

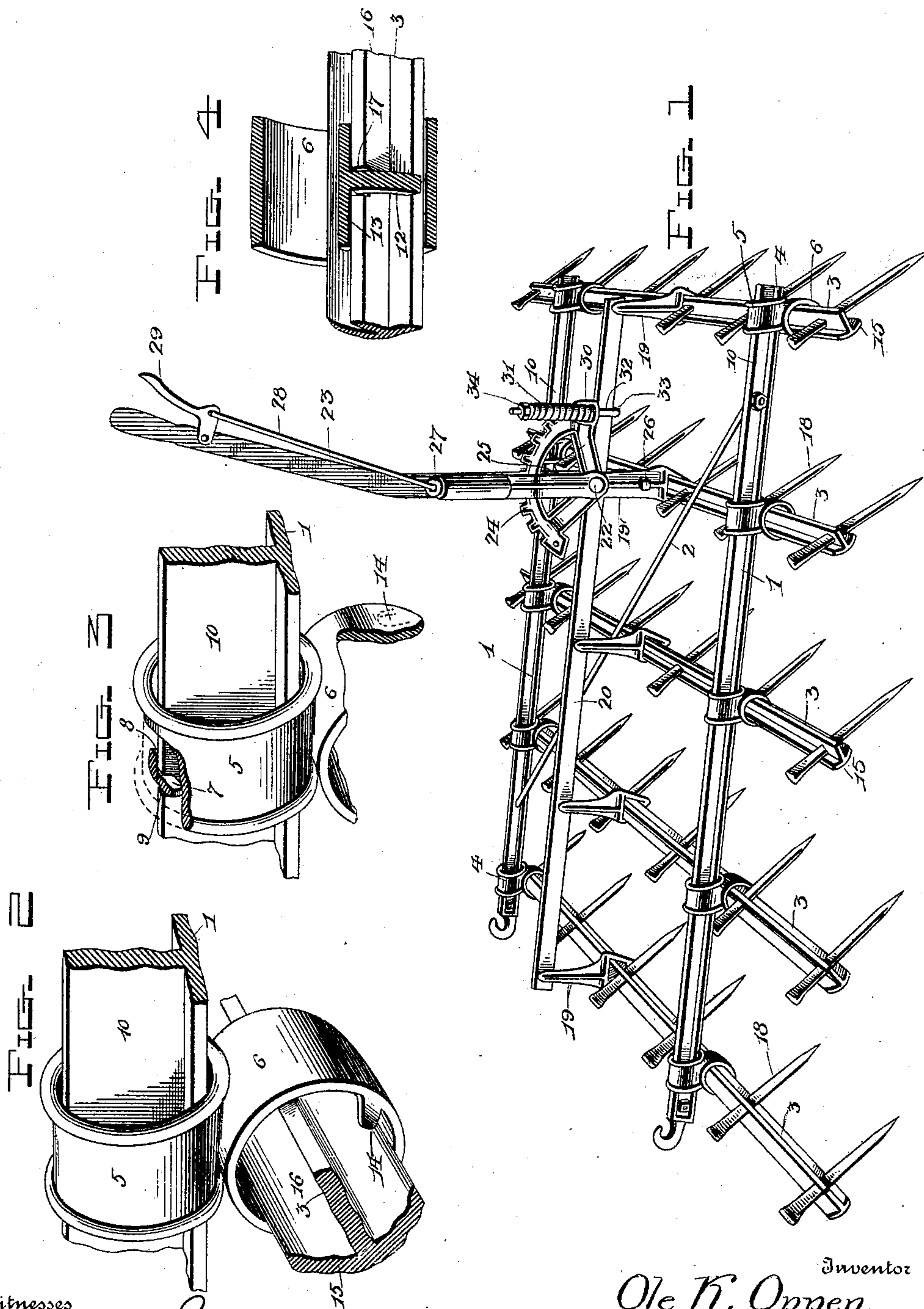
No. 633,270.

Patented Sept. 19, 1899.

O. K. OPPEN.
HARROW.

(Application filed Dec. 10, 1898.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

OLE K. OPPEN, OF WORTHINGTON, MINNESOTA.

HARROW.

SPECIFICATION forming part of Letters Patent No. 633,270, dated September 19, 1899.

Application filed December 10, 1898. Serial No. 698,820. (No model.)

To all whom it may concern:

Be it known that I, OLE K. OPPEN, a citizen of the United States, residing at Worthington, in the county of Nobles and State of Minnesota, 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.

My invention relates to improvements in harrows; and the object is to simplify and improve the construction and increase the efficiency and durability of the implement.

To these ends the invention consists in a novel construction of the draft-bars, the cross-bars, and in the bracket employed to couple these parts together.

The invention further consists in the construction, combination, and arrangement of the coupling devices, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same reference characters indicate the same parts of the invention.

Figure 1 is a perspective view of a harrow embodying my invention. Fig. 2 is an enlarged detail perspective view of the coupling connecting the draft-bars and the transverse harrow-tooth bars. Fig. 3 is a similar view showing the manner of connecting the draft-bars and coupling. Fig. 4 is a similar view showing the manner of connecting the coupling and the transverse harrow-tooth bars.

