

E. C. BRUCE.  
Catapult.

No. 223,274.

Patented Jan. 6, 1880.

FIG. 1.

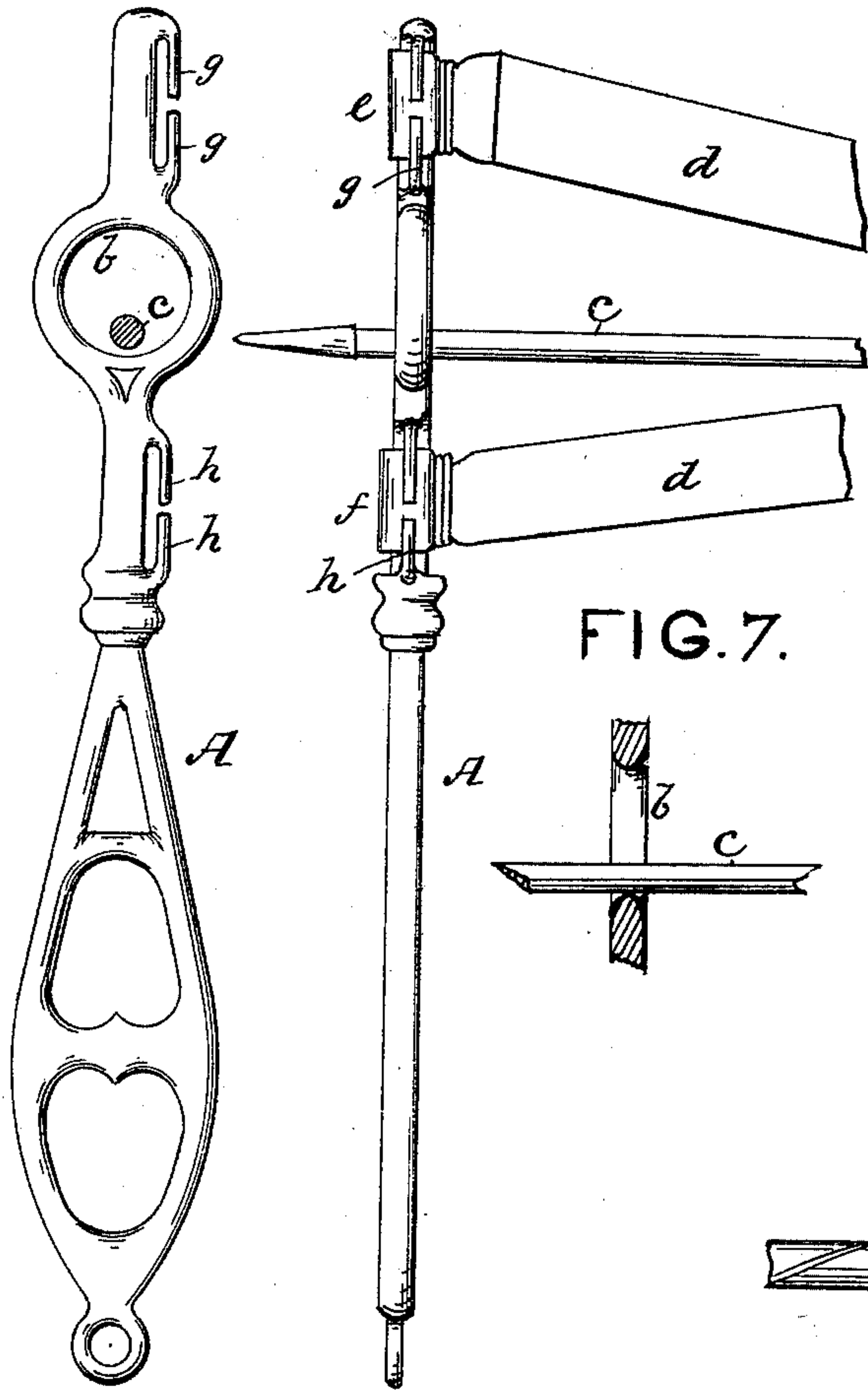


FIG. 2.

