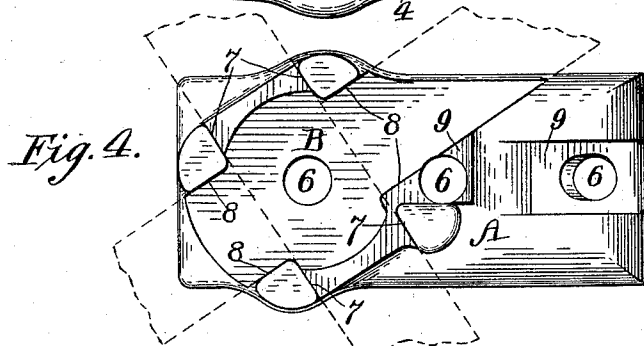
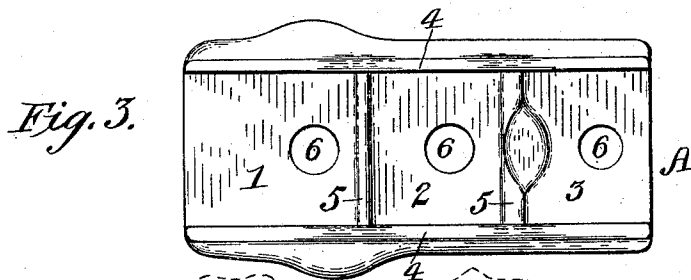
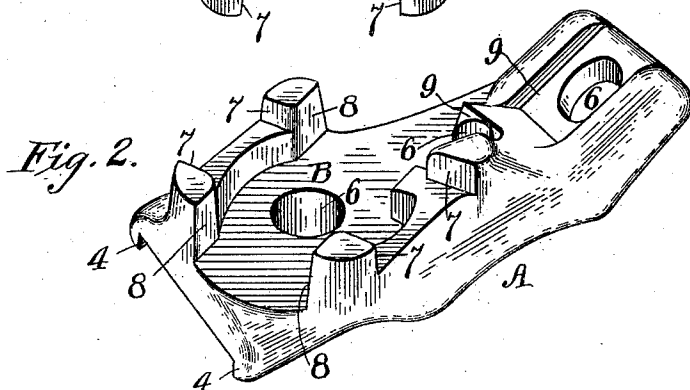
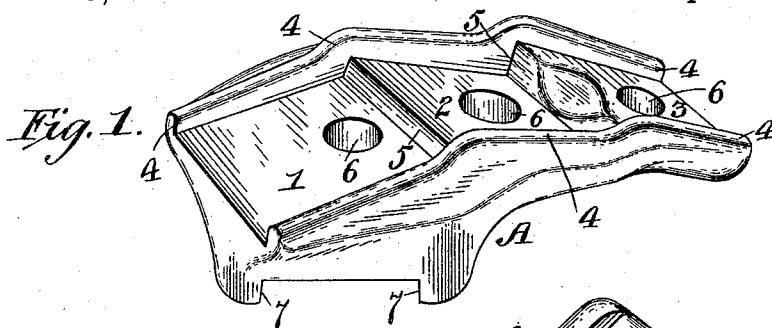


(No Model.)

W. STRAIT.  
HARROW.

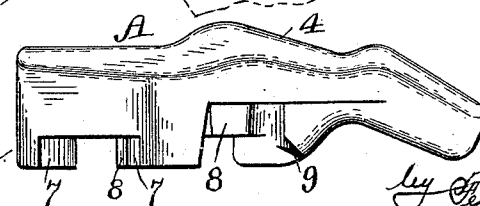
No. 473,796.

Patented Apr. 26, 1892.



*Fig. 5.*

Witnesses  
*Cleverance*  
*Wm L. Boyden*



Inventor

*William Strait*

*by F. Nelson R. Brock*  
Attorney

# UNITED STATES PATENT OFFICE.

WILLIAM STRAIT, OF ELMIRA, NEW YORK.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 473,796, dated April 26, 1892.

Application filed December 24, 1891. Serial No. 416,060. (No model.)

### *To all whom it may concern:*

Be it known that I, WILLIAM STRAIT, a citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Harrows; and I do 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 the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of a tooth-seat embodying my invention, and Fig. 2 a similar view of the opposite side thereof. Fig. 3 is a plan of the same. Fig. 4 is a bottom plan view. Fig. 5 is a side elevation.

My invention relates to tooth-seats and frame-couplings for agricultural implements.

The object of my improvements is to provide harrows, cultivators, rakes, planters, and the like with a tooth-seat in which the tooth may be adjustably set, and also with a frame-seat.

The invention consists in the following construction and arrangement of the parts, which will be described in detail, and the features of novelty then set forth in the claims.

In the drawings, A represents my tooth-seat and frame-bar coupling. On the top are formed three tooth-seats 1, 2, and 3 to receive the flat end of a tooth which is bolted in one of said seats, according to its adjustment thereon. These seats are plane or flat seats, and are provided with side walls 4, which prevent the swerving of the tooth by engaging its opposite edges.