1 1 denotes the T-iron draw-bars, which are connected by the diagonal brace-rod 2.

3 3 denote the transverse T-iron harrow-tooth bars, which are connected to the draw-bars by the couplings 4 4. Each coupling consists of a short sleeve 5, which encompasses the draw-bar, and a similar sleeve 6, arranged beneath and at a right angle to and integral with the sleeve 5, and it encompasses the transverse bar. The inner face of the upper wall of the sleeve 5 is formed with a segmental locking-lug 7, beveled or pointed at its front end and formed with a lateral stop 8 at its rear end.

9 denotes a recess formed in the outer or free edge of the central rib 10 of the draft-bar to receive the segmental lug 7, the draw-

bar being turned so that its central rib 10 is horizontal, in which position it is inserted in the sleeve 5 until the recess 9 in said draw-bar is alined with the lug 7 in the sleeve. The draw-bar is now turned a quarter of a circle on its axis, which brings the rib 10 to a vertical position, with the lug extending through the recess in the rib and the rib resting against the limit-stop 8. In this position the draw-bar is securely locked in the sleeve 5 against any longitudinal movement whatever. The sleeve 6 is also formed with an internal segmental lug 12, the rear end of which terminates in a lateral stop 13.

14 14 denote two (2) longitudinal ears formed on the opposite edges of the sleeve 6, and they are alined with the front end of the locking-lug 12.

The transverse flange 15 of the bar 3 is curved to correspond to the inner wall of the sleeve 6, on which it bears, and the central rib 16 of said bar is formed with a notch 17 to receive the locking-lug 12 in the sleeve.

In assembling the parts the draft-bar is first secured in the sleeve 5, as hereinbefore described, and the bar 3 is then inserted in the sleeve 6 until the notch 17 in its central rib is alined with the lug 12 and the bar turned on its axis to engage said rib 16. The longitudinal ears 14 14 are now turned radially inward to project into the path of the outer edge of the rib 16. This arrangement effectually locks the bar 3 in the sleeve 6 and at the same time permits it to be rotated on its axis for about one-quarter ($\frac{1}{4}$) of a circle or the distance the central rib is permitted to oscillate between the stops 13 and 14.

The transverse bars 3 3 are provided with the harrow-teeth 18, and each bar has secured to it a vertical arm 19, the upper ends of the arm being connected by a bar 20, so that the entire series of transverse bars may be simultaneously turned on their axes.

The pivot-bolt 22, which connects the vertical arm 19' with the bar 20, also extends through an orifice in the lower end of the hand-lever 23 and an axial orifice in the segmental rack 24, and the opposite side of this lever 23 is provided with an extension-plate 25, which extends down on the outside of the rack 24 and is secured to the arm 19' by the bolt 26.

A spring locking-bolt 27, carried by the hand-lever 23, projects into the notches in the rack for the purpose of locking the lever in the position to which it may be adjusted, and this bolt 27 is manipulated by the rod 28, extending to the grip 29, pivoted to the upper end of the hand-lever.

The rear end of the rack 24 is formed with a socket 30, in which is seated a coiled spring 31, and a rod 32, having its lower end formed with a hook 33 to engage the bar 20, extends upward through an orifice in the socket 30 and through the spiral spring 31, and it is supported in this position by the adjusting-nut 34, and by adjusting this nut up or down a greater or less tension is imparted to the spring 31, so as to permit of a corresponding vibratory movement of the harrow-teeth independently of the inclination to which they may be adjusted by the hand-lever 27.

Although I have specifically described the construction and relative arrangement of the several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a harrow of the class described, the combination with the T-shaped draft-bars and the correspondingly-formed transverse harrow-tooth bars, of a coupling consisting of two integral sleeves axially arranged at right angles to each other to encompass said draw and transverse bars, substantially as and for the purpose set forth.

2. In a harrow of the class described, the

combination with the T-shaped draft-bar having a central-notched rib, of the encompassing sleeve, provided with a coacting lug, substantially as and for the purpose set forth.

3. In a harrow of the class described, the combination with the T-shaped harrow-tooth bars formed with a central rib, of the encompassing sleeve, the rib being provided with a notch or recess and the sleeve with a coacting lug, substantially as described.

4. In a harrow of the class described, the combination with the notched draw and harrow-tooth bars, of a coupling consisting of two integral sleeves formed with interior segmental locking-lugs and adapted to encompass and engage the notched portions of said draw and transverse harrow-tooth bars, substantially as set forth.

5. In a harrow of the class described, the combination with the notched draw-bar 1 and the notched transverse harrow-tooth bar 3, of the sleeve 5 adapted to encompass the bar 1 and formed with a segmental locking-lug 7 arranged to extend through the notch in said draw-bar, and the sleeve 6 formed integral with said sleeve 5 and adapted to encompass said bar 3, and provided with the segmental locking-lug 12, arranged to engage the notches in said bar 3, and the longitudinal ears 14 14 arranged to lock said bar 3 on said lug 12, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

OLE K. OPPEN.

Witnesses:

GILBERT ANDERSON,
NEWTON FAUSKEE.