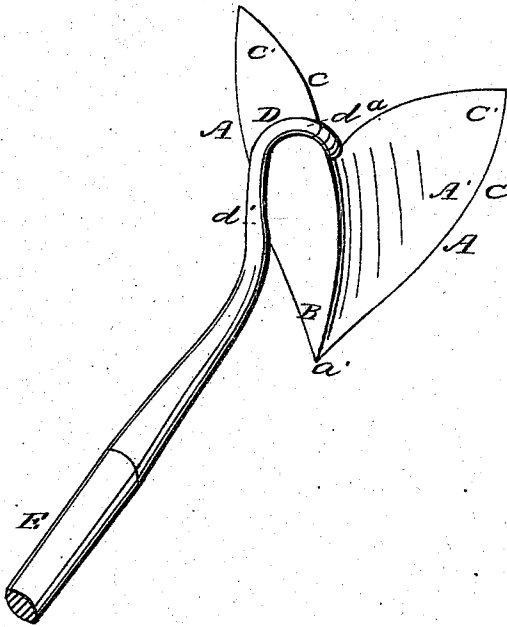


E. WARREN.

Hoe.

No. 102,891.

Patented May 10, 1870.



Witnesses:

C. R. Lutz
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Inventor:

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United States Patent Office.

EDWARD WARREN, OF CERESCO, MICHIGAN.

Letters Patent No. 102,891, dated May 10, 1870.

IMPROVEMENT IN HOES.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern:

Be it known that I, EDWARD WARREN, of Ceresco, in the county of Calhoun and State of Michigan, have invented a new and useful Improvement in Hoes; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon and being a part of this specification.

My improved hoe is distinctly shown in perspective in the annexed drawing.

The nature of my invention consists in constructing a hoe, which, in general outline, somewhat resembles a double mold-board plow. My hoe blade has a curved sweep extending from heel to tip, while its center is convex, and its wings are concave, each terminating in a point similar in form to the tip. To a blade thus formed is secured a curved or gooseneck for the handle, of such shape and length that the point of bearing of the handle, after the same has been inserted, shall be on a line with, or opposite to the center of the blade. The great advantages of this construction of hoe, both as to formation of blade as well as to the style of neck, will readily suggest themselves. Among the most prominent are the great amount of cutting-surface the hoe presents, its entire freedom from all tendency to clog with either wet earth or weeds, and its lightness, and the ease with which it can be worked. Owing to the peculiar combination of curves which are met with in the blade, the requisite strength is readily obtained with scarcely half the weight of metal usually required for the manufacture of such blades, while a neck thus constructed enables the agriculturist readily to do his work without stooping or leaning over, as he is required to do with any other hoe now in the market. This certainly is a great advantage, as the amount of fatigue that it avoids is immense.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A A represent each a half section of the blade, which is made of steel, or any other suitable metal. These sections A A are, of course, cast or otherwise manufactured in one piece.

The blade is convex, as shown at A', and is formed so as to have a circular or scoop-shaped face from the point *a* of the heel to *a'* at the tip.

The wings C C are concave, and are so formed that each ends in an angular, slightly-curved tip C' C' closely resembling in shape the tip B, where the wings C C meet and terminate at a common center point.

D is the shank, to which the handle E is secured.

This shank D consists simply of a double curved neck, and is secured by a suitable bearing-plate on the rear side of the blade.

It will be seen, by reference to curve *d* of the neck, that such distance is left between the neck and blade at this point, and here is where hoes generally clog, as to allow the dirt to be readily cleaned off or removed, while the curve *d'* terminates at such point that, when the handle E is inserted, its forward end rests, and has its bearing directly opposite the center of the blade, thus enabling the one who uses the hoe to readily do his work, and, at the same time, occupy an upright position.

Having thus fully described my invention,

What I claim therein as new, and desire to secure by Letters Patent of the United States, is—

A hoe, having a circular blade between *a* and *a'*, convex at its center A', and having concave wings C C terminating in tip points C' C', when the blade thus formed is secured to a shank of such curvature and length that, when the handle is inserted, its bearing shall be opposite the center of the blade, substantially as described.

EDWARD WARREN.

Witnesses:

H. F. EBERTS,
S. C. HYDE.