(No Model.) 2 Sheets—Sheet 1.

C. H. KADING.

HARROW.

No. 472,129. Patented Apr. 5, 1892.

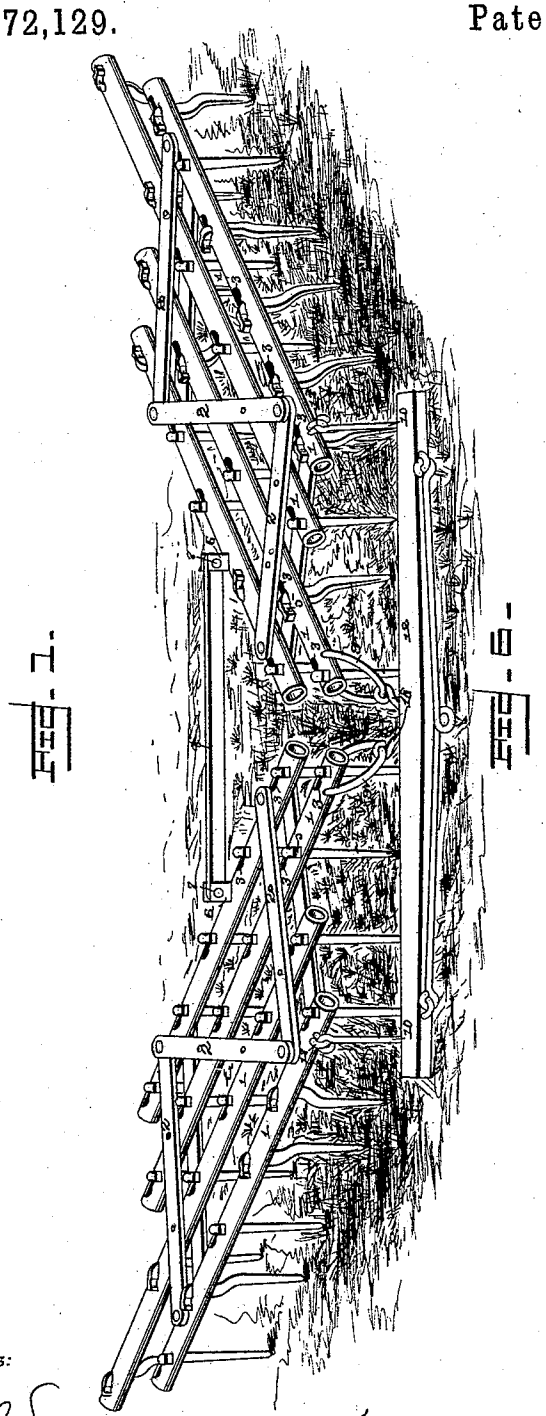

Fig. 1.

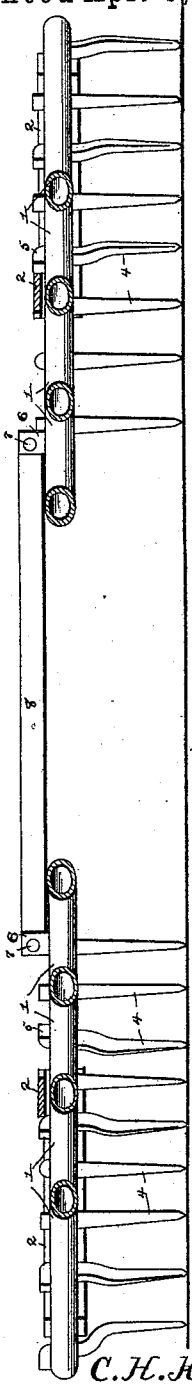

Fig. 2.

Witnesses:

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Inventor

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(No Model.) 2 Sheets—Sheet 2.

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FIG. 3.

