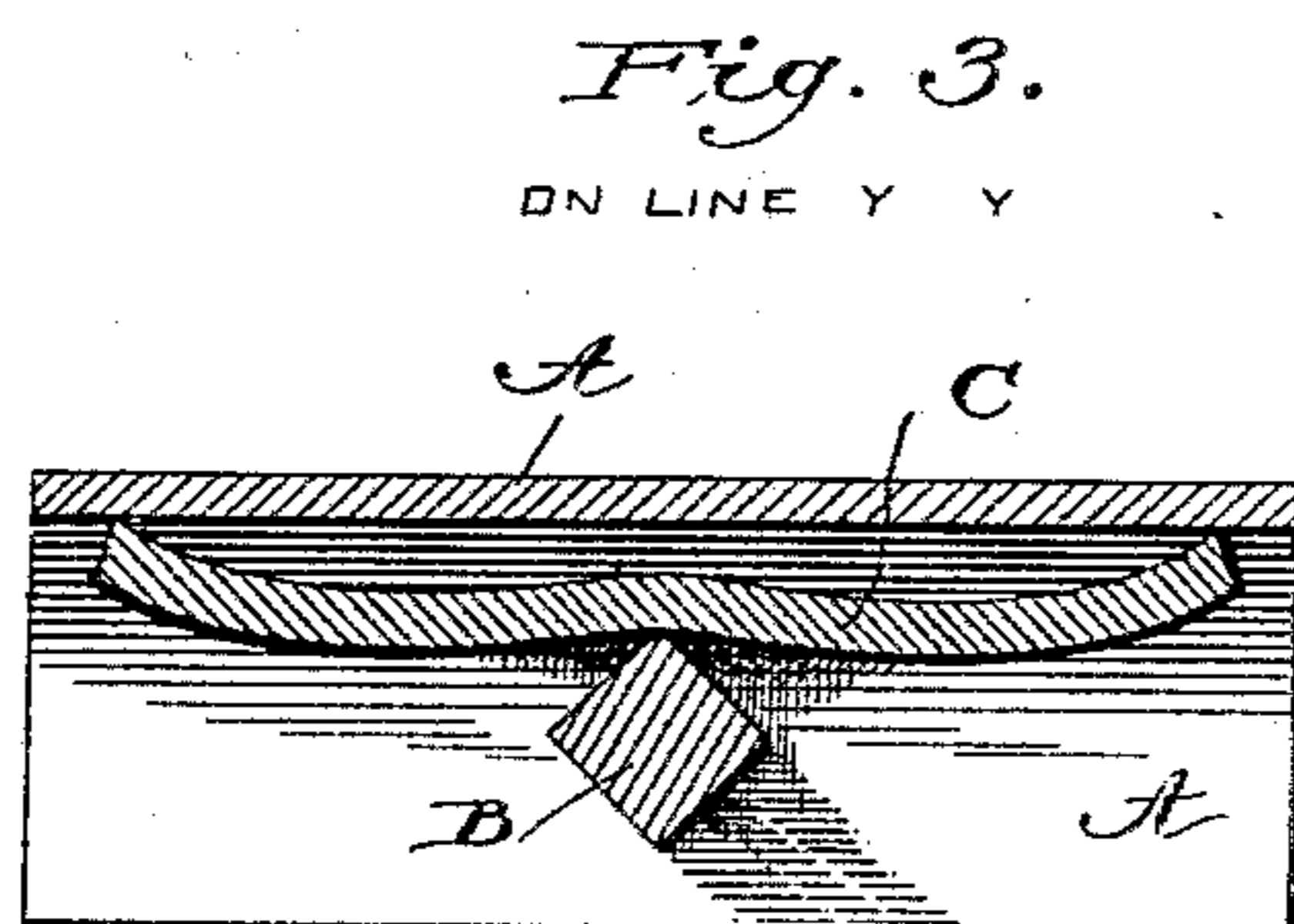
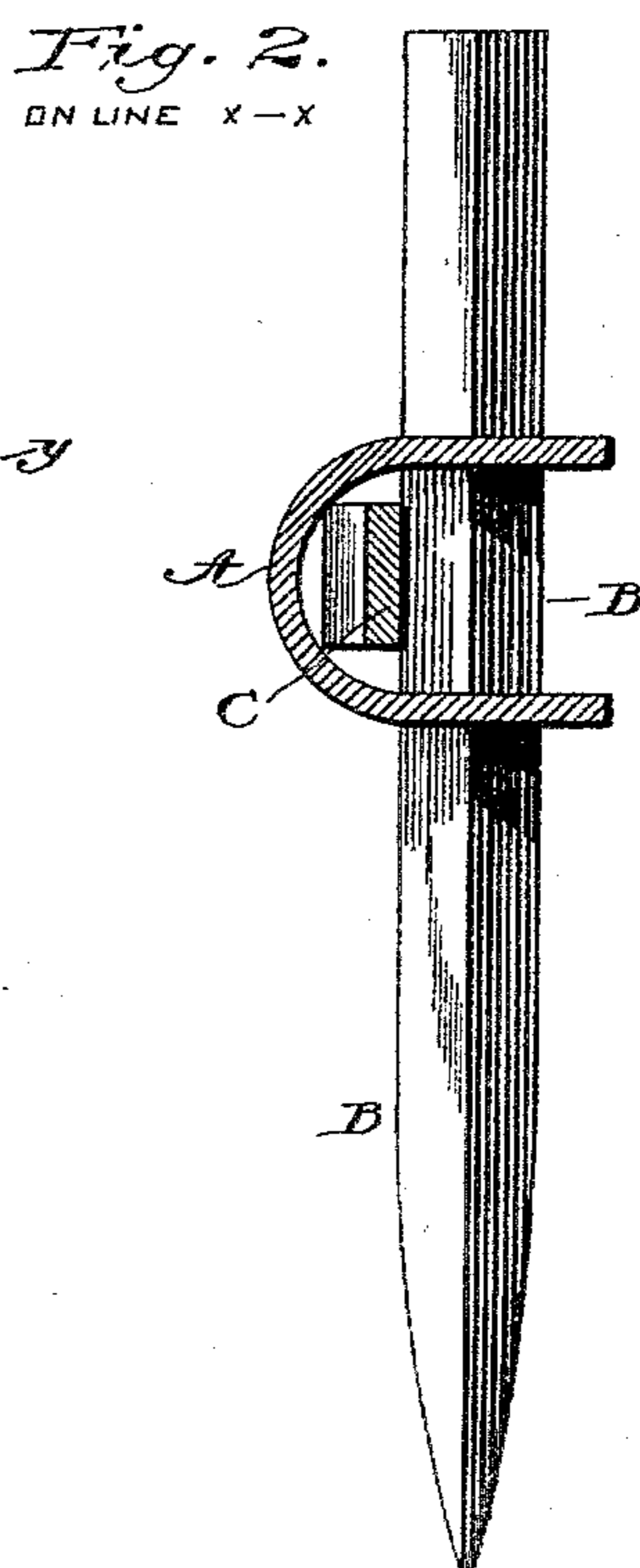
