

(No Model.)

H. D. BABCOCK & DE VALOIS ST. JOHN.  
HARROW.

No. 551,883.

Patented Dec. 24, 1895.

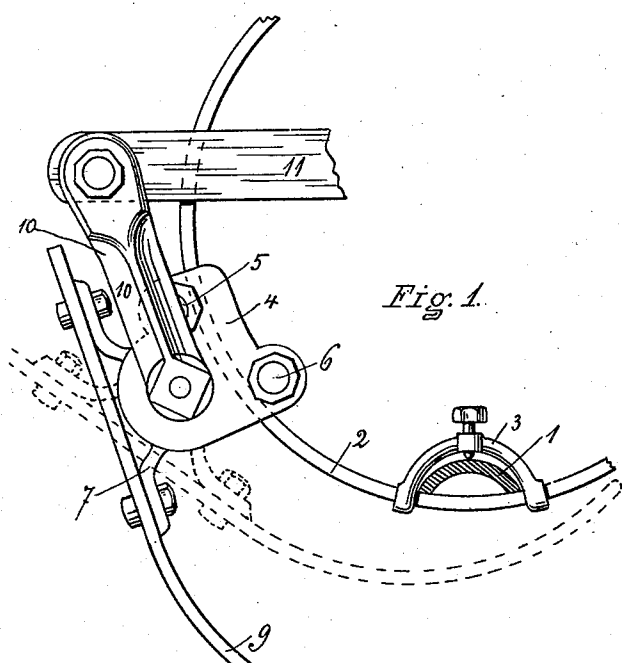


Fig. 1.

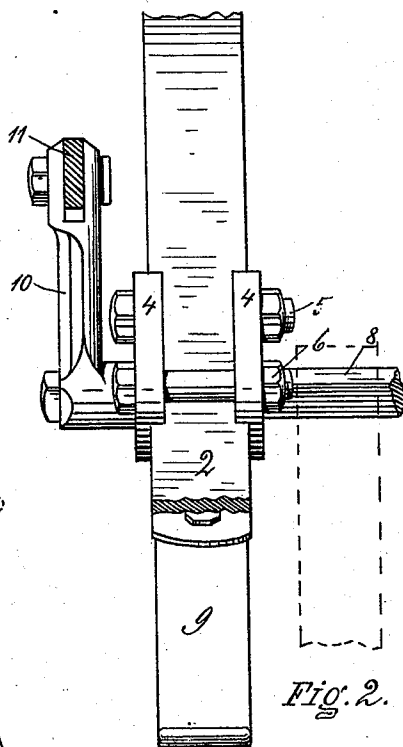


Fig. 2.

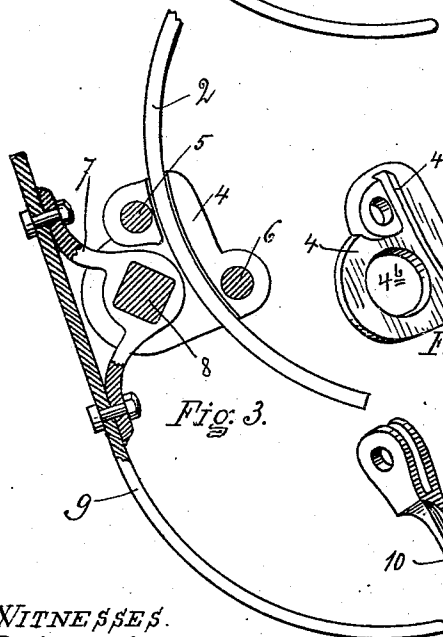


Fig. 3.

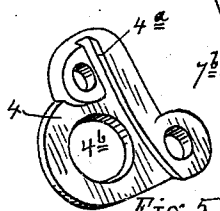


Fig. 5.

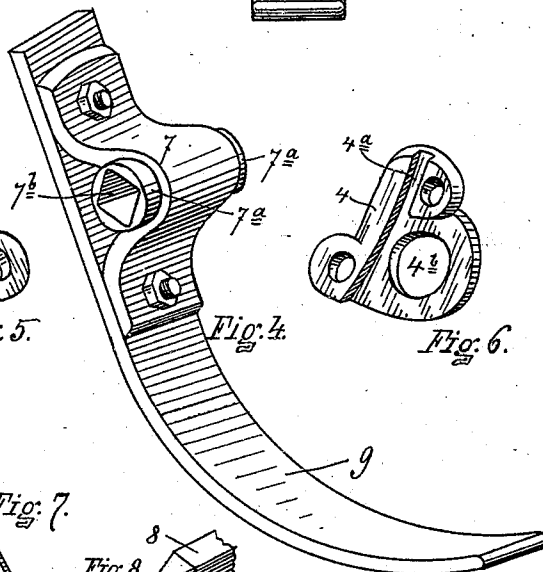


Fig. 4.

