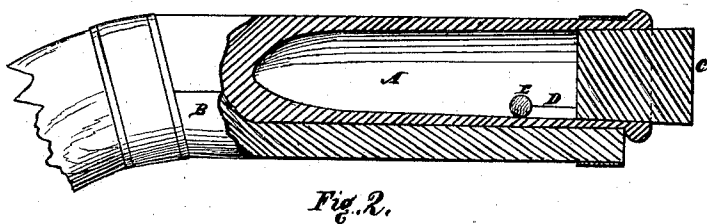
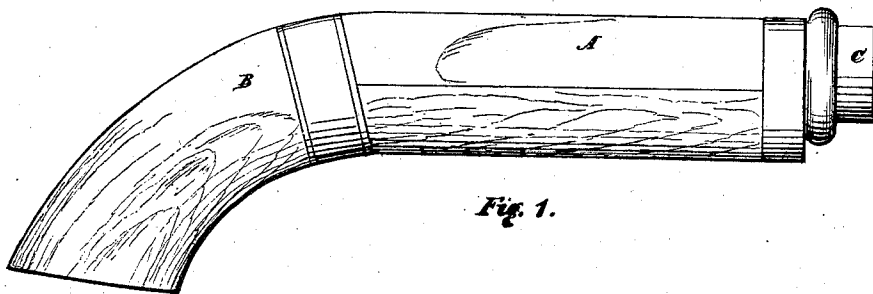


R. WELCH.

Improvement in Toy-Pistols, &c.

No. 128,990.

Patented July 16, 1872.



Witnesses: { Henry T. Thomas  
Frederick W. Jones

Inventor:  
Rodney Welch

# UNITED STATES PATENT OFFICE.

RODNEY WELCH, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN TOY-PISTOLS, &c.

Specification forming part of Letters Patent No. 128,990, dated July 16, 1872.

### SPECIFICATION.

Specification describing the construction, principle, and manner of using a Self-Discharging Hydrogen-Gun, designed for instruction and amusement, invented by RODNEY WELCH, of Chicago, in the county of Cook and State of Illinois.

My invention relates to a toy hydrogen-gun; and consists, primarily, of a tube in which hydrogen is eliminated from water or other substances containing it by means of sodium, and is afterwards exploded without contact with fire from without; and it consists, secondarily, in coating the sodium so that it may be conveniently preserved and handled for this purpose.

In the drawing which accompanies this specification, Figure 1 represents a full or perspective view of the gun; and Fig. 2 represents a sectional view of the same with the sodium charge in position.

The same letters refer to like parts as far as they are represented in the drawing.

A is the tube or barrel of the gun; B, the stock or handle; C, the cork or stopper; D, the wire for holding the sodium charge; and E, the sodium charge. The gun proper consists of a tube closed at one end, and may be made of any desired diameter and length, and may be constructed of any material suitable for forming tubes. For convenience in using it is mounted on wheels, provided with a stock, or the barrel and stock may be constructed from one piece. Accompanying the tube or barrel is a stopper, made of any suitable material—as cork or India rubber—which is to be firmly inserted in the end of the tube or barrel not permanently closed. Inserted in the stopper is a piece of wire, on which a ball of sodium may be fixed. Balls of sodium are prepared by coating them with paraffine or other material of similar composition and properties, so that they will not be affected by air or moisture, or this coating may be applied to a wrapper placed around the balls.

In order to fire the gun a small quantity of ice, snow, or water, or other substance capa-

ble of eliminating hydrogen in the presence of sodium is placed in the tube or barrel. The covering is now removed from a ball of sodium, when it is attached to the end of the wire above described, and the stopper to which it is fastened is firmly pressed into its place, the gun during this time being held so that the muzzle points upward. The gun is now held in a horizontal position so that the water or other material used in its place may come in contact with the ball of sodium. As it does this the sodium floats off on the surface of the liquid, causing the oxygen, of which it is in part composed, to unite with it, while the hydrogen is set free and mixes with the air in the tube. When so much hydrogen has been eliminated that it is in the right proportion to unite with the oxygen in the tube, the heat produced is such that ignition, followed by the explosion of the mixed gases, ensues, which forces out the stopper, or else the hydrogen unites with the sodium, producing a like result.

I am aware that sodium has been used for generating hydrogen from water; that its employment has been suggested for blasting rocks and that it has been preserved in paraffine oil and other liquids that contain no oxygen; therefore I make no claim to either of these; but

I claim as my invention, and desire to have protected by Letters Patent—

1. A toy hydrogen-gun, exploded by inserting in the barrel thereof sodium in connection with ice, snow, water, or other substances capable of eliminating hydrogen in the presence of sodium, so as to set the hydrogen free, substantially as shown and described.

2. The process of coating balls of sodium with paraffine, wax, or other materials that contain no oxygen, and are solid at ordinary temperatures, for the purpose above indicated, substantially as hereinbefore set forth.

RODNEY WELCH.

Witnesses:

HENRY T. THOMAS,  
FREDERICK W. JONES.