No. 821,942. PATENTED MAY 29, 1906.

W. H. JOHNSON.

MECHANICAL DETONATING TOY.

APPLICATION FILED JULY 26, 1905.

Fig. 2.

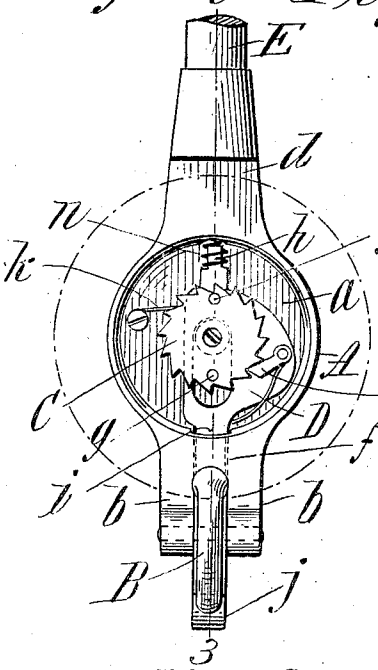


Fig. 1.

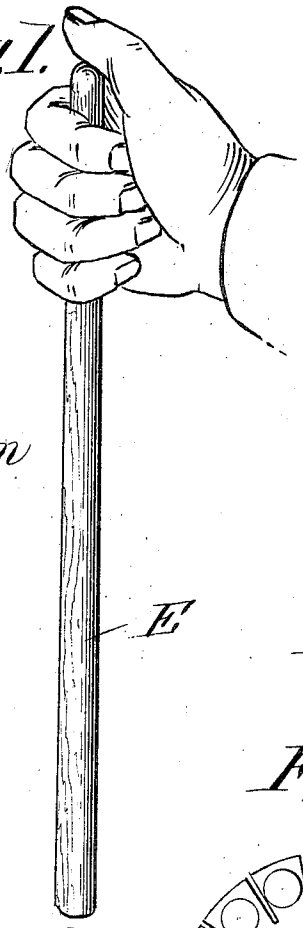


Fig. 3.

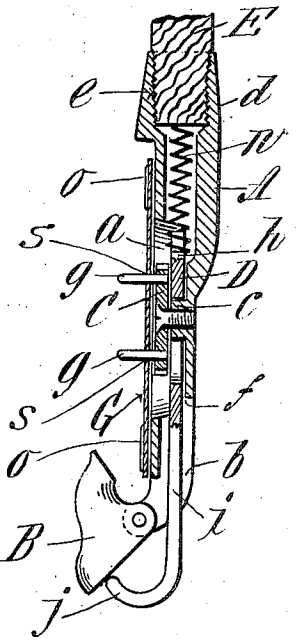


Fig. 4.

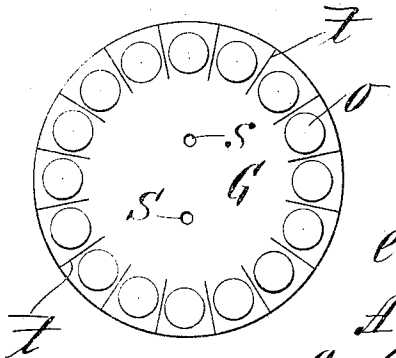
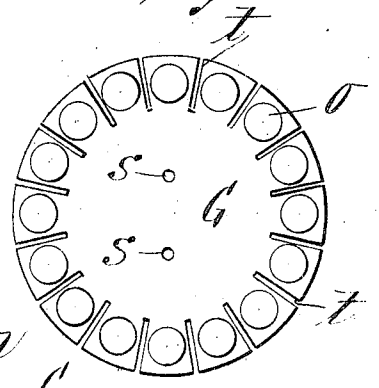
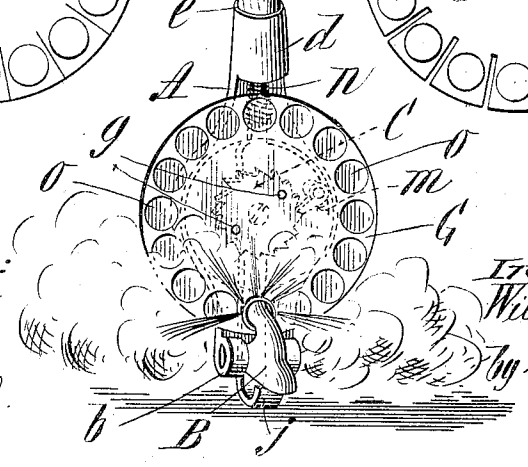


Fig. 5.





Witnesses:
J. R. Gaffney
G. R. Driscoll.

Inventor:
William H. Johnson,
by Wm. F. Bellon
Attorney.

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM H. JOHNSON, OF BRANDON, VERMONT, ASSIGNOR OF ONE-HALF TO WILLARD E. KIMBALL, OF THOMPSONVILLE, CONNECTICUT.

