C. B. Tatham,

Casting Rifle Balls.

No. 35,334. Patented May 20, 1862.

Fig. 2.

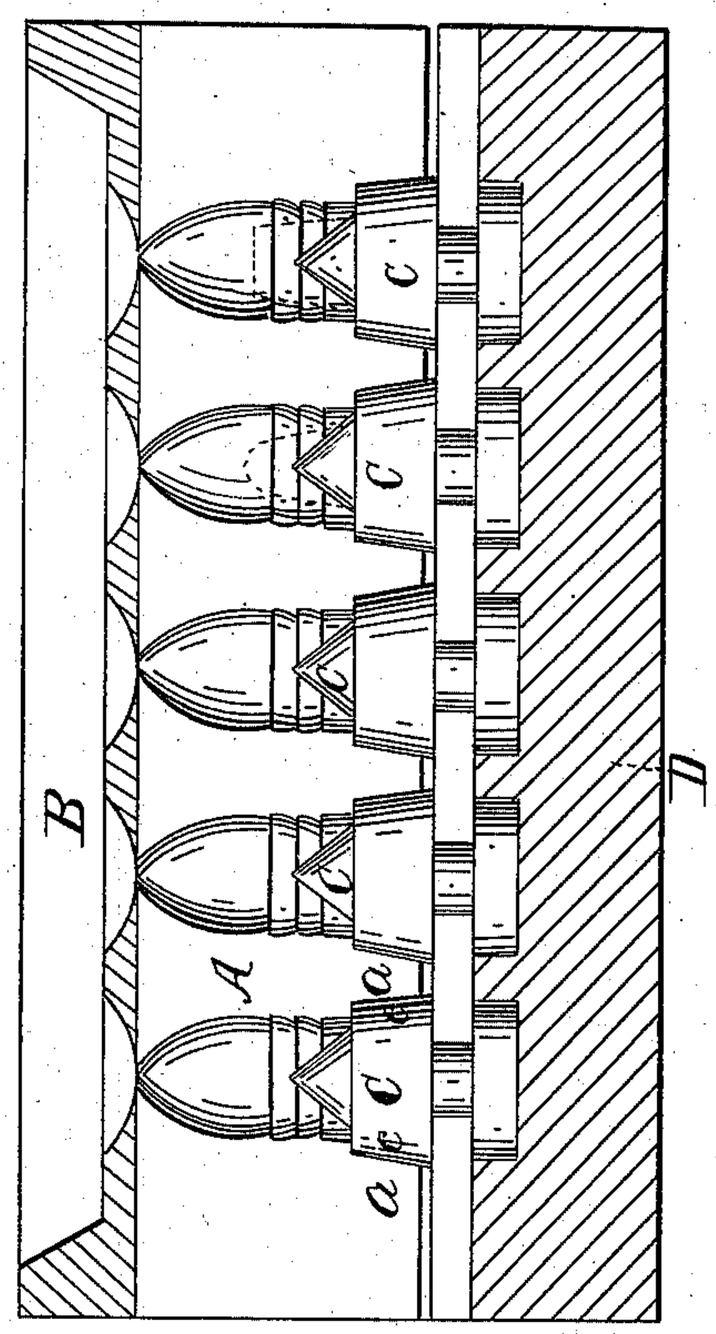
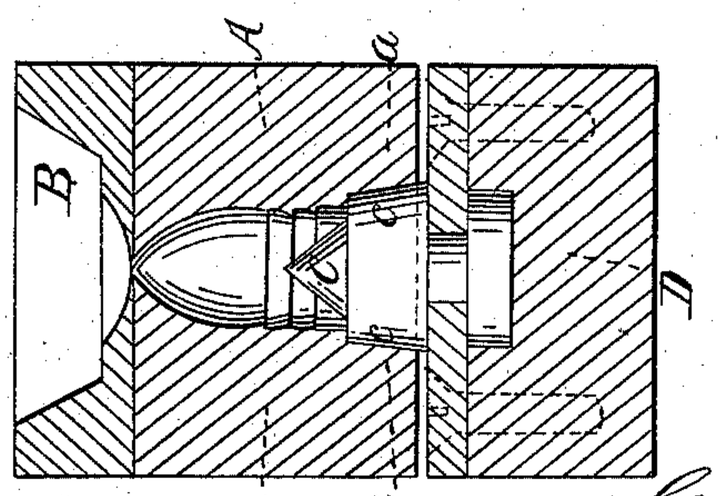


Fig. 1.



Witnesses.

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CHARLES B. TATHAM, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN APPARATUS FOR CASTING MINIÉ BALLS.

Specification forming part of Letters Patent No. **35,334**, dated May 20, 1862.

