(No Model.)

S. ARMSTRONG.

DETONATING BALL.

No. 359,490. Patented Mar. 15, 1887.

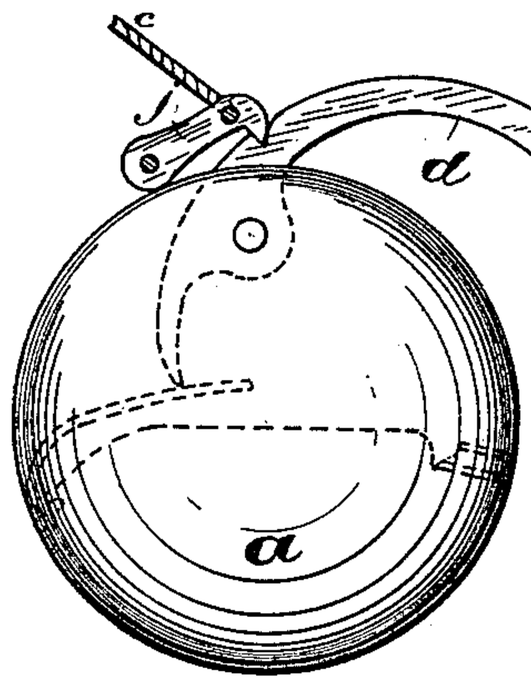


Fig. 1.

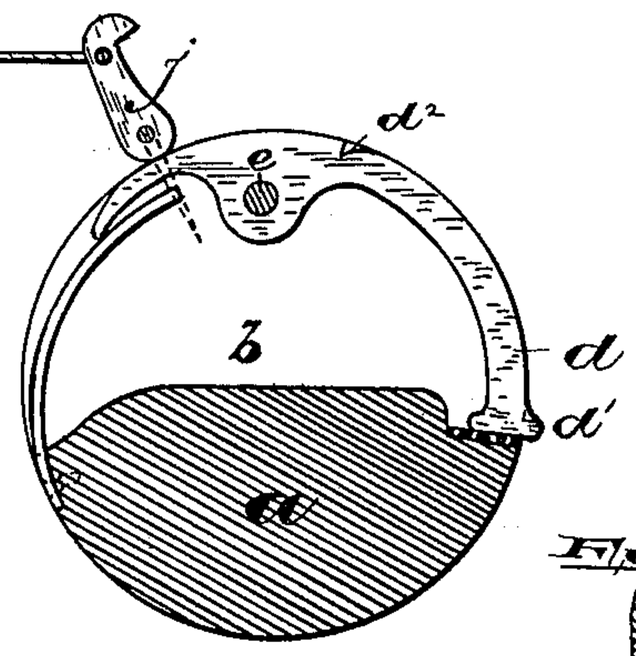
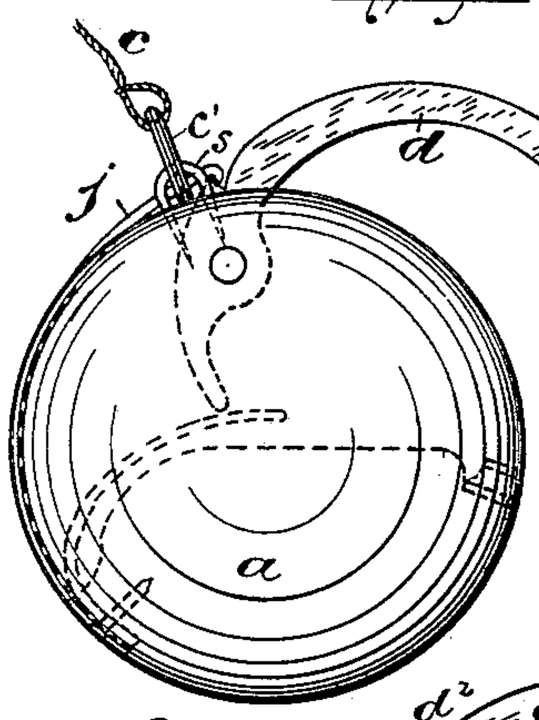


