

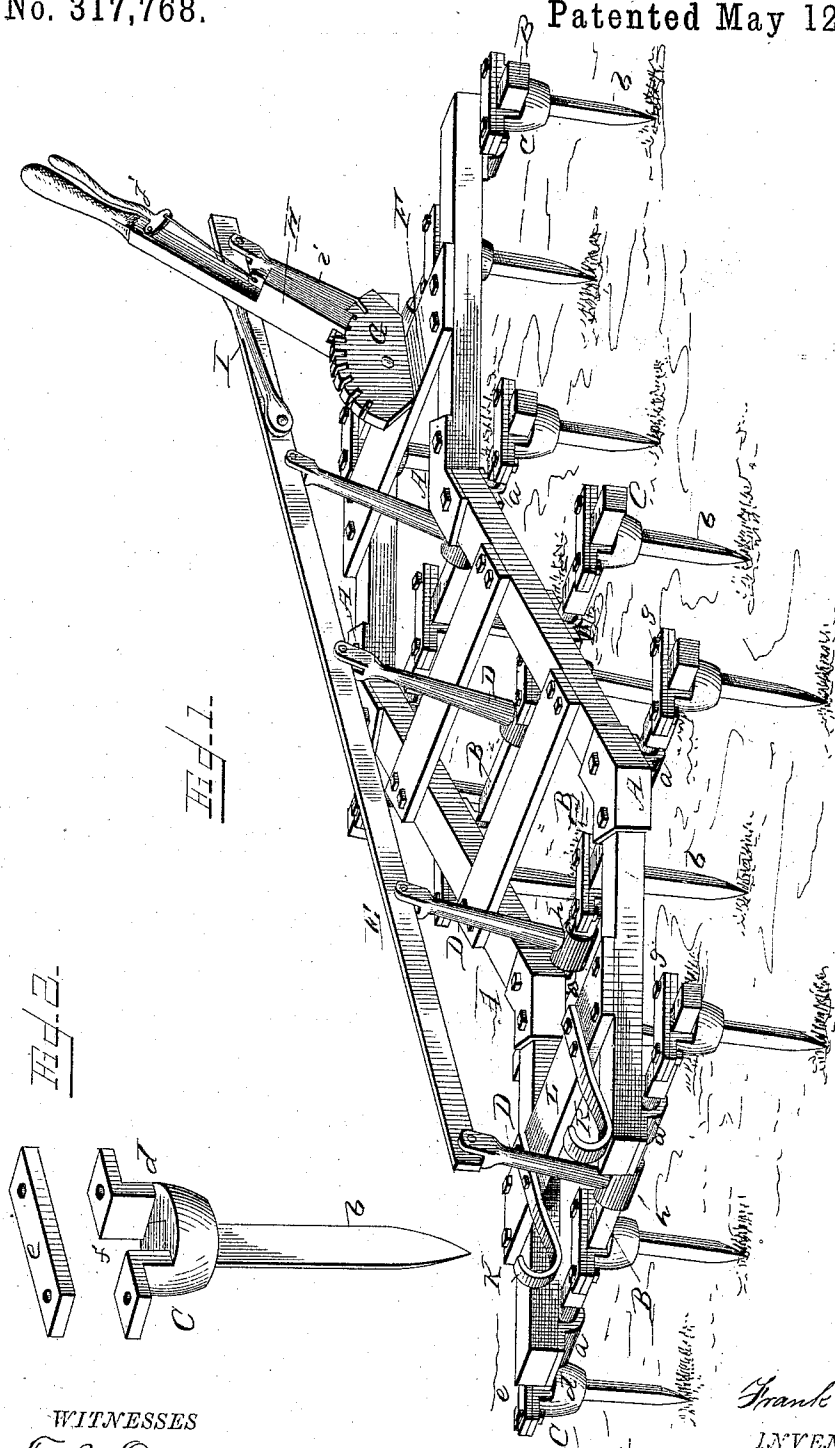
(No Model.)

F. M. HAKES.

HARROW.

No. 317,768.

Patented May 12, 1885.



WITNESSES
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FRANK M. HAKES, OF MARTELLE, IOWA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 317,768, dated May 12, 1885.

Application filed July 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. HAKES, a citizen of the United States of America, residing at Martelle, in the county of Jones and State of Iowa, have invented certain new and useful Improvements in Harrows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention is a harrow; and it consists in the improvements hereinafter described and set forth, whereby an efficient and durable harrow structure is produced in which the position of the teeth may be readily changed by the operator from a vertical to an inclined position.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view of an improved harrow constructed in accordance with my invention. Fig. 2 is a detail perspective view of one of the harrow-teeth sockets.

The supporting-frame of the harrow consists of a series of bars which are connected together so as to form an obtuse angle, and thereby constitute a zigzag frame. The joints of these bars are re-enforced and connected by means of angle-plates A. Upon the under side of said bars, at the joints and about midway thereof, are secured a series of hangers, *a*, in which bear the cylindrical portions of a series of parallel transverse shafts, B. Each shaft B has secured thereto, at the center and at each end thereof, a casting, C, which forms the socket for the upper end of one of the harrow-teeth *b*. This casting C is preferably of the form shown in the detail view, Fig. 2, and consists of the lower socketed portion, *d*, and upper clamp-plate, *e*. The portion *d* has a square recess, in which is clamped the upper end of the harrow-tooth *b*. A second recess or notch, *f*, formed centrally in the upper portion of the said section *d*, enables the same to embrace one of the bars B, and is secured

thereto by means of the upper clamp-plate, *e*, through which plate and section *d* securing-bolts *g* pass.

An arm, D, is provided at its lower end with an enlarged portion, *h*, in which is formed a square opening, by which the said enlarged portion embraces one of the shafts B, so as to move therewith when the same is oscillated in its bearings, and the upper end of said arm D is bifurcated to receive a rod, E, which passes centrally and longitudinally along the harrow.

A platform, F, is secured transversely at one end of the harrow, and the said platform has centrally secured thereon a segmental rack-plate, G, to which is pivoted the lower end of a lever, H, carrying a spring-catch, *i*, adapted to engage the teeth of the segmental plate G, and be disengaged therefrom by means of a bell-crank, *j*, pivoted on the upper side of said lever. The said lever is connected by a link, I, to the longitudinal shaft E.

From the foregoing it will be apparent that the teeth have a firm and rigid bearing in the casting C, and that the operator can manipulate the lever from the platform F to simultaneously change all the teeth from an inclined to a vertical position, or vice versa. Moreover, the castings C can be readily adjusted transversely on their shafts B.

Draft-hooks K are secured on a platform, L, located transversely at the front of the harrow.

I claim—

The combination, in a harrow constructed and operating substantially as described, of the casting constituting the harrow-socket, and consisting of the section *d*, provided with the notch *f* and independent plate *e*, and an independent harrow-tooth having its end fitting in said socket, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK M. HAKES.

Witnesses:

GEORGE W. MELLE,
JOHN REMINGTON.