

(No Model.)

C. LA DOW.  
HARROW.

No. 455,261.

Patented June 30, 1891.

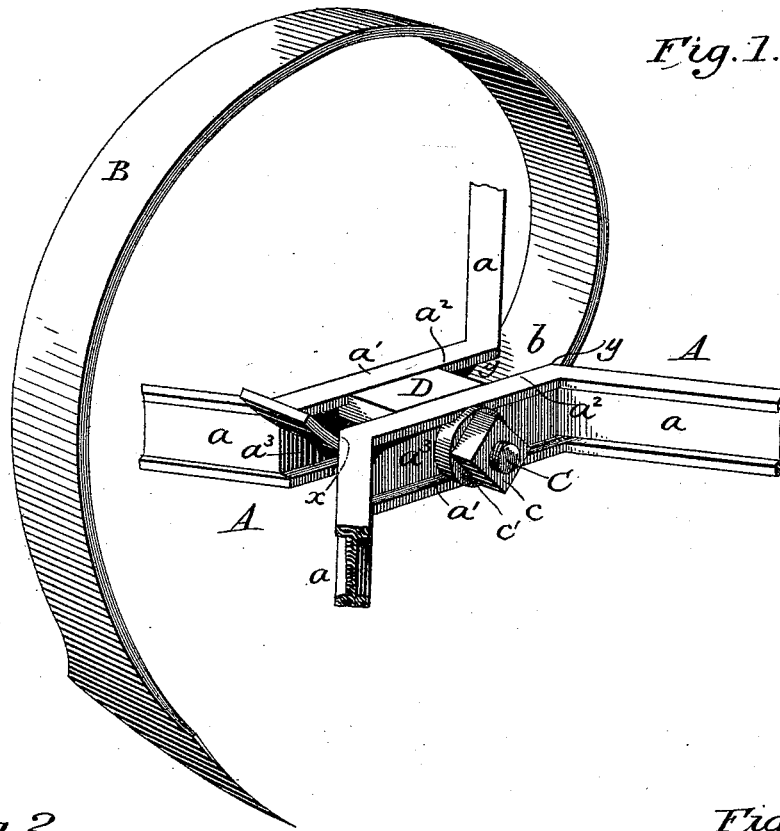


Fig. 1.

Fig. 2

ON LINE 2-2

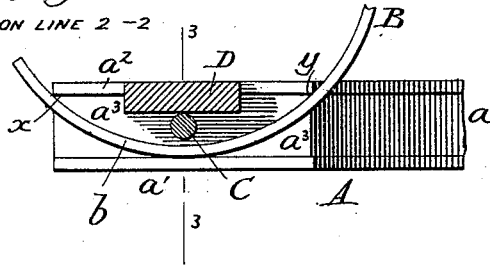
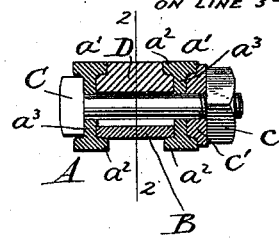


Fig. 3.

ON LINE 3-3



Witnesses

*Sidney P. Mellingworth*  
*E. M. Brooke*

Inventor

CHARLES LA DOW

By his Attorneys

*Baldwin, Davidson & Wright*

# UNITED STATES PATENT OFFICE.

CHARLES LA DOW, OF ALBANY, NEW YORK.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 455,261, dated June 30, 1891.

Application filed March 19, 1891. Serial No. 385,643. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES LA DOW, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Harrows, of which the following is a specification.

My invention particularly relates to spring-tooth harrows of the class in which curved spring-teeth are adjustably secured to metallic frame-bars. When the teeth are located between adjacent parts of the bars of a frame made up of bars or beams of a substantially zigzag or staggered form, and bolts are employed for connecting the bars and securing the teeth between them, it often happens that the bars are bent or twisted and the harrow-frame becomes distorted and will not hold the teeth in proper position to work evenly or efficiently.

My present invention obviates this difficulty by employing devices which, independently of the teeth, serve to hold the bars apart; but the construction which I prefer, and which is hereinafter specifically described, is such that these devices and the teeth both serve to separate the bars. In other words, in such a construction each tooth is held between two adjacent portions of the skeleton frame, and in order to keep the frame-bars from twisting or getting out of position additional devices are employed to keep them apart.

