(No Model.)

F. S. KRETSINGER.

HOE.

No. 332,350. Patented Dec. 15, 1885.

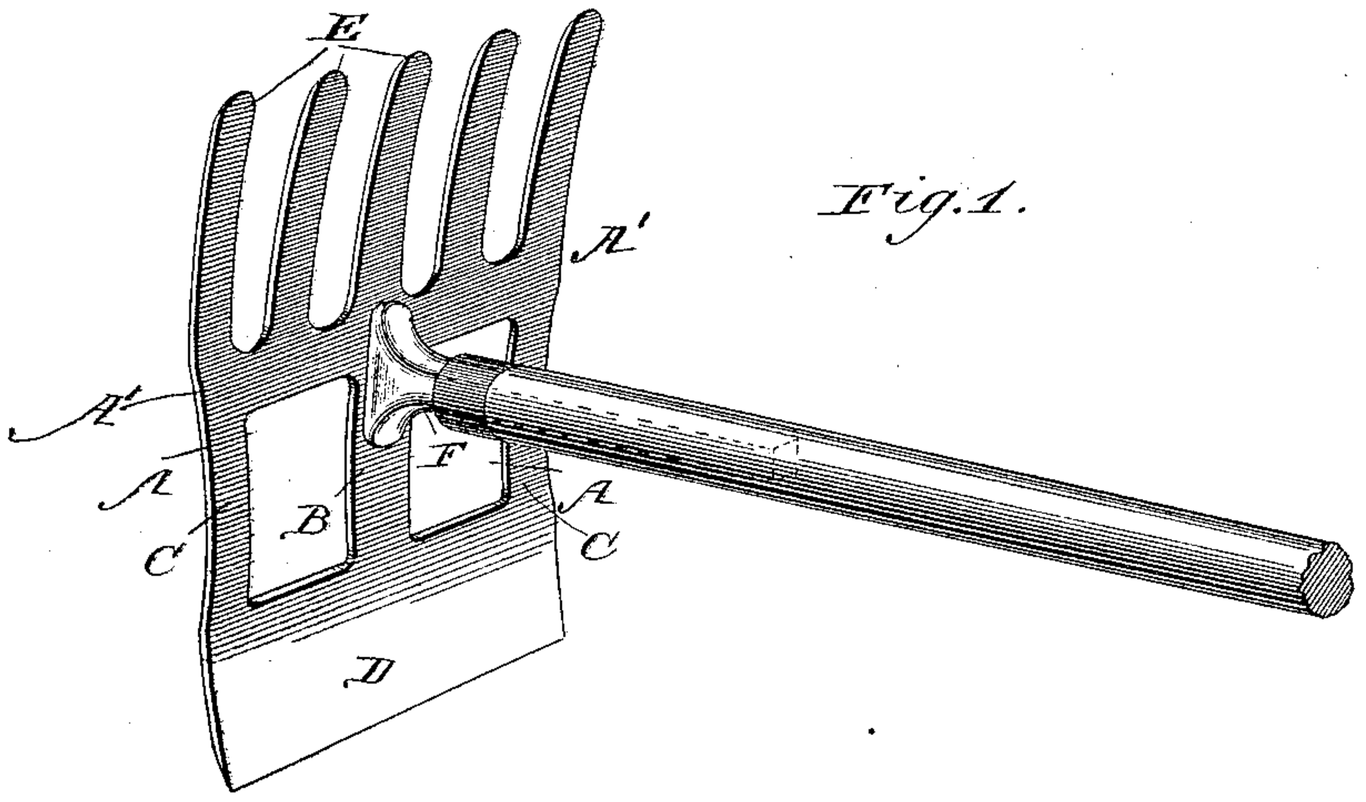


Fig. 1.

