

(No Model.)

J. H. BARLEY.

HARROW.

No. 270,536.

Patented Jan. 9, 1883.

Fig. 1.

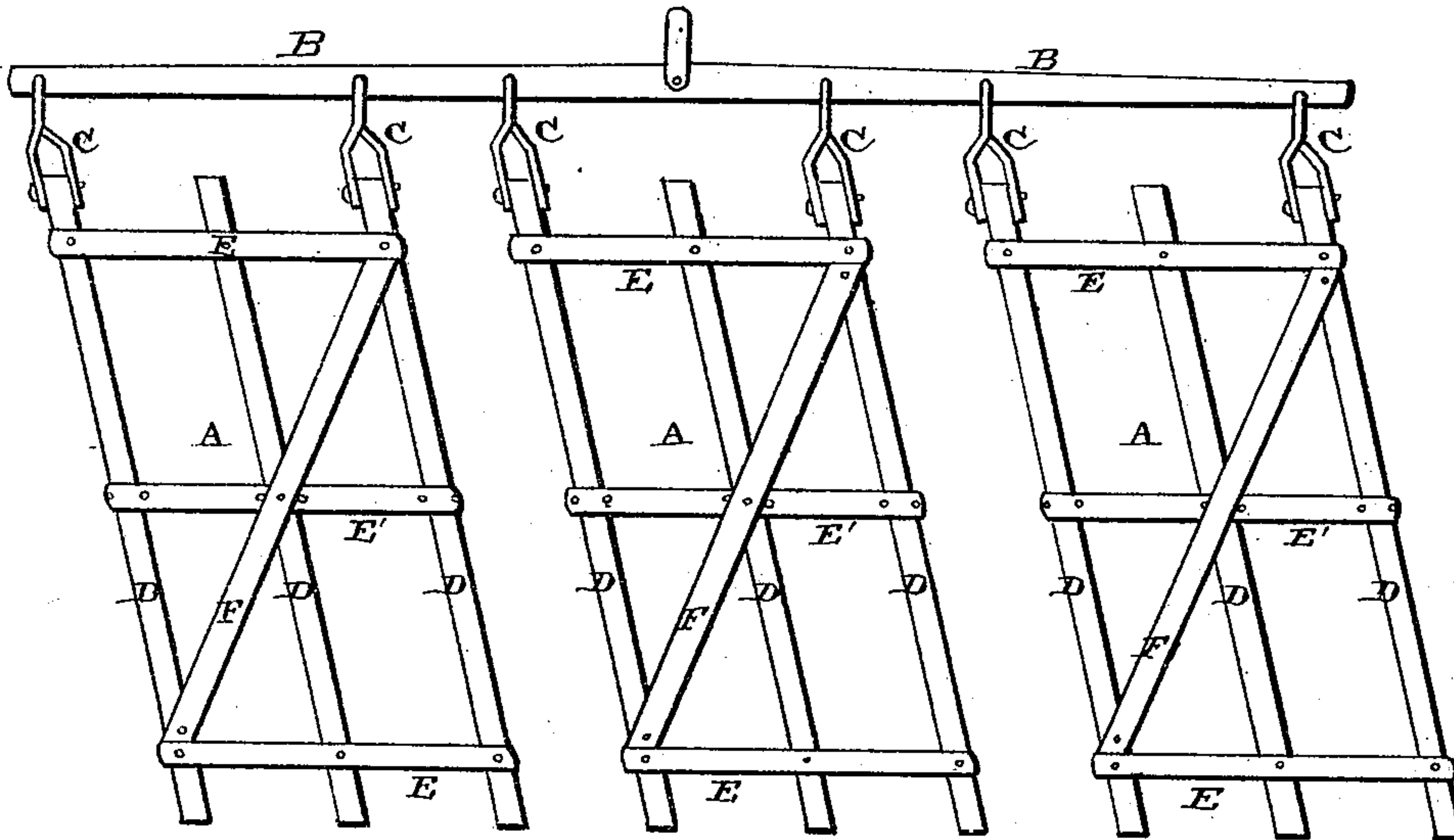


Fig. 2.

