

No. 641,418.

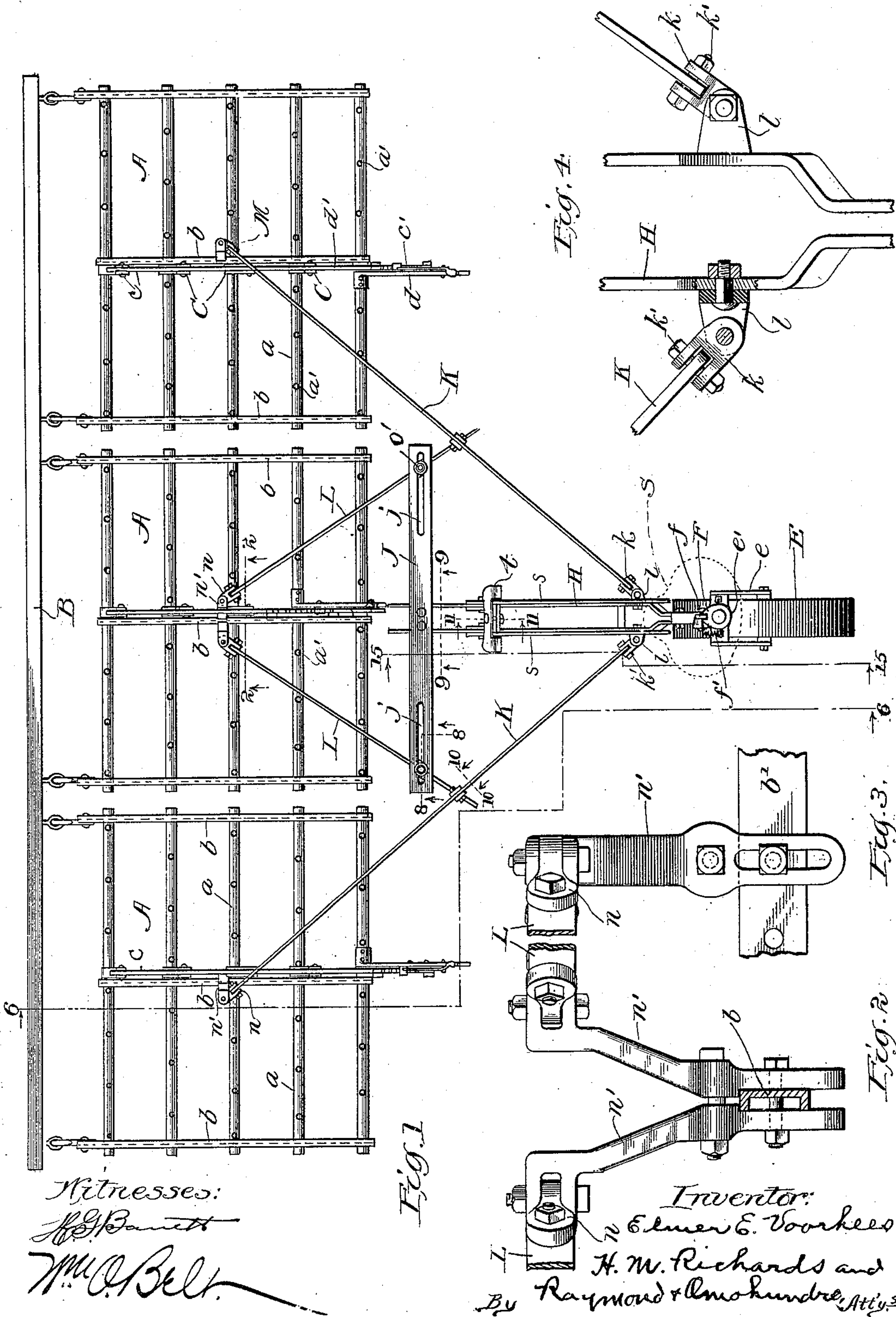
Patented Jan. 16, 1900.

E. E. VOORHEES.
HARROW ATTACHMENT.

(Application filed Sept. 5, 1899)

(No Model.)

5 Sheets—Sheet 1.



No. 641,418.

