

J. S. KEITH & J. BROOK.
BULLET MOLD.

No. 12,411.

Patented Feb. 20, 1855.

Fig. 1.

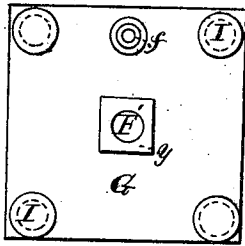


Fig. 4.

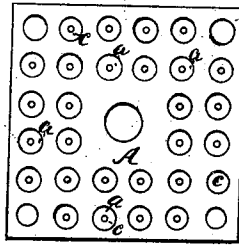


Fig. 5.

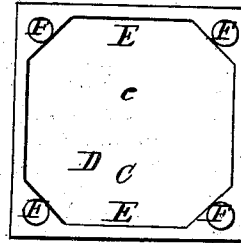


Fig. 3.

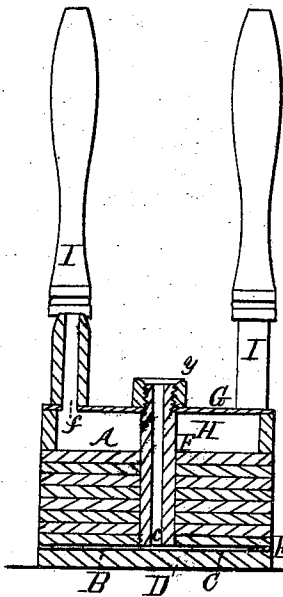


Fig. 6.

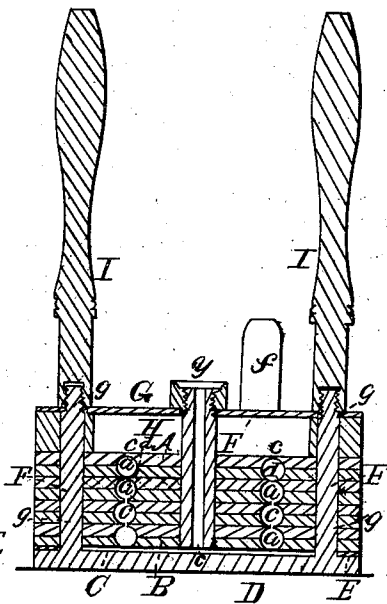
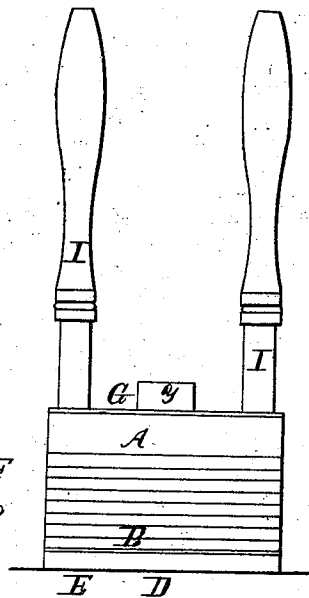


Fig. 2.



UNITED STATES PATENT OFFICE.

JOHN S. KEITH AND JOHN BROOKS, OF CANTON, MASSACHUSETTS.

BULLET-MOLD.

Specification of Letters Patent No. 12,411, dated February 20, 1855.

To all whom it may concern:

Be it known that we, JOHN S. KEITH and JOHN BROOKS, of Canton, in the county of Norfolk and State of Massachusetts, have invented a new and useful or Improved Bullet-Mold; and we do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of these drawings, Figure 1, denotes a top view of the said mold; Fig. 2, a side elevation of it; Fig. 3, a transverse section of it, such section being taken through one of its escape and filling tubes to be hereinafter described. Fig. 4 is an underside view of one of the upper matrix plates (A).

The mold on which our invention is engrafted is intended when used to be dipped into metal in a molten state. It is not necessary however, that such a mode of using it be always adopted as metal may be poured from a vessel and directly into the mold or the filling tube thereof, and so as to pass into the matrices.