MECHANICAL DETONATING TOY.

No. 821,942. Specification of Letters Patent. Patented May 29, 1906.

Application filed July 26, 1905. Serial No. 271,295.

To all whom it may concern:

Be it known that I, WILLIAM H. JOHNSON, a citizen of the United States of America, and a resident of Brandon, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in Mechanical Detonating Toys, of which the following is a full, clear, and exact description.

This invention relates to a device adapted to carry a series of percussion-caps usually supported at the lower end of a stick or cane and including a striker or hammer for successively operating against the caps to explode them and comprising means for the automatic intermittent advancement of the caps.

One object of the invention is to render the device adaptable for the engagement therewith of disks or circular plates having marginal circularly-arranged series of caps so employed that the disk constitutes a shield or guard for the movable parts of the mechanism, preventing the corroding explosive from which the caps are made from having a detrimental effect on the device, especially in a manner to impair the operativeness thereof.

Another object of the invention is to construct the device in a most simple, cheap, and practical manner.

Further advantages are attained in and by the parts organized as illustrated and hereinafter described.

The invention primarily consists in a device of the character described of the combination with a support, a hammer pivoted to said support, and a ratchet-toothed cap-disk carrier rotatable on said support, of a pawl-carrier having a reciprocatory movement relatively to and projecting below the lower end of said support provided with a member to engage said hammer and having a pawl coacting with said ratcheted cap-disk carrier.

The invention furthermore consists in certain more specific combinations and arrangements of parts and the constructions of certain of the parts, all substantially as hereinafter fully described, and set forth in the claims.

The new cap-detonating device is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the same as used in the act of firing. Fig. 2 is a front view of the novel portion of the device with the cap-carrying disk or plate absent, the relative position thereof, however, being indicated by dotted lines. Fig. 3 is substantially a central vertical longitudinal section as taken on the line 3 3, Fig. 2. Figs. 4 and 5 are face views of cap-disks, showing features of construction hereinafter referred to.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents a support or frame having the circular forwardly-opening recess *a* therein made with a central forwardly-extending boss C and with downwardly-extending separated ear-lugs *b b* and the upwardly-extending shank *d*, which has a cane-receiving socket *e*, leading downwardly from its open upper end to said recess *a*, and said supporting-frame is constructed with an opening *f* in its lower portion, extending from communication with said recess *a* to the space between the said ear-lugs *b b*. A three-membered hammer B is pivotally connected to and between said ear-lugs for a swinging movement, so that its upper striking end may impinge against the front face of the frame just below the middle lower portion of the recess *a*. The ratchet-wheel C, which constitutes a rotatable cap-disk carrier, is pivoted for rotation on the front of said boss *c* and has forwardly-projecting pins or studs *g g*, which are shown as set diametrically opposite each other. D represents a pawl-carrier located in said recess and having an apertured middle portion embracing said recess *c*, and this pawl-carrier is constructed with an upwardly-extending shouldered member *h* and with a downwardly-extending member *i*, projecting downwardly and in a vertical line through said opening *f* below the lower ends of the ear-lugs and having the forwardly-return bent extremity *j* for engagement with the hammer B, as most clearly shown in Fig. 3. The spring-pressed pawl *m* is pivotally mounted on said pawl-carrier and has its point in engagement with the said ratchet-toothed cap-disk carrier C. The spring *n*, located in said socketed shank, is in compression and reacts downwardly against the shouldered member of the pawl-carrier and serves normally to keep the latter in its downwardly-extending position.

This spring is held against displacement by and in abutment against the lower end of the cane or stick A, which is engaged in said socketed shank *d* of the frame.

k represents a detent-spring pawl or click in engagement with the ratchet-toothed disk-carrier and serves to prevent any undesirable or excessive movement of the ratchet-wheel in the direction of its feed beyond that which is desirable for the perfect operation thereof.

G represents the cap-disk, which may be made of paper, cardboard, metal, or other material having the circularly-arranged marginal series of separated caps or percussive layers on its front face. The said disk has the diametrically opposite small perforations *s s*, whereby such disk may be engaged with the forwardly-projecting pins *g g* of the ratchet-toothed cap-disk carrier when brought to the position represented in Figs. 1 and 3 of the drawings, whereby said disk must necessarily partake of the rotational step-by-step movements of the ratcheted carrier-wheel C, and also covers and protects the chamber or recess *a*, within which the most actively-operable and sensitive parts of the device are located, and thus when the caps are exploded none of the gas or smoke therefrom can have entrance into the portion of the mechanism within the circular recess *a*, which is behind and effectually covered by the cap-disk.

As shown in Figs. 4 and 5, the cap-disks have marginal cuts or incisions *t*, those in Fig. 5 being represented as having a substantial width, and the construction of the cap-disk with these cuts is to the end of isolating each cap from the next, so that the paper or other material from which the disk is constituted is not rendered a conductor to lead the fire or gas from the exploding-cap to the one next behind for the premature firing of the latter.