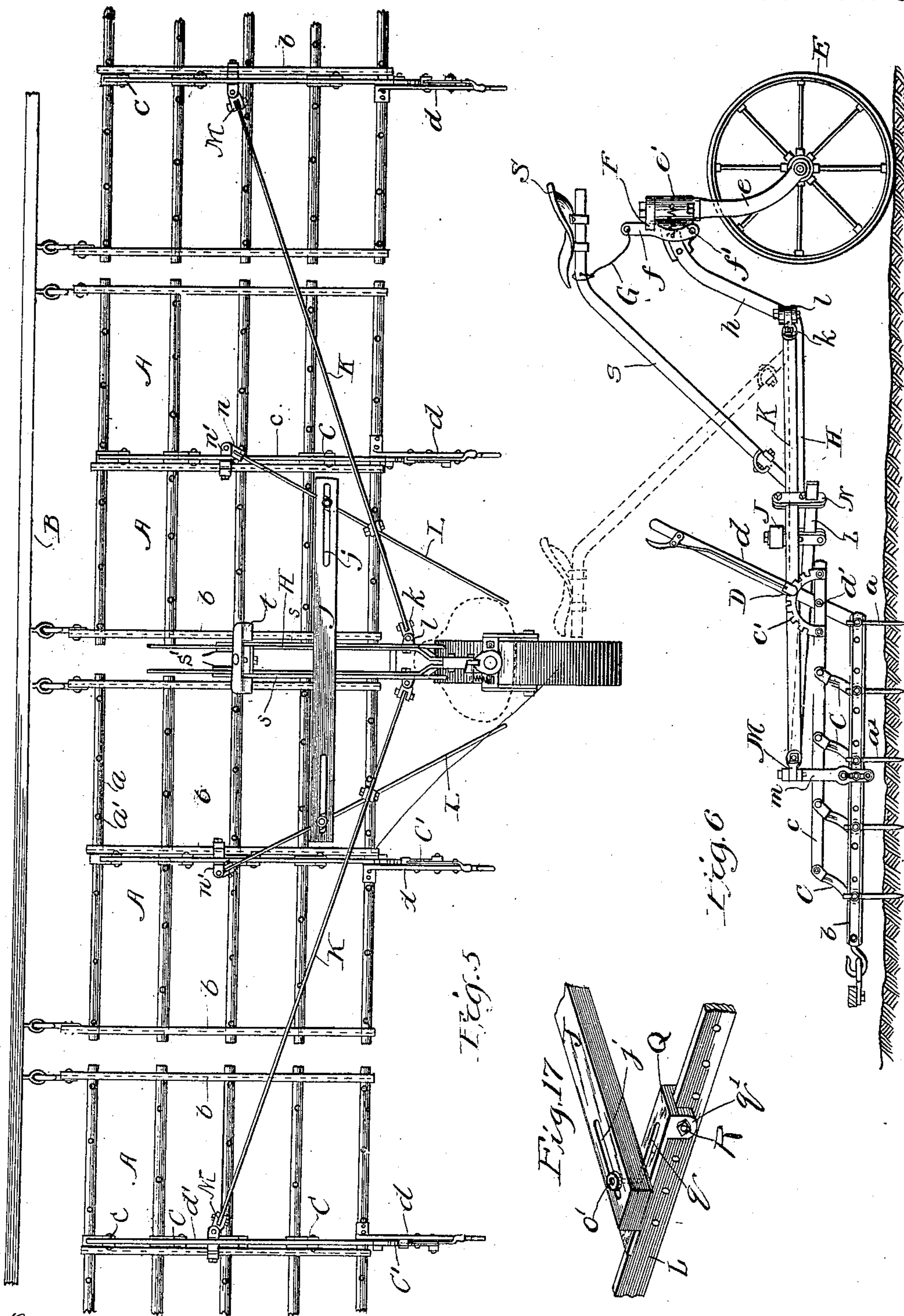
Patented Jan. 16, 1900.

E. E. VOORHEES.
HARROW ATTACHMENT.

(Application filed Sept. 5, 1899.)

(No Model.)

5 Sheets—Sheet 2.



Witnesses:
Wm. O. Bell

Inventor:
Elmer E. Voorhees,
By *Wm. Richards and Raymond & Oroskunder, Attys.*

No. 641,418.

