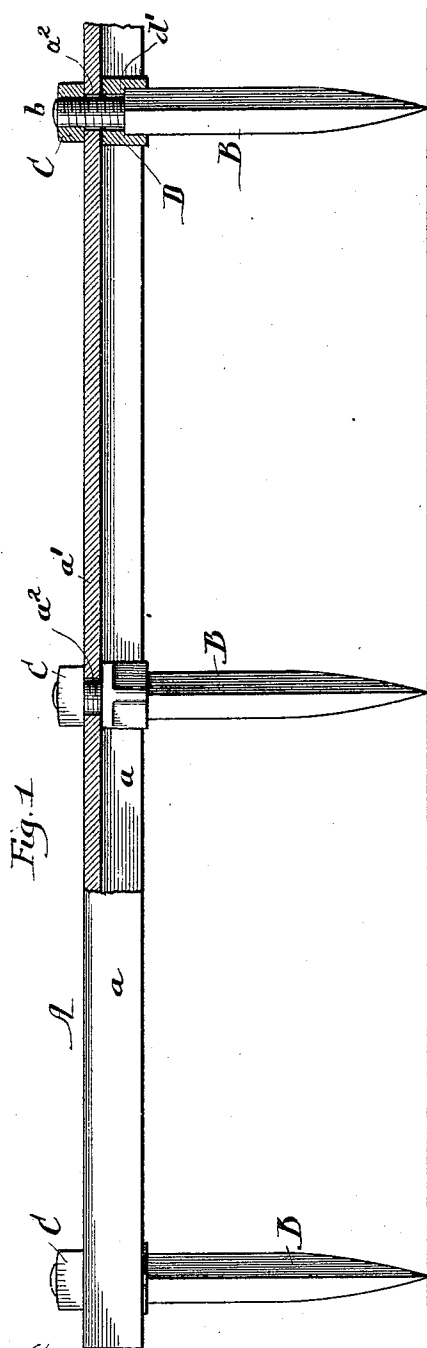


(No Model.)

W. SOBEY.
HARROW.

No. 471,032.

Patented Mar. 15, 1892.



Witnesses:
Fred Garlach
J. B. Carpenter

Fig. 3.



Fig. 2.

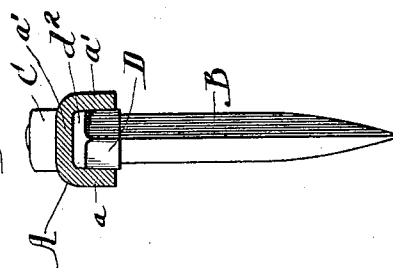


Fig. 5.

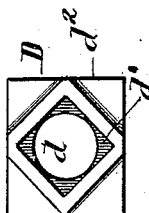
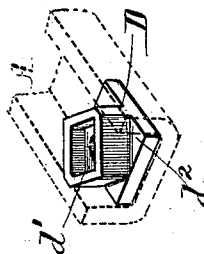


Fig. 4.



Inventor:
Wm. Soby
By Prince & Fisher
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM SOBEY, OF RACINE, WISCONSIN, ASSIGNOR TO THE J. I. CASE PLOW WORKS, OF SAME PLACE.

HARROW.

SPECIFICATION forming part of Letters Patent No. 471,032, dated March 15, 1892.

Application filed October 21, 1891. Serial No. 409,367. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SOBEY, a citizen of the United States, residing at Racine, in the county of Racine, State of Wisconsin, have invented certain new and useful Improvements in Harrows, 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.

This invention has relation to that class of harrows in which metal bars are employed as a means for sustaining the harrow-teeth.

The object of the invention is to provide improved means whereby the teeth may be readily connected with the tooth-bar in such manner that they can be conveniently shifted from time to time, so that as one angle of the tooth becomes rounded by wear and thus loses its cutting qualities the position of the tooth can be changed so as to bring another angle of the tooth into the line of draft, and so on until each corner of the tooth has in turn been used, by which time the corner first used will be found to have been more or less sharpened by the wear during the exposure of the other corners and can be again presented to the line of draft.

The invention consists in the novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly defined in the claim at the end of this specification.