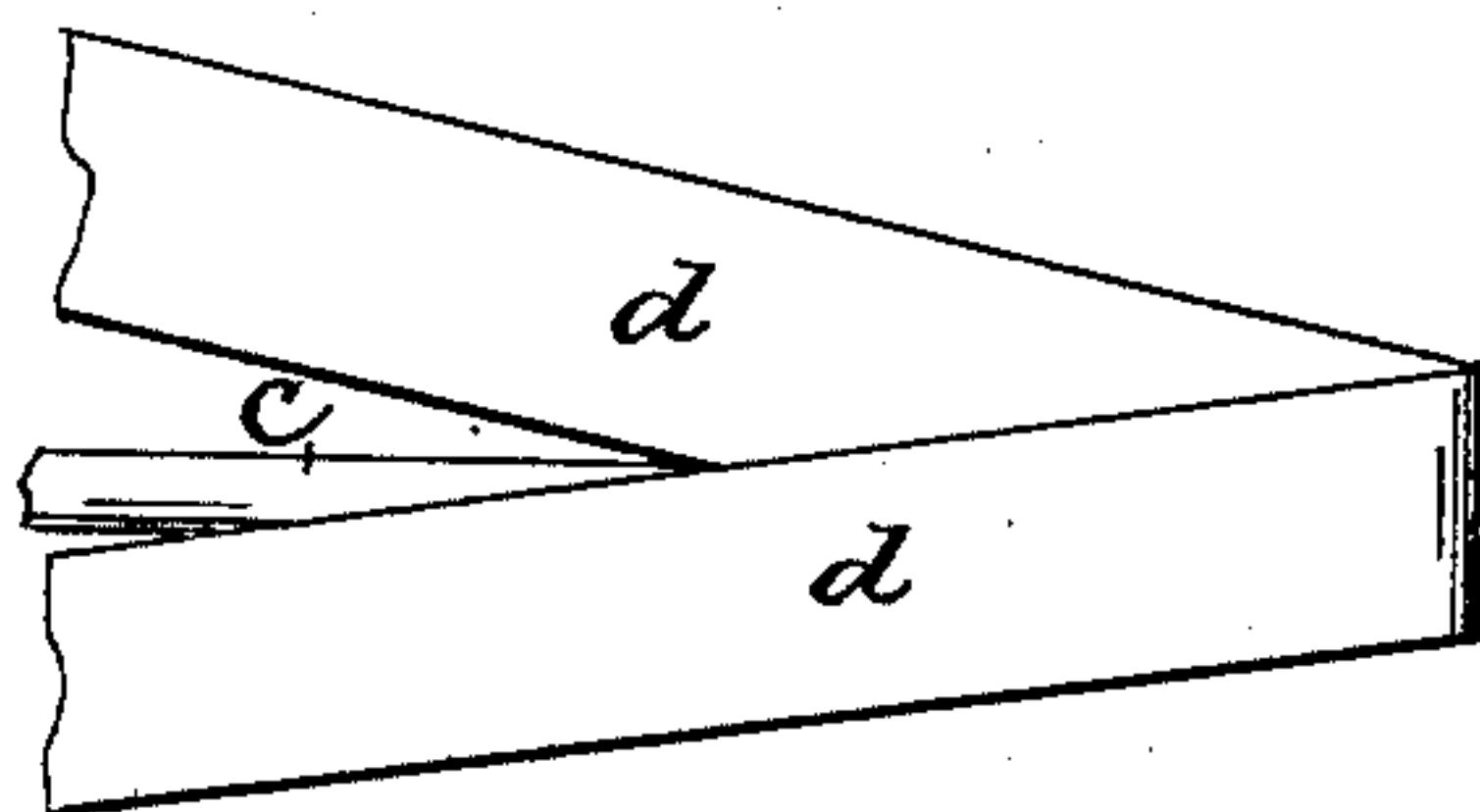


FIG. 3.

