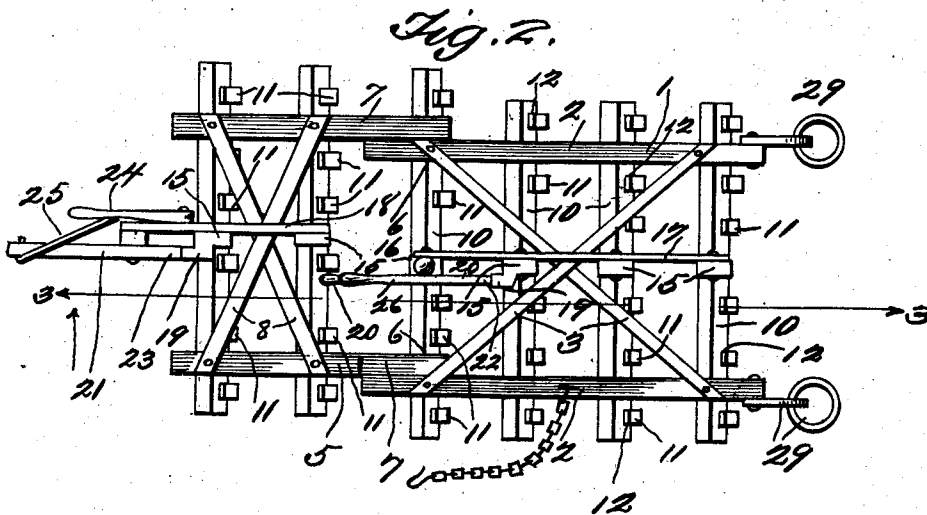
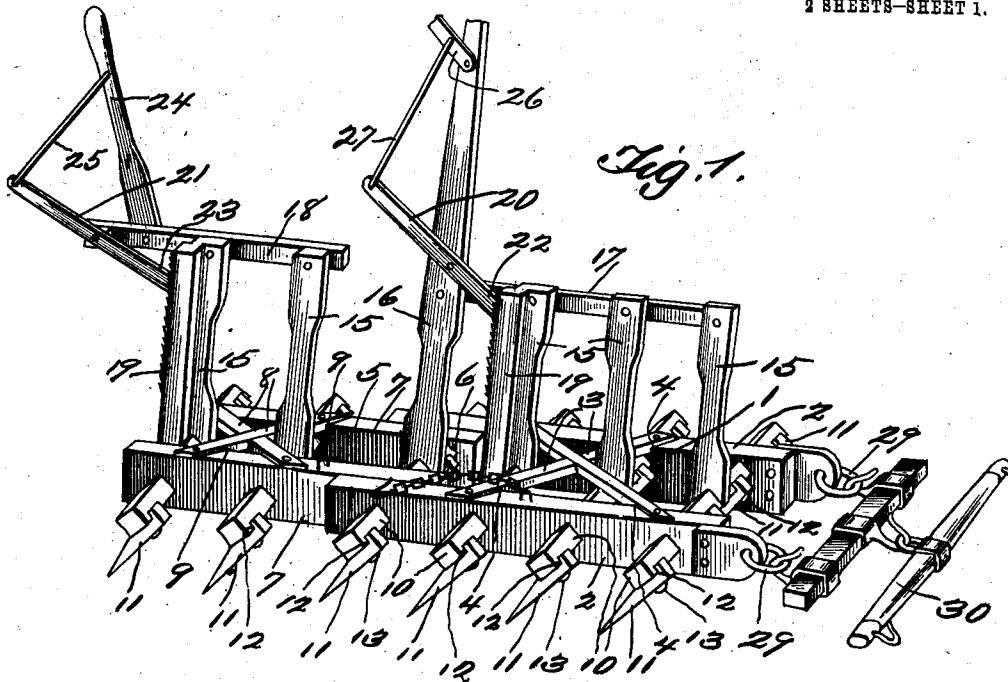


F. I. GROVE.
HARROW.
APPLICATION FILED MAY 5, 1910.

992,655.

Patented May 16, 1911.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS-SHEET 3.