One embodiment of my invention is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a well-known form of spring harrow-tooth secured to a frame in accordance with my invention. Fig. 2 is a detail view in section on the line 2 2 of Fig. 3, and Fig. 3 is a transverse section on the line 3 3 of Fig. 2.

The frame A is in this instance shown as formed of I-beams  $a$ , and although the entire frame is not shown in the drawings the arrangement is such, as is sufficiently indicated, that each tooth is secured between the two adjacent portions  $a'$  of the beams or bars, and these bars which make up the frame are of a substantially zigzag form. In this instance the adjacent portions  $a'$  of the zigzag bars are straight and parallel; but they are not necessarily so. From the adjacent parallel portions  $a'$  the beams or bars diverge and

extend forwardly and backward and connect with other parts of the frame, which it is not here necessary to show or describe.

The upper end or shank  $b$  of the tooth B enters between the inner flanges  $a^2$  of the beams, extends in a curved line beneath them, and projects from the rear end thereof. By this arrangement the edges of the shank are in contact with the webs  $a^3$  of the I-beams, and at the shoulders or points  $x$  and  $y$ , when the bars diverge, the upper surface of the shank is in contact with the flanges  $a^2$ . If now the adjacent I-beams are drawn tightly together, the tooth will be firmly held, being clamped between the webs of the I-beams, and being in contact with the inner flanges at the points  $x$  and  $y$  there is no danger of slipping.

In order to secure the adjacent portions of the I-beams together and to hold each tooth in place, I in this instance employ a single bolt C, extending through opposite apertures in the adjacent portions  $a'$  above the shank of the tooth. The butt  $c$  may be made to bear against the washer  $c'$ . By this arrangement, if the nut be tightened, the I-beams will be held together and the tooth securely held in place; but in practice it is found that by the arrangement thus far described, when the nut is tightened, the upper sides of the I-beams will be drawn together more than the lower sides, and thus the beams will become bent or twisted so as to distort the frame and impair the symmetrical arrangement of the frame-bars, and thus cause the teeth to bear on the ground unevenly. To avoid this I use devices in addition to the teeth for holding the frame-bars apart and for preventing their upper sides from coming closer together than their lower sides.

I have shown one way of embodying my invention, and it is the way preferred when the tooth is attached to the frame in the manner illustrated in the drawings. In this case I arrange bars transversely to the adjacent parts of the frame-bars and so connect them as to hold the frame-bars apart. The plate or block D, when arranged as shown in the drawings, is accurately shaped to fit between the frame-bars, its width being, as nearly as possible, equal to the width of the tooth. By this arrangement, with the tooth below the bolt and the block above it, the frame bars

or beams may be drawn together to tightly clamp the tooth and securely hold it in place, and yet the frame will in no wise be distorted. It will be observed that the shanks of the teeth lie in inclosures or boxes formed by the adjacent portions of the frame-bars and the securing devices or boxes D, and are securely held in proper position to work efficiently. The teeth may be readily adjusted by loosening the bolts C. It will be observed that the spacing device or bar D is stationary—that is to say, the teeth may be adjusted without moving the bar.

While I wish it understood that I claim the specific arrangement and devices illustrated in the drawings, I do not wish to limit myself to this one way of embodying my invention; but designate in the claims the subject-matter which I desire to secure in this case by Letters Patent.

I claim herein as of my own invention—

1. The combination of frame-bars, spring harrow-teeth having their shanks arranged between adjacent portions of the frame-bars

and in direct contact therewith, transverse blocks or plates above the teeth for holding the frame-bars apart, and bolts between the transverse bars and the teeth for securing the frame-bars, transverse plates, and teeth together.

2. The combination of zigzag frame-bars rigidly connected together to form a section of the harrow, stationary horizontal blocks or plates for holding contiguous portions of different frame-bars at suitable distances apart, curved spring harrow-teeth adjustable relatively to the frame-bars and to the plates which hold them apart, and bolts which hold the parts in position and which admit of the teeth being adjusted to vary the pitch of their points or working ends.

In testimony whereof I have hereunto subscribed my name.

CHARLES LA DOW.

Witnesses:

CHARLES W. HANDY,  
LLOYD B. WIGHT.