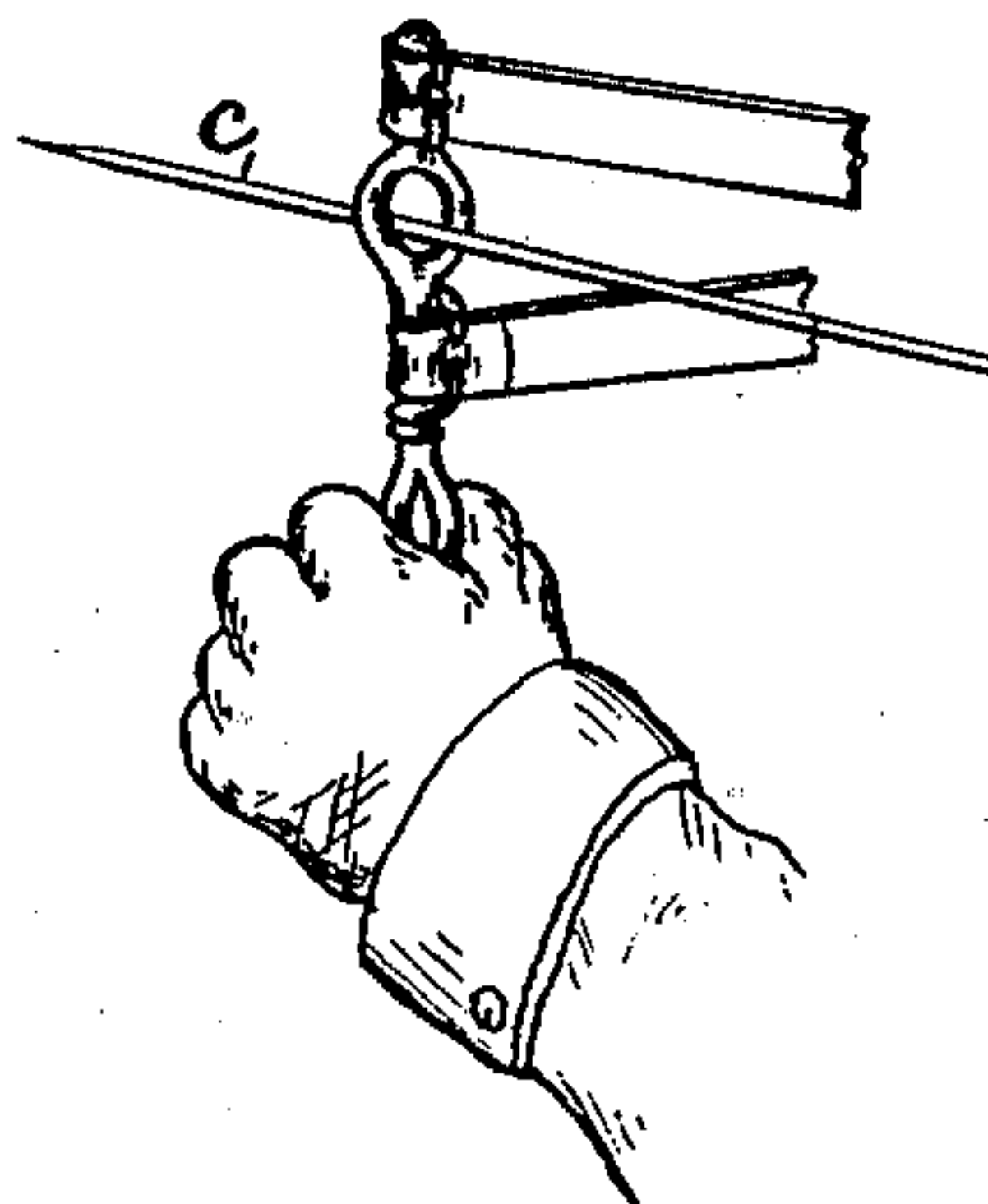


FIG. 4.



FIG. 5.