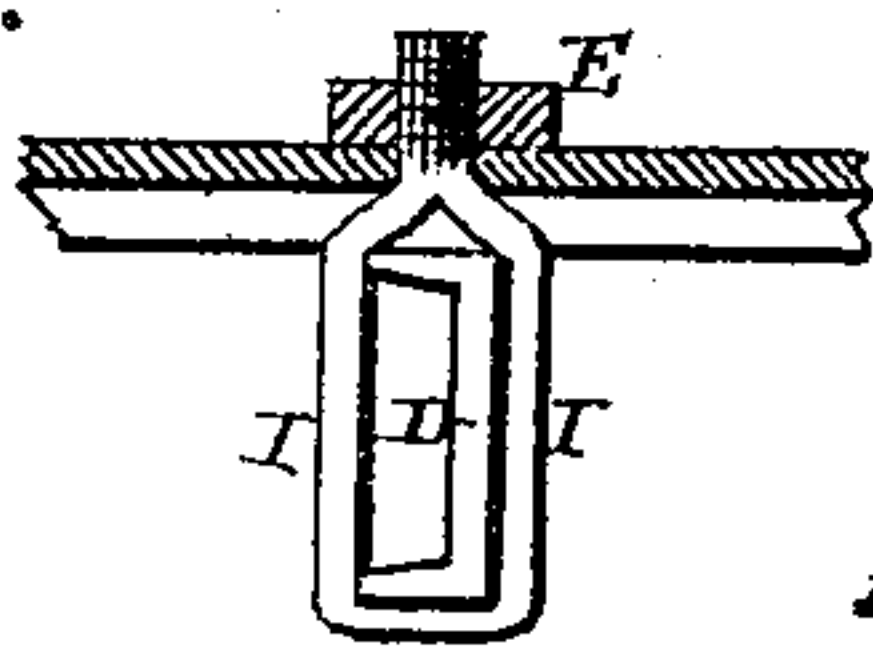


Fig. 3.

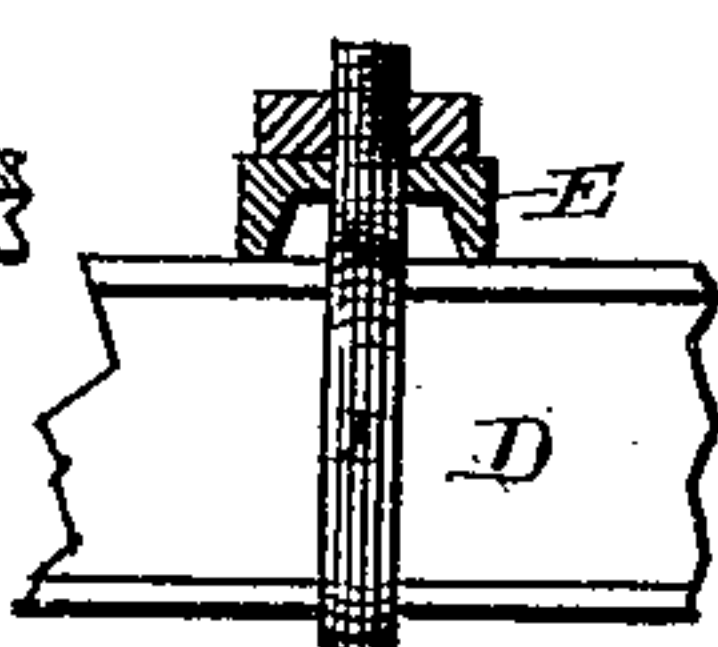


Fig. 4.

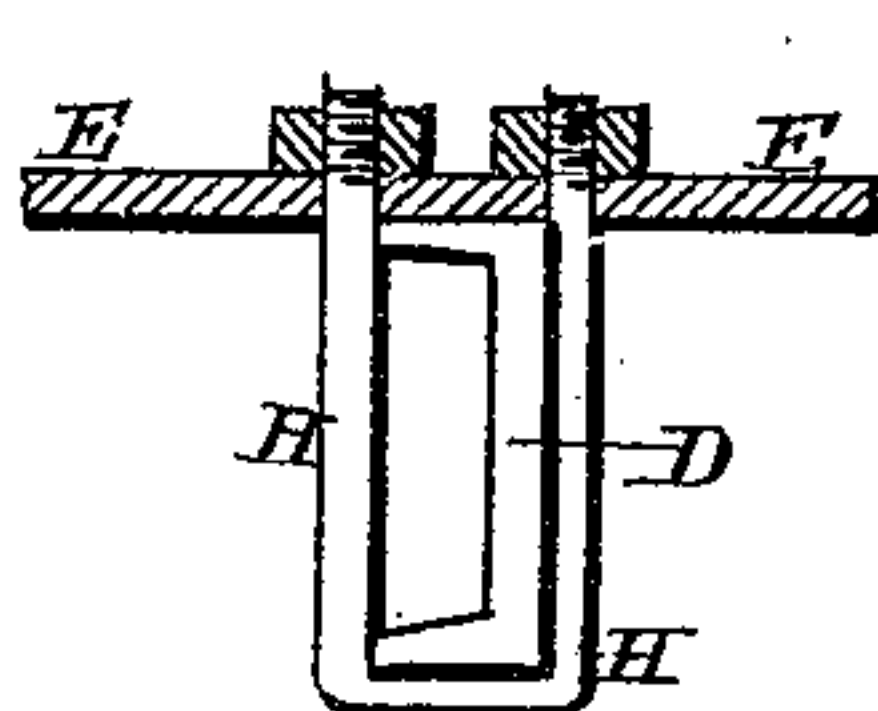


Fig. 5.