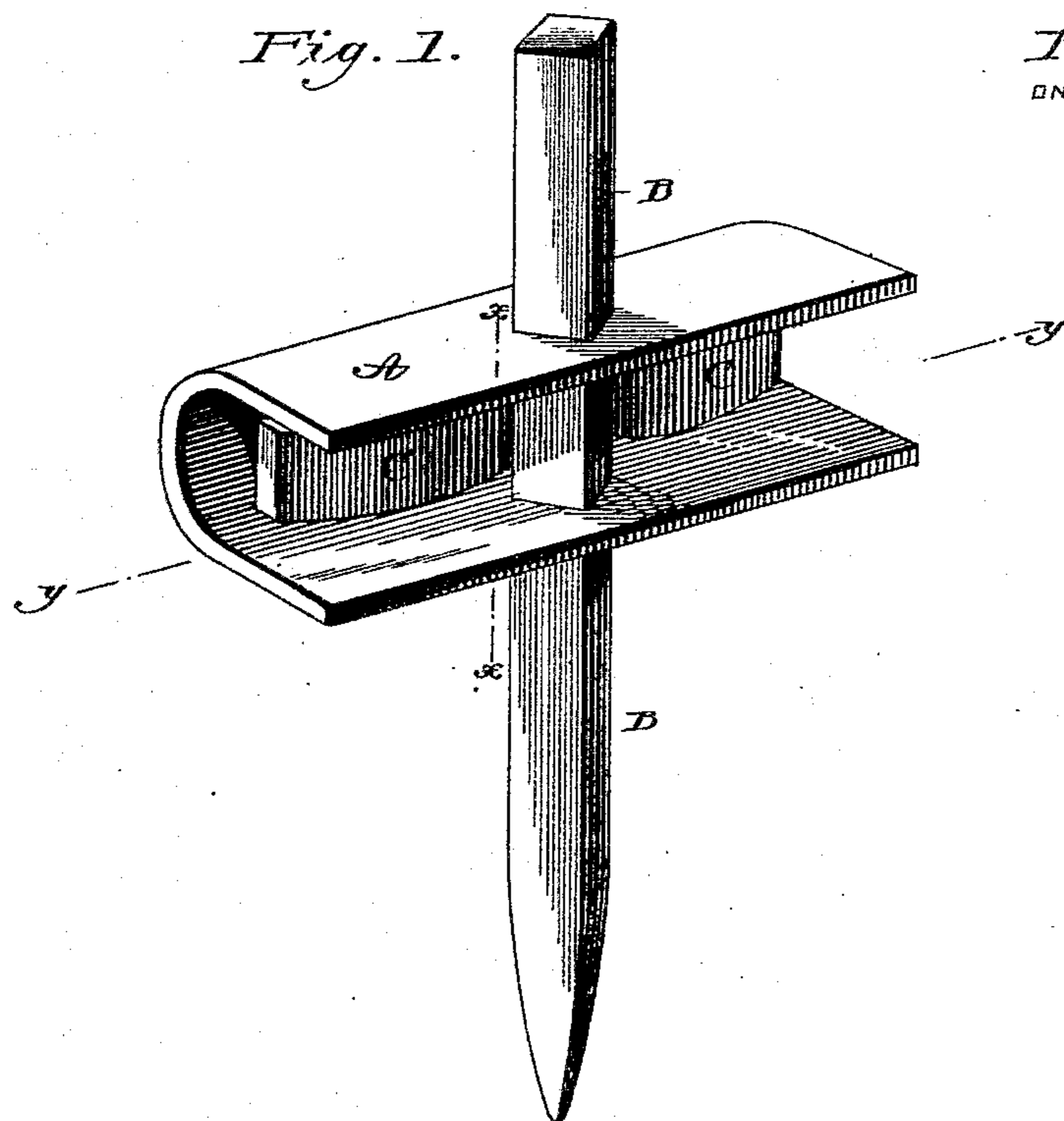


