

No. 34,006.

PATENTED DEC. 24, 1861.

P. NAYLOR.  
MEANS FOR CASTING BALLS.

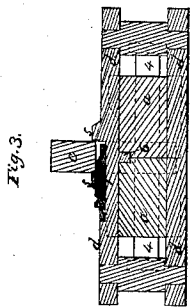


Fig. 3.

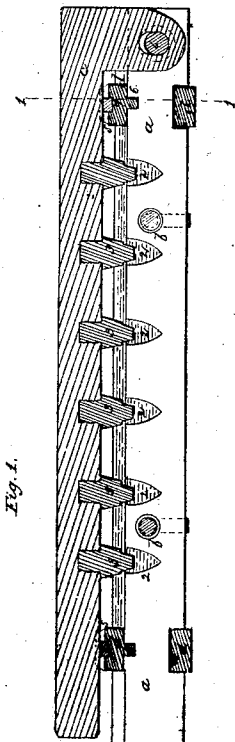


Fig. 1.

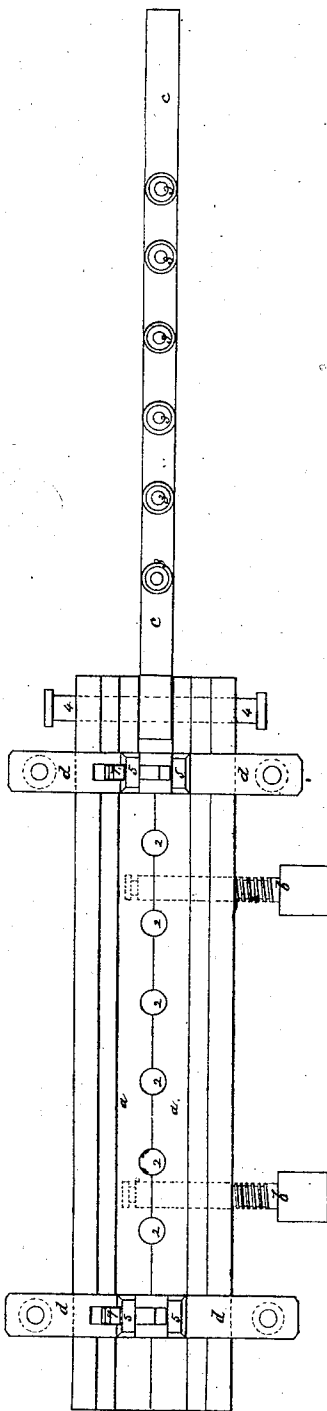


Fig. 2.

Witnesses:  
*Lemuel H. Sewell*  
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Inventor:  
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# UNITED STATES PATENT OFFICE.

PETER NAYLOR, OF NEW YORK, N. Y.

## IMPROVEMENT IN CASTING BALLS FOR RIFLES.

Specification forming part of Letters Patent No. 34,006, dated December 24, 1861.

*To all whom it may concern:*

Be it known that I, PETER NAYLOR, of the city and State of New York, have invented, made, and applied to use a certain new and useful Means for Casting Balls for Rifles, &c.; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical longitudinal section of my mold for making balls. Fig. 2 is a plan of the same, and Fig. 3 is a cross-section at the line 1 1.

Similar marks of reference denote the same parts.

Several devices have heretofore been made for casting musket-balls, rifle-balls, and hollow balls, usually known as the "Minié ball." In these cases the molds have either left the ball in a rough state, to be afterward finished by compression, or else the surplus metal has been cut off while in the molds, and the compressing and solidifying of the balls has been accomplished by a separate and distinct operation, either while in the molds or after being removed therefrom.

The nature of my said invention consists in the employment of a punch held above or sufficiently distant from the mold to allow the melted metal to be poured, and which punch, on being forced toward the mold, simultaneously effects the three operations of, first, consolidating the metal and thoroughly filling the mold by pressure on the semi-fluid mass; second, of impressing its own form in the molten metal, and thus completely finishing the metal at the pouring-point; and, third, of tilting or nearly filling the opening to the mold through which the metal was poured, so as to separate the ball and the surplus metal, so that said surplus metal does not require to be cut off by a separate operation, as heretofore. By this means my balls are not only more perfect in every respect than those heretofore cast, but considerable expense is saved in the casting, and less time is occupied than heretofore.

In the drawings, *a a* are the halves of the mold, kept together by a suitable pressure

when the balls are being cast and finished, or opened for their delivery. I have shown the screws *b b* for this purpose.

The size and shape of each cavity 2 2 is to be that of the ball to be cast. I have shown these cavities shaped according to the ordinary elongated or Minié ball.

*c* is a die-bar carrying the dies 3 3, one of said dies being over each of the cavities 2; and kept by the bar *c* sufficiently above the said cavities 2 to allow the melted metal to run into these cavities, and the end of each of these dies is to be shaped as required for finishing the ball. I have shown each die 3 as shaped for forming a hollow or Minié ball, and when said die is forced down upon the metal while in a semi-fluid state the ball is consolidated, finished, and the surplus metal separated from the ball. The upper portion of these dies should be tapering, so as freely to come out of the mass of surplus metal around them, as seen in Fig. 1 by red lines. Each of these dies 3 might be driven down by a blow from a hammer acting separately on each, if the stem of said die extended up through the bar *c* and projected above. I have, however, shown all these dies set in said bar *c*, and I act on all at once by a heavy hammer or a drop-weight, in order to effect the aforesaid three objects by forcing the dies down upon the semi-fluid metal. This die-bar *c* is, for convenience, hinged by the pin 4, and can be turned back out of the way while the surplus metal is being lifted from the pouring-trough formed on the top of the molds *a a*.

*d d* are guide-bars, causing the molds *a a* to open and close parallel and correctly, and also serving to bring the bar *c* parallel with the molds and correctly over the cavities 2 2, said bar *c* setting in a notch between the lugs 5 5 on each upper guide-bar *d d*.

6 6 are lugs projecting from the under sides of the upper bars, *d d*, that take recesses in the faces of the molds *a a*, and when said molds are shut bring the bars *d d* and bar *c* into position transversely of the molds.

In order to hold the bar *c* and dies 3 3 sufficiently above the cavities 2 2 to allow for pouring the metal, I employ the wedges 7 7,

(see Fig. 3,) and when these are drawn back the bar *c* and dies 3 3 can be forced down as a whole, for the purposes aforesaid.

What I claim, and desire to secure by Letters Patent, is—

The employment of a die, 3, at the opening through which the metal is poured, in the manner and for the purposes specified.

In witness whereof I have hereunto set my signature this 23d day of November, 1861.

PETER NAYLOR.

Witnesses:

LEMUEL W. SERRELL,  
THOS. GEO. HAROLD.