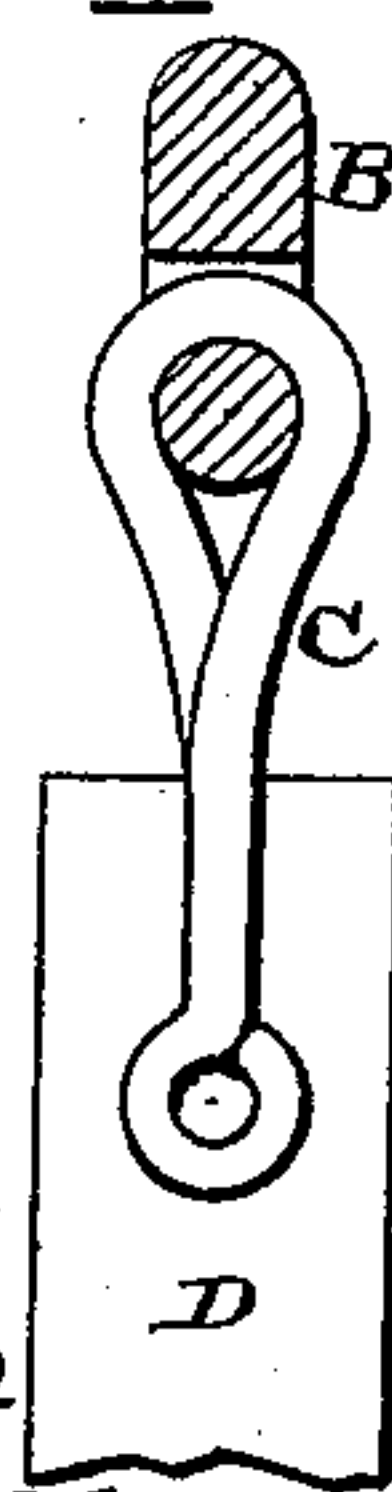


Fig. 6.

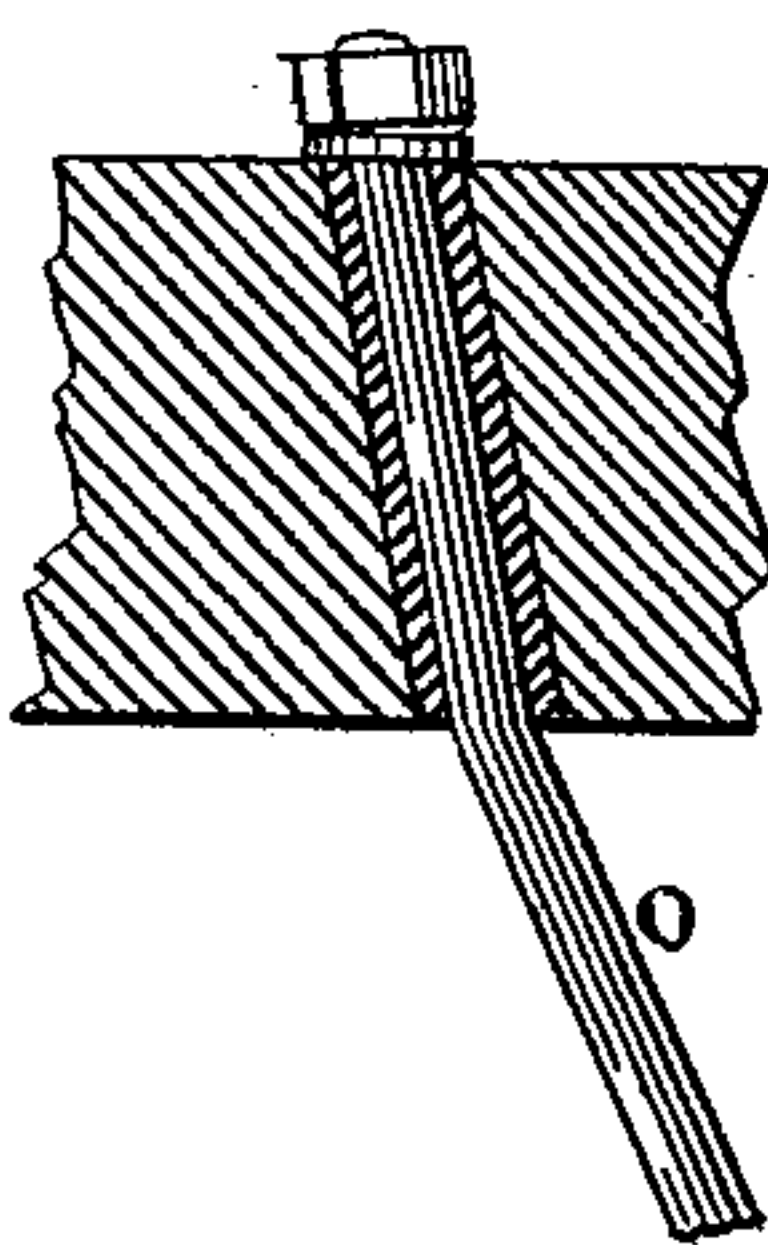


Fig. 7.