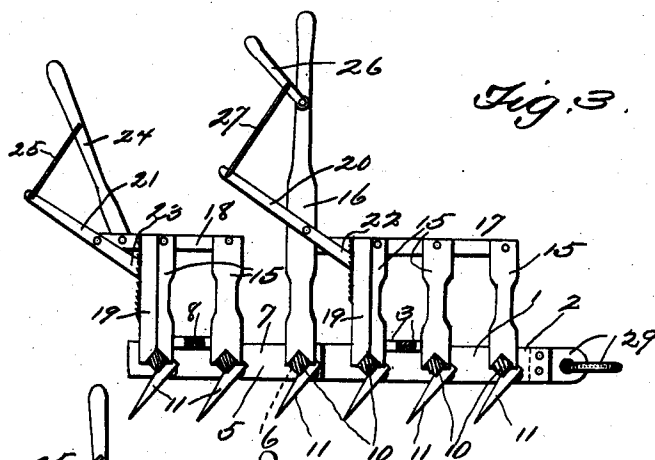


Fig. 3.

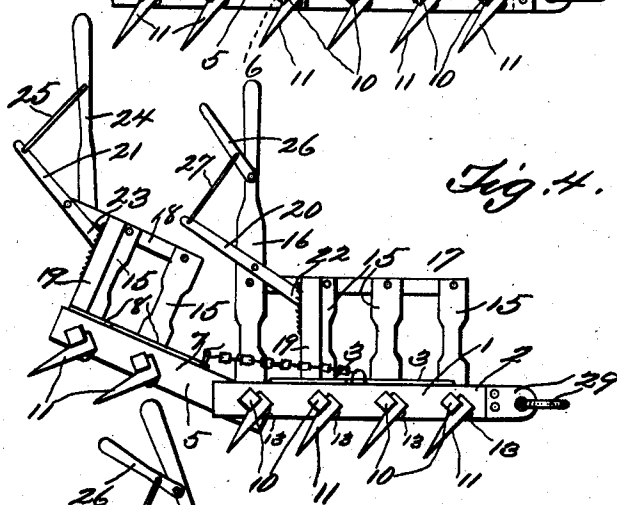


Fig. 4.

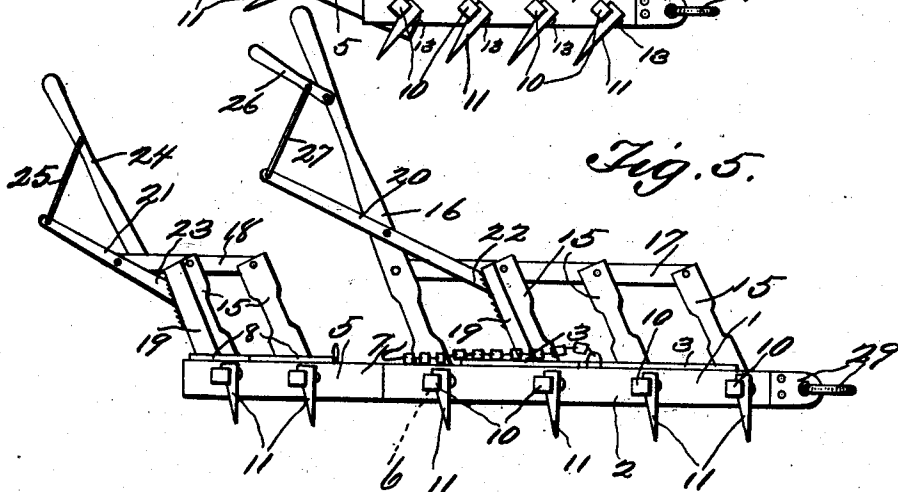


Fig. 5.

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UNITED STATES PATENT OFFICE.

FRANK IRVIN GROVE, OF LARNED, KANSAS.

HARROW.

992,655.

Specification of Letters Patent.

Patented May 16, 1911.

Application filed May 5, 1910. Serial No. 559,628.

To all whom it may concern:

Be it known that I, FRANK I. GROVE, a citizen of the United States, residing at Larned, in the county of Pawnee and State of Kansas, have invented a new and useful Harrow; 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 appertains to make and use the same.

The invention relates to improvements in harrows.

In the drawings, a certain form harrow is disclosed, but in experimenting and reducing to practice this form of harrow, if the applicant finds it necessary to alter various parts thereof, for instance details of the structure, he is entitled to do so, provided the alterations fall within the scope of the appended claims.