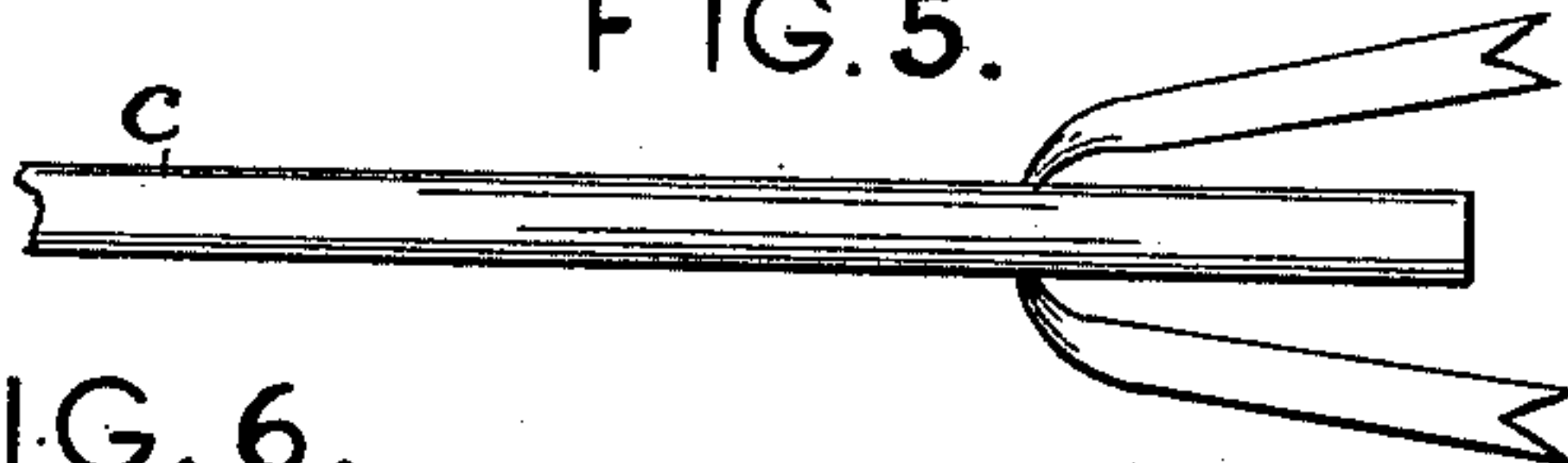
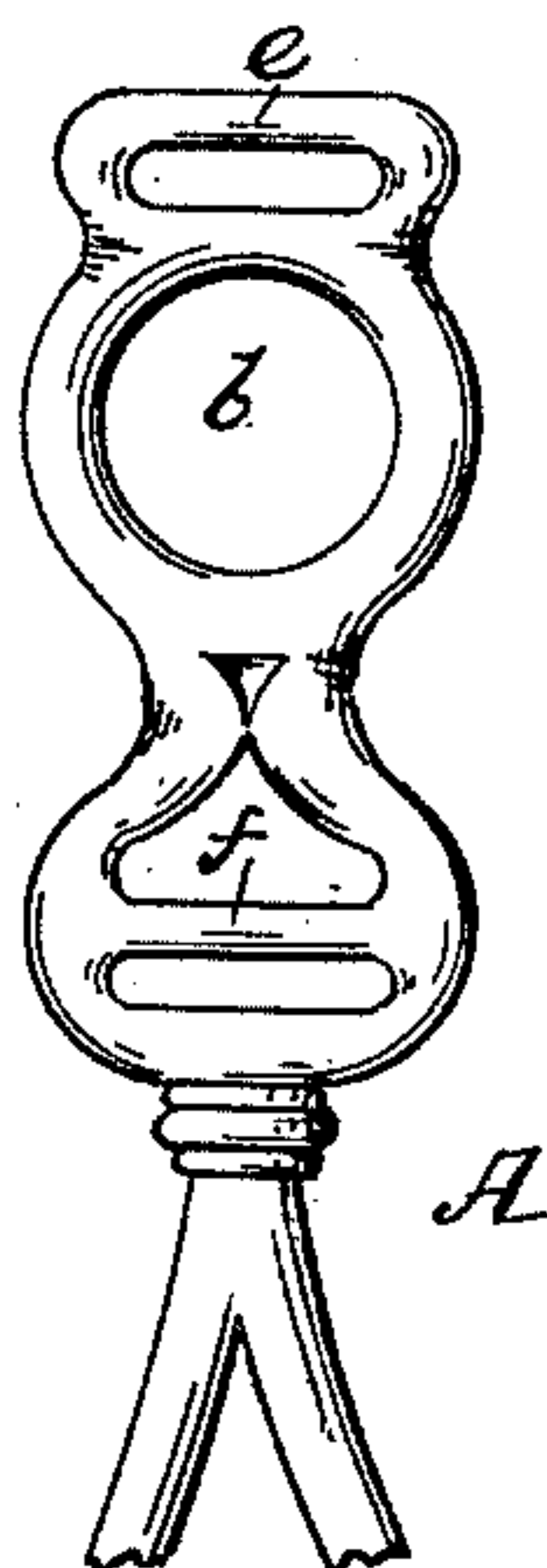


FIG. 6.



Witnesses:

Sam. R. Turner  
John Halsted

Inventor:

Edward C. Bruce,  
by John J. Halsted  
his Atty.



# UNITED STATES PATENT OFFICE.

EDWARD C. BRUCE, OF WINCHESTER, VIRGINIA.

## CATAPULT.

SPECIFICATION forming part of Letters Patent No. 223,274, dated January 6, 1880.

Application filed October 1, 1879.

*To all whom it may concern:*

Be it known that I, EDWARD C. BRUCE, of Winchester, in the county of Frederick and State of Virginia, have invented certain new and useful Improvements in Toy Guns and Arrows; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 my invention is to furnish a pocket-gun adapted to be held in the hand vertically, the stock and handle being in the same continuous line, and having the attachment-points of the arrow-driving rubber in the axial line of such stock and handle and beyond the handle, and having a ring or hole for the arrow reduced to a mere single point of contact for the arrow when resting thereon.