(No Model.)

A. LINDGREN.
HARROW.

No. 412,107.

Patented Oct. 1, 1889.



Witnesses.

H. H. Mortimer.
H. A. Kennedy.

Inventor,

August Lindgren
By *his* Attorney.
Philip T. Dodge.

UNITED STATES PATENT OFFICE.

AUGUST LINDGREN, OF MOLINE, ILLINOIS, ASSIGNOR TO THE MOLINE PLOW COMPANY, OF SAME PLACE.

HARROW.

SPECIFICATION forming part of Letters Patent No. 412,107, dated October 1, 1889.

Application filed March 21, 1889. Serial No. 304,129. (No model.)

To all whom it may concern:

Be it known that I, AUGUST LINDGREN, of Moline, in the county of Rock Island and State of Illinois, have invented certain Improvements in Harrows, of which the following is a specification.

This invention relates to that class of harrows in which fixed teeth are passed through channeled supporting-bars or similar supports.

The object is to provide a simple and efficient means for holding the teeth in position, but permit them to be readily lowered to compensate for wear.

To this end it consists in combining with the tooth and its support an intermediate spring-plate acting laterally against the tooth.

In the accompanying drawings, Figure 1 is a perspective view showing a harrow-tooth secured on my plan. Fig. 2 is a vertical section of the same on the line *x x*. Fig. 3 is a horizontal cross-section on the line *y y*.

Referring to the drawings, A represents a frame-bar or portion of the main frame formed, in the present instance, of metal of a **C** form in cross-section.

B represents an ordinary straight harrow-tooth passed vertically through openings in the upper and lower sides of the bar in such manner that it may be driven upward or downward.

C represents the fastening-spring, consisting of a flat strip of steel of suitable thickness introduced within the channeled bar, with its two ends seated against the bar and its middle portion bearing against the tooth.

It is preferred to give the spring the double longitudinal curvature, as shown; but this is not material, the only essential requirement being that it shall rest between and bear against the bar and the tooth.

The parts may be conveniently assembled by introducing the spring and driving the tapered rear end of the tooth down through the bar. The ends of the spring may be embedded slightly in the bar, as shown; but this is not material.

It will be noted that under my construction it is unnecessary to employ bolts, wedges, or other fastening devices, since the spring seated between the tooth and frame and bearing at its two ends against the frame is held securely in place by the tooth.

What I claim is—

1. The channel-bar and the tooth passing through its edges, in combination with the intermediate spring bearing at its ends on the bar and at its middle on the tooth.

2. In a harrow, the combination of a frame-bar, an upright tooth arranged to slide there-through, and an intermediate spring acting between the frame and the side of the tooth and held in place by the latter, substantially as shown.

In testimony whereof I hereunto set my hand, this 11th day of March, 1889, in the presence of two attesting witnesses.

AUGUST LINDGREN.

Witnesses:

S. M. HILL,
W. V. RICHARDS.