

W. S. HOW.  
Toy Catapults.

No. 140,922.

Patented July 15, 1873.

Fig. 1.

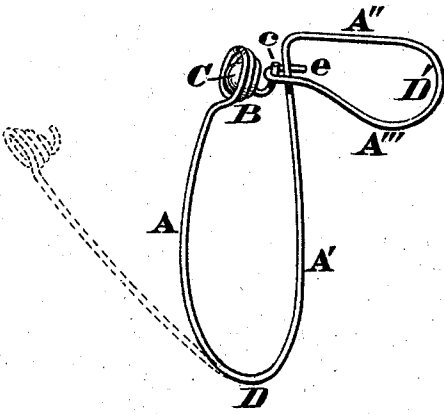


Fig. 2.

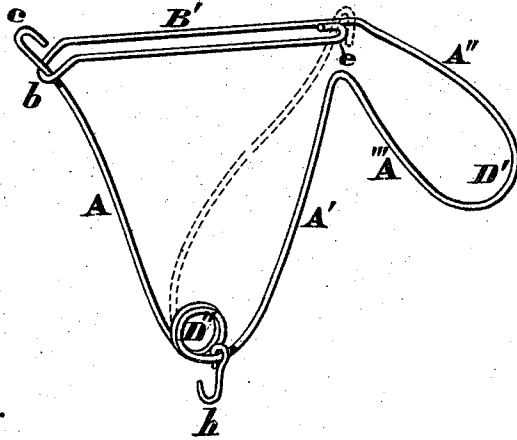


Fig. 3.

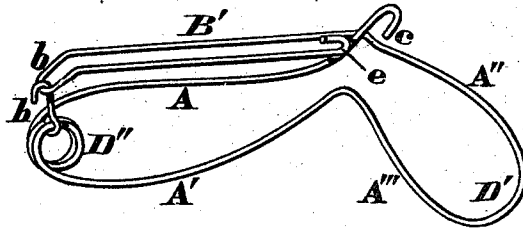


Fig. 4.

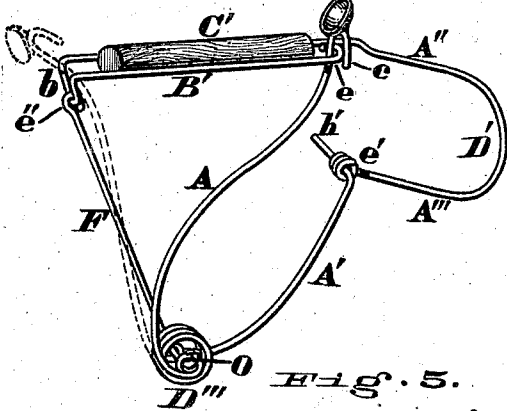


Fig. 6.

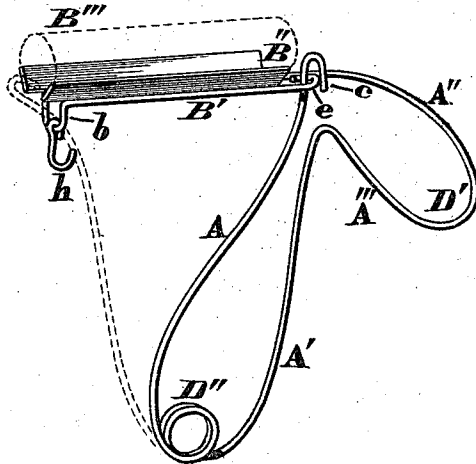
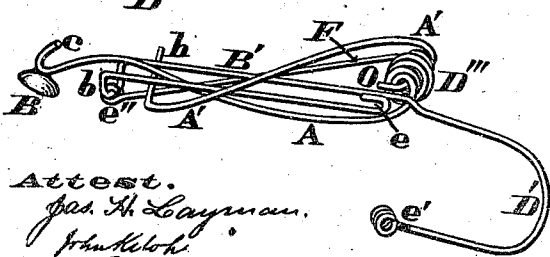


Fig. 5.



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By Knight Bros.  
Attys.

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Fig. 7.

