

B. Britten,
Inpts. in Artillery and Projectiles.

PATENTED JUN 27 1871

116408

FIG. 1.

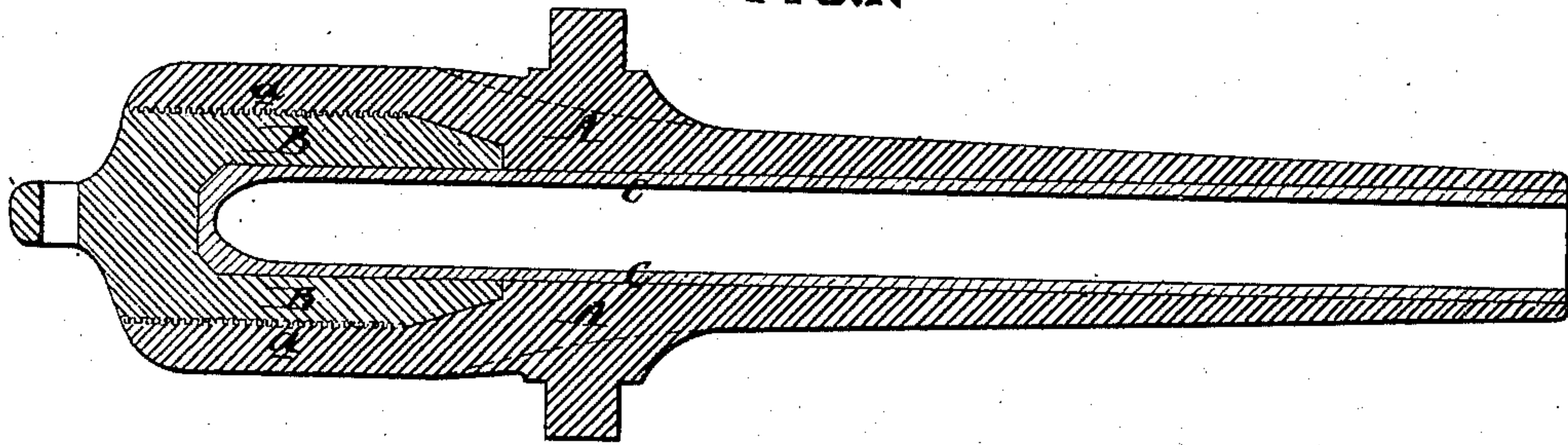


FIG. 2.

