No. 846,884. PATENTED MAR. 12, 1907.

T. B. WILKINSON & F. G. DIETERICH.

DETONATING TOY.

APPLICATION FILED JULY 9, 1906.

Fig. 1.

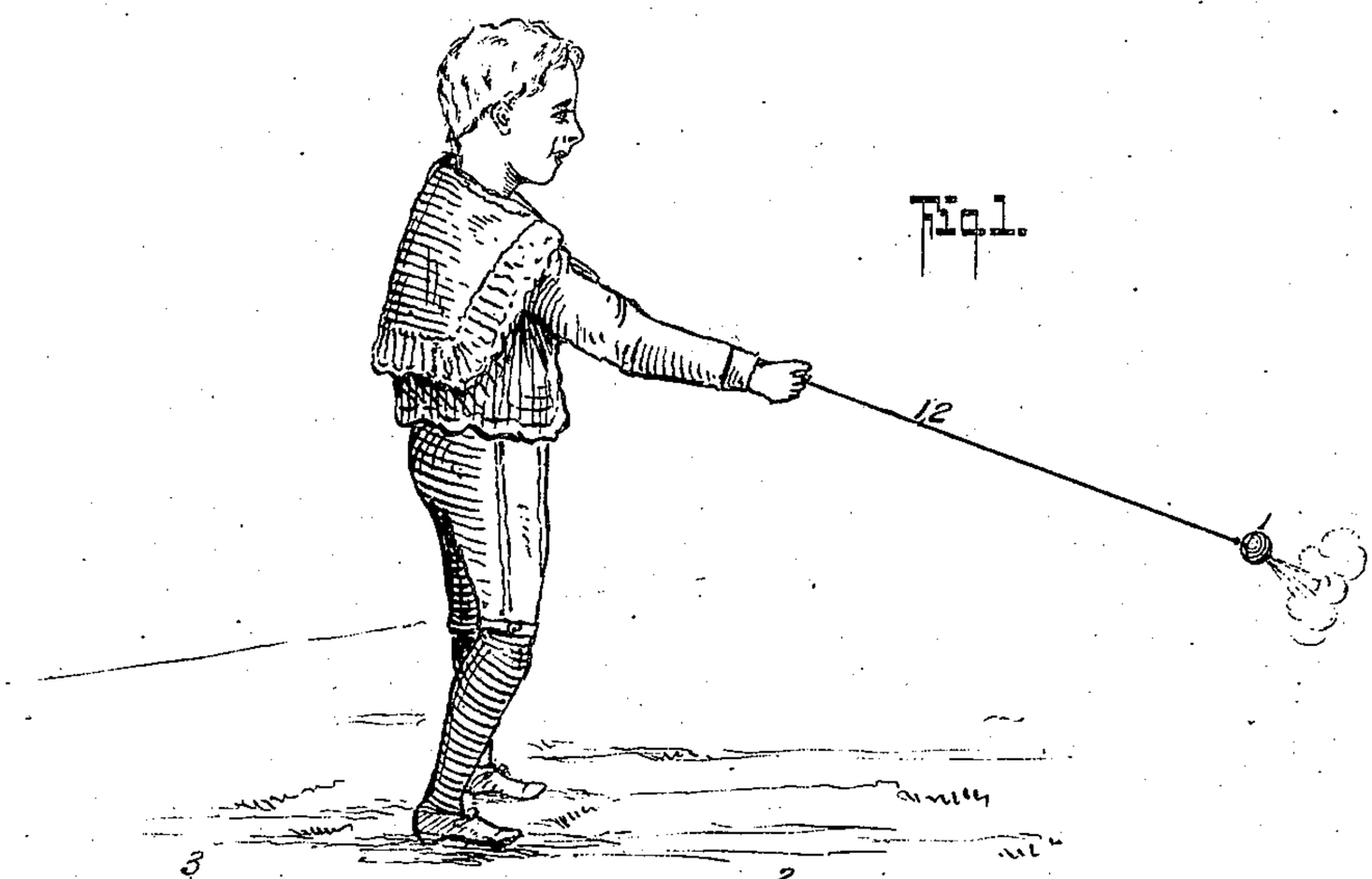


Fig. 2.

