(Model.)

K. THARRALDSON.

HARROW.

No. 263,994. Patented Sept. 5, 1882.

Fig. 1

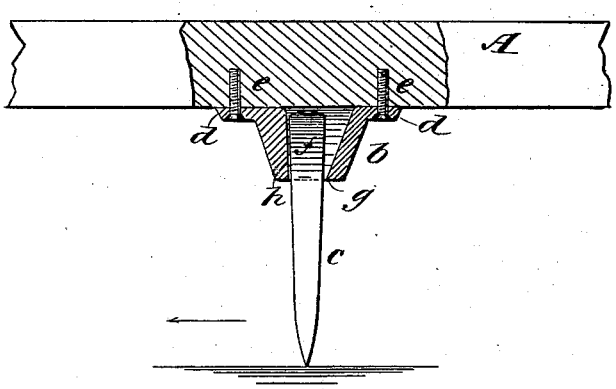


Fig. 2.

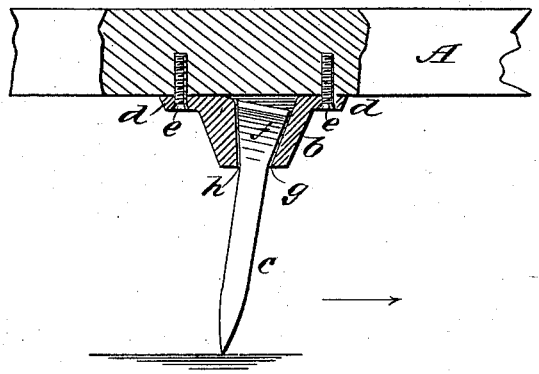
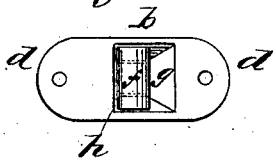


Fig. 3



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KNUDE THARRALDSON, OF IDA GROVE, IOWA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 263,994, dated September 5, 1882.

Application filed June 26, 1882. (Model.)

To all whom it may concern:

Be it known that I, KNUDE THARRALDSON, of Ida Grove, in the county of Ida and State of Iowa, have invented certain new and useful Improvements in Harrows, of which the following is a full, clear, and exact description.

My improvement in harrows consists of the attachment of the teeth to the harrow-bars by means of cast-metal sockets and heads on the teeth, the said sockets being bolted on the under side of the bars of the harrow and holding the teeth by their heads on the sockets, whereby the boring of the bars is avoided, the expensive material of the teeth is economized, and by contrivance of the shapes of the sockets and the heads of the teeth the teeth may be set in different positions for different kinds of work, all as hereinafter fully described.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of one of the bars of a harrow, also of my improved socket device for the connection of a harrow-tooth, and a side elevation of the tooth. Fig. 2 is a similar view of the same devices, the tooth being turned and set in a different position; and Fig. 3 is a top view of the socket.

A represents one of the beams of a harrow, *b* the socket for the connection of a harrow-tooth, and *c* a tooth connected to the beam by the socket. The socket is a simple casting, with flanges *d* for connection to the under side of the beam A by the screws *e*. The cavity for the head *f* of the tooth is square at the upper side of the socket; but the opening at the lower side is narrowed to the thickness of the body of the tooth below the head by the sloping wall *g* of the socket, while the opposite wall, *h*, thereof is vertical. The head *f* of the tooth is widened in one direction upward from its junction with the body of the tooth to the width of the top of the socket-cavity, so that by placing the tooth as represented in Fig. 1 it will assume a vertical position when moving in the direction of the arrow, and by placing it as in Fig. 2 the point will incline in the direction of the arrow of Fig. 1 and reversely to the arrow of Fig. 2. If the direction of the harrow be reversed, with the tooth arranged as in Fig. 1, the slant toward the arrow of Fig. 1 will be still greater than in Fig. 2. Thus it will be seen that, besides the economy of metal of which the teeth are formed and the better mode of attaching the teeth, the plan enables the teeth to be shifted into several different positions.

The sockets are to be fastened with screws, to be detached readily for shifting the teeth, which is done by taking them out of the sockets, turning them, and replacing them in said sockets.

I am aware that it is old, broadly, to employ a tooth having a wedge affixed to one side of its upper end to enable it to be arranged in a perpendicular or an inclined position, as is also the employment of a tooth having a head formed in two parts, having each an inclined and a horizontal surface of contact to permit a like adjustment of the tooth.

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

1. The metal socket *b*, having beveled side *g* and vertical side *h*, in combination with a harrow-tooth, *c*, having head *f*, with two sides corresponding in size and shape to the space between said sides *g* and *h*, substantially as described.

2. The metal socket *b*, having beveled side *g* and vertical side *h*, in combination with a harrow-tooth, *c*, having head *f*, with two sides corresponding in size and shape to the space between said sides *g h*, and other sides in conformity with the sides of the body of the tooth, substantially as described.

3. The combination, with the bar A and the tooth *c* of a harrow, of a metal socket, *b*, for attaching said tooth to the beam, the said socket and the head of the tooth being constructed and relatively arranged with respect to their size and shape for shifting the positions or inclinations of the tooth by shifting it around in said socket from side to side, substantially as described.

KNUDE THARRALDSON.

Witnesses:

C. W. ROLLINS,

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