Figure 1 represents a front view, and Fig. 2 an edge view, of a bow or gun of full size for practical use, the rubber and arrow being partly broken away; Fig. 3, a reduced view, showing the manner of using the same; Figs. 4 and 5, different kinds of arrows, broken away, adapted to be used with the gun; and Fig. 6 is a modification of the gun.

The part A, I prefer to make in a single piece of wood or metal, and the handle of open-work, to insure lightness when made in the latter material. *b* is an open ring, oval or circular, made in the gun or implement for the passage of the arrow or projectile *c*. This ring *b* is not a tube; and as the thickest part of the implement is only about a fifth of an inch, and the inner edge of this ring is rounded off, the arrow rests upon it only at a point, and thus the friction becomes almost inappreciable.

The impelling force is a rubber strip or cord, *d*, flat by preference, though one square or round in cross-section may be used, and I attach this rubber to the handle—or, rather, to the upper part—of the implement, at points *e* and *f*, one above and the other below the ring, and not, as has been the practice heretofore, at the right and left sides of a tube. By this means I can place the points of attachment *e* and *f* as far apart as may be found efficient or

most desirable without adding needlessly to the thickness or breadth of the implement, one main object of my improvement being to render the whole implement and its convenient adjuncts adapted to ready portability, while at the same time minimizing the frictional resistance and affording a strong driving-power equal to that of the ordinary bow.

The rubber strip or cord I make much longer than the stock, and attach it loosely, so that when in its normal state, or not in use, it is not stretched or distended, but, on the contrary, hangs free upon its points of attachment, and hence its elasticity is preserved for the longest practical period. This is of great importance, in order to avoid the gradual diminution of its resilience, which must ensue when kept under continuous tension, and also to avoid the need of loosening or detaching it from the stock when not in use, to preserve its resilience or elasticity.

The rubber strip or cord *d* may have the longest dimensions of its cross-section (when that cross-section is not a square or a circle) placed transversely, as in Fig. 6, or vertically, as in Fig. 1, and, whether flat, square, or round, it may have any convenient means of attachment; but in every arrangement the centers of the two attachments, upper and lower, form a vertical line with the center of the ring through which the projectile passes, of the projectile itself when ready to be discharged, and of the gripe or lower part of the implement.

Flanges, as shown at *g h* in Figs. 1 and 2, or loops, slots, or hooks, or, if wood be the material employed, screw-eyes may be used to confine the rubber. The full force of the rubber's elasticity is made available for the impulsion of the unimpeded arrow from the right and left hands of the archer, held in the same relative positions to each other and to his body that the practice of thousands of years has shown to be best suited to combined muscular action and ocular precision.

The arrow or projectile may be of the ordinary form, smooth, and with a feathered end; but special arrows, better suited to the form of the bow, and better adapted for easy portability, devised by me, are as follows: One (shown in Fig. 4) has the shaft spirally grooved with two rifles or grooves, each having one or



more complete twists or spirals in its length. The other, in lieu of the feathering, which is costly, difficult to arrange with proper exactness, more or less obstructive in action, and liable to rapid destruction by chafing, has a narrow tape or ribbon, from four (4) to six (6) inches long, and passing at its middle through a hole or slot in the arrow two or three (2 or 3) inches forward of the rear end, as shown in Fig. 5. It is secured by glue or a peg.

The rifled arrow or the ribboned arrow I prefer to other forms. The rifling or grooving, when used, is to give it an axial rotation and surer direction in its transit, and the flexible ribbon is to give it an easy passage through the ring, as it does not, like a feathered arrow, require to be held in a given position, only before discharging, lest the feathers meet with obstruction from the implement as the arrow leaves it, and also because it is cheap, simple, and attractive, and guides the arrow equally as well as any other known device in its line of flight.

In Fig. 6 the openings for attaching a flat rubber are made transversely instead of longitudinally in the gun.

In use the implement is held vertically, about as shown in Fig. 3. The target or target-front need not be illustrated, and the quiver or case for containing the whole apparatus in a form suitable for sending by mail may be a paper cylinder of a length sufficient to admit the arrows, with or without a lid or cover.

I claim—

The pocket-gun described, adapted to be held in the hand vertically, and having its stock and handle in a continuous piece and in the same line with each other, and having both the attachment-points of the arrow-driving rubber in the axial line of such stock and handle and beyond such handle, and having a ring or hole through the stock reduced by rounding or beveling to a mere single point of contact for the arrow when resting thereon, all substantially as and for the purpose set forth.

EDWARD C. BRUCE.

Witnesses:

L. N. HUCK,

D. H. BRAYONIER.