In the drawings, Figure 1 is a perspective view of a harrow, illustrating the novel features of the invention. Fig. 2 is a top plan view of the harrow, showing the relative positions of the means whereby the harrow teeth are adjusted. Fig. 3 is a sectional view on line 3—3 of Fig. 2. Fig. 4 is a side elevation of the harrow, showing the rear portion (which is pivotally joined to the forward portion) thrown up out of commission. Fig. 5 is a side elevation of the harrow, showing the harrow teeth adjusted in different positions to that shown in Fig. 3.

Relative to the drawings, 1 denotes the forward frame of the harrow, which consists of side bars 2, and the angularly arranged intersecting bars 3. These angularly arranged intersecting bars are recessed at their ends, as shown at 4, in order to engage the side bars 2.

5 denotes the rear harrow frame which is pivotally joined, as shown at 6, to the forward frame, and consists of the side bars 7, the intersecting angularly arranged bars 8, which are also recessed, as shown at 9, to engage the side bars 7. The structure of the forward and rear harrow frames is similar, as will be observed.

Mounted in bearings of the side bars of the forward and rear harrow frames are rocking beams or bars 10, to which the harrow teeth 11 are fixed. These harrow teeth are seated in recesses 12 of the rocking beams

or bars and are secured in such recesses by bolts 13.

Rising from the rocking beams or bars, for instance, three of them of the forward frame, and two of them of the rear frame, are arms or levers 15. Arising from one of the rocking beams or bars of the forward frame is a lever 16. Connecting each of the arms or levers 15 and the lever 16 of the forward frame is an approximately horizontally arranged bar 17, while the arms or levers of the rocking bars or beams of the rear frame are also connected by an approximately horizontally arranged bar 18. One of the arms or levers 15 of the rear and forward frame is provided with an offset portion or enlargement 19, the purpose of which will hereinafter appear.

Pivoted to the lever 16 and to the horizontally arranged bar 18 are the abutment levers 20 and 21, the ends 22 and 23 of which are designed to contact with the offsets or enlargements 19 of two of the levers or arms of the forward and rear harrow frames, in order to limit or prevent movement of the levers or arms, after their positions are once arranged. Also fixed to the horizontally arranged bar 18 is an upstanding arm 24, between which and the abutment lever 21, a link connection 25 is arranged, whereby the abutment lever 21 may be raised or tilted, in order to disengage it from contact with the offset or enlargement. The lever 16, as shown, is longer than the arms or levers 15, and is pivoted to it adjacent its upper portion is a lever 26, between which and the lever 20, a wire connection 27 is connected, so that when the lever 26 is raised, the lever 20 will be tilted. By holding the levers 20 and 21 securely in contact with the offset or enlargements 19 of the arms or levers 15, the rocking beams or bars will be prevented from moving or rocking, thereby holding the harrow teeth in the desired positions.

The pivotal connections between the forward and rear harrow frames are so arranged that the rear harrow frame may be thrown up out of commission, and the levers or arms of the rocking beams or bars of the rear harrow frame are arranged to one side of the arms 15 of the forward frame, so that the two will not interfere when the rear harrow frame is raised out of commission. The

forward portion of the forward harrow frame has connected to it means 29 by which an evener or equalizer 30 may be connected to the harrow, so that the harrow may be
5 drawn forward.

The invention having been set forth, what is claimed as new and useful is:—

1. In a harrow, a frame comprising side bars, rocking bars journaled therein having
10 upstanding arms, a bar connecting the upstanding arms, one of the arms being extended and having a pair of levers pivoted to it, one adapted to engage one of the upstanding arms to limit the rocking move-
15 ments of the rocking beams, while the other is provided with a connection with the former in order to tilt it out of engagement with the said arm.

2. In a harrow, a frame comprising side
20 bars, rocking bars journaled therein having

harrow teeth and provided with upstanding arms, a bar connecting the upstanding arms together, one of said arms having an offset, while another of said arms is extended, an abutment lever pivoted to the extended portion of one of said arms adapted to engage
25 one of the upstanding arms to limit the rocking movement of the rocking bars, a lever pivoted to said extended portion and having a connection with the abutment lever in order to tilt it out of engagement with the
30 offset.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK IRVIN GROVE.

Witnesses:

J. J. STOCKMAN,
J. W. GROVE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