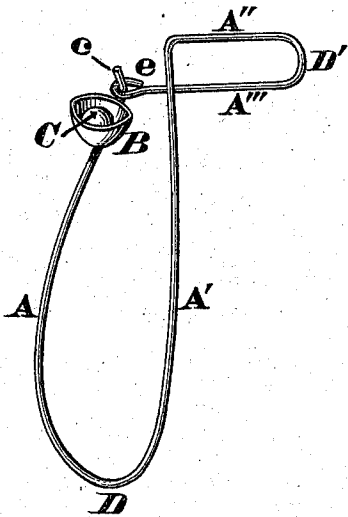


Fig. 8.

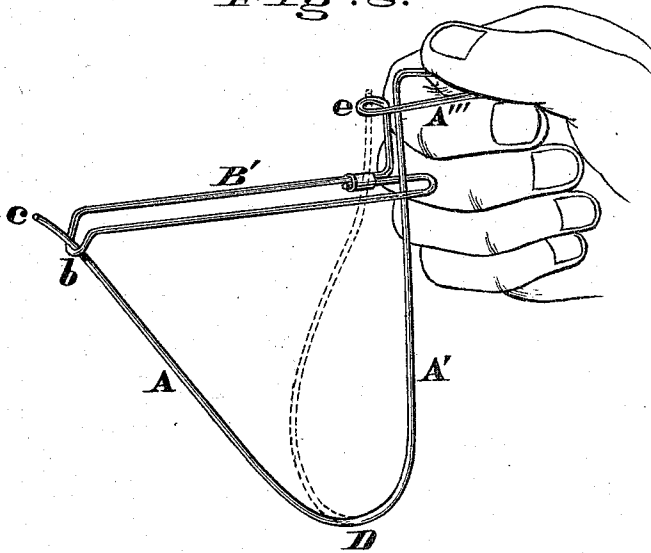


Fig. 9.

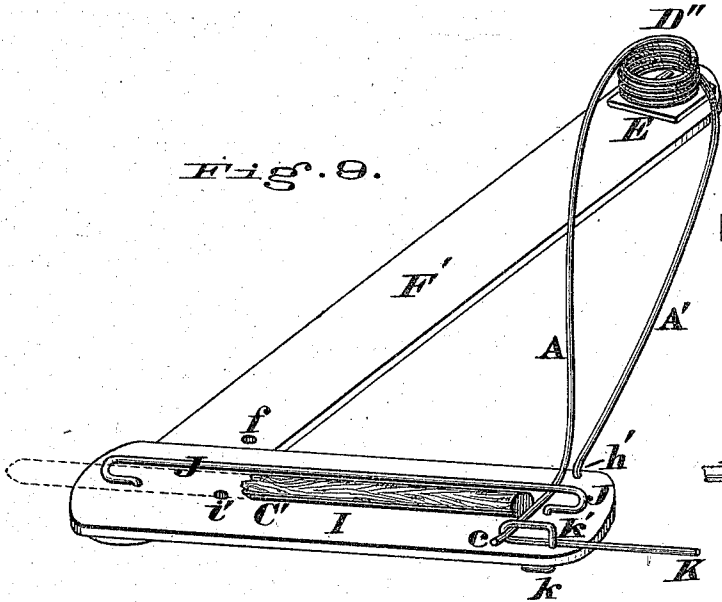


Fig. 11.

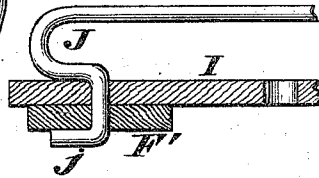


Fig. 12.

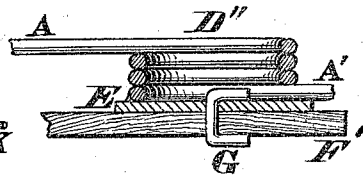
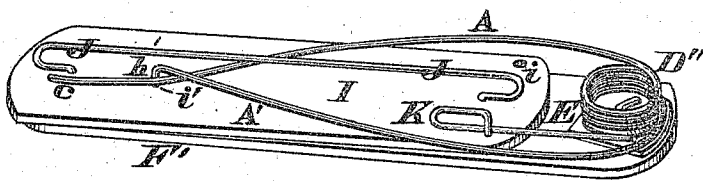


Fig. 10.



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# UNITED STATES PATENT OFFICE.

WOODBURY S. HOW, OF CINCINNATI, OHIO.

## IMPROVEMENT IN TOY CATAPULTS.

Specification forming part of Letters Patent No. **140,922**, dated July 15, 1873; application filed May 14, 1873.