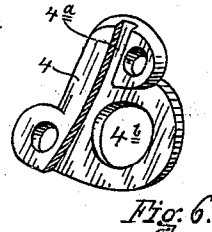


Fig. 6.

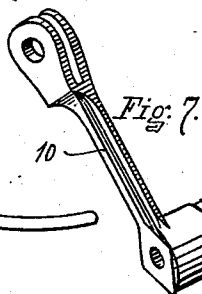


Fig. 7.

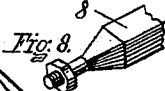


Fig. 8.

WITNESSES.  
Rich. A. George.  
M. A. Keller.

INVENTOR'S  
HENRY D. BABCOCK  
DE VALOIS ST. JOHN.  
By Kirley, Robinson & Love  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

HENRY D. BABCOCK AND DE VALOIS ST. JOHN, OF LEONARDSVILLE, ASSIGNORS TO THE STANDARD HARROW COMPANY, OF UTICA, NEW YORK.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 551,883, dated December 24, 1895.

Application filed December 6, 1894. Serial No. 531,071. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY D. BABCOCK and DE VALOIS ST. JOHN, of Leonardsville, in the county of Madison and State of New York, have invented certain new and useful Improvements in Harrows; and we do hereby declare that the following is a full, clear, and exact description of the invention, which 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 the numerals of reference marked thereon, which form part of this specification.

Our invention relates to improvements in harrows.

In the drawings which accompany and form a part of this specification and in which similar figures of reference refer to corresponding parts in the several views, Figure 1 shows a portion of a curved spring harrow-tooth secured to a portion of a harrow-frame in connection with the adjusting mechanism which constitutes the improvements. Fig. 2 shows a rear view of a portion of a tooth in connection with the same adjusting mechanism. Fig. 3 shows details on the same plane as Fig. 1, partially in section. Fig. 4 shows the shoe and its mountings in detail. Figs. 5 and 6 show two clamping-holders. Fig. 7 shows the adjusting lever-arm. Fig. 8 shows the end of a connecting rocking shaft on which the lever-arm is secured.

Referring to the reference-figures, 1 indicates a harrow-frame bar, to which is secured the curved spring-tooth 2 by a set-screw clamp 3. On the tooth 2 are secured the clamping-pieces or shoe-hangers 4, held thereto by bolts 5 and 6 and provided with grooves and shoulders 4<sup>a</sup> for receiving and engaging the edges of the tooth. Between the clamping-pieces is placed the shoe-base 7, having hub or boss 7<sup>a</sup> on either end, which are received in the openings 4<sup>b</sup> of the clamping-pieces, so as to permit a free rocking movement of the shoe-base. The shoe-base is also provided with a square opening 7<sup>b</sup> for the reception of a rocking shaft 8, by means of which two or more shoes located in substantially the same line on the harrow-frame may be connected and

simultaneously operated. On the shoe-base 50 is secured the shoe 9, which is curved and is located in the same plane as the tooth and in front of the working point of the tooth. The shoe is held and operated by a lever-arm 10 secured on end of rocking bar 8 and thereby 55 connected with the shoe or shoes. To the arm are attached a connecting-bar 11, which may connect with other shoes, and an adjusting and holding mechanism.

In operation the shoe or shoes of the harrow 60 may be moved from the position shown in full lines in Fig. 1 to that shown in dotted lines in the same figure or any intermediate position, and running on the surface of the ground gage the depth of cut of the tooth or elevate 65 the frame so as to throw the tooth out of operation entirely. The shoe also acts as a guard for the tooth. The shoe 9 may be adjusted to the position shown in dotted lines in Fig. 2 on the bar 8.

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

1. The combination in a harrow of a frame, a curved spring-tooth, a shoe pivotally secured to the tooth, and adjusting and holding device attached to the shoe, substantially as set forth.

2. The combination in a harrow of a frame, a curved spring-tooth secured to the frame, a shoe-holder secured to the tooth at a point 80 removed from the frame, an adjustable shoe pivoted to the shoe-holder, and means for adjusting and securing the shoe in adjusted position, substantially as set forth.

3. The combination in a harrow of a frame, 85 a curved spring-tooth secured to the frame, shoe-hangers secured to the bows of the teeth, a rocking shaft in the hangers, a shoe on the shaft, and adjusting and holding mechanism, substantially as set forth.

In witness whereof we have affixed our signatures in presence of two witnesses.

HENRY D. BABCOCK.  
DE VALOIS ST. JOHN.

Witnesses:

E. WILLARD JONES,  
GEORGE C. CARTER.