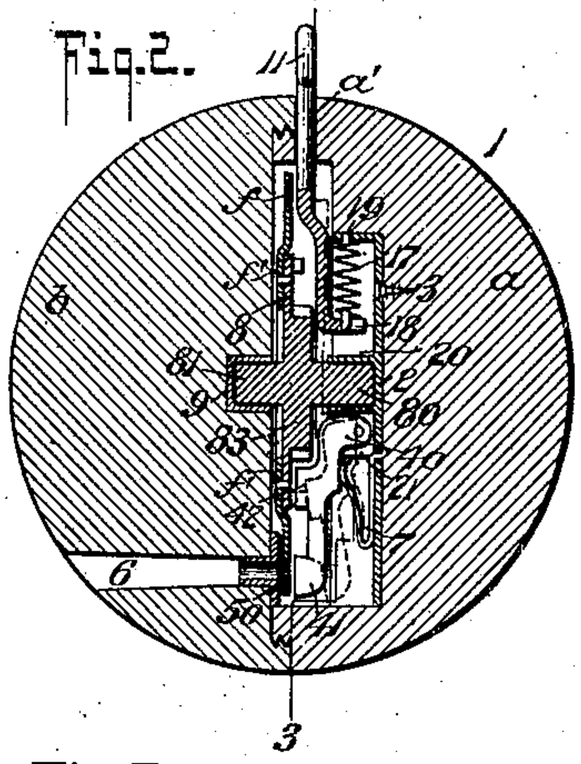


Fig. 3.

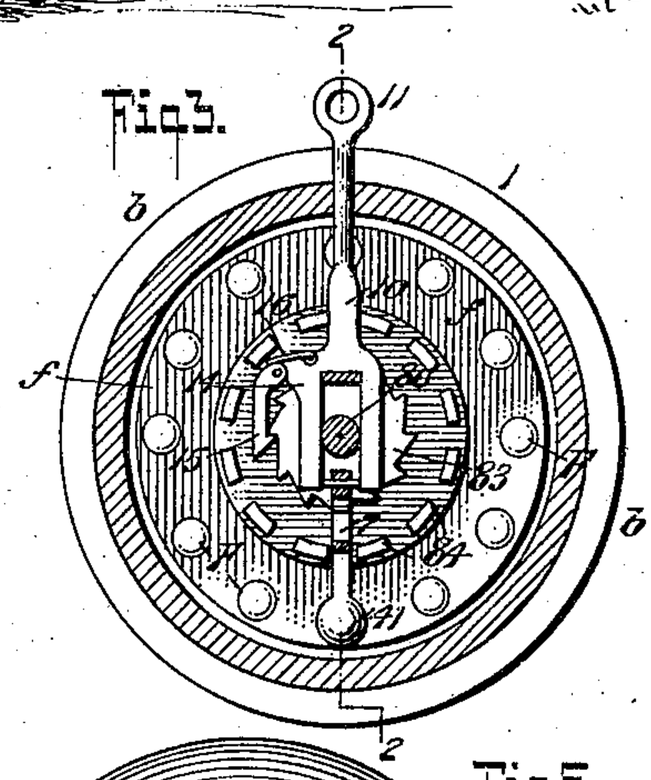


Fig. 8.

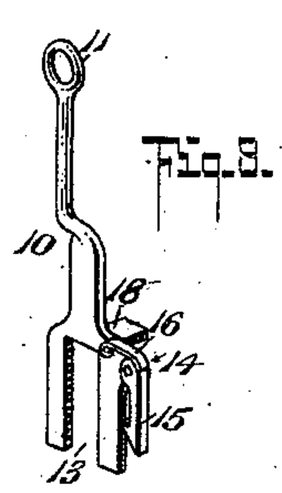


Fig. 6.