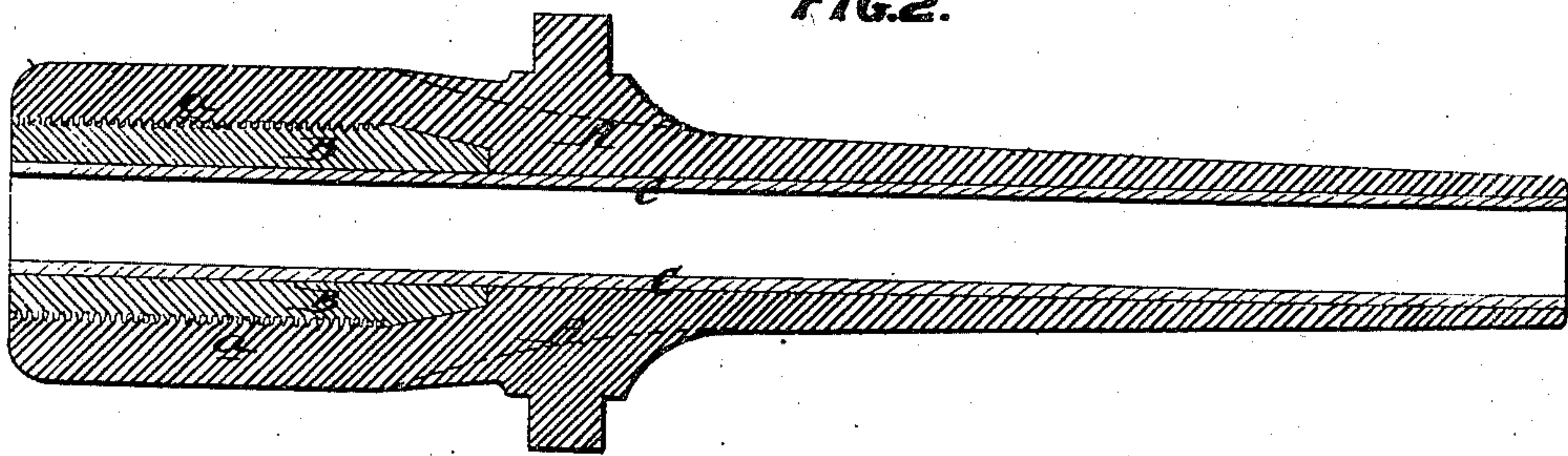


FIG. 3.