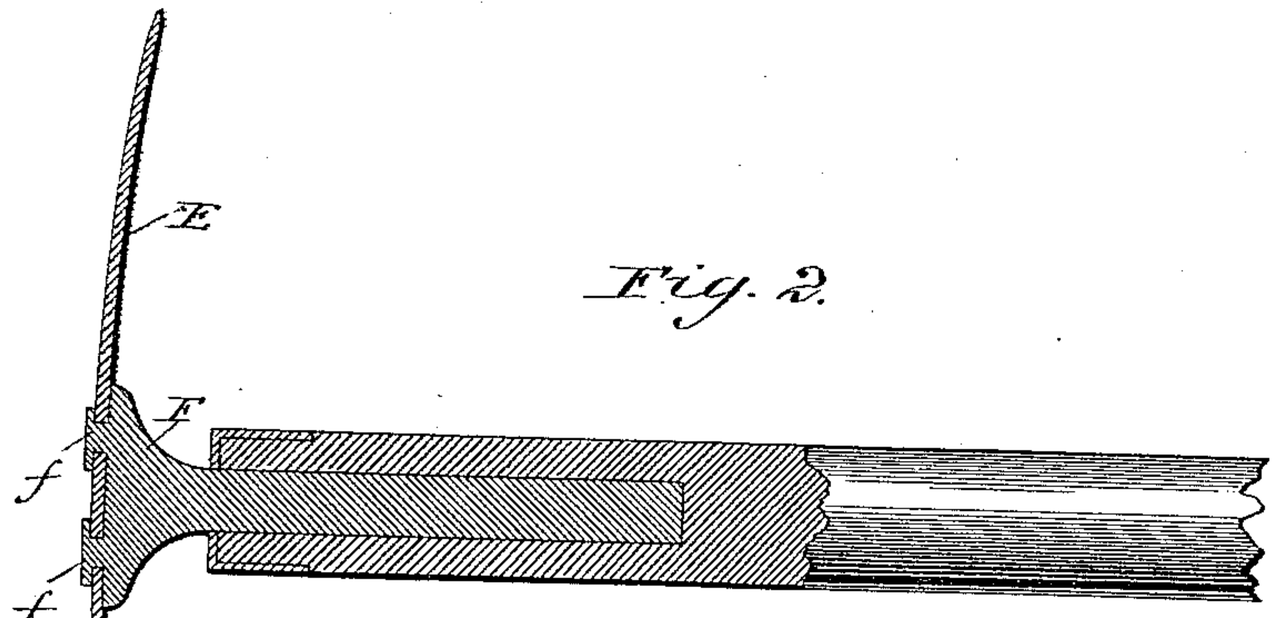


Fig. 2.

Fig. 3.

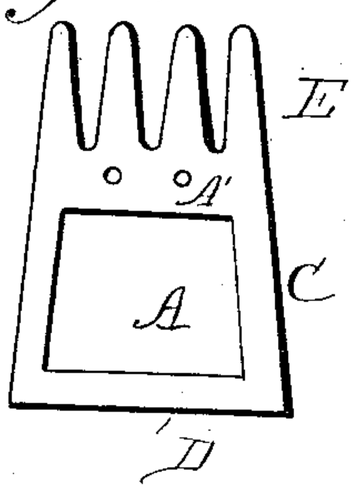
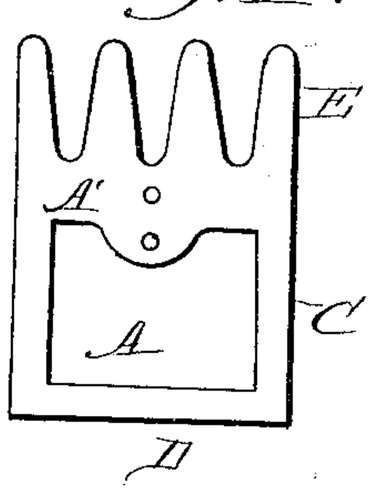


Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERICK SHERWOOD KRETSINGER, OF FORT MADISON, IOWA.

HOE.

SPECIFICATION forming part of Letters Patent No. 332,350, dated December 15, 1885.

Application filed September 28, 1885. Serial No. 178,357. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK SHERWOOD KRETSINGER, a citizen of the United States, residing at Fort Madison, Iowa, have invented certain new and useful Improvements in Hoes, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention relates particularly to that class of hoes designed for weeding and like purposes, which are provided upon one side with a series of prongs and upon the other side with a cutting-blade. In the manufacture of this class of hoes as at present commonly practiced it is customary to provide a central web or body portion of a single piece of metal, to which the handle-shank is welded, and from one side edge of which the teeth are drawn, after the method adopted in the formation of rakes or similar articles, while from the opposite side edge project arms, to which, near their outer ends, is welded a steel plate that constitutes the blade of the hoe. This method of manufacture has been found objectionable in practice, for the reason, among others, that the welding of the blade to the projecting arms is a difficult and costly operation. Even when the weld-joints are made with the greatest care they are apt to be weak, and thus frequently become loosened and break in the final operation of finishing the hoe. A further objection incident to this method of manufacture is the difficulty in grinding and polishing that face of the hoe-blade to which the arms are welded and above the plane of which they necessarily project. A still further objection is that in this old style of hoe it has been customary to form the teeth of an even number. As a result, if attempt were made to rivet the shank to the central web instead of welding it thereto, the perforations formed in the central web or body of the hoe to receive the rivets would come in the space between the middle teeth, thus producing a very weak point in the body of the hoe, so that in use the strain at such point would be liable to break the thin metal. In the manufacture of hoes it has also been heretofore proposed to employ a single flat piece of metal having its upper edge rounding or square-pointed or provided with two prongs, and having its lower edge finished to form a blade, the handle-shank being joined to the body slightly above its center. In this construction, however, the body being solid—that is to say, without any cut-away spaces—the hoe did not work as easily as was desirable, not having teeth or a sufficient number of them, nor did it serve as effectively to break up the soil.