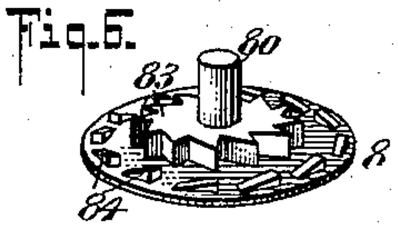


Fig. 5.

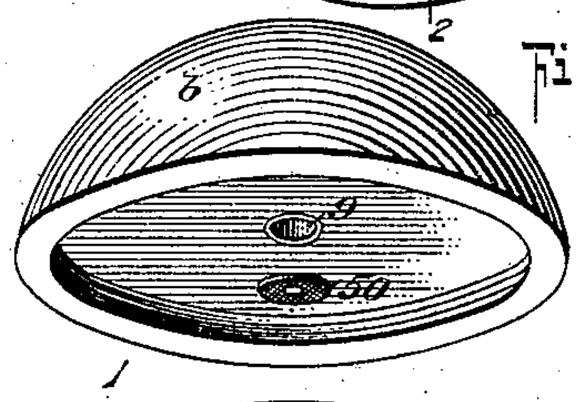


Fig. 9.

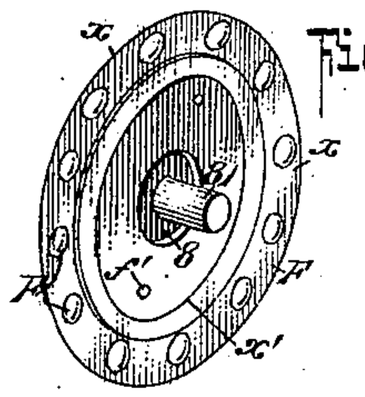


Fig. 7.

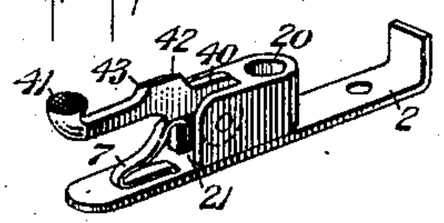


Fig. 4.

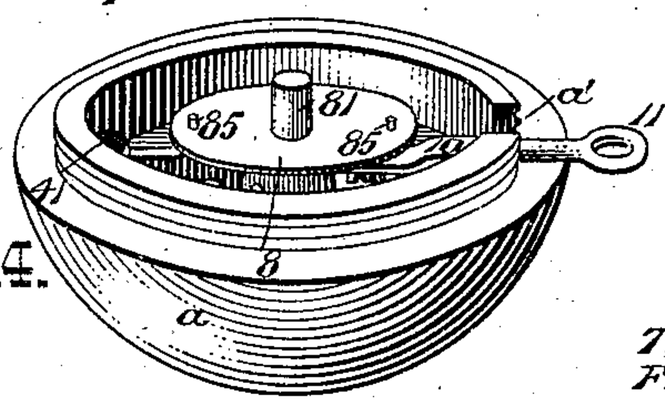
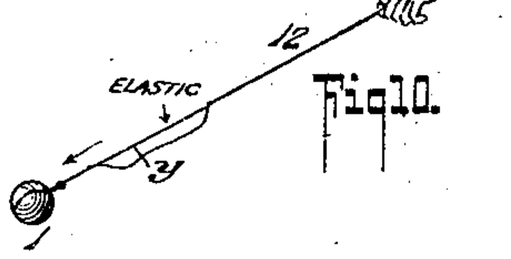


Fig. 10.



WITNESSES

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BY

Fred G. Dieterich & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

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DETONATING TOY.

No. 846,884. Specification of Letters Patent. Patented March 12, 1907.

Application filed July 9, 1906. Serial No. 325,278.

To all whom it may concern:

Be it known that we, THOMAS BERTRAND WILKINSON, of New York, county of New York, and State of New York, and FRED G. DIETERICH, of Washington, in the District of Columbia, have invented a new and Improved Detonating Toy, of which the following is a specification.