The action of the device is apparent in Fig. 1. By thrusting the device in a downward direction against the ground or floor the forwardly-turned lower end projection *j* of the then relatively upwardly moving pawl-carrier swings the hammer to bring its striking end forcibly against the cap, properly positioned to receive the hammer-blow. The elevation which in this action is imparted to the pawl-carrier causes the pawl *m* to engage a new tooth of the ratchet-wheel C, so that when the device is bodily elevated from the floor or ground the pawl-carrier having its downward returning movement under the reaction of the spring *m* will cause a rotational movement of the ratchet-wheel to the extent of one tooth, which gives a corresponding movement to the disk to bring the next cap to position to be struck by the hammer, it of course being understood that the spacings of the ratchet-teeth and caps are to correspond.

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

1. In a device of the character described, the combination with a support, a hammer pivoted to said support and a ratchet-toothed cap-disk carrier rotatable on said support, of a pawl-carrier having a reciprocatory movement relatively to and projecting below the lower end of said support, provided with a member to engage said hammer, and having a pawl coacting with said ratcheted cap-disk carrier.

2. In a device of the character described, the combination with a support, a hammer pivoted to said support, a ratchet-toothed cap-disk carrier rotatable on said support and a disk having a marginal series of detonating caps mounted on and rotatable with said ratcheted carrier, of a pawl-carrier having a reciprocatory movement relatively to, and projecting below, the lower end of said support, provided with a member to engage said hammer, and provided with a pawl coacting with said ratcheted cap-disk carrier.

3. In a device of the character described, the combination with a support, a hammer pivoted to said support, and a ratchet-toothed cap-disk carrier rotatable on said support, and provided with a plurality of forwardly-projecting pins, of a pawl-carrier having a reciprocatory movement relatively to and projecting below the lower end of said support, provided with a member to engage said hammer, and provided with a pawl coacting with said ratcheted cap-disk carrier.

4. In a device of the character described, the combination with a support, a hammer pivoted to said support, a ratchet-toothed cap-disk carrier rotatable on said support and provided with a plurality of forwardly-projecting pins, and a disk, having a marginal series of detonating caps, mounted on and rotatable with said ratcheted carrier, and having a plurality of holes therein through which said pins engage, of a pawl-carrier having a reciprocatory movement relatively to, and projecting below, the lower end of said support, provided with a member to engage said hammer, and provided with a pawl coacting with said ratcheted cap-disk carrier.

5. In a device of the character described, the combination with a support, a hammer pivoted to said support and a ratchet-toothed cap-disk carrier rotatable on said support, of a pawl-carrier having a reciprocatory movement relatively to and projecting below the lower end of said support, provided with a member to engage said hammer, and provided with a pawl coacting with said ratcheted cap-disk carrier, a detent-pawl engaging said ratchet-toothed carrier, and a spring reacting downwardly against the pawl-carrier.

6. In a device of the character described, the combination with a support, a hammer pivoted to said support, a ratchet-toothed cap-disk carrier rotatable on said support and a disk having a marginal series of detonating caps mounted on and rotatable with said ratcheted carrier, and said disk having a series of cap-separating cuts at its margin, of a pawl-carrier having a reciprocatory movement relatively to, and projecting below, the lower end of said support, provided with a member to engage said hammer, and provided with a pawl coacting with said ratcheted cap-disk carrier.

7. In a device of the character described, the combination with a support, a hammer pivoted to said support, a cap-disk carrier rotatable on said support, and relatively to wh ch the hammer has its striking movements, a disk having a circular marginal series of detonating caps and made with a series of cuts between, and for separating, the caps, means for rotating the disk-carrier, and means for operating the hammer.

8. A support or frame having circular forwardly-opening recess therein and made with a central forwardly-extending boss and with downwardly-extending separated ear-lugs, an upwardly-extending shank having a cane-receiving socket leading downwardly from its open upper end to said recess, and said supporting-frame having an opening in its lower portion extending between said ear-lugs, the three-membered hammer pivotally connected to and between said ear-lugs, a ratchet-wheel pivoted to rotate on said boss and having forwardly-projecting studs, the pawl-carrier in said recess having an apertured middle portion embracing said boss, having an upwardly-extending shouldered member and having a downwardly-extending member projecting through said passage below the lower ends of the ear-lugs and forwardly return bent extremity *j* to engage the hammer, a pawl on said pawl-carrier to engage said ratchet-wheel, a spring in said socketed shank reacting downwardly against the pawl-carrier, and the cane or stick engaged in said socketed shank of the frame.

Signed by me at Brandon, Vermont, in presence of two subscribing witnesses.

WILLIAM H. JOHNSON.

Witnesses:
F. P. COOKE,
R. J. CARLISLE.