Figure 1 is a view in front elevation of a portion of the tooth-bar, showing my improved means of connecting the harrow-teeth therewith, parts being shown in vertical section. Fig. 2 is a view in vertical transverse section through the tooth-bar, the connected parts being shown in elevation. Fig. 3 is a detail perspective view of the harrow-tooth. Fig. 4 is an inverted perspective view of the clamp, its position with respect to the tooth-bar being shown by dotted lines. Fig. 5 is an inverted plan view of the clamp.

The tooth bar or beam A is of channel form or U shape in cross-section and is preferably of iron or steel, the hollow portion or channel of this bar facing downward. The sides *a* of the tooth-bar are connected by the back *a'*, which is formed with suitable perforations *a²*, corresponding in number with the harrow-

teeth B, that are to be employed. The harrow-teeth B are preferably of squared shape and are set in such position with respect to the bar A that the corners of the teeth shall be presented to the line of draft. The upper portion of each harrow-tooth is provided with a shank *b*, preferably screw-threaded, to enter a retaining-nut C, by means of which it is held within the clamp D and in proper position upon the tooth bar or beam A. The clamp D is provided with the perforation *d* to admit the upper shank or stem of the harrow-tooth, and is furnished also with an angular socket *d'* to receive the upper squared end of the tooth. The clamp D is flanged or expanded, preferably as at *d²*, to afford a firm bearing against the sides *a* of the tooth-bar A. The clamp D sits within and is inclosed by the sides of the tooth-bar *a*, the purpose of this arrangement being to enable the clamp not only to firmly engage with the sides of the tooth-bar, but also to be guarded and protected thereby, and by thus inclosing the clamp between the sides of the tooth-bar the clamp-plate is protected from wear and injury incident to the use of the harrow.

From the foregoing description it will be seen that when the harrow-tooth B has had its threaded upper end inserted through the clamp D and through the back *a'* of the tooth-bar A this threaded end of the tooth will be engaged by the nut C, which will firmly hold the squared upper end of the tooth-bar within the socket of the clamp and will retain the clamp and the tooth in proper position with respect to the tooth-bar. When it is desired to change the position of the teeth after the angles have become worn or rounded by use, it is only necessary to loosen the nut C and then withdraw the tooth B from the clamp, so as to free the squared portion of the tooth from the seat or socket, after which the tooth can be turned a quarter-revolution, so as to present a new angle of the tooth to the line of draft, after which the nut C will be again set to hold the tooth in its new position with respect to the bar A. This shifting of the tooth B may be done from time to time until each angle of the tooth has been in turn presented to the line of draft, by which time the angle first presented will be found to have

become sufficiently sharpened by the wear in opposite directions to enable it to be again used. By my improved construction also new harrow-teeth can be readily inserted to replace such as may have become worn or broken by long and severe usage. Moreover, by inclosing the clamp between the sides *a* of the tooth-bar not only is the clamp in its new position guarded against wear, but by this means the upper portion of the harrow-teeth may be made considerably sharper than would be necessary if the clamp merely bore against the lower edges of the channel-bar, and a corresponding saving in cost of manufacture is thereby effected.

It is obvious that instead of employing the nut C to hold the harrow tooth and clamp in position with respect to the tooth-bar A a pin might be employed for this purpose, this pin entering a suitable hole in the upper end of the tooth above the tooth-bar, although I regard the construction shown as preferable.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

In a harrow, the combination, with the channel or U-like bar having two parallel sides and a back permanently connected thereto, of the flanged clamp-plate having an angular socket-seat, said plate being inclosed by said channel-bar and supported at the back thereof with its flanged edges bearing against the inner faces only of the bar sides, the angular tooth resting within the socket-seat of said clamp-plate and having a reduced shank passing through said plate and the back of the channel-bar, and a fastener engaging said back and the tooth terminal to hold the parts together and to retain the clamp-plate inclosed within the channel-bar, substantially as described.

WILLIAM SOBEY. [L. S.]

Witnesses:

HENRY MITCHELL WALLS,
ABRAHAM HUTCHINS HARRIS.