*To all whom it may concern:*

Be it known that I, WOODBURY STORER How, of Cincinnati, Hamilton county, Ohio, have invented a Toy Catapult, of which the following is a specification:

My invention relates to a simple and amusing modification of the catapult in the form of a toy or plaything for the entertainment and instruction of children.

The essentials of my device are a propelling or projecting arm, whose lower end has permanent elastic connection with a handle part which discharges the function of a trigger, with which the free or upper extremity of said arm is capable of being engaged, and from which, when liberated by compression of the handle, its said free end escapes in obedience to a resilient force, which either resides in said arm or constantly affects it, so as to shoot or project a pellet or other missile in the manner hereinafter set forth. My invention, in its more complete forms, also includes a shackle or bridle which performs the three-fold duties of sight, guide, and stop, as hereinafter fully explained.

Figure 1 shows a simple form of my toy, the strong lines representing the cocked, and the dotted lines the discharged, condition thereof. Fig. 2 represents a slightly more elaborate form, the discharged condition being shown by strong, and the cocked by dotted lines. Fig. 3 shows the form last mentioned in its folded condition, suitable for the pocket. Fig. 4 shows another form, whose cocked condition is represented by strong, and whose discharged condition is represented by dotted, lines. Fig. 5 shows the form last mentioned in its folded condition. Fig. 6 represents a form substantially such as shown in Fig. 2, but with the additional feature of guide-wings or holders, the strong lines showing its set, and the dotted lines its discharged, condition. Fig. 7 shows, in the cocked condition, a form slightly differing from that represented in Fig. 1. Fig. 8 shows a form slightly varied from that represented in Fig. 2, the strong lines showing the discharged, and the dotted lines the cocked, condition.

Either one of the above forms may be composed wholly, or almost wholly, of a single piece of spring-wire, as represented, and at

an extremely slight expenditure of material and labor.

Fig. 9 represents a yet more elaborate form of my toy in its cocked condition. Fig. 10 shows the same in its folded condition. Figs. 11 and 12 are sections to a larger scale, showing, respectively, a portion of the guide J and a portion of the helical spring D'' of form Figs. 9 and 10.

I take a piece of spring (brass or other) wire, and so bend the same as to present two elastic loops, A D A' and A'' D' A''', whose curvatures are, as nearly as may be, in a common vertical plane, and their axes of curvature nearly at right angles, or less, according to the special form adopted, as will hereinafter appear. The limbs or portions A' A'' maintain a comparatively unchanging relative position, and become, in the hands of the user, abutments or fulcrums for the other portions, to wit, the projecting arm A and the trigger A''', the elbows D and D' constituting the special fulcrums of resilience of the said arm and trigger respectively. The trigger terminates exteriorly in a hook or eye, e, and the instrument is cocked or set by forcibly compressing the loop A D A' and engaging the free extremity e of A in said hook or eye e. The loop A'' D A''', besides discharging the function of lock and trigger, is also the handle by which the instrument is held and presented for taking aim and discharging the piece. The said wire, in near proximity with the extremity e, is coiled into the form of a cup or pocket, B, for holding a wad, ball, pellet, or other suitable missile, C.

The somewhat more elaborate form shown in Fig. 2 is designed for greater accuracy of aim and more enduring and effective resilient force. The cup is omitted and, instead thereof, there extends from the free end of the trigger a loop or bridle, B', within which the free end of the arm A is guided and travels, and by whose end b most distant from the trigger said arm is stopped or arrested in its outward swing. The said loop also serves the several purposes of a sight for the marksman in taking aim with the instrument, as a holder for a dart or other missile, and a guide thereto in its outward flight. It also, in conjunction with a hook, h, serves to hold the instrument

to a folded condition suitable for the pocket, as shown in Fig. 3. By substituting the helical coil  $D''$  for the elbow  $D$  a more sensitive and enduring resilience is secured.

In Fig. 4 is seen a yet somewhat more elaborate form, whose two loops,  $A D''' A$  and  $A'' D' A'''$ , are composed of distinct wires, coupled together by hook  $h$  and eye  $e$ . The coiled elbow  $D'''$  of the loop  $A D''' A'$  being braced to the down-turned end  $b$  of holder  $B'$  by rod  $F$ , which engages in said coil by hook  $O$  and in said down-turned end by eye  $e''$ , the brace  $F$  serves to hold the guide  $B'$  more rigidly in place, and in so doing enables greater accuracy of aim to be secured.