My present invention has for its object to provide an improved weeding-hoe, by which the above-mentioned objections will be fully overcome; and to this end it consists, first, in forming a hoe comprising a body, blade, and teeth formed integrally, the body being cut away above the blade and having the rivet-holes for the handle-socket directly beneath the base of one or more of the teeth.

My invention further consists in a hoe having its body, blade, and teeth formed of a single piece of metal, the body being cut away and provided with a downwardly-extending central portion to afford strengthening stock for the rivet-hole.

My invention also consists of a hoe having its body cut away above the blade, and having formed integral with its body a series of teeth or prongs of an uneven number, so that one of said teeth shall occupy the central position, and having a handle shank or socket riveted to said body near the base of the middle tooth of the series.

Figure 1 is a perspective view of a hoe embodying my invention. Fig. 2 is a view in vertical section through this hoe and its attached handle-socket. Figs. 3 and 4 are respectively front views of slightly-modified forms of my invention.

The body of my improved hoe is provided with the cut-away spaces A, Fig. 1, above which extends the top bar, A′, from which rise the teeth E. From the bar A′ extends the central bar or portion, B, and the side bars, C, of the body, and in piece with these bars is formed the blade D. By forming the cut-away spaces A in the body, not only is an easier operation of the hoe secured, but it is also thereby caused to more effectively break up the soil.

The body, blade, and teeth of the hoe are made by preference of a single sheet of steel, which, after being stamped into the desired

form, will be ground and finished in suitable manner.

It will be noted that in Fig. 1 the teeth of the hoe are formed an uneven number, so that the central tooth of the series projects above that part of the hoe-body opposite the central bar or portion, B, and that beneath the base of this middle tooth and in the central bar or portion, B, are formed the perforations to receive the rivets *f*, by which the handle-shank F is secured to the hoe. One of the series of teeth being in the central position shown permits the perforation for the rivet to be placed nearer the teeth or prongs than could be safely done were the teeth of even number, so as to bring a space opposite the perforation. By this expedient not only is the handle-shank secured nearer the teeth and in more effective position, but the metal is better distributed about the perforation next the teeth, so that the strain in use is not liable to break the body of the hoe. The centrally-depending bar or portion B serves not only to strengthen the body of the hoe and aid in breaking up the soil, but also gives increase of stock to the body at the point of attachment of the handle-shank and affords a firm bearing for such shank.

In the modified construction shown in Fig. 3 the central bar, B, is omitted and the teeth are formed of an even number; but in this case the perforations for the rivets of the handle-shank are placed in a horizontal line and at such distance apart that each perforation will come beneath the base of a tooth. By this means I secure sufficient stock about the perforations to enable the handle-shank to be firmly attached to the body.

In the modification illustrated by Fig. 4 the teeth are formed of even number, and the centrally-dependent portion B does not extend to the blade D, but only such distance into the space A as to give sufficient stock about the lower rivet-hole, and to this extent attain one of the advantages of the central bar, B, above described.

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

1. As a new article of manufacture, a hoe comprising a body, blade, and teeth formed integrally, the body being cut away above the blade, and having the rivet-holes for the handle-socket directly beneath the base of one or more of the teeth, substantially as described.

2. As a new article of manufacture, a hoe having its body cut away above the blade, and having formed integral with its body a series of teeth or prongs of an uneven number, so that one of said teeth shall occupy the central position, and having a handle-shank riveted to said body near the base of the middle tooth of the series, substantially as described.

3. As a new article of manufacture, a hoe having its body, blade, and teeth formed of a single piece of metal, the body being cut away and provided with a central downwardly-extending portion to afford strengthening stock for the rivet-hole, substantially as described.

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