Fig. 2



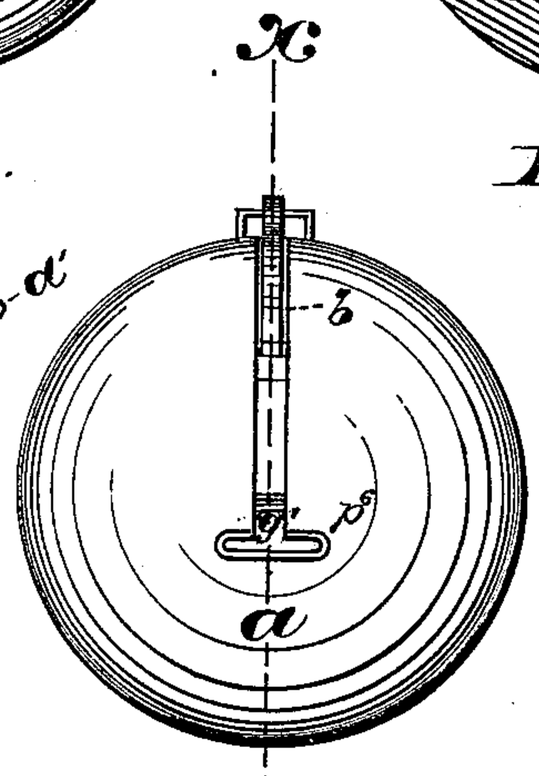
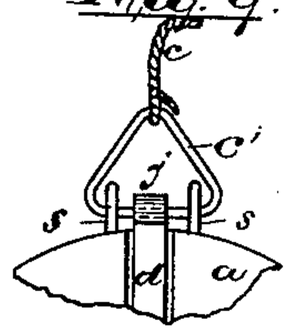


Fig. 3.

Fig. 9.



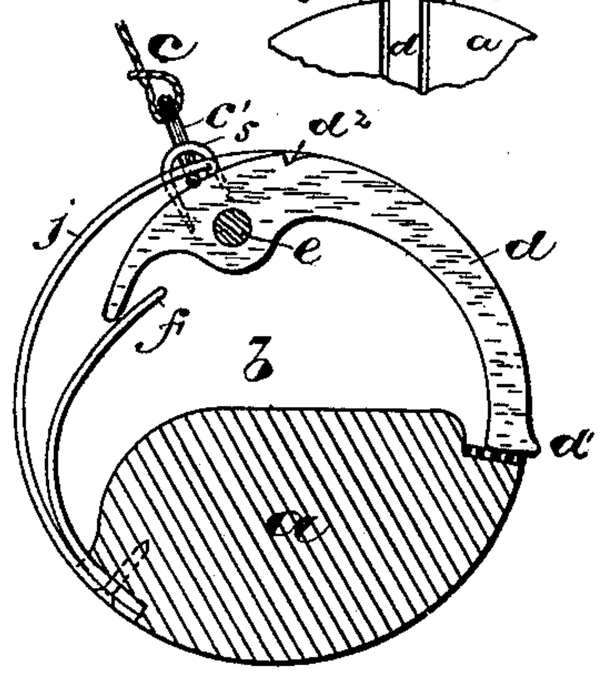
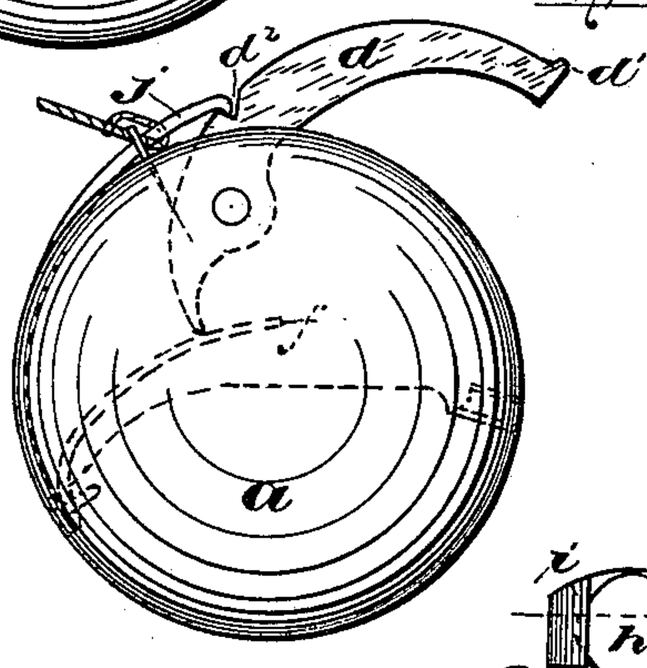


Fig. 8.

Fig. 7.



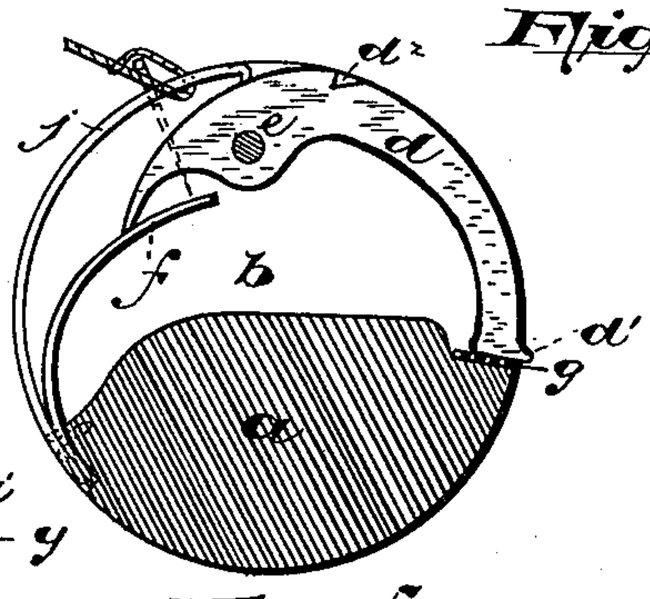


Fig. 4.

