May 5, 1931. C. C. STETSON 1,803,365

TOY

Filed July 5, 1929

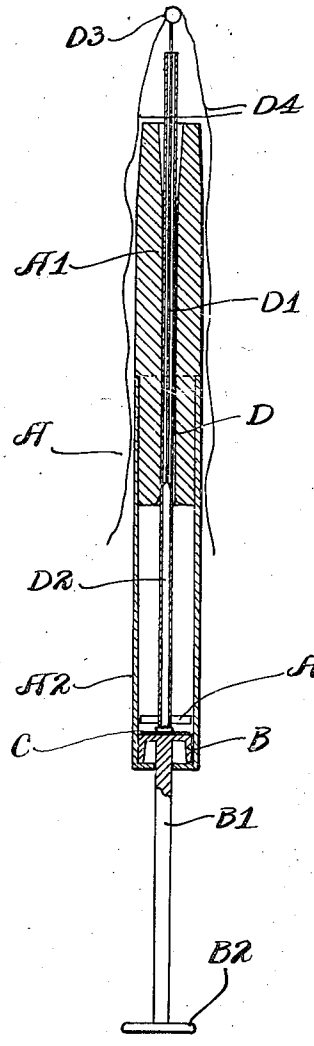


Fig. 1

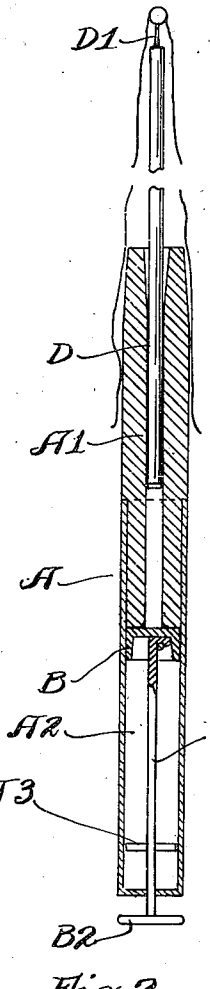


Fig. 2

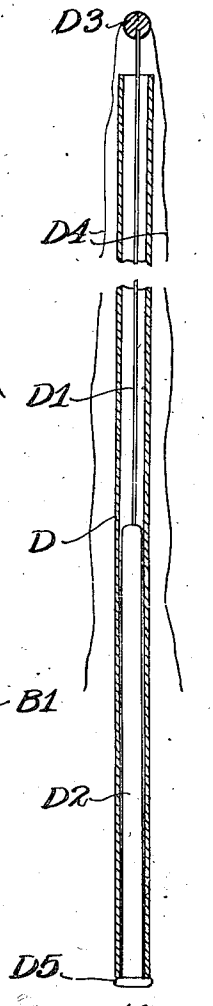


Fig. 3

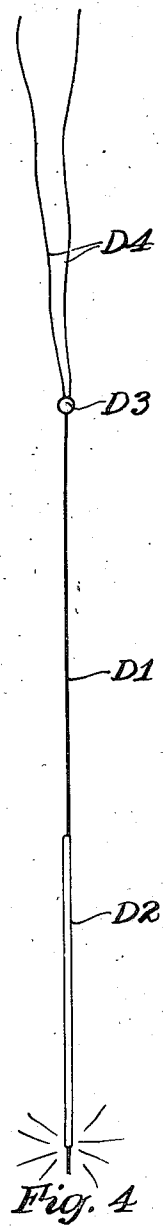


Fig. 4

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UNITED STATES PATENT OFFICE

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TOY

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My invention relates to an improvement in toys, wherein it is desired to provide a toy which will furnish amusement and entertainment for children.

It is my object to provide a toy to shoot a projectile or arrow up into the air, which approximately at its highest point will separate into two parts, one of which drops quickly to the ground while the other sparkles brightly as it drops, colored ribbons retarding its downward motion. The mechanism is such that it will shoot the projectile high in the air, but will not give it sufficient speed to damage anything obstructing its path.