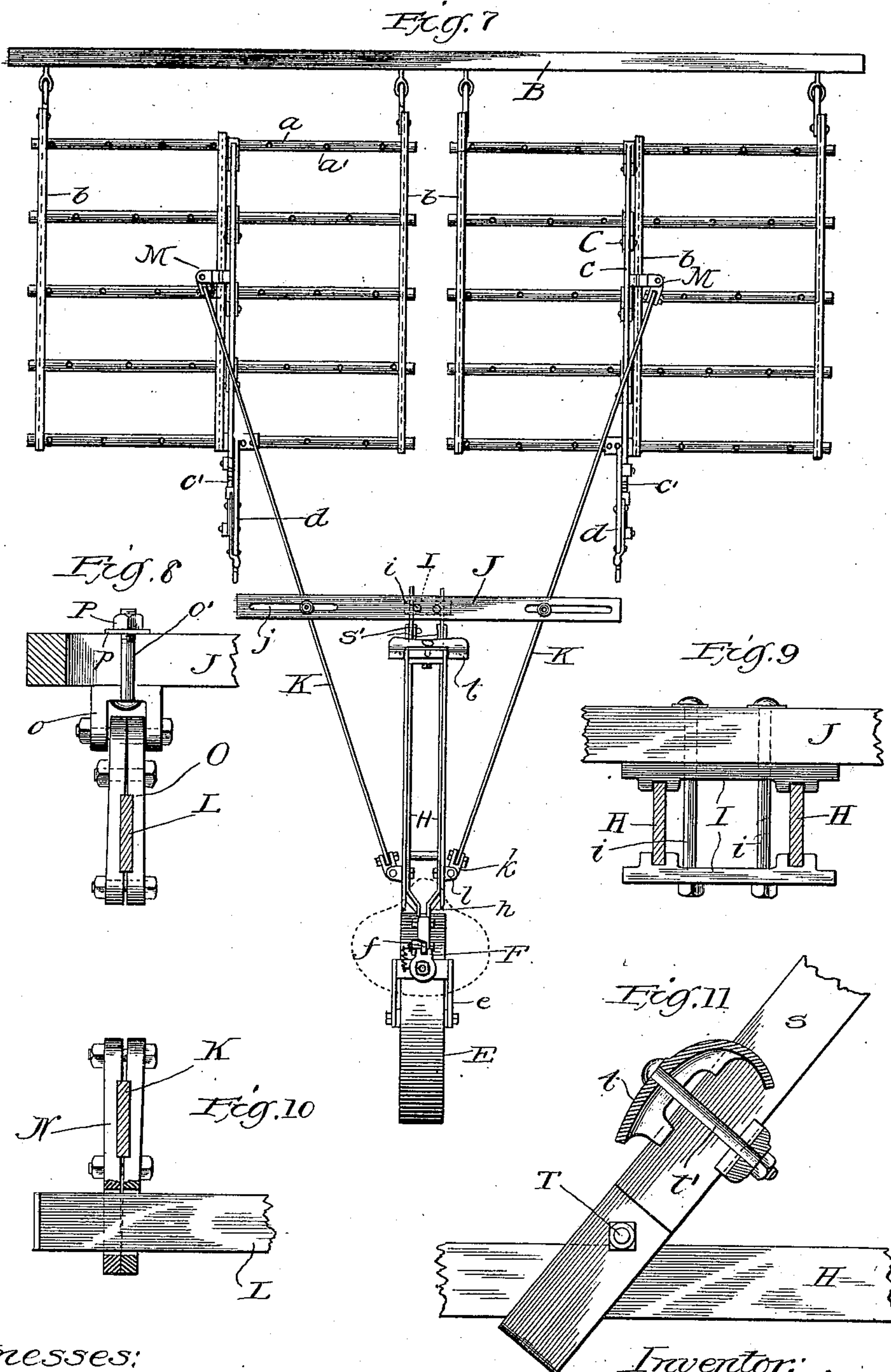
Patented Jan. 16, 1900.

E. E. VOORHEES.
HARROW ATTACHMENT.

(Application filed Sept. 5, 1899.)

(No Model.)

