

No. 702,475.

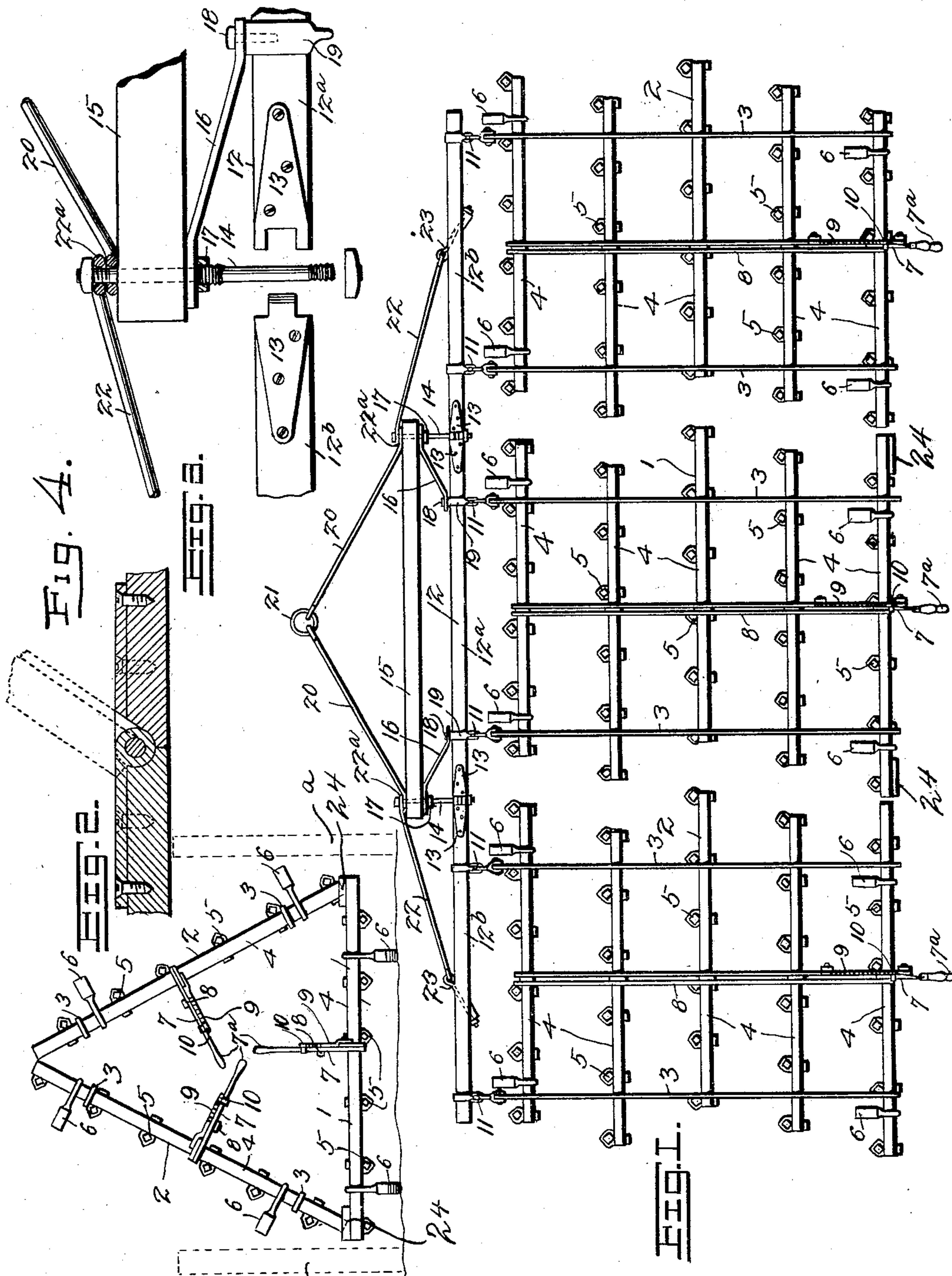
Patented June 17, 1902.

W. POWERS.

HARROW.

(Application filed Feb. 14, 1902.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM POWERS, OF CENTRAL CITY, IOWA.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 702,475, dated June 17, 1902.

Application filed February 14, 1902. Serial No. 94,116. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM POWERS, a citizen of the United States, residing at Central City, in the county of Linn and State of Iowa, have invented a new and useful Harrow, of which the following is a specification.

My invention is an improved harrow; and the object of my invention is to effect improvements in the construction of a harrow whereby the same is formed of a plurality of sections flexibly jointed together, whereby the outer sections may be folded over the central section or sections to lessen the width of the harrow, so that the same may be drawn through a gateway of ordinary width.

With this object in view my invention consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a top plan view of a harrow constructed in accordance with my invention. Fig. 2 is a rear elevation of the same, showing the outer sections disposed above the central section to lessen the width of the harrow, so that the same may be drawn through a gateway, the posts of which are indicated in dotted lines at *a*. Fig. 3 is a detail view. Fig. 4 is a detail section of the sectional hingedly-connected brace-bar.