It is an object of my invention to combine the spectacular flight of the projectile and sparkler stick with the noise of an explosion. Thus, the child is not only entertained by the interesting sight of the ascending and descending projectile, but also by the noise of an exploding paper percussion cap. The combination is one which would please practically every child, while at the same time the danger usually accompanying an explosion has been eliminated, as the explosion takes place in a chamber entirely enclosed with the exception of the barrel opening.

An important feature of my device is the use of both a direct manual movement by the operator and a percussion cap so adjusted and synchronized that after the movement of the hand starts the projectile on its flight, and when in the proper position, the cap explodes directly under the moving projectile, greatly accelerating its movement. The combination of these two forces in this way is important and novel and results in shooting the projectile much higher than can be done by either one alone. The percussion cap also serves the purpose of igniting the end of the fulminate material upon one part of the projectile so that this slow burning material commences to sputter as the projectile leaves the guiding barrel, continues to sparkle on its upward flight and draws or forces the two parts of the projectile apart as it reaches the highest point of its flight, one part dropping quickly and the other more slowly, sparkling and fluttering as it falls.

My toy has the advantages of being attractive in appearance, economically constructed, of having but few moving parts and of being substantial so that it will not easily be destroyed. It may also be packed and shipped conveniently. My toy induces healthy outdoor exercise and develops the child's judgment and skill.

These and other objects and novel features of my invention will be more fully disclosed in the course of the following specification and claims.

In the drawings forming a part of this specification:

Figure 1 is a longitudinal cross section through the center of my toy in position to be operated.

Figure 2 is a longitudinal cross section of my toy as the projectile is leaving the barrel.

Figure 3 is a longitudinal cross section through the center of my projectile showing the sparkler in place.

Figure 4 is a side view of a portion of my projection descending in the air.

My toy is adapted to be used by children and accordingly is constructed in a manner to prevent the danger of accidents. The body portion A of my toy is a cylinder of sufficiently small diameter that it may be easily grasped by the hand of the operator, and long enough to provide space for a guiding barrel portion A1 and a firing chamber A2. The body portion A of wood or other suitable material is slightly tapered inwardly at the mouth of the barrel, and the bore of the barrel portion A1, sufficiently large to allow the easy movement of the projectile, is tapered or flared outwardly at the mouth to allow the projectile to be more easily placed in the toy.

Attached to and depending from the barrel portion A1 is a hollow metal tube having a closed end, formed to provide a firing chamber A2. Within this firing chamber A2, a piston B is adapted to operate. This piston B has a flat head and side walls forming a skirt portion to guide it in its movement up and down within the firing chamber A2. This piston B is attached by any suitable means to an operating rod B1 which extends through an aperture formed in the closed end

of the firing chamber A2. Thus, by striking a sharp blow upon the flat end B2 of the operating rod B1, the piston B may be forced upwardly within the firing chamber A2 at a high rate of speed. Slightly above the head of the piston B when the toy is in position for firing, I provide a slot A3 which is wide enough to allow the insertion of a percussion cap C to be placed upon the head of the piston B, but too small to permit fingers to be inserted into the firing chamber A2. This slot A3 provides an opening through which any dust may be shaken out or the head of the piston B may be scraped off to remove the accumulation of fired percussion caps which may form there. This slot A3 also serves the purpose of admitting air when the toy is operated preventing the retarding of the piston B by creating a partial vacuum behind the piston.

The projectile is made in two separate parts, a hollow tube or casing D and an enclosed sparkler stick D1 which is coated with fulminate D2 over its lower portion. To the free end of the stick is attached a small knob D3 and a ribbon or series of ribbons D4 to add to the attractiveness of the spectacle and to retard the dropping of the sparkler stick to the ground. These ribbons D4 are attached to the knob D3 which fits over the end of the sparkler stick D1 and is held in place by slight friction so that it may be removed and successively used on a number of sticks. The hollow tube D serves as a casing and carries the stick D1, D2.