5 Sheets—Sheet 3.



Witnesses:
Wm. O. Bell

Inventor:
Elmer E. Voorhees,
{ *H. M. Richards and*
By *Raymond & O'Quinn*
Attys.

E. E. VOORHEES.
HARROW ATTACHMENT.

(Application filed Sept. 5, 1899.)

(No Model.)

5 Sheets—Sheet 4.

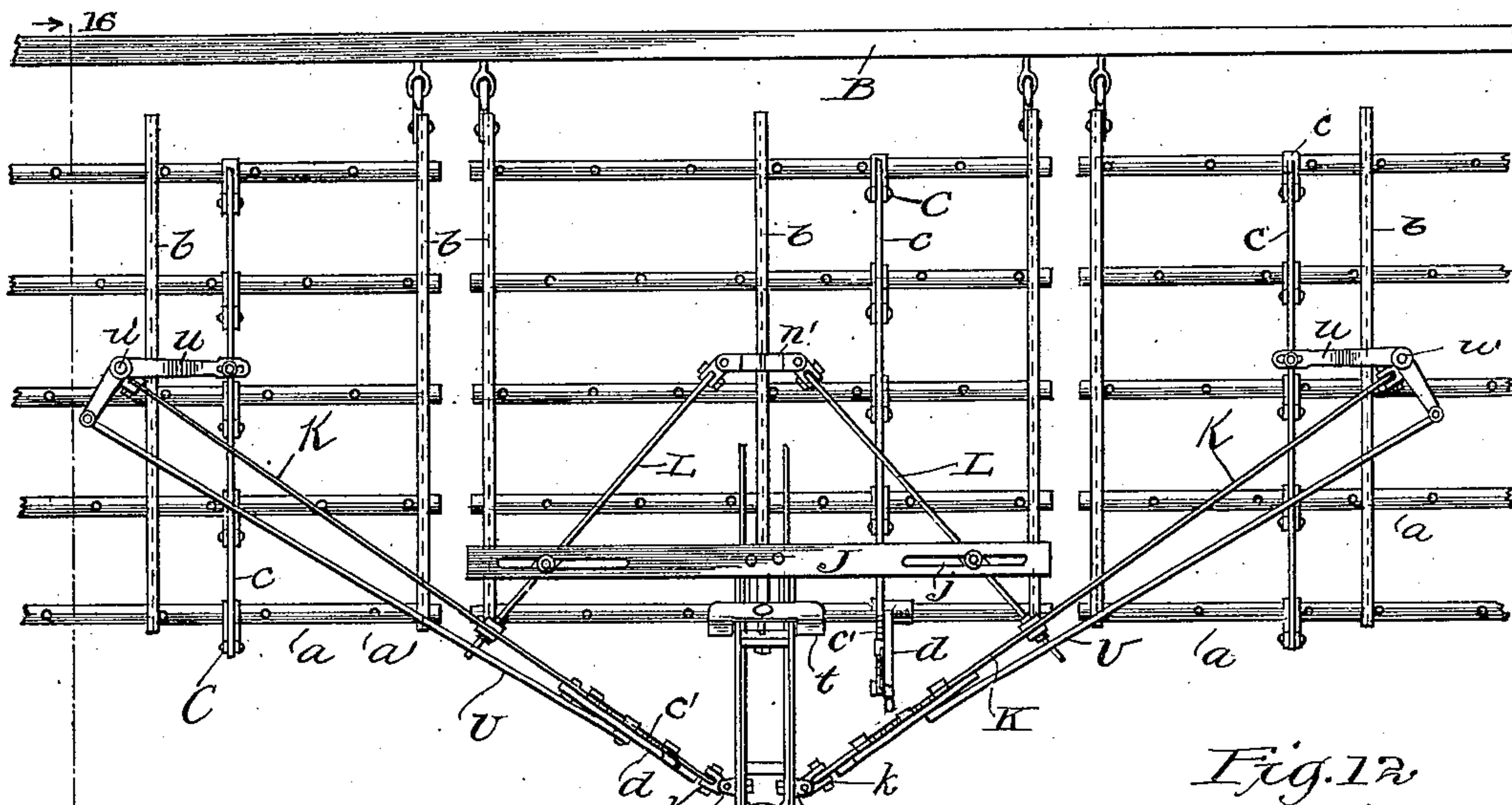


Fig. 12

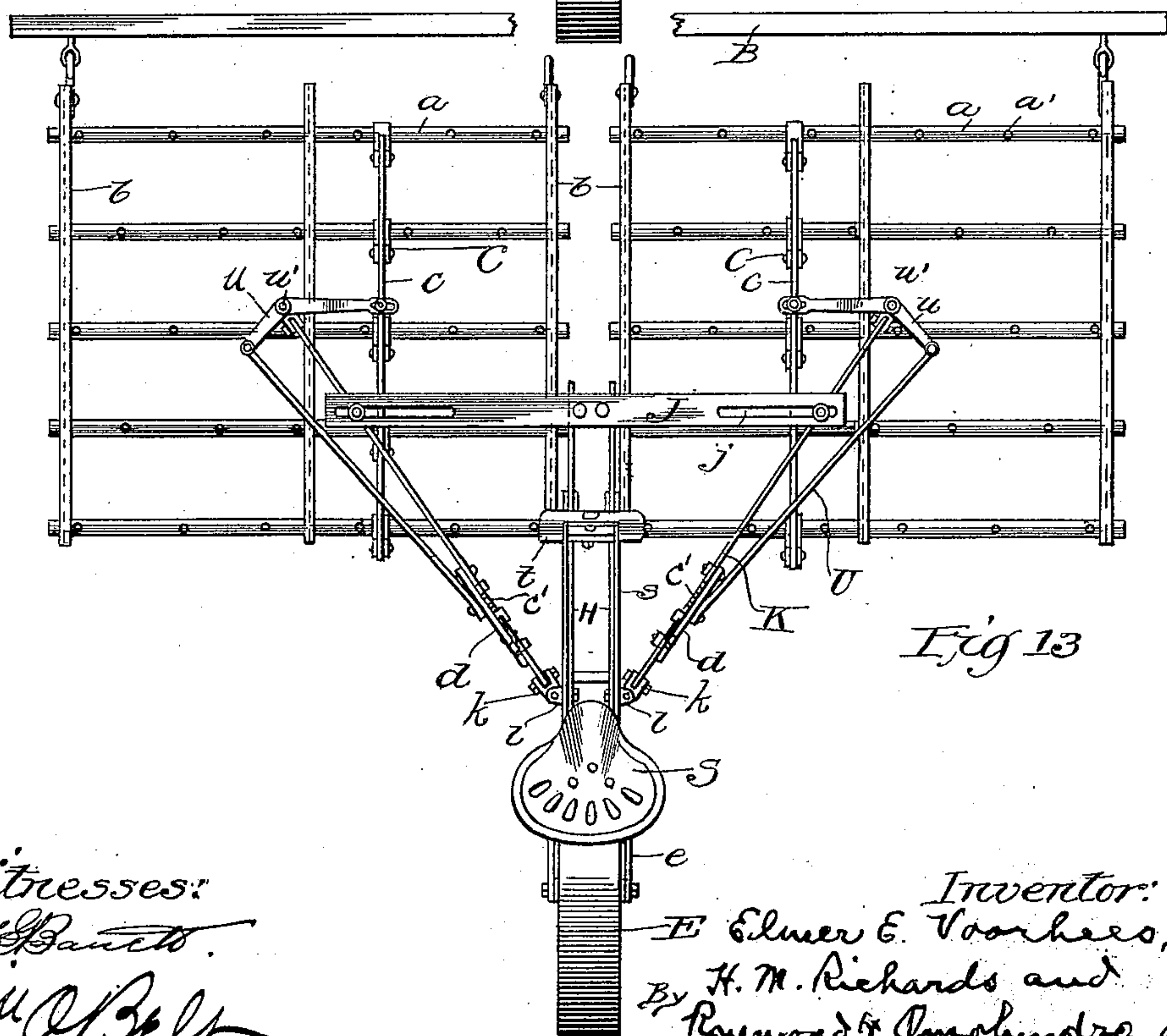


Fig. 13

Witnesses:

H. B. Bunch

Wm. A. Bell

Inventor:

E. Elmer E. Voorhees

By *H. M. Richards and*

Raymond & Amundson, Attys.

No. 641,418.