This invention, which in its general nature relates to a means for carrying a number of percussion-caps adapted under certain manipulation thereof to automatically feed one of said caps into position and explode the same, more specifically seeks to provide a toy in the nature of the "return ball" and in which the explosive fulminating or percussion caps are contained within the ball and arranged to coöperate with a means also mounted on the ball correlatively so contained with the explosive members, whereby when the ball is thrown and reaches the limit of its thrust the retarding or recoil action sets in operation the firing and feeding devices, explodes one of said caps, and leaves the operating parts in proper adjustment to effect another explosion when the ball is again thrown and its movement checked by reason of reaching the limit of its thrust or throw.

Generically, our invention comprises a hollow body, a holder for the caps, a spring-actuated firing member for engaging said caps, and a means for simultaneously feeding the caps to be exploded in position, setting the trigger and releasing said trigger after the cap has been set, said operations being effected by a manually-controlled movement of the said means in one direction and an automatic return of said means to the normal position.

In its more complete nature our invention comprehends a two-part hollow ball having a firing-opening, a cap-carrying disk having a marginal circularly-arranged series of caps rotatably mounted within the hollow ball, a spring-actuated firing-trigger, a flexible cord-like means on which the ball is suspended, an actuating member movable in the ball, to which the cord is connected and which has such connection with the rotary cap-disk and the firing-trigger, whereby an outward or recoil pull therein automatically and intermittently sets the cap-disk and the firing-trigger and then, together with the trigger, assumes the normal condition ready for another firing operation.

This invention also has for its object to provide the well-known return-ball toy with an internal-explosion means that is fired when the ball is thrown and reaches the limit of its outward thrust or recoil and in such manner that no special manipulation of the ball or the suspension cord or elastic is required to effect the results stated.

With other objects in view and which will be hereinafter explained our invention in its more subordinate features comprises certain details of construction of parts especially designed for providing for an economical construction of the toy, one capable of being used with absolute safety, and one in which simple provision is made for quickly and easily recharging the ball after one set or series of caps have been exploded, all of which will be hereinafter fully explained, pointed out in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a view which illustrates the manner in which our toy is used. Fig. 2 is a cross-section thereof, taken substantially on the line 2 2 of Fig. 3, the trigger being shown in dotted lines. Fig. 3 is a similar view taken on the line 3 3 on Fig. 2. Fig. 4 is a perspective view of that half of the ball in which is contained the cap holding and firing devices. Fig. 5 is a similar view of the other section of the ball. Fig. 6 is a detail perspective view of the cap-carrying and trigger-setting disk. Fig. 7 is a detail view of the plate to which the firing-trigger is connected. Fig. 8 is a perspective view of the actuating-lever and pawl members to which the throwing cord or member is attached. Fig. 9 is a view of a slightly-modified form of the cap-carrying disk hereinafter referred to. Fig. 10 is a detail view illustrating a further modification hereinafter referred to.

In carrying out our invention we provide a body member or holder, preferably of a ball shape and of wood, but may be of metal.

The ball or holder 1 for conveniently giving access to the interior thereof is formed of two half-sections *a b*, joined by threaded engaging portions, as clearly shown in Fig. 2. One of the sections *a* is suitably bored or hollowed out to receive a plate 2, fulcrumed to

the ball-section *a* by a single screw 3 and which centrally thereof has a hub portion provided with a socket-bearing 20 and below said bearing with a recess 21, that opens through the bottom of the hub portion and which forms a socket to receive the heel portion 40 of the firing-trigger and the arrangement of which is best shown in Fig. 2, which shows said trigger provided with a firing-head 41, that opposes an apertured firing-anvil 50, that fits on the inner end of the firing-opening 6, that extends through the ball-section *b*, and to provide for readily exploding the caps the opposing faces of the anvil and the trigger-head are roughened, as shown. The trigger is also provided on its front edge with a tripping-lug 42, having a beveled edge 43, the reason for which will presently appear, and the said trigger is fixed to its normal or firing position by a suitable spring 7, secured to the plate 2 and held to bear against the trigger near its heel or fulcrum end.

8 designates a disk having axially thereof oppositely-projected pintles or journals 80 and 81, one of which is adapted to detachable seat in the bearing-socket 20 and the other, 81, is adapted to fit the socket-bearing 9 in the ball-section *b*, which is preferably faced by a metal sleeve, as shown.