The operation of the toy is simple and may be learned by a very small child. The body portion A is grasped by one hand of the operator while the knobbed end B2 of the rod B1 is at its lowest position. A percussion cap C is then inserted through the slot A3 in the side of the firing chamber and the projectile D with its contained stick D1 is inserted through the bore of the barrel A1 until its lower end rests upon the cap C. The operator then aims the toy up into the air and with his free hand strikes the knobbed end B2 a sharp blow upward. This starts the projectile D, D1 on its upward flight. When the piston B which is of sufficient weight to attain considerable momentum, reaches the shoulder formed by the lower end of the barrel portion A1, the impact explodes the cap while directly under and in contact with the moving projectile D, D1. This explosion greatly accelerates the upward movement of the projectile, increasing its speed so that it will fly high in the air while at the same time the flash of fire which results from the explosion lights the fulminate or sparkler material D2 upon the lower end of the stick D1. As a result the projectile soars upwardly through the air with sparks from the fulminate being expelled from the lower open end of the tube D. By the time the projectile D and the contained stick D1 have nearly reached their highest elevation, the sparks expelled from the lower end have forced the stick upwardly and out of the tubular projectile in a rocket-like manner. The tubular portion D of the projectile then drops to the ground and the sparkling stick descends more slowly, being retarded by the ribbons attached to its head D3. The head D3 may then be detached by a slight twist from the sparkler stick D1 and inserted upon a new sparkler stick. The head forms a weight to insure the proper upward flight of the projectile and the attached ribbons help to retard the progress of the sparkler on its downward flight.

The sparkler stick D1, D2 is formed with an enlarged flat end D5 of fulminate material so that the sparkler stick D1, D2 may not be inserted entirely into the tube D. This large end D5 also provides a greater surface in contact with the cap C so that it may be ignited more easily. I also coat the lower surface of the sparkler material D5 with match phosphorus to make certain it will catch fire. When this form of sparkler stick is used, the stick D1, D2, D5, is inserted into the tube D before the head D3 is put into place upon the free end of the sparkler stick D1. This head D3 serves the purpose of preventing the stick D1 from slipping back through the tube D. As soon as the enlarged end D5 of fulminate material D2 is burned off, the sparkler stick D1, D2 is free to slip upwardly through the tube D.

In place of using the ordinary sparkler fulminate in the construction of the sparkler portion of the projectile, it is possible to construct the core of the sparkler stick in the form of a fuse-like member, having a slow powder or other similar material therein so that when the same is ignited, it will burn with a blowing force to force the sparkler out of the holding tube D into the air with a rocket-like action, or the tube D may contain slow burning powder such as is used in sky-rockets without the use of any stick D1 and the said tube will then tend to soar by the expulsion of such powder gases after the tube D has been expelled from the barrel portion A1.

The portion of the firing chamber A2 in which the explosion takes place is entirely enclosed with the exception of the barrel opening, preventing any danger from the exploding percussion cap. Furthermore, the tube must be held pointed up into the air or the percussion cap will not lie flat upon the piston head and not be exploded. Thus, my device is safe for children to operate and provides little chance for accidents.

In accordance with the patent statutes, I have described the principles of operation of my toy and while I have endeavor to illustrate the best embodiment thereof, I desire

to have it understood that the same is only a means of carrying out my invention and that obvious changes may be made within the scope of the following claims without departing from the spirit of the invention.

I claim:

1. A toy including, a holder comprising a tubular member, a means for supporting a sparkler member slidably positioned within said holder, a plunger hammer within said holder, an opening for receiving a percussion cap in said holder, said hammer being adapted to force said percussion cap against the end of said sparkler and tubular holder to force the same out of said holder and simultaneously ignite said sparkler forcing the same high in the air and causing it to descend sparkling in its descent.

2. A toy comprising, a tubular holder, having an auxiliary holder extending therein, a plunger hammer slidably positioned in one end of said first holder, a recess for placing a percussion cap on said plunger hammer, means for supporting a sparkler within said holder, display ribbons carried by said sparkler, said sparkler being adapted to be ignited by the percussion cap when said plunger hammer is operated, driving the sparkler out of the holder and simultaneously igniting the same, causing the sparkler to descend with the ribbon displays streaming therefrom and while sparkling through the air.

3. A toy comprising, a holder, a sparkler made of fulminate material, a percussion cap, and means for exploding said percussion cap to discharge and ignite said sparkler, forcing the sparkler high in the air.

