

(No Model.)

A. J. HALSTEAD.
HARROW ATTACHMENT.

No. 452,784.

Patented May 26, 1891.

Fig. 1.

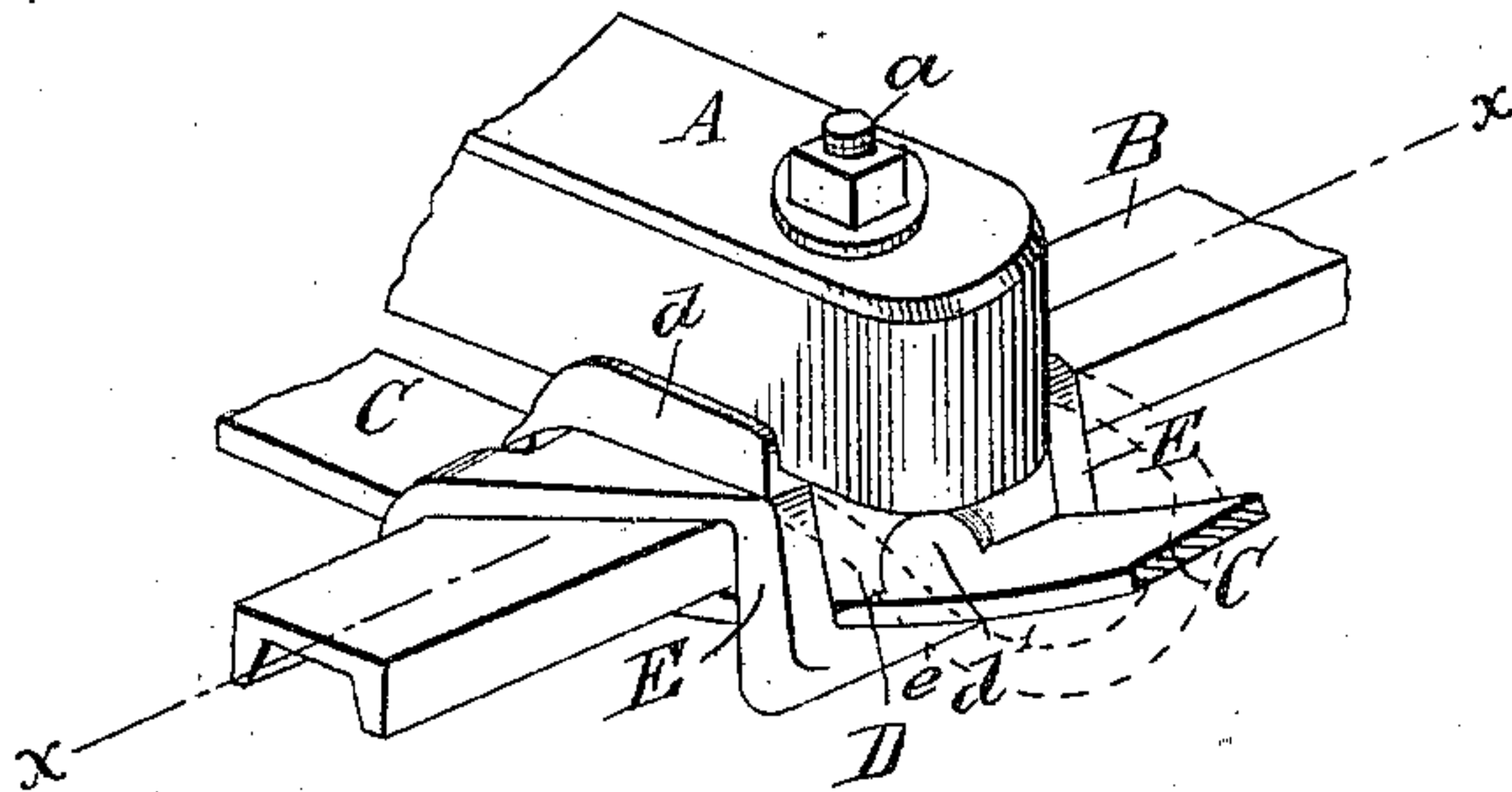


Fig. 2.