5 are ledges or steps, which unite or intervene between the seats 1, 2, and 3. The steps 1, 2, and 3 lie in different planes. Seat 1 is substantially horizontal; seat 2, diverging therefrom downwardly to a certain degree, and seat 3 diverging still farther in the same direction, but all being plane seats. Each seat is open outwardly—that is, each seat of the series is open in a line substantially vertical to the plane of the seat. Each seat is also located in advance of or at one side from the others and substantially contiguous

thereto, as distinguished, for instance, from a series of seats above one another.

6 are a series of bolt-holes, by means of which and a bolt secured therein and to the tooth the latter may be secured to any one of the seats.

B is the intersecting frame-bar seat of a harrow.

7 are vertical walls or stops, which prevent the lateral swerving of one of the intersecting frame-bars, (shown in dotted lines,) and 8 the walls or stops for the other intersecting bar. A single bolt passing through these bars, the tooth, and the hole 6 in the seat 1 secures all of the parts.

9 are recesses about the holes 6 within which the bolt-head rests.

It will be obvious that the casting A might be reversed with the seats for the tooth upon the under side with but a slight modification thereof and of the tooth. In like manner the tooth-seats could be disposed in substantially a vertical position. In both the above instances the tooth-seats would be plane-seats lying in different planes, and in the latter instance the inner end of the tooth would be bent to correspond to the vertical character of the tooth-seats.

By "plane" or "flat" tooth-seats are meant seats which have a plane side or floor for holding the end of a tooth. Such planes need not necessarily be solid, but may consist of ledges, ribs, or studs lying in the same plane, and may have recesses about them.

In referring to the series of seats for the tooth as being "one in advance of the other" it is not meant that such seats are always in the line of draft. For instance, where the seats are in substantially a vertical line they would not be one in advance of the other in that strict sense. What is meant is that the seats are located side by side with the edges of said seats adjacent to and diverging from one another. Only two seats may be formed upon the casting, but three or more may be employed.

Instead of the side walls 4 stops or projections from the body of the seats may take into the tooth or be arranged along the sides of the seats. The ledges 5 are not essential. A clip or other binder for the tooth may be

used instead of a single bolt through the tooth.

In lieu of the intersecting harrow-frame bar-seats a single frame-seat may be employed to secure the tooth-coupling to the harrow-frame at other portions of the frame; or a seat for attachment to a cultivator, a rake, a seeder, or other agricultural implement may be formed thereon.

10 In the drawings I have shown the frame-seat on one side of the coupling and the tooth-seats on the opposite side; but both frame and tooth seats may be upon the same side.

My invention will be clearly distinguished from tooth-seats which are not diverging, and where diverging the tooth is pivoted or similarly held in a series of diverging notches and has a common bearing upon such pivot or center during all the adjustments of the tooth.

20 My improvements contemplate a series of independent adjacent diverging tooth-seats, in each of which the seated tooth in its adjustment may be both seated and removed from one tooth to the other bodily, each seat being open outwardly to permit such shifting of the tooth.

The frame-bar seat may be arranged beneath the central tooth-seat, if desired. Where the tooth-seats are arranged one in advance of the other, the seats may be curved.

I claim—

1. An adjusting tooth-seat having a series of seats lying at relatively different angles, within any one of which a tooth may be seated and bodily removed.

2. An adjusting tooth-seat having a series of seats lying at relatively different angles, one in advance of the other, within any one of which a tooth may be seated and bodily removed.

3. An adjusting tooth-seat having a series of relatively different-angled plane seats, having their sides or edges adjacent to one another and provided with means for supporting or binding the tooth within any one plane seat.

4. An adjusting tooth-seat having a series of plane seats lying in different but substantially horizontal planes, within any one of which a tooth may be seated and bodily removed.

5. An adjusting tooth-seat having a series of plane seats lying at relatively different angles and an intervening ledge or stop connecting said seats.

6. A coupling having a frame-seat and a series of plane tooth-seats lying at relatively different angles, in each of which tooth-seats a tooth may be independently supported by a binder.

7. An adjusting tooth-seat and coupling having a frame-seat upon one side and a series of plane seats lying at relatively different angles upon the other.

8. A coupling having an intersecting frame-bar seat upon one side and a series of plane seats lying at relatively different angles upon the other.

9. An adjusting tooth-seat having a series of plane seats lying at relatively different angles, the front and rear edges of said seats lying adjacent to one another, in combination with the tooth adapted to be seated and bodily removed in any one of said seats.

10. An adjusting tooth-seat having a series of plane seats lying at relatively different angles, each plane seat being open outwardly at substantially right angles to the plane of the seat.

11. An adjusting tooth-seat having a series of plane seats lying at relatively different angles, within any one of which a tooth may be seated and bodily removed, combined with a binder, whereby a tooth may be supported upon any one of the seats.

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

WM. STRAIT.

Witnesses:

F. B. BROCK,  
GEO. L. CLARK.