4. A toy comprising, a sparkler made of fulminate material, a rod-like upper end formed on said sparkler, a ball member adapted to be secured to said rod-like member and supporting ribbon-like displays, a holder for supporting said sparkler with the ribbon-like displays on the outer side thereof, a percussion cap hammer slidably positioned within said holder, said hammer being adapted to fire an explosive percussion cap and ignite and force the sparkler high into the air in a rocket-like manner.

5. A toy including, a cylindrical holder, a tubular supporting member adapted to be axially positioned within said holder, a sparkler adapted to be inserted in said tubular member, a slidable plunger in one end of said holder, an opening in the side of said holder adapted to receive a percussion cap on said plunger, said holder for said sparkler being adapted to be rested upon the percussion cap and said plunger being operable to send said sparkler rocket-like into the air and cause it to sparkle in descending to provide a display.

6. A toy including, a sparkler made of fulminate material, means for supporting ribbon-like streamers to said sparkler, a holder for supporting said sparkler extending axially therein, with the ribbon-like displays on the side of said holder, a plunger percussion hammer, an operating head connected with said plunger percussion hammer to operate the same by striking the projecting end of the same to slide the plunger longitudinally in said holder, and means for supporting said sparkler within said holder in a manner to cause the percussion explosive cap to be exploded by striking said operating head of said plunger to explode the percussion cap within the holder against the lower end of the sparkler to simultaneously ignite the same and drive the sparkler rocket-like into the air.

7. A display toy including, a sparkler, a holder for supporting said sparkler, retarder display flexible members connected to said sparkler to retard the descent of the same, slidable plunger hammer means positioned in one end of said holder, said hammer being adapted to ignite an explosive percussion cap within said holder to send said sparkler rocketing into the air and to simultaneously ignite the same as it is forced out of said holder.

8. A toy including, a sparkler member, and holder and percussion cap means for simultaneously igniting and forcing said sparkler member into the air to provide a toy display.

9. A toy comprising, a sparkler, a holder for supporting said sparkler, and percussion cap and driving means in said holder for igniting and driving said sparkler out of said holder rocket-like into the air.

10. A toy including, a sparkler, a fuse-like core extending in said sparkler having a burning nature to cause a blowing force out of one end of said sparkler, a holder for supporting said sparkler and means for driving and simultaneously igniting said sparkler as it is driven out of said holder.

11. A display toy including, a sparkler member, a fuse-like core extending into the bottom end of said sparkler, a holder for supporting said sparkler, retarders connectable to the upper end of said sparkler adapted to retard the descent thereof, means in said holder for driving said sparkler out of said holder and simultaneously igniting the fuse core of the same as it is driven out of said holder.

12. A display toy including, a sparkler and an ignitable fuse core providing a blowing effect out of the end of said sparkler to drive the sparkler into the air as a display rocket when ignited, and means for simultaneously igniting the sparkling material of the sparkler to cause the same to sparkle while descending in the air.

13. A toy including, a flying portion, means for starting said flying portion upward by hand and means including a percussion cap for accelerating said flying portion

by explosion caused by and synchronized with the hand operation, as and for the purposes described.

14. In a toy in which a flying portion is started upward by hand, and accelerated by a percussion cap explosion, an inner projectile carried within the said flying portion and adapted to separate therefrom while in flight for the purposes described.

15. In a toy in which a flying portion is started upward by hand and accelerated by a percussion cap explosion, an inner projectile partly coated with sparkler material arranged to ignite and burn, carried within the said flying portion and adapted to separate therefrom while in flight, substantially as and for the the purposes described.

16. A spectacular toy having, a guiding barrel portion attached to a firing chamber, a piston moving in said firing chamber and adapted to explode a cap therein, and a tubular projectile containing a sparkler to be shot by said explosion through the said guiding barrel, substantially as and for the purposes described.

17. A spectacular toy having, a guiding barrel portion attached to a firing chamber, a piston moving in said chamber, and adapted to explode a cap therein, a tubular projectile adapted to be shot therethrough by said explosion, and an inner projectile having a removable enlargement on its upper end.

CHARLES C. STETSON.