In constructing our improved mold we make use of two, four, six or any even number of metallic plates, A, and B. Each of which has a thickness equal to the radius of each of its matrices. These plates are placed one on the top of the other and each of them has formed in a series of semi spherical cavities as seen at *a, a*, or *d, d*, in Figs. 6, and 4, such cavities being so arranged in either set of two plates, that each one of the lower plates shall have one of the upper plates directly over it and so that the two combined together may form a spherical matrix whose radius is equal to the thickness of either of the plates. Each of the said matrices is provided with a very small hole (*c*) which is bored through the plate A, at the very crown of the matrix, such hole being about one sixteenth of an inch in diameter. Another and similar hole (*d*), is formed out of the lowest part of each matrix and through the plate B, such holes being for the escape of air from the matrix and the passage of molten metal into and through said matrix. Beneath all the matrix plates is a thin chamber, C, arranged directly below the lower mold plate, B, and extending beneath the several matrices. This chamber is formed by means of a metallic bottom plate D, and a thin plate E, and having an opening *e*, made through it

as seen in Fig. 5, which is a top view of said plate E. The lower mold plate is provided with one or more tubes or standards, F, that extend from it and pass through the upper mold plate and rise above the same and through the different sets of mold plates and what may be termed the top plate, G, as seen in Fig. 3.

An air passage, *f*, leads out of a chamber, H, made in the plate, G, and over the matrices of the upper set of mold plates. A screw nut, *g*, may be screwed on the top of the tube, F, so as to aid in confining the mold plates together. The bore of the pipe, F, opens out of the chamber, C.

Fig. 6, exhibits a diagonal section of the mold and shows the manner in which its plates are clamped together, the lower plate, D, being provided with a screw, *g*, at or near each corner of it—such screw extending upward through the several plates E, B, A, and G, and having a handle I, screwed upon it and down upon the latter plate as seen in the drawings. The object of the chamber, C, and its tube, F, is to allow the molten metal to pass down into the chamber, C, and from thence to flow up through the several matrices, and drive the air that is in them before it and into the chamber, H, from whence such air will escape through the tube or funnel, *f*. The said chamber, C, also constitutes a space for the reception of metal so as to insure the perfect formation of the lower part of each ball of the lower set of mold plates. The space, H, directly above the upper mold and within the guard plate, G, receives the metal from the several holes, *c, c*, of the upper set of matrices and holds a surplus of it sufficient to supply what metal may be needed in the several matrices during the times of its passing from a molten to a solid state therein, it being subject to contraction at such time. Were it not for the chambers or spaces above and below the mold plates, the contraction of the metal in the mold plate would be such as to create imperfections or cavities in the balls.

By making the thickness of the mold plate equal to the radius of the matrix as described the outer surface of each of the mold plates become tangential to the matrices thereof, and so that when the lead or molten metal in contact with it is removed the balls are left in the matrices and without any sprues or projections such as will be a material injury to them and would have

to be removed from them before they would be fit for the musket or for use. By passing a knife between the outer surface of a mold plate and the lead adhering thereto, such lead may readily be separated from the balls so as to leave them in a fit state for use. By turning one set of mold plates on the other a little the balls of one set will be separated from those of another, it being understood that each matrix of one set of mold plates is made to communicate with a matrix placed over it as seen in the drawings. Instead of the lead being suffered to flow into the tube, F, and thence into the tube, C, it may be poured into the chamber, H, and suffered to flow down through the several matrices and into the chamber, C, the air being expelled through the pipe, F. We do not however deem such a mode of using the mold as that calculated to form the balls to the best advantage.

What we claim as our invention is—

1. Combining with the mold plates, A, and B, the air and lead chambers, C, and H, the passages, *c, c*, and a tube F, leading out of the chamber, C, and terminating above the level of the receiving space above the upper mold plate, the object of the said

chambers C, and H connected with the several matrices as described being as herein- 30 before specified.

2. And we also claim the arrangement of the outer surface of either of the mold plates tangentially to the spherical or adjacent surfaces of its several matrices, or so that 35 after the mold has been filled with metal, and the sheet of metal against the tangential surface removed therefrom, the balls shall be left for all practical purposes without sprues, or in a state fit for use as 40 specified.

3. We also claim arranging two or more sets of mold plates and their matrices together so that the matrices of each set shall be made to respectively communicate with 45 those of another set placed either above or below it as specified.

In testimony whereof, we have hereunto set our signatures this eleventh day of January A. D. 1855.

JOHN S. KEITH.
JOHN BROOKS.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.