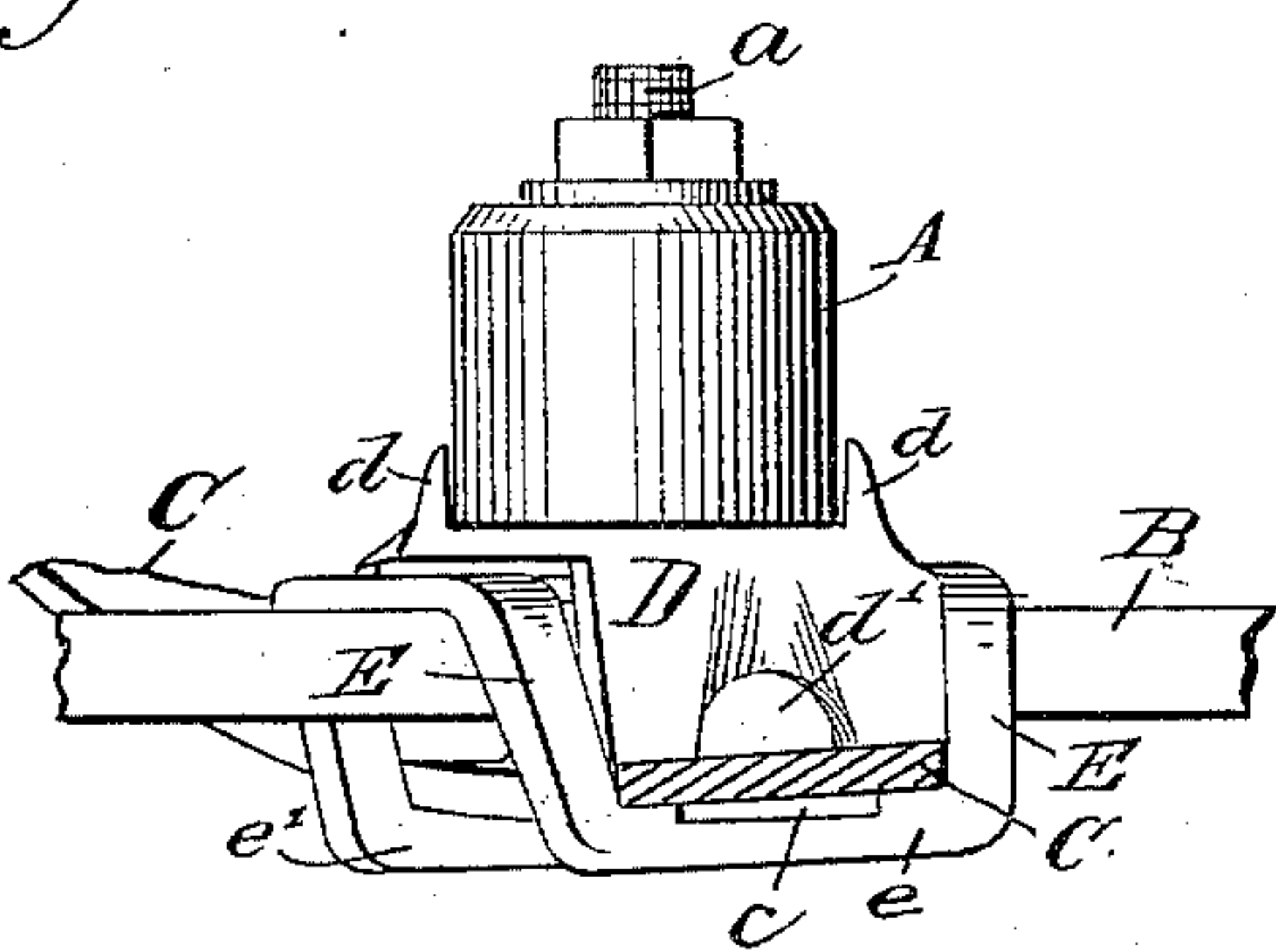


Fig. 3.