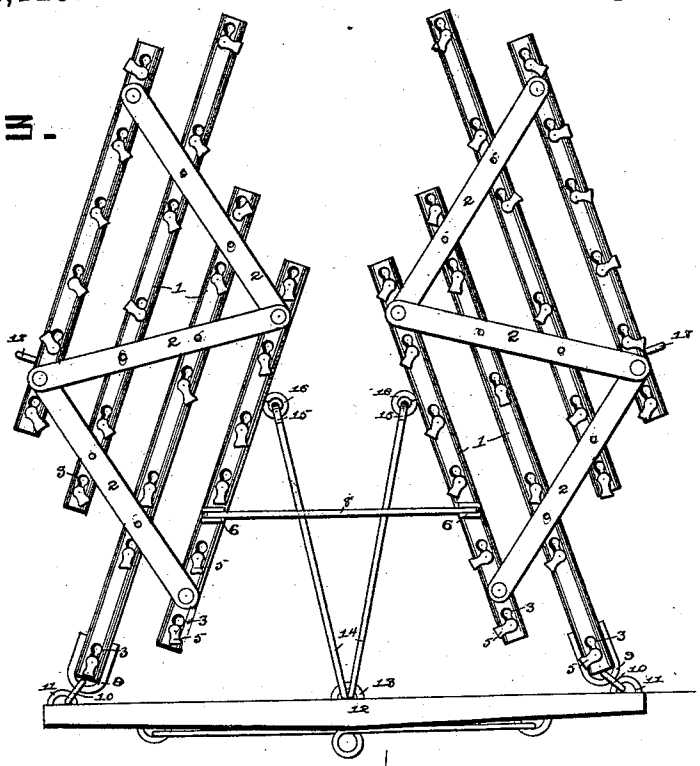


FIG. 2.

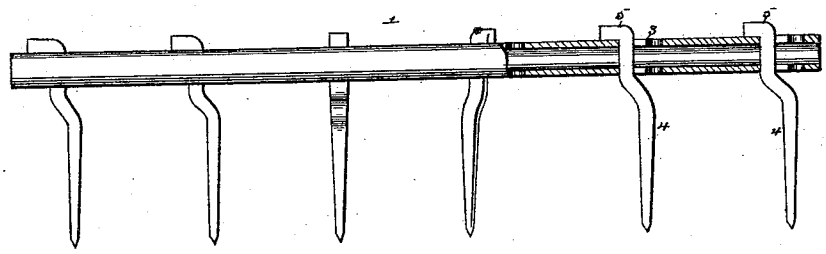


FIG. 4.

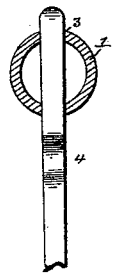
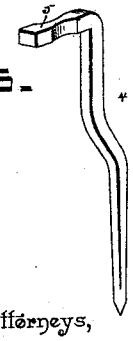


FIG. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES HENRY KADING, OF TRIPOLI, IOWA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 472,129, dated April 5, 1892.

Application filed July 23, 1891. Serial No. 400,493. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HENRY KADING, a citizen of the United States, residing at Tripoli, in the county of Bremer and State of Iowa, have invented a new and useful Harrow, of which the following is a specification.

This invention relates to improvements in harrows, the objects in view being to provide a harrow of cheap, simple, and durable construction, adapted for ordinary work and for cultivating young corn, and, furthermore, to provide an improved means for fastening the harrow-teeth, whereby they travel in the line of draft and out of line with each other, and which are adapted to readily deflect when coming against hard objects, and thus avoid becoming broken.

With the above objects in view the invention consists in certain novel features of construction and combinations of parts hereinafter specified, and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective view of a harrow constructed in accordance with my invention. Fig. 2 is a side elevation of one of the harrow-bars, a portion being shown in section. Fig. 3 is a plan of the harrow, the same being the form adapted for the cultivation of young corn. Fig. 4 is a transverse section through one of the bars. Fig. 5 is a detail of one of the teeth. Fig. 6 is a transverse section, the section being taken in front of the harrow-section-connecting bar.

Like numerals of reference indicate like parts in all the figures of the drawings.

In constructing the harrow-sections I form the harrow-bars of gas or other pipes 1 and connect the series by three diagonal braces 2, which are riveted at the points of intersection with the tubular harrow-bars. In each of the harrow-bars perforations 3 are at intervals formed, said perforations being formed at diametrically-opposite sides of the tubular bars and each upper perforation being of substantially key-hole shape.