The disk 8 on the side having journal 80 is formed with a ratchet 83, and near its perimeter it has an annular series of beveled cams 84, there being one cam for each ratchet-tooth, and in practice the series of caps fed to the ball covers a number corresponding with the number of ratchet-teeth and cams 84.

In the simplest form of our invention the fulminating-caps F are circularly formed in the outer end of a thin cardboard disk *f*, having two or more perforations *f'* to fit over the lugs 85, projected from the outer face of the disk 8, whereby the disk and the caps will be intermittently moved step by step with the disk 8 when the latter is actuated in the manner presently stated.

10 designates the actuating member in the nature of a rod that has a limited movement radially through an aperture or recess *a'*, formed in the ball-section *a*, and whose outer end has an eye 11, to which one end of the sustaining and recoil cord 12 is attached, the other end of which may have a ring or loop for engaging the finger of the hand that manipulates the toy, which is done substantially in the manner illustrated in Fig. 1. The member 10 has its inner end bifurcated, as at 13, whereby to be guided by and move freely over the journal or pintle 80, and it also has a lateral extension 14, to which is fulcrumed the ratchet-engaging pawl 15, held to its normal position under the action of a weak spring 16, and the said member 10 is returned to its normal position by a spring 17, that engages a lateral lug 18 on the member 10 and an outwardly-projected lug 19 on the upper end of plate 2. (See Fig. 2.)

By reason of the peculiar construction and arrangement of parts, as shown and described, the toy is easily manipulated by very young children as well as adults. No setting of parts or adjusting of the firing-caps is required after the ball has been loaded further than to toss the ball with sufficient force that it reaches the end of its string and recoils.

In operation when the ball is thrown and reaches the limit of its throw the recoil pulls the actuating member 10 quickly outward, and in so doing its pawl, which now engages the ratchet, revolves the disk one step, and in so doing simultaneously brings the cap to be exploded into the firing position and sets the trigger for a firing action, the action being effected by the respective disk cam engaging the beveled lug on the trigger and forcing said trigger back against the tension of the trigger-spring, it being understood that the cam releases the trigger the instant the cap to be fired comes over the firing-anvil, when the trigger flies back under action of its spring, fires the cap, and at the same time holds the disk from further movement as the member 10 and the pawl resume their normal position.

Since the entire operation of feeding and firing the caps is effected by the movement of the member 10, it is manifest that should by accident or weakening of the spring 17 the member 10 fail to go back its limit to bring the pawl into position to engage the ratchet the user will quickly understand that it is only necessary to push down the member 10 to bring the toy in condition for another operation. Again, since the actuating devices, the disk, the member 10, and the trigger can be sustained on the ball-section *a* when the section *b* is removed danger of the parts becoming detached when it is desired to put in a new cap is reduced to the minimum and besides as the only parts that can fall out are the disk and the member 10, with the pawl, their construction and correlative arrangement is such that they can be readily replaced by a child.

Instead of forming the caps in a cardboard disk, as stated, for the cheapest form of our toy, in which the caps are to be exploded under a very slight impact force of the trigger, the fulminating-caps may be formed in a very thin oiled or paraffined sheet (designated *x*) pasted circularly on a very thin cardboard, as shown in Fig. 9.

To have the full return-ball effect, the cord may be formed with an elastic section *y*, (see Fig. 10,) sufficient slack in the cord being provided to compensate for the stretch or elasticity of the part *y*, thus providing for the required recoil action necessary to actuate the parts and also for a simple return of the ball to the hand that threw it.

By reason of the structural arrangement of parts the toy can be economically manufactured and its use be understood by very young children and be entirely free of the danger incident in firing fulminating-caps near the face, as is the case with toy pistols, since in my toy the cap explodes only when at the farthest distance possible from the face.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A "return-ball" toy, having a plurality of caps contained therein, automatic means mounted in the ball for adjusting the caps and firing them when the ball is thrown and recoils, as set forth.

