard-metal casing extending over the surface of the bullet, the said casing and body reduced to form the shoulder *b*, and also constructed with annular grooves around the body between said shoulder and its rear end, substantially as described.

THOMAS G. BENNETT.

Witnesses:

DANIEL H. VEADER,
LEE H. DANIELS.