To all whom it may concern:

Be it known that I, CHARLES B. TATHAM, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful improvements in the means of casting Minié balls, or any balls which require a cavity or recess in the center of the base or rear end; and I do hereby declare that the following is a full and exact description of the same, which has been prepared with a view to the obtaining of Letters Patent therefor.

In order to better explain my invention, I deem it proper to describe briefly a machine or instrument commonly used for casting these balls, which has long pieces of hard metal hinged together, each of which contains half of each of the chambers, which chambers are a series of cavities of the desired form and size for the exterior of the ball. The hole in the base of each ball is in such well-known instrument or machine formed by a metallic core or point attached to a movable cap, by which it is held within the chamber with the point downward. An opening is left at the side of each of these cores, through which the mold is filled with melted metal. It is found by experience to be almost impossible by these means to make the hole exactly central in the base. This arises from the unequal expansion and contraction of the pieces which compose the mold and its movable cap when in use. It is obvious that any difference in this respect between the cap and the mold must vary the position of the cores in the same proportion.

The objects of my invention are to insure the centrality of the hole in the base and to insure a sound casting.

Instead of suspending the cores within the chamber from a movable cap, I arrange them so that each is separately held centrally in place within its chamber by the pieces which form the chamber. Thus any variation of expansion carries the cores in the same direction, and they are always held in the same relative position in the center of the chamber.

Instead of casting my balls point downward, and filling my molds at the base of the ball through holes at the side of the cores, as usually practiced, I cast them point upward, and fill them from that end under a considerable head of surplus metal, so that the point of the ball is formed last, and the head or pressure of the metal insures a solid casting.

To facilitate the removal of the balls from the molds, I arrange the cores so that they can be withdrawn at the bottom before the molds are opened.

I can cast my balls in machines or instruments adapted to produce either one at a time or a large number at a single operation, the latter being preferable for economy. When several balls are to be cast simultaneously in the same machine, the cores are attached loosely to a bar, so as to allow of sufficient motion upon it to correspond with any expansion of the mold beyond that of the bar.

Various ways of accomplishing the object will readily suggest themselves to any practical mechanic without departing from my invention, the chief feature of which consists in determining the position of each core in its chamber by the contact of the pieces which form such chamber.

The better to enable others skilled in the art to make and use my invention, I will proceed to describe the details thereof by the aid of the accompanying drawings and the letters of reference marked thereon.

Figure 1 shows a cross-section of the machine or mold; and Fig. 2, a longitudinal section of a portion of the same, it being understood that the parts may be of any length desired, and hinged or otherwise connected in any ordinary manner. The balls may also be cast in two or more rows in the same machine with the same facility as the ordinary molds.

The drawings represent the mold as adapted to making a single series of balls.

A A represents the halves of the molds.

B is a movable filling-trough resting and capable of being moved upon A, and the bottom surface of which forms a knife-edge.

C C represent the cores in their places within the chambers, the bearings *c* and seats *a*, which form the contact of the cores with the halves A A, being coned, as represented. The portion that enters the chamber may be conical, as shown by the black lines, or may have any other form, as shown by the red lines.

D represents the bar, by which the entire series of cores are withdrawn from or replaced within the mold at a single operation, the button or lower portion of each core being so held therein that the core may move horizontally to a small extent independently of the bar. After the melted metal has been poured into

the mold so as to fill the chambers, and also the filling-trough B, and has become set, the filling-trough B is moved laterally or longitudinally by any suitable means, and thereby all the surplus metal is cut off and may be returned to the melting-pot. The cores C are then withdrawn by depressing D by means of an eccentric or any other motion, after which the halves A A are separated, and the balls fall upon a suitable receiver, made of soft material to avoid bruising or indenting them. The parts of the machine are then again applied together, as before, and the operation of pouring into B is repeated.

I do not limit myself to the precise form of the parts, or to the combination of all the features of my invention; but,

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. The means, substantially as herein described, of forming the hole in the base of the ball by a core, held in its place within the chamber by its contact with the piece or pieces which form the same, so that any expansion or motion of the mold will carry the cores therewith and maintain their central position within the chambers.

2. In combination with means, substantially as herein described, of preserving the centrality of the cores under movements or varying expansion of the parts of the mold, removing a number of such cores and returning them to their places at a single operation by the means substantially as herein described.

3. In combination with means, substantially as herein described, of preserving the centrality of the cores, and with means, substantially as herein described, of removing and returning to their places a number of such cores, the use of chambers so located and arranged as to be filled through the points thereof, and to allow the metal to set under a head with the points of the balls directed upward, for the purpose of simplifying the construction of the apparatus, and of increasing the solidity of the balls.

CHAS. B. TATHAM.

Witnesses:
THOMAS D. STETSON,
D. W. STETSON.