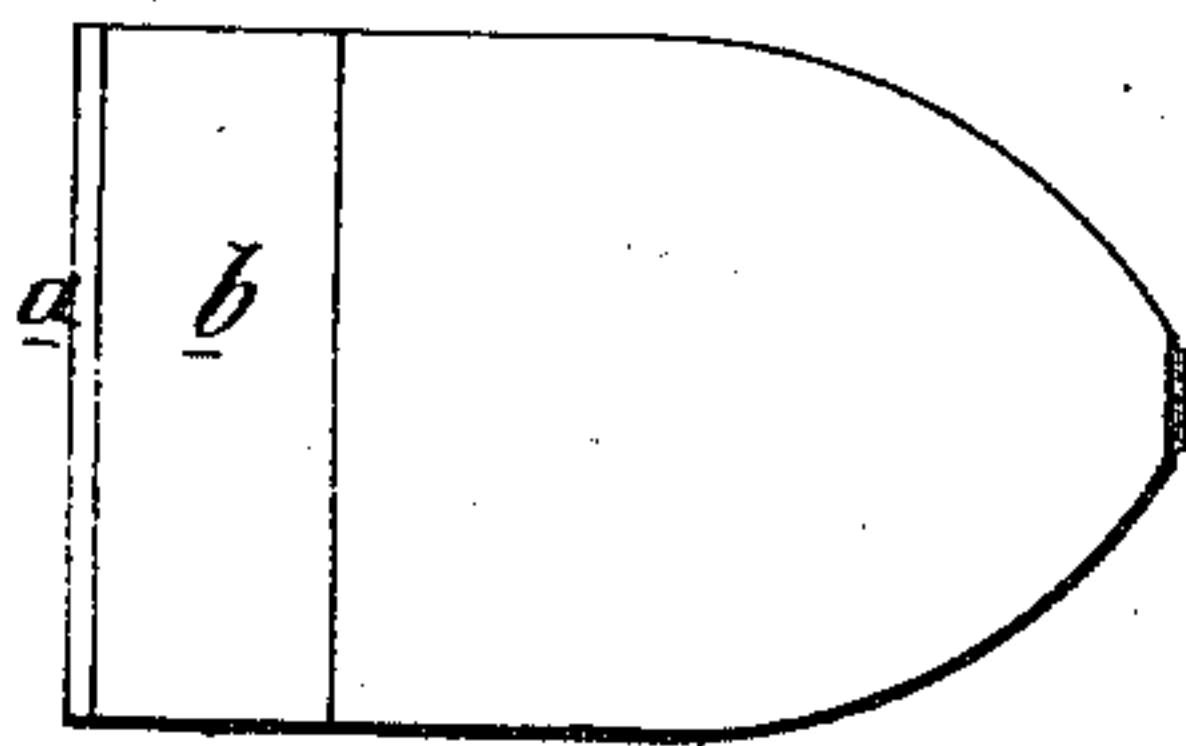
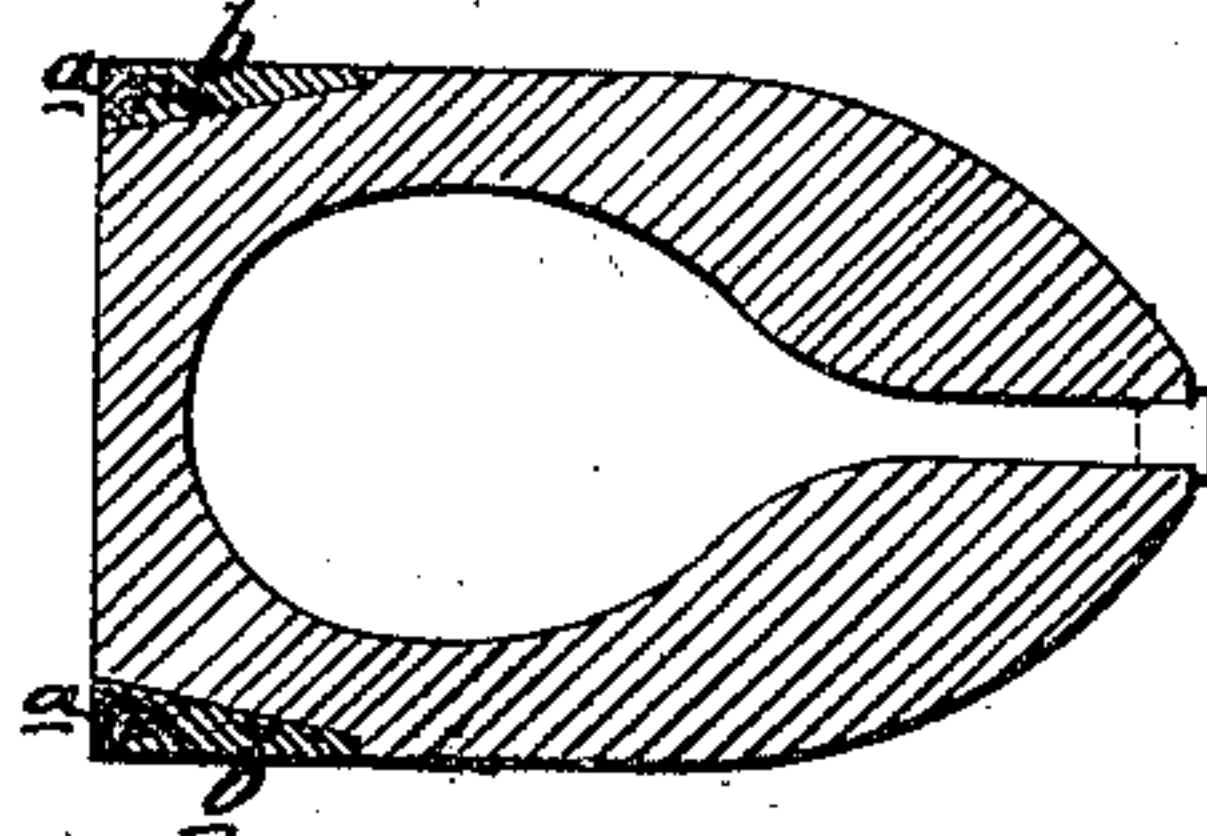


FIG. 4.



Witnesses { *Jno. B. Harding.*
Thomas M. Evans

B. Britten
by his attys.
Howson and Son

UNITED STATES PATENT OFFICE.

BASHLEY BRITTEN, OF RED HILL, ENGLAND.

IMPROVEMENT IN ORDNANCE.

Specification forming part of Letters Patent No. 116,408, dated June 27, 1871.

To all whom it may concern:

Be it known that I, BASHLEY BRITTEN, of Red Hill, in the county of Surrey, England, have invented Improvements in Ordnance, of which the following is a specification:

My invention relates to certain improvements in ordnance, too fully described hereafter to need preliminary explanation, whereby the weight and cost of the gun are reduced and its strength increased.