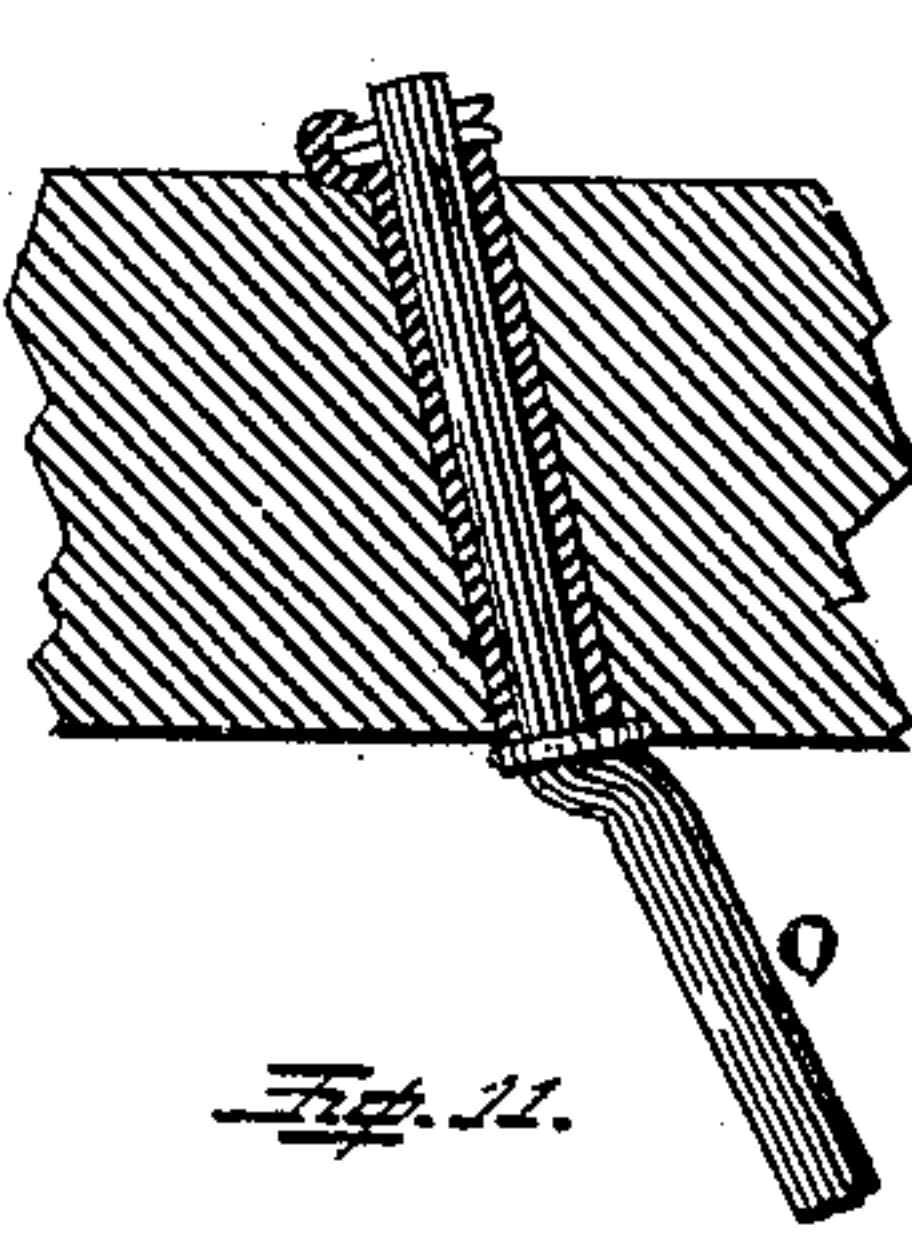


Fig. 8.