Fig. 5.

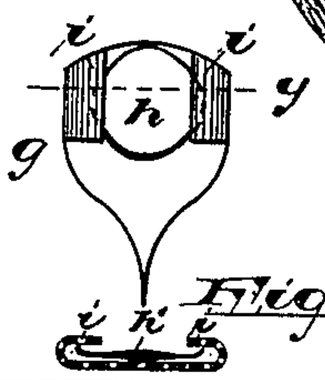


Fig. 6.

WITNESSES:

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UNITED STATES PATENT OFFICE.

SAMUEL ARMSTRONG, OF NEWARK, NEW JERSEY.

DETONATING-BALL.

SPECIFICATION forming part of Letters Patent No. 359,490, dated March 15, 1887.

Application filed June 5, 1886. Serial No. 204,192. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL ARMSTRONG, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Detonating-Balls; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to afford amusement for the children; and it consists in the arrangements and combinations of parts, substantially as will be hereinafter set forth, and finally be embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters indicate corresponding parts in each of the several figures, Figure 1 is a side elevation of a device embodying the invention; Fig. 2, a sectional view of the same, taken through line *x*, Fig. 3. Fig. 3 is a front elevation of the said device. Figs. 4 and 5 are respectively a side elevation and a sectional view illustrating a slightly-modified construction. Fig. 6 is a detail plan and section through *y* of said plan, showing the construction of an anvil upon which the fulminating-caps are laid and discharged by a blow from the hammer or plunger. Figs. 7 and 8 are respectively an elevation and sectional view showing another and preferred construction; and Fig. 9 is a detail view showing a lifting-loop employed therein.

In said drawings, *a* indicates a ball, which is preferably of wood. Partly through the same, as at *b*, is formed a saw-cut, in which is arranged mechanism to receive and discharge a cap when the ball is thrown and a string or cord, *c*, secured to the ball at one end and to the hand at the other, is pulled.

The mechanism preferred and the arrangement of the same are shown in Figs. 7, 8, and 9, although I do not wish to be understood as limiting myself to said mechanism and arrangement, as many changes of construction other than those provided for may be made without departing from the spirit of this invention. In said preferred construction, *d* is a hammer having an outer outline or edge closely coinciding with the outline of the ball, and having at its free extremity a slight projection, *d'*, which serves as a finger-piece, by means of which the hammer may be raised or cocked. By having the principal parts of the working mechanisms at or beneath the surface of the ball they are prevented from injuring the hand when the ball is being handled.

Within the cut or opening *b* is arranged a spring, *f*, preferably a flat steel spring, which is secured at or nearly at the periphery of the ball on a plane about parallel with said periphery, extending inwardly, and thus engages the inner end of the lever-like hammer and tends constantly to throw said hammer at its outer extremity against the anvil, and to thus discharge the fulminating-cap arranged on said anvil, when the hammer is released.

When the hammer is raised, the spring is greatly bent, so that it extends in a direction nearly at right angles to its normal position, (that being nearly parallel with the periphery of the ball,) so that when said hammer is released by withdrawing the detent the greatest power of the spring is immediately exerted on the hammer at the commencement of the discharging or exploding stroke thereof.

The anvil or bed *g*, which serves to receive the stroke of the hammer or plunger, is preferably a plate having arms or bent edges *i i*, beneath which the cap *h* may be inserted and held while the ball is being handled and thrown and before the hammer is released. An opening between said arms is provided to allow access of the hammer to the cap. The said anvil is arranged in a transverse slot or aperture, p^6, Fig. 3, the side edges of the said anvil extending beneath the side walls of the slot opening or cut *b*, by means of which the anvil is held securely in position. By this construction the anvil may be simply driven into position without preliminary preparation upon the ball, the transverse slot being formed when driving the anvil home. The outer edge of the hammer is notched, as at d^2, to receive the pawl *j*. Said pawl or detent is independent of the actuating-spring, is pref-

erably secured to the ball behind the hammer, and is adapted to catch into the notch of the hammer and to hold the hammer in the raised position shown in Figs. 1, 4, and 7. Said pawl may be, and preferably is, a spring-catch adapted to spring into holding engagement with the notched hammer automatically as the latter is lifted. The string or cord *c* is preferably secured to the detent, so that the latter may be raised or disengaged from the hammer when the ball is thrown and the end of the cord is retained by the hand.