2. In a "return-ball" toy, the combination with the ball, a holder having a series of caps, a firing-trigger, a means for simultaneously feeding the caps into firing position and setting the trigger to fire the caps, said means being connected to the ball-sustaining cord and set into action on the recoil of the ball when thrown, as set forth.

3. A device of the character described, comprising a separable two-part body, a revolving holder adapted for removably sustaining a cap-carrying disk and a firing-trigger, means within the said body for automatically revolving the holder and actuating the firing-trigger, said means being connected to the sustaining member or cord, and adapted to be set in action on the recoil of the ball when thrown, as set forth.

4. A device of the character described, comprising a separable two-part holder, a series of explosive caps contained therein, a means operating to independently feed the caps into a firing position and to fire said caps, a flexible sustaining member or cord connected with said means and adapted to actuate them when the ball is thrown and reaches the limit of its thrust, as set forth.

5. A device of the character described, which comprises a hollow ball composed of separable sections, a spring-actuated trigger, and a rotary disk mounted in the ball, said disk engaging the trigger and adapted to set and trip it at each partial revolution of the disk, a plunger having an actuating-head projected radially from the ball and having a pawl-and-ratchet connection with the disk to impart intermittent movement thereto, and a holder having circularly-disposed firing-caps, movable in the line of the firing-trigger head, said holder being detachably mounted on the revolving disk to revolve therewith, as set forth.

6. A mechanical detonating toy, consisting of a ball-like holder, having an internal chamber and a firing-opening provided within an exploding-anvil; in combination with a means held within the ball for automatically feeding a fulminating-cap over the anvil, and exploding it when the ball is thrown and a flexible sustaining member or cord for the ball.

7. In a device of the character described, the combination with the ball having a chamber and a firing-opening provided with an exploding-anvil of, a disk having a series of circumferentially-arranged caps, a revolving disk mounted in the ball, to which the cap-disk is detachably connected, a spring-actuated firing-trigger operating over the anvil, and a means for revolving the cap-carrying means step by step at each throw of the ball and simultaneously actuating the firing-trigger and a flexible ball-sustaining cord that is connected to the said disk-revolving and trigger-actuating means, substantially as shown and described.

8. A device of the class described, comprising in combination with a weighted body and a flexible connection thereto adapted to be grasped by the hand of the operator, of a cap-holding member within said weighted body and containing a plurality of serially-arranged caps, means within the weighted body and connected with the flexible conductor for exploding said caps when the weighted member is thrown from the operator to draw the flexible connection taut, substantially as shown and described.

9. An apparatus of the class described, comprising a weighted member, a cap-carrying magazine within said weighted member, a firing member, a flexible holding member for said weighted member adapted to be held by the operator, and means connected with said holding member for setting said magazine and operating said firing member when the weighted member is thrown from the operator to draw the flexible connection taut.

10. The combination with a casing, a rotatable cap-carrying member within said casing, an anvil, a trigger mechanism for coöperating with said anvil, means carried by the casing for rotating said cap-carrying member to bring the caps in alinement with the anvil and trigger, and means for setting and releasing said trigger, substantially as shown and described.

11. The combination with a casing, a rotatable cap-carrying member within said casing, an anvil, a firing-head, a trigger mechanism for coöperating with said anvil, means carried by the casing for rotating said cap-carrying member to bring the caps in alinement with the anvil and trigger, means for setting and releasing said trigger, means connected with said trigger setting and releasing means and said cap-carrying-member setting means and under control of the operator for operating all of said setting and releasing means at times, substantially as shown and described.

12. The combination with a casing, a rotatable cap-carrying member within said cas-

ing, an anvil, a trigger mechanism for coöperating with the anvil, the firing-head, means carried by the casing for rotating said cap-carrying member to bring the caps in alinement with the firing-head and trigger, means for setting and releasing said trigger, means connected with said trigger setting and releasing means and said cap-carrying-member setting means and under control of the operator for operating all of said setting and releasing means at times, said last-named means comprising a flexible member connected with said operating means and adapted to be held by the operator.

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