The harrow-teeth 4 are of bayonet shape, as shown, and have their upper ends bent at a right angle to their remaining portion and shaped to form key-shaped heads 5, which correspond in shape with the key-hole perforations and are adapted to be passed therethrough. Swiveled brackets 6 are mounted near the forward ends and in the inner bar of each section, and pivoted, as at 7, to said brackets is a transverse harrow-section-connecting bar 8. The second bar of each section has its front end extended beyond the remaining sections and provided with a clevis 9, which, through the medium of links 10, is loosely connected with eyes 11, secured to the rear sides and at the opposite ends of a transverse draft-bar 12. The draft-bar is also provided with a central eye 13, and from the center of the same rearwardly extends a pair of diverging rods 14, the rear ends of which are connected loosely with opposite eyes 16, projecting from the inner ends of the sections, and for such connection said bars are hook-shaped, as at 15. When thus connected the harrow is adapted for harrowing corn, and it will be seen that the front ends of the harrow-sections diverge, said sections being disposed diagonally to each other and forming an intermediate space for the passage of young corn. (See Fig. 3.)

By changing the links 11 from the clevises and connecting the same to eyes 17, one of which is located at the outside and near the front end of the outer bar of each harrow-section, and substituting short links 18 for the diverging rods 14 and connecting the central eye of the draft-bar to the clevises of the harrow-section, it will be seen that said sections will be diverged at their rear ends and converged toward their front ends, so that their teeth are thrown out of line with each other and the device as a whole is adapted for ordinary harrowing.

It will be seen that the operation of changing the harrow from an ordinary drag-harrow to a corn-cultivating harrow is very simple and the change quickly accomplished, it simply requiring the removal of the links and the reconnection of the same with other points of the harrow, so as to change the line of draft.

It will be seen that as the teeth are loosely swiveled in the harrow-bars they will turn so as to face the line of draft, regardless of how often the same is changed, and that they will readily deflect or swing to one side should they come in contact with a stone or other obstacle sufficiently solid or large to break

them, so that the general efficiency of the harrow is preserved against such common accidents.

In order to insert the teeth the bent heads are inserted upwardly through the lower perforations of the bar, after which the teeth are swung to a right angle and rotated until their key-shaped heads are in line with the key-shaped perforations at the upper side of the bars, through which perforations the teeth are pushed, after which they are given a partial rotation, so as to throw the heads and perforations out of alignment, and such position they occupy while in operation and hence cannot be accidentally withdrawn. The teeth being bayonet-shaped, hence have the shoulders 19 between their ends, and upon these latter rest the harrow-bars.

If desired, the rear ends of the harrow-sections may be provided with a pair of handles, by which the harrows may be guided in crooked rows and for the purpose of harrowing around a corn-hill that may be out of alignment.

It is obvious that the manner of fitting the teeth in place may be used when the harrow-bars are made solid.

Having described my invention, what I claim is—

1. The combination, with the tubular harrow-bar having diametrically and vertically opposite perforations, the upper ones of which are key-hole shaped, of the bayonet-shaped teeth passed through the perforations and having a head of key-hole shape laterally bent and loosely fitting the key-hole-shaped perforations, substantially as specified.

2. The combination, with the opposite harrow-sections, the swiveled bracket loosely mounted in the inner bars and in front of the center of each section, and the transverse connecting-bar pivoted to the ends of the swiveled brackets, of the draft-bar having a central and end eyes, rods connecting the central eye with the transverse bar, and links connecting the outer ends of the draft-bar with the forwardly-extended ends of intermediate harrow-bars of each section, substantially as specified.

3. The combination, with the opposite harrow-sections, the swiveled brackets mounted near the front ends of the inner bars of the sections, and the cross-bar pivoted in the brackets and serving to connect the two sections, of a transverse draft-bar located in front of the sections, links connecting the ends of the same removably with eyes and the front ends of the outer bars of the sections, and links removably connecting the central eye of the draft-bar with clevises located at the forward extended ends of bars adjacent to the inner bar of each section, substantially as specified.

4. The harrow-bar having key-hole-shaped perforations, combined with the teeth passed through the perforations and having a key-hole-shaped head laterally bent and loosely fitting the key-hole-shaped perforations, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

CHARLES HENRY KADING.

Witnesses:
FRANK R. KERR,
O. C. MURPHY.