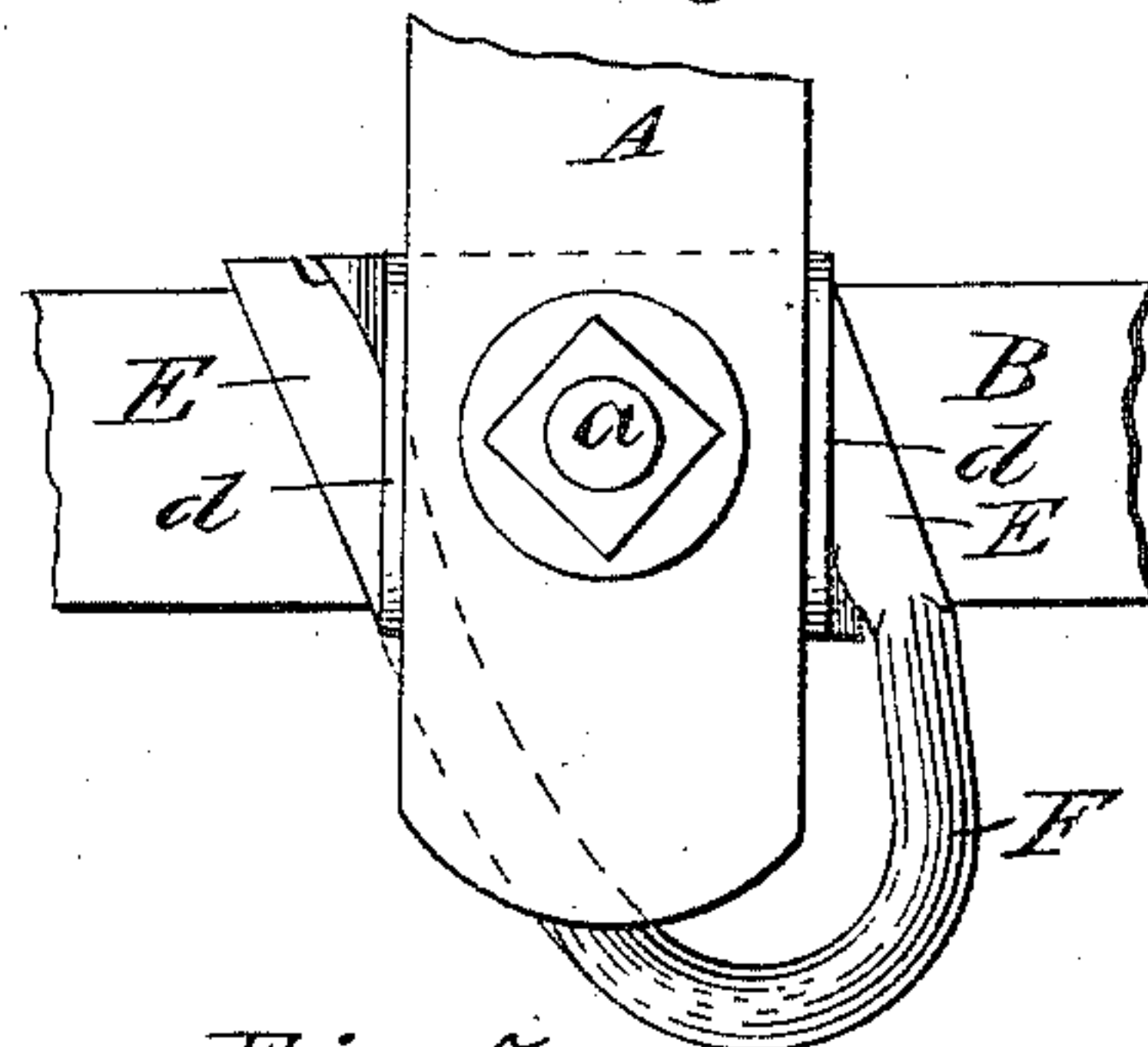


Fig. 4.