In the embodiment of my invention I construct my improved harrow of a plurality of sections, of which any suitable number may be used, and within the scope of my invention the said sections of the harrow may be of any suitable or preferred construction. As here shown, the harrow is composed of a central section 1 and a pair of outer sections 2, which are disposed on opposite sides of the central section. As here shown, each section of the harrow comprises longitudinal bars 3 and cross-bars 4, which are journaled in bearings in said longitudinal bars. Each of the cross-bars is provided with a suitable number of harrow-teeth 5, and the end cross-bars at the front and rear ends of the respective harrow-sections are also provided each with a pair of runners 6, which are disposed substantially at right angles to the harrow-teeth, so that when the bars 4 are turned to move the harrow-teeth out of engagement with the ground the runners are turned downwardly and serve

to support the harrow-sections and enable the harrow to be readily dragged from or to the field where it is to be employed. Each cross-bar 4 is provided with a lever-arm 7. The said lever-arms of the rear cross-bars are prolonged to form handles 7<sup>a</sup>, which are adapted to be manually operated. The lever-arms 7 of the cross-bars of each harrow-section are connected together by a rod 8, one or more, which are pivotally connected thereto, so that by means of the handles 7<sup>a</sup> the cross-bars of each harrow-section may be simultaneously turned. I further provide each harrow-section with a segment-plate 9, and each handle-lever 7<sup>a</sup> with a suitable locking-dog 10 to engage said segment-plate, whereby the cross-bars of each harrow-section may be locked at any desired adjustment.

The front ends of the longitudinal bars 3 of the harrow-sections are connected, by means of suitable links 11 or other flexible connecting elements, to the brace-bar 12. The latter comprises a plurality of sections corresponding in number to the harrow-sections and hinged together. In the embodiment of my invention here shown the brace-bar 12 comprises the central section 12<sup>a</sup>, which is disposed in front of the central harrow-section 1, and the end or side sections 12<sup>b</sup>, which are disposed in front of the side sections 2 of the harrow. The meeting ends of the sections of the brace-bar 12 are provided with hinge leaves or members 13, and the same are connected together by bolt-rods 14, whereby the sections of the brace-bar are hinged or flexibly connected together, so that the outer sections thereof may be upturned and disposed above the intermediate section or sections thereof. A draw-bar 15 has its ends attached to the front portion of the bolt-rods 14, the latter passing through the same, and the said draw-bar is thus secured at a suitable distance in front of the intermediate section of the brace-bar 12. Brace-straps 16, which are made of iron or steel, have their outer ends secured on the bolt-rods 14 and clamped against the rear side of the draw-bar by means of nuts 17. The inner rear ends of the said brace-straps are bolted or otherwise secured to the intermediate section of the brace-bar. As here shown, the inner ends of the brace-straps are secured by bolts 18 to clips 19 on



the brace-bar 12, which clips are included in the flexible connections between the central harrow-section and the central section of the brace-bar. A pair of draft-rods 20 have eyes  
 5 at their outer end portions, which engage the front portions of the bolt-rods 14, and have eyes at their inner ends, which are engaged with a draft link or ring 21, which serves for the attachment of the doubletree (not here  
 10 shown) to the harrow. Brace-rods 22 have their inner ends pivoted on the front end portions of bolt-rods 14, as at 22<sup>a</sup>, and their outer ends connected to the outer sections 12<sup>b</sup> of the brace-bar 12 by eyebolts 23 or other suitable devices. It will be understood that the  
 15 brace-straps and the brace-rods relieve the hinge connections between the sections of the brace-bar of stress and prevent the outer sections of the brace-bar from sagging when the harrow is in operation, and hence the harrow-sections are kept abreast of each other  
 20 when the harrow is at work. It will be understood that by thus connecting the harrow-sections together the outer sections may be upturned and disposed over the intermediate section or sections, as shown in Fig. 2, in order to lessen the width of the harrow to enable it to be drawn through a gateway of ordinary width. The rear cross-bar of the central harrow-section 1 is provided at its ends with  
 30 bearing-plates 24, which when the harrow is in position to be drawn through a gateway are on the upper side of the said cross-bar and serve to support the rear inner corners of the outer harrow-sections, as shown.

The eyes 13<sup>a</sup> of the hinge-leaves 13 are on the under sides thereof, so that the bolt-rods 14 in the said eyes are below the leaves, and the adjacent ends 13<sup>b</sup> of the leaves come in  
 40 contact with each other when the outer harrow-sections are upturned, as shown in Fig. 4, thus facilitating the disposition of the outer harrow-sections over the intermediate section. When thus upturned, the outer harrow-sections come in contact with each other and  
 45 brace and support each other.

Having thus described my invention, I claim—

1. In combination with a plurality of harrow-sections, a brace-bar comprising a plu-

5 rality of sections, to which the front ends of the harrow-sections are respectively connected, pivot-rods to which the meeting ends of the brace-bar sections are hingedly connected, a draw-bar connected to the said rods, in  
 55 front of the intermediate section of the brace-bar, and braces secured to the sections of the brace-bar and pivoted on said pivot-rods, substantially as described.

2. In combination with a plurality of harrow-sections, a brace-bar comprising a plurality of sections, to which the front ends of the harrow-sections are respectively connected, pivot-rods, to which the meeting ends of the brace-bar sections are hingedly connected, a draw-bar connected to the said pivot-rods in front of the intermediate section of the brace-bars, brace-straps, secured to the intermediate section of the brace-bar and having their outer ends pivoted on the pivot-rods  
 70 and bearing against the rear side of the draw-bar, and brace-rods, pivoted on the said pivot-rods, extending outwardly, and connected to the outer harrow-sections, substantially as described.

3. In combination with a plurality of harrow-sections, a brace-bar comprising a plurality of sections, to which the front ends of the harrow-sections are respectively connected, pivot-rods to which the meeting ends of the brace-bar sections are hingedly connected, a draw-bar connected to the said pivot-rods in front of the intermediate section of the brace-bar, brace-straps, secured to the intermediate section of the brace-bar and having their outer ends pivoted on the pivot-rods  
 85 and bearing against the rear side of the draw-bar, brace-rods pivoted on said pivot-rods and connected to the outer harrow-sections, and a draft element, in front of the draw-bar and having its ends connected to the front portions of the pivot-rods, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in  
 95 the presence of two witnesses.

WILLIAM POWERS.

Witnesses:

ARTHUR MILLS,  
 ORIN BICE.