To limit the draft on the spring pawl or detent, so that the latter will not be broken when the ball is thrown with considerable force, I have provided at the end of the cord a loop or eye, *c'*, which is held beneath said pawl, as in Figs. 7, 8, and 9, so as to lift the same when the string or cord is pulled, and in staples *s s*, secured in the ball at each side of the pawl and hammer. Said staples allow a sufficient vertical play to the loop to enable it to withdraw the detent from the notch of the hammer, but to prevent any excessive draft on the said detent. The cord employed with the detonating-ball is preferably of rubber or other elastic substance adapted to cause said ball to return to the hand after the discharge or report is made.

In operating the device, the hammer being cocked and held automatically by the spring engaging the wall of the notch and a fulminating-cap being placed on the anvil in the path of the hammer or plunger, and the free end of the cord *c* being caught or tied to the hand, the ball is thrown from the person, and as it arrives at the limit of the cord it causes the latter to be pulled. The draft on the cord causes the detent to be lifted from the notch, and the hammer is free to act on the cap. The spring *f* then causes said hammer to discharge the cap while the ball is still in the air and away from the person. The elastic cord, when such is used, then causes the ball to return to the hand, that the same may be again loaded.

In using the word "ball" I do not wish to limit myself to a piece exactly globular or round, as the shape, as is evident, may be varied. The cut or aperture *b* may be formed by other means than a saw.

I am aware it is not new to provide a ball with a slot, spring, hammer, and a cord, the last being tied to one end of the hammer, and consequently I do not claim these features, broadly; but in the device referred to the spring merely acts as a detent to hold the hammer in its raised position prior to throwing the ball, and not to actuate the hammer in the act of exploding the cap. In said prior device the power expended in operating the hammer is derived from the draft on the string as the ball arrives at the end thereof on being thrown; but this requires that the ball be thrown with energy to secure a certain discharge of the cap—an objection it is one object of this improvement to overcome.

In the improved device the string or cord disengages the detent from the hammer, so that the actuating-spring has full control over the hammer. The position and strength of the spring is such as to give such sudden motion to the hammer as to discharge the cap with certainty, whether the ball be thrown with little or much energy.

Having thus described the invention, what I claim as new is—

1. The improved toy herein described, consisting, essentially, of a ball having an anvil or bed against which the hammer may strike to discharge the cap, a hammer, and a spring secured at or near the periphery of the ball and normally lying parallel or nearly parallel with said periphery, extending inwardly or from said periphery and engaging the hammer to actuate said hammer, said parts being combined substantially as and for the purposes set forth.

2. The improved toy herein described, having a cut, slot, or aperture therein, and an anvil or bed, a spring-actuated hammer operating in said slot, a detent, and a cord secured to said detent adapted to release said hammer therefrom when draft is brought thereon, said parts being arranged and combined substantially as set forth.

3. The improved toy herein described, which consists, essentially, of a ball having a notched and spring-actuated hammer, a detent adapted to enter the notch of said hammer, and a cord attached to or connected with said detent and adapted to draw the same from the notch, substantially as and for the purposes set forth.

4. As an improved toy, a ball, a detonating-hammer arranged in an aperture or slot therein, a spring to actuate the hammer, an independent detent capable of holding the plunger or hammer away from the cap or fulminating substance, and a string or cord of elastic matter adapted to release said hammer, all substantially as and for the purposes set forth and shown.

5. In a detonating-ball, the combination of a detonating-hammer having a notch on the outer edge thereof, an actuating-spring, and an independent spring-detent to engage said notch, substantially as and for the purposes set forth.

6. In a ball-detonator, the combination, with a ball having slots or openings *b* and p^6, of a hammer arranged in the slot or opening *b*, and an anvil having arms *i i*, and held in place by the walls of the slot or opening *b*, substantially as shown and described.

7. In combination, the slotted ball, a hammer arranged in the slot thereof, a spring, *f*, to actuate the hammer, a cord by which control of the ball is retained, a spring-detent to engage the hammer and hold the same away from the anvil and to do so automatically as the hammer is raised, and means, substantially as described, for limiting the draft on said spring-detent when the ball is thrown and the

resistance of the hand is brought to bear, said parts being arranged and adapted to operate substantially as set forth.

8. In combination, the slotted ball, a detonating-hammer arranged in the slot thereof, an actuating-spring arranged in said slot beneath the hammer, a spring-detent to automatically engage the hammer and prevent a premature discharge, staples *s*, a loop or eye, *c'*, and a cord, all said parts being arranged to operate substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of May, 1886.

SAMUEL ARMSTRONG.

Witnesses:
CHARLES H. PELL,
FREDK. F. CAMPBELL.