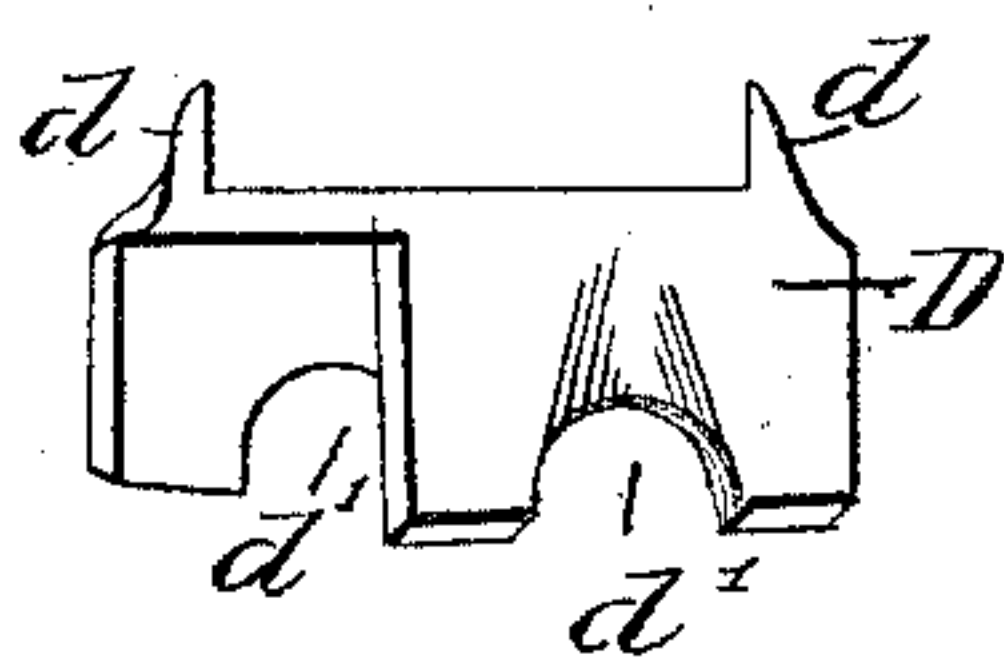
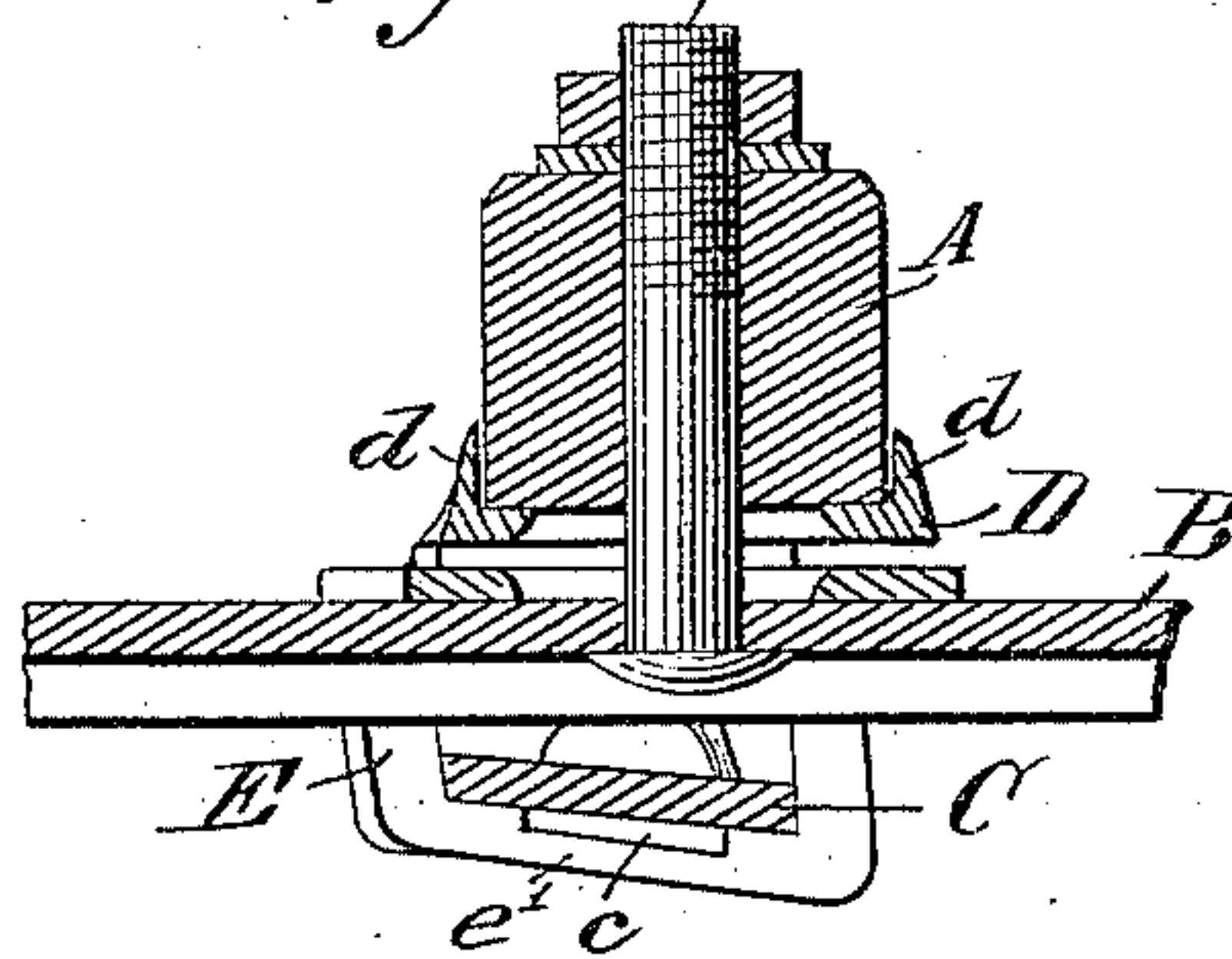


Fig. 5.



Witnesses:

Chas. H. Baker,
B. W. H. Brown.

Inventor.

Andrew J. Halstead
By his attorney
John M. Perkins.

UNITED STATES PATENT OFFICE.

ANDREW J. HALSTEAD, OF UTICA, NEW YORK.

HARROW ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 452,784, dated May 26, 1891.

Application filed April 2, 1889. Serial No. 305,794. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. HALSTEAD, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Harrows; and I 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.

My invention relates more particularly to improvements in spring-tooth harrows in which curved spring-teeth are used; and it consists of novel means of holding the spring-teeth rigidly and securely to the draft-bars of the harrow. A saddle is provided with a channel for firmly holding the cross-bar, and the depending sides or flanges of which saddle embrace a tooth-holding clamp of peculiar construction. The depending flanges of this saddle terminate in four feet, which form the seat for the spring-tooth. Placed below the saddle and the tooth-holding clamp is a channel-iron of ordinary construction, which forms the draft-bar. The spring-tooth is firmly held in place on its seat by the clamp and a bolt passing through the channel-iron, the saddle, and the cross-bar and secured tightly by a nut.

My invention will be more clearly illustrated by the accompanying drawings, a detailed description of which will now be given.

The same letters will be used to indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a top plan view. Fig. 4 is a front elevation of the saddle detached from the other parts of my invention. Fig. 5 is a longitudinal and vertical sectional view taken through the line *xx* of Fig. 1.

A is a cross-bar connecting the two parallel draft-bars on either side of my harrow.

B is the draft-bar on one side of my harrow, shown in the drawings to have been made of channeled iron in the usual way.

C is the curved spring harrow-tooth held firmly in place by the gripping-clamp E.

D is the saddle, which is provided on two sides at its upper part with elevated flanges *dd* for holding the cross-bar A firmly in position. A bolt *a* passes through a slot in the channeled draft-bar B and an opening in the

top of the saddle D, and after passing through the cross-bar A is secured by a nut, as shown in the drawings. It will be seen that two of the depending sides of the saddle D terminate in four feet, the lower part of the sides being cut away, as shown at *d' d'*.

The gripping tooth-clamp E is formed of one continuous piece of metal, the lower sides *e e'* of which are not in the same horizontal plane—that is to say, the bottom sides *e e'* each incline in a direction opposite to the other. It is evident that such must be the case in order to grip firmly the spring-tooth C. An opening *c* is shown in the gripping-clamp E just below the under side of the harrow-tooth C, where it rests on the clamp E.

The draft-ring F, elongated in shape, is attached to the clamp E, as shown in Fig. 3, at or near the knees of the clamp, where it embraces the channel or draft bar B. This elongated ring or loop F forms such an angle with the sides of the tooth-clamp E that it may pass around the tooth C, so that a draft-rod may be hooked into it.

The four feet of the saddle D form a seat for the tooth C. The cross-bar A is placed between the flanges *dd* of the saddle D. The tooth-gripping clamp E is then placed in conjunction therewith, so as to leave sufficient space in which to insert the tooth. The channel draft-bar B is then placed in position, so that the clamp E passes over its upper surface. The bolt *a* is then passed through the slot in the channel-iron, the saddle D, and the cross-bar A, as before described, and the nut is loosely screwed to the top of the bolt. The tooth C is now placed below the feet of the saddle D and above the bottom bars of the clamp E. The nut is now screwed on the bolt *a* as rigidly as can be done.

It is now evident that the various parts of my tooth-clamping devices are each contributing its share in holding firmly and rigidly the tooth C in its place.

Having now described my invention and the co-operation of its various parts, what I claim, and desire to secure by Letters Patent, is—

1. In a harrow having curved spring-teeth, a saddle D, provided with the flanges *dd*, terminating in four feet, said feet extending below the channel-iron B and forming a tooth-seat, in combination with the channel draft-

bar B and the gripping-clamp E, made of one continuous piece of metal, whose lower sides *e e'* are inclined in opposite directions in order to hug the tooth firmly to its seat, substantially as shown and described, and for the purposes herein set forth.

2. An elongated ring or loop fastened to the gripping-clamp E and forming an angle with the clamp E in order to pass around the tooth
10 C and furnish a loop for a draft-hook to be at-

tached thereto, substantially as shown and described, and for the purposes herein set forth.

In witness whereof I have hereunto set my hand this 13th day of February, 1889.

ANDREW J. HALSTEAD.

In presence of—

H. P. DENISON,
C. W. SMITH.