This modification may be put into compact form for the pocket by simply disengaging the hook  $h'$  from eye  $e'$ , folding the parts  $B F A$  and  $A'$  together, and engaging the hook between them, as shown in Fig. 5.

The form represented in Fig. 6 is substantially that of Fig. 2, with the addition of wings  $B'' B'''$  soldered obliquely to the two members of the loop  $B'$ , so as to constitute a trough or pocket in which the missile  $C$  may be laid and by which it will be very accurately guided in leaving the piece. The hook  $h$  may, as in this case, be suspended from  $b$  instead of from  $D''$ , and serves, as in Fig. 3, to lock the instrument to its folded condition.

The modification shown in Fig. 7 differs from Fig. 1 chiefly in that its trigger  $A'''$  terminates in a simple eye,  $e$ , beyond the limb  $A'$ , instead of a hook,  $e$ , Fig. 1, which embraces said limb, and in that its cup is formed of a distinct piece of metal soldered to the arm  $A$ .

The modification shown in Fig. 8 differs from my form, Fig. 2, chiefly in the following particulars: The guide  $B$  is at a lower elevation than the member  $A''$ , and is not attached to it, but to the member  $A'''$ , which, instead of shoulder  $e A''$ , Fig. 1, is provided with the eye  $e$  to receive the extremity of the projecting arm, and said extremity is not hooked, and the guide  $B'$  embraces both members  $A$  and  $A'$  of the loop  $A D A'$ .

Although I have described the cup  $B$  and guide  $B'$  as parts of separate modifications, they might obviously be combined in one, if desired.

Figs. 9, 10, 11, and 12 represent a still more elaborate modification of my invention, whose helix  $D''$  is soldered or otherwise united to a plate,  $E$ , which plate is firmly fastened to a wooden brace,  $F'$ , near one end thereof by means of a pivot,  $G$ . The limb  $A'$  terminates in a hook,  $h'$ , which occupies

an orifice,  $i$ , near one end of a wooden brace,  $I$ , while the end  $c$  of limb  $A$  is confined between said brace and wire guide  $J$ , which is permanently attached to said brace, and which, by its hooked extremity  $j$ , permanently pivots said braces to one another. Pivoted,  $k$ , to the brace  $I$ , near the same extremity which receives the hook  $h'$ , is the trigger  $K$ , formed of a piece of wire so bent as to present an eye,  $k'$ , for engagement of the extremity  $c$  of limb  $A$  when cocked.

This form of my toy may be put in compact shape, suitable for the pocket, by disengaging the hook  $h'$ , folding the braces together, and securing the parts in said folded condition by engaging the hook  $h'$  in orifices  $f$  and  $i'$ , as shown in Fig. 10.

The above-described essential features of my invention may obviously receive various modifications—for example, the projecting arm may be a rigid bar, operated upon by an external spring, either acting by tension or by expansion, and may be hinged to a rigid or other member connecting it with my trigger-handle, or an increase of power may be obtained by multiplying or duplicating the resilient parts, or by the use of India rubber or other elastic substance.

A groove formed in the brace  $I$  may be used for holding and directing the missile, either instead of or in conjunction with the guide  $J$ ; and the braces  $F$  and  $I$  may be of vulcanite, bone, or other suitable material.

I claim as new and of my invention—

1. The toy catapult formed of the elastic members or loops  $A D A'$  and  $A'' D' A''' e$ , in the described combination with cup  $B$  or guide  $B'$ , or both, substantially as set forth.

2. In combination with the elements  $A D A'$ ,  $A'' D' A''' e$ , and  $B$  or  $B'$ , the coiled or helical spring-elbow  $D''$ .

3. In the described combination with the elements  $A D A'$ ,  $A'' D' A''' e$ , and  $B'$ , the hook  $h$  for locking the parts into compact form for the pocket, as explained.

4. In combination with the elements  $A D A'$ ,  $A'' D' A''' e$ , and  $B'$ , the separable joint  $h e'$  and the brace-coupling  $F$ .

5. In combination with the elements  $A D A'$  and  $A'' D' A'''$ , the braces  $F'$  and  $I$ , guide  $J$ , and trigger  $K k k'$ , or devices substantially equivalent.

In testimony of which invention I hereunto set my hand.

W. STORER HOW.

Witnesses:

GEO. H. KNIGHT,  
H. SCHOONMAKER.