Figure 1 is a sectional view of a muzzle-loading gun constructed according to my improvement; Fig. 2, a sectional view of a breech-loading gun; Figs. 3 and 4, views representing projectiles which may be used.

In the manufacture of my improved guns I employ metal of great tensile strength, such as wrought-iron, steel, bronze, or gun-metal, or other suitable metal for that part of the gun where the greatest strength is required in order to resist the pressure of the charge in the chamber of the gun when the gas first expands, while I use a cheaper or more easily manufactured metal, such, for example, as cast-iron, for the other part of the gun which is not subjected to so great a tensile strain from the expansion of the gases. The body of the gun may be made of cast-iron, in which case the special part which would be provided in order to bear the greatest strain would, according to my invention, be made of wrought-iron, steel, or bronze; or, on the other hand, the body of the gun may be composed of bronze and the interior of the breech-piece of steel or wrought-iron. Thus the cheaper or more easily manufactured metal furnishes the greater part of the weight needed in the gun to lessen its recoil when fired.

In practically carrying out my invention I make the body A of the gun of cast metal. With-in this, at the rear end, I insert a breech-piece, B, of wrought-iron, steel, bronze, or other strong metal, sufficiently thick to bear the strain of the charge, and long enough to surround the bore for about three times the length of the space (more or less) occupied by the charge of powder. This breech-piece B, of extra strong metal, is secured in its place by shrinking on of the cast-metal body round it, or by a screw-thread on its circumference, as shown at *a* in the drawing. For some guns I use, in addition, the ordinary lining of steel C; or I sometimes use a lining of gun-metal; which linings may extend through-

out the whole or a portion of the length of the bore.

Guns so constructed may obviously be made as muzzle-loaders or breech-loaders, and be rifled or left with a smooth bore, as preferred, and any existing cast-iron guns may be strengthened in the same manner.

Fig. 2 represents a section of a breech-loading gun constructed on my system, any mode of closing the breech which may be preferred being adapted thereto.

I make projectiles of cast-iron or steel for ordnance with a partial coating of lead or other soft metal, united to the projectile itself by zinc or other solder, and formed so that the said coating will expand, the soft metal being upset or bulged by the pressure of the gases when fired. I attach at the extremity of the soft metal coating a circular shoe-piece, *a*, as shown in the elevation and section of a projectile at Figs. 3 and 4, this shoe being made of iron or other suitable metal. It is to be embedded in the soft metal *b* (the soft metal being cast round it) and united to it by the same means as the soft metal is united to the body of the projectile, viz., by zinc or other solder, so that it shall not become detached when fired, and will serve to protect the extremity of the soft metal from being injured when in store or during transport.

In order to attach the coating of lead firmly to the iron of the projectile I first remove all impurities from the surface of the iron either by tools or by subjecting the iron to a strong pickle of sulphuric or other acid. This portion of the shell is then immersed in a bath of melted zinc, tin, or solder, so as to become coated with such metal. This projectile is then taken out and as quickly as possible placed in a mold of the required form containing melted lead, which, on cooling, becomes firmly attached to the projectile. The iron or other metal shoe or ring is treated in like manner for the purpose of causing it to adhere firmly to the lead. It is of a wedge-form, in section, as shown in the drawing, or of other convenient shape, in order to bulge out the lead when acted upon by the expansion of the gases. Three or more pins or wires, as shown in dotted lines in Fig. 4, may be fitted into the upper side of the ring, upon which wires the projections will rest when placed in the mold, thereby preventing the ring from rising

in the lead, and securing a free space between the ring and the projectile to be filled up by the lead.

I do not claim, broadly, a gun within the breech of which is inserted a detachable lining or cylinder of steel or other material; but

I claim—

A cast-metal gun, in the breech of which is embedded a breech-piece of malleable iron or bronze, upon which the body is cast, and which

is bored out to coincide with the bore of the gun, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BASHLEY BRITTEN.

Witnesses:

D. ALLPORT, 9 Fenchurch Bldgs., London.

W.S. RATTEY, 9 Fenchurch Bldgs., London.