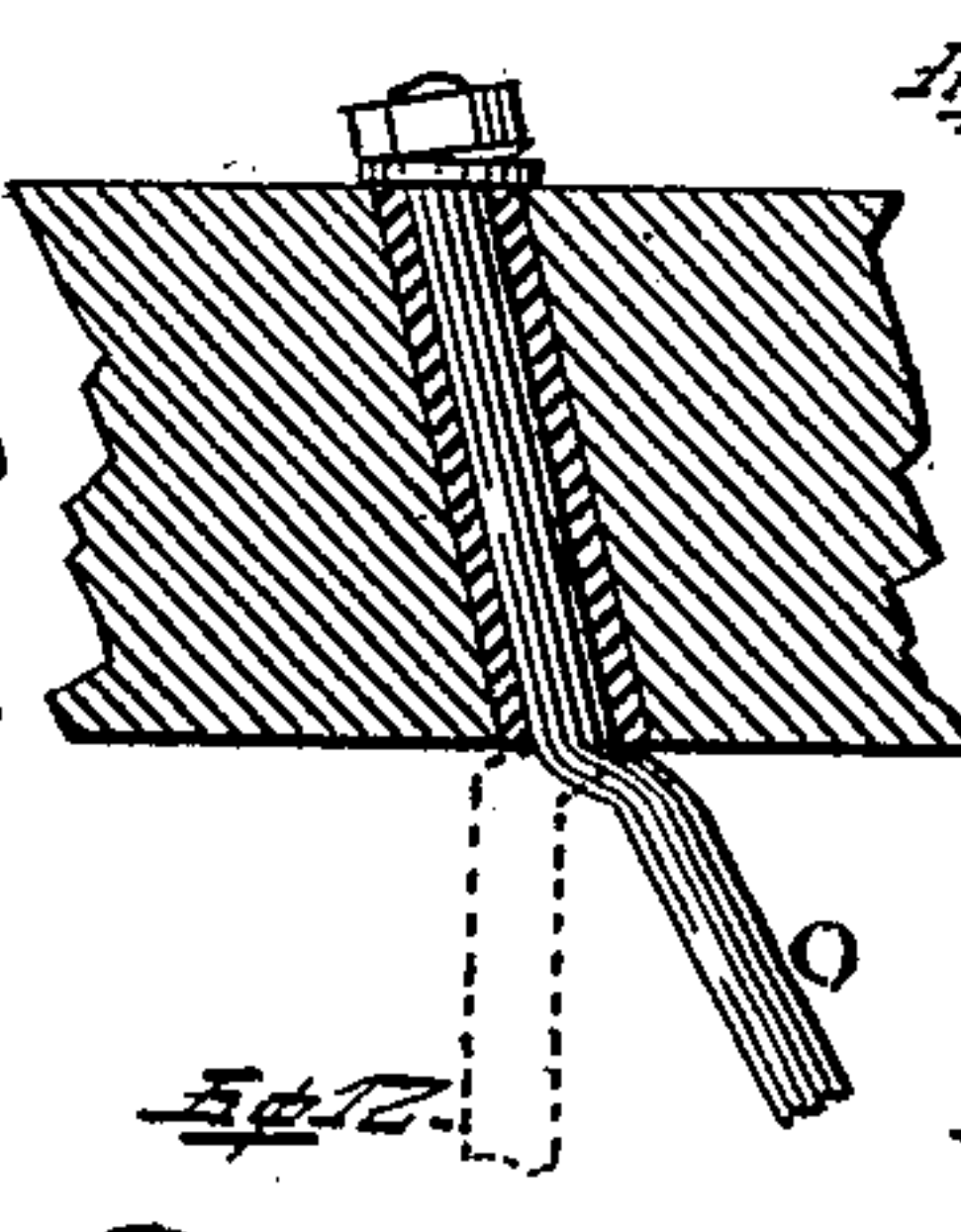


Fig. 9.

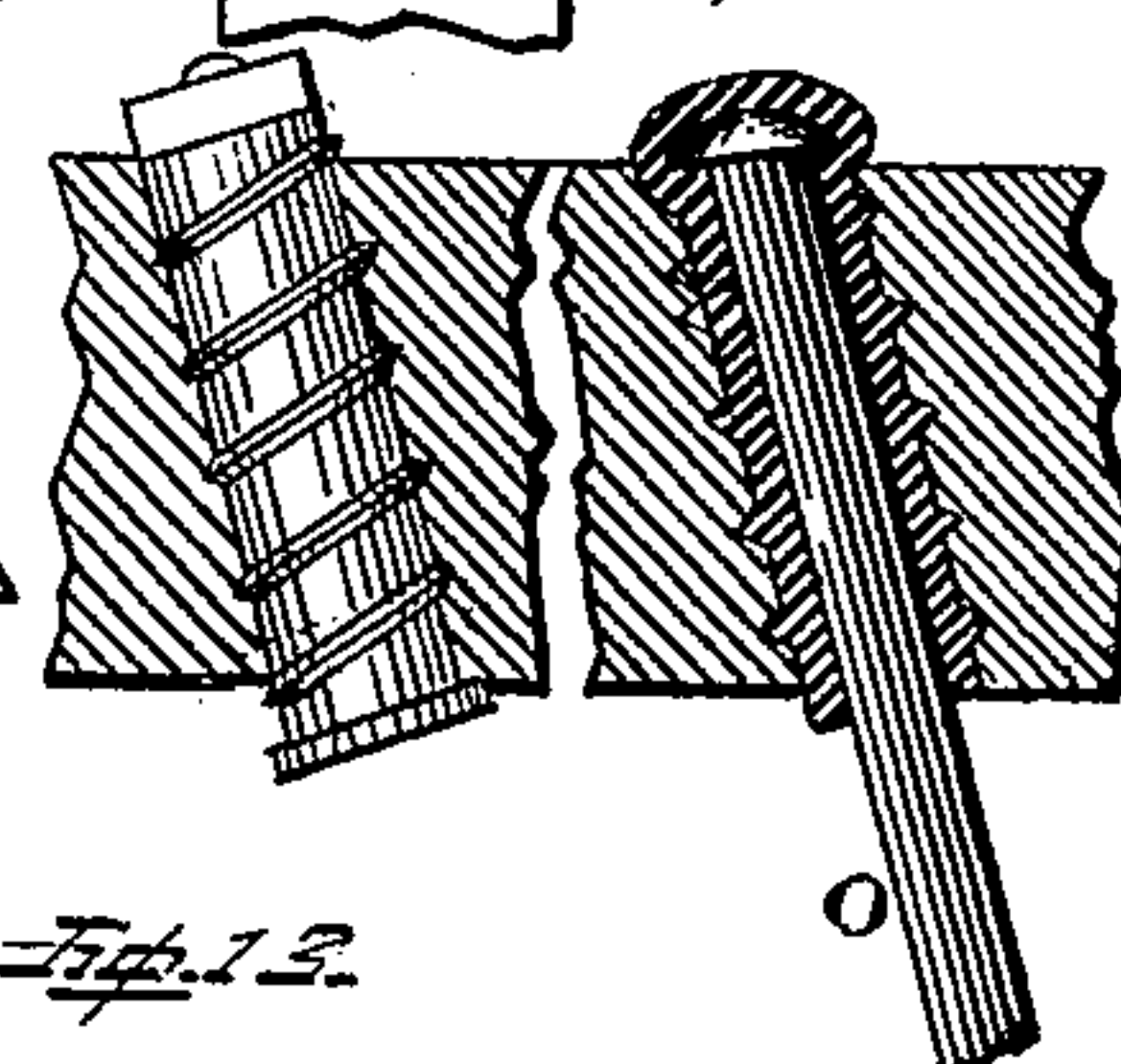


Fig. 10.

Fig. 11.

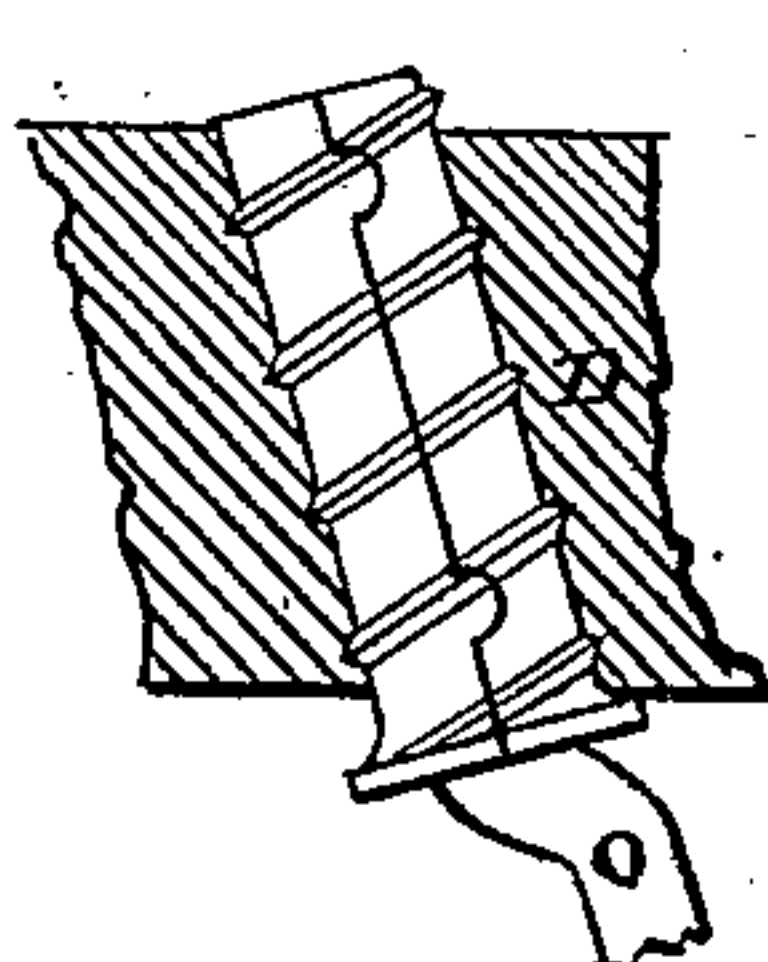


Fig. 12.

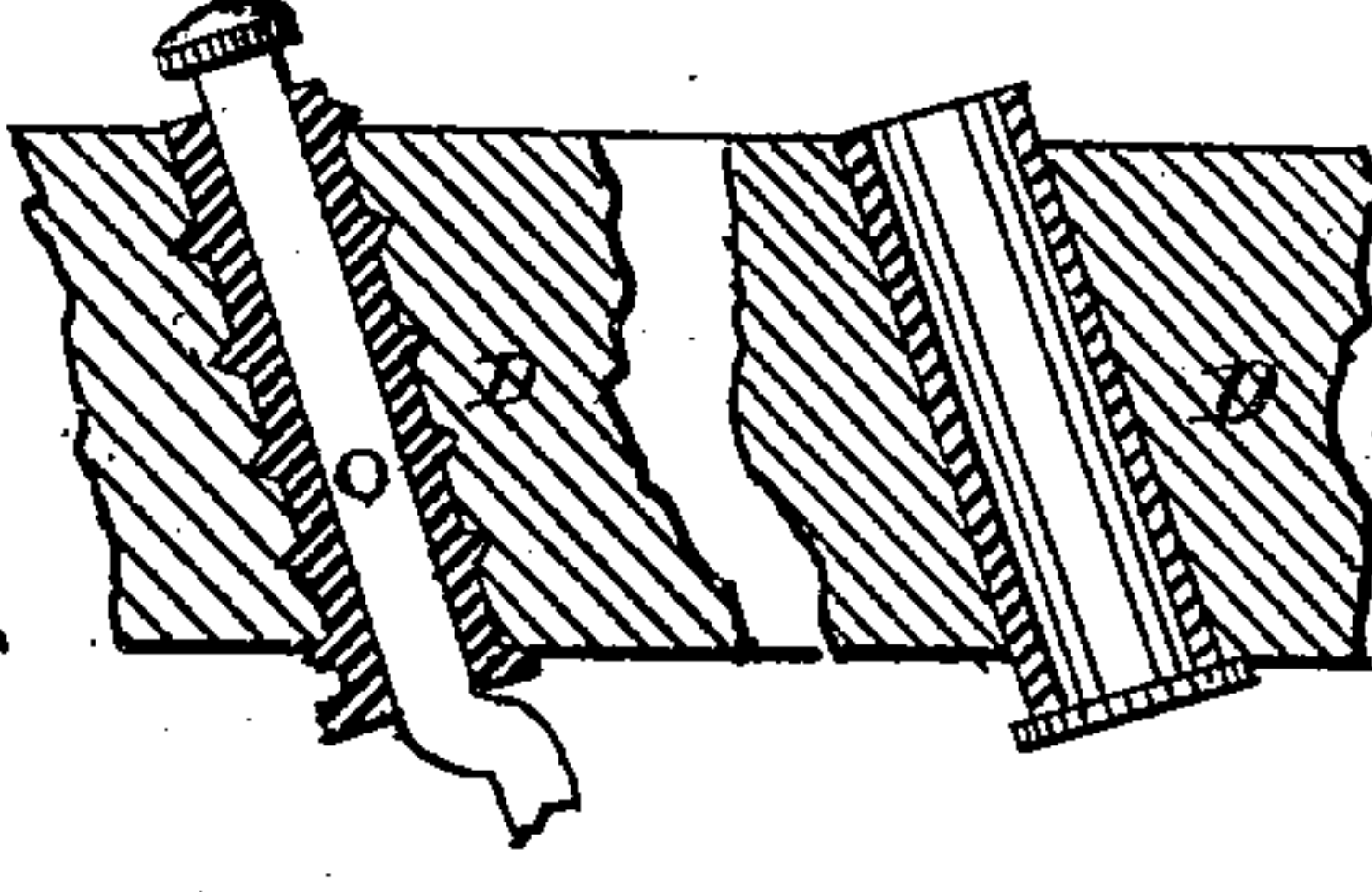


Fig. 13.

WITNESSES.

W. H. Mortimer,  
W. H. Kern.

Inventor  
Jas H. Barley  
per  
F. A. Lehmann,  
atty



# UNITED STATES PATENT OFFICE.

JAMES H. BARLEY, OF SEDALIA, MISSOURI.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 270,536, dated January 9, 1883.

Application filed January 23, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JAS. H. BARLEY, of Sedalia, in the county of Pettis and State of Missouri, 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in harrows; and it consists, first, in bent teeth, which are passed at a suitable angle through the beams, the flanges formed upon the beams or the plates which are secured to the top and bottom edges of the beams, and which teeth will stand at a suitable inclination when the harrow is drawn from one end, but which will assume a vertical position when the harrow is drawn from the other end, the teeth being prevented from coming out of the beam by means of nuts, locking-pins, or any other suitable devices, which are applied to their upper ends; second, in a bushing made in either one or two parts, and which is made screw-threaded, so that it can be screwed into the beam, and through which bushing the tooth is passed.

Figure 1 is a plan view of my invention complete. Figs. 2, 3, and 4 are detail views of the devices used to fasten the different parts of the harrow together. Fig. 5 is a vertical section taken through the double-tree, where one of the clevises is attached to it. Figs. 6, 7, 8, 9, 10, 11, 12, 13 are detail views of the tooth and bushing.

A represents the different sections of the harrow, of which there may be any desired number, and which are fastened to the double-tree B by means of coupling-links C. Each section of the harrow is composed of three or more longitudinal bars, D, which are preferably made of channel-iron, as shown in Figs. 2, 3, and 4, and which are secured together by means of the cross-bars E, which are also made of channel-iron. In order to brace these parts more rigidly together, a diagonal piece, F, is applied across the top of each section, as shown in Fig. 1. Where the beams are of considerable length, in order to prevent them from springing at their centers, light cross-

bars E' are used, and these bars will preferably be thin flat plates. These flat plates or bars will be secured to each one of the longitudinal bars by means of a clip, H, as shown in Fig. 4. The cross-bars, the diagonal bars, and the longitudinal bars of each section are fastened together by means of clevises I, which are made to pass over the longitudinal bars and then have their ends brought together and passed up through the cross-bars, as shown in Figs. 2 and 3. The cross-bars are made of channel-iron, and the channel in each one is made sufficiently deep to receive a shoulder which is made upon each clevis where its two ends are brought together. Where the channels are not made sufficiently deep in the cross-bars their flanges would not rest upon the tops of the longitudinal bars, and hence the parts could not be clamped together as rigidly as is necessary. After the ends of these clevises are passed up through the channels cross-bars, nuts, wedges, or any other suitable clamping devices are applied to their upper ends, so as to fasten the parts rigidly together. Should it be desired to use flat bars instead of channel-bars, it would be necessary to place a washer or a perforated plate over the tops of the clevises, which would be sufficiently thick to rise above the shoulders, and then flat bars could be used, and which would rest solidly upon the plates or washers which are placed upon the tops of the longitudinal bars. In order to prevent each one of these sections from closing upon the other while the harrow is being drawn over rough and uneven ground, a coupling-link is applied to the front end of each one of the outside bars, as shown, so that the sections shall be drawn from each of its front corners alike. These coupling-links may be made of either round or flat iron, which are passed through holes made especially for them directly in the double-tree, and which are then bent as shown in Figs. 1 and 5, so that their end will extend horizontally backward and be fastened upon opposite sides of the beams by having a pin passed through them. These links, being made to pass vertically through the double-tree, and then bent so that their ends will extend horizontally backward, prevent the sections of the harrow from closing



in upon each other while they permit them to have a free vertical play.

Each one of the longitudinal bars of each section, whether made of channel-iron, as here shown, or of solid wooden or metallic beams, will be provided with a suitable number of bent reversible teeth, O, such as are shown in my Patent No. 231,257. The upper ends of these teeth are bent at a suitable inclination, and these bent ends are passed directly through the centers of the beams, through the flanges formed upon their sides, or through plates which are applied to the top and bottom or sides of the beams, especially to receive them. These teeth are shown in my former patent, and are there used in connection with suitable clamping devices for holding them in position; but these clamping devices, I have discovered, are entirely unnecessary, and that the teeth will operate just as well without them. After the teeth have been passed up through the beam, the flange formed upon it, or the plates which are secured to the beams, any suitable devices—such as nuts or holding-pins—may be applied to their upper ends for the purpose of preventing them from dropping out of the harrow when the harrow is lifted up or tilted from the ground. When the harrow is drawn from one end these teeth assume the angle shown in solid lines in Figs. 6, 7, and 8; but when the harrow is drawn from the other end the teeth turn partially around in the beam and assume a vertical position, as shown in dotted lines. If so preferred, each one of the teeth may be given a kink or bend, so as to form a shoulder which will bear against the under side of the beam when the harrow is being drawn in such a direction as to cause the teeth to assume a vertical position. These kinks or bends serve to prevent too great a strain from coming upon the shanks of the teeth, and while they are useful for the purpose described, they are not absolutely necessary, and I do not therefore limit myself to their use. Where these teeth are to be used with wooden beams, and where their constant turning would have a tendency to wear their bearings, a metallic bush may be applied to them. These bushings may be made smooth on their outer sides or have small ribs or flutes formed on them, so that when driven into the beam they will be securely held in place. A

screw-thread will be preferably formed upon them, however, so that they can be secured in place, their upper ends being so shaped that a wrench or other tool can be applied to them. Where threads are used the bushings can be more readily removed than where they are driven into the beams. Another advantage of these threads consists in enabling a bushing made in two parts to be joined together and screwed evenly into place. When the bushings are made in two pieces the harrow-teeth will be preferably made with solid heads on their upper ends, and the two parts of the bushing are then applied to the teeth, as shown, and then screwed into place. The head of the tooth may project beyond the upper end of the bushing, or the head of the tooth may be made globular and the bushing have a suitable recess formed in it so as to fit over the head, as shown. Should it be necessary to lock the harrow-teeth rigidly in any desired position, the two halves of the bushings will be made so small that when applied to the teeth, and the bushings then screwed into place, the bushings will clamp the teeth so tightly that they cannot turn.

Having thus described my invention, I claim—

1. In combination with the beams of a harrow, the bent reversible teeth, which have their upper ends passed through the beam, the flanges on its side, or the plates which may be secured to the beam, at an angle, so that when the harrow is drawn from one end the teeth will automatically assume a vertical position, and when the harrow is drawn from the other end an inclined position, substantially as specified.

2. The combination of a harrow-tooth with a two-part screw-threaded bushing which is applied to the upper end of the tooth and then screwed into the beam, substantially as shown.

3. The combination of a harrow-tooth having a globular head with a bushing made in two parts, and having a recess to fit over the head, substantially as described.

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

JAMES H. BARLEY.

Witnesses:

JAMES M. BYLER,  
A. H. CHURCHILL.