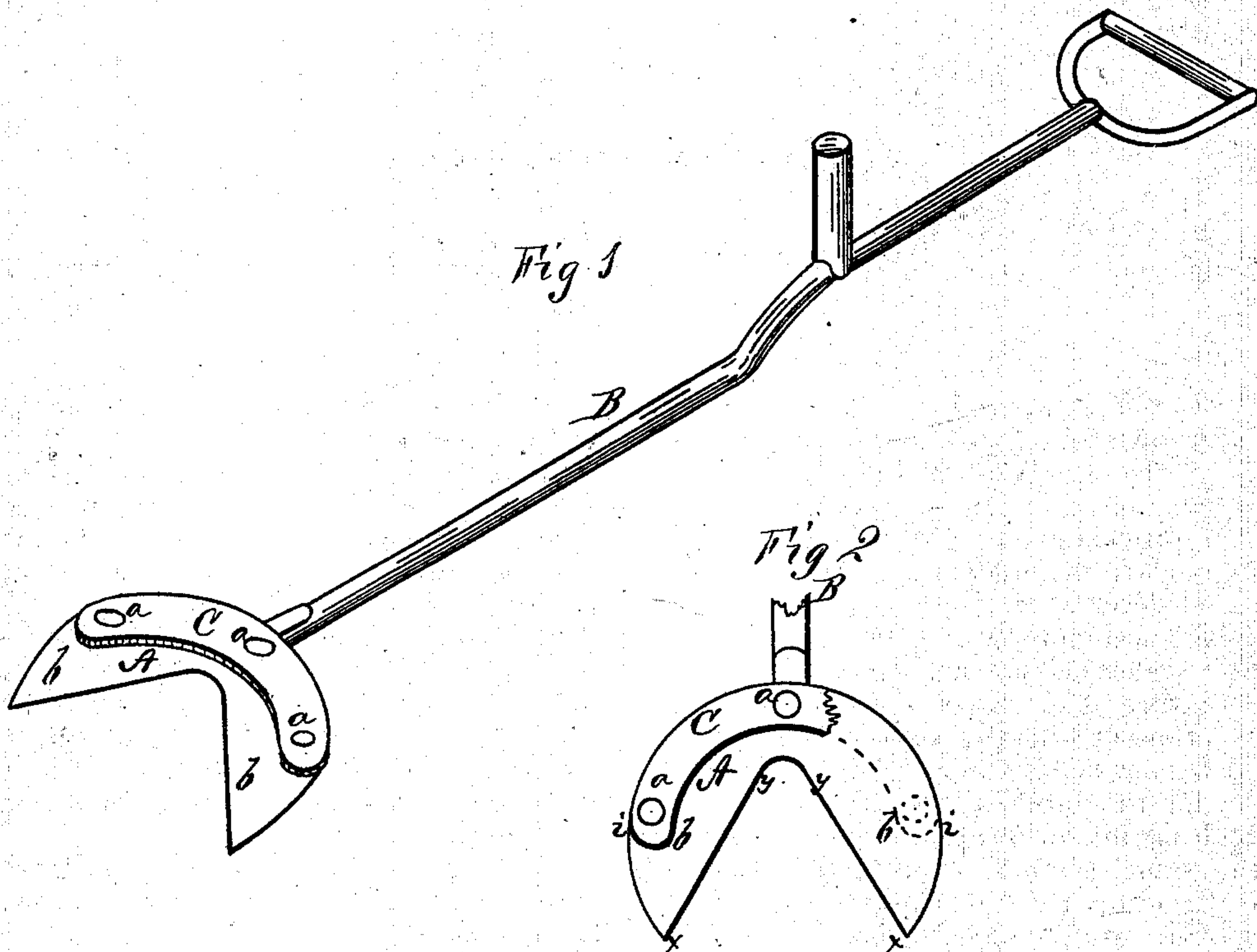


J. S. BALL.  
Hay-Knives.

No. 144,591.

Patented Nov. 18, 1873.



Witnesses:  
Frank L. Durand,  
C. L. Ewert

Inventor  
John S. Ball  
By J. Mc. Perkins  
Attorney



# UNITED STATES PATENT OFFICE.

JOHN S. BALL, OF MISHAWAKA, INDIANA.

## IMPROVEMENT IN HAY-KNIVES.

Specification forming part of Letters Patent No. **144,591**, dated November 18, 1873; application filed April 18, 1873.

*To all whom it may concern:*

Be it known that I, JOHN S. BALL, of Mishawaka, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Hay-knives; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The nature of my invention consists in the construction and arrangement of a hay-knife, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, which forms a part of this specification, and in which—

Figure 1 is a perspective view of my entire hay-knife, and Fig. 2 is a front view of the blade thereof.

A represents the blade, and B the handle attached thereto by means of a yoke, C. The entire handle B is made of gas-pipe, making a stiffer handle than the same size of solid iron, and as a consequence much lighter, or equally as light as wood, and much more durable. This handle is attached to the blade A by means of the curved yoke C fastened to the blade by three rivets, *a a a*. This enables any

one to remove the blade in case it breaks, and secure a new one without rendering the whole tool useless in case of a broken knife. The blade A is constructed, as shown in Fig. 2, in semicircular form, cut out as shown, forming two sharp-pointed wings, *b b*, the inner sides of which are straight from *x* to *y*, and then curved at the joint from *y* to *y*. This shape obviates nearly all of the dead-cut that a true circle is subject to at the circle or turn in the middle of the blade. The cutting-edge of the blade extends on the outer edge of both wings *b b* as far as the first rivet, or to the points marked *i i*.

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

The combination, with the blade A, constructed as described, of the handle B and yoke C, the latter being in curved form, corresponding with the shape of the blade, united to the handle and riveted to the blade, as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of March, 1873.

JOHN SANFORD BALL.

In presence of—

J. B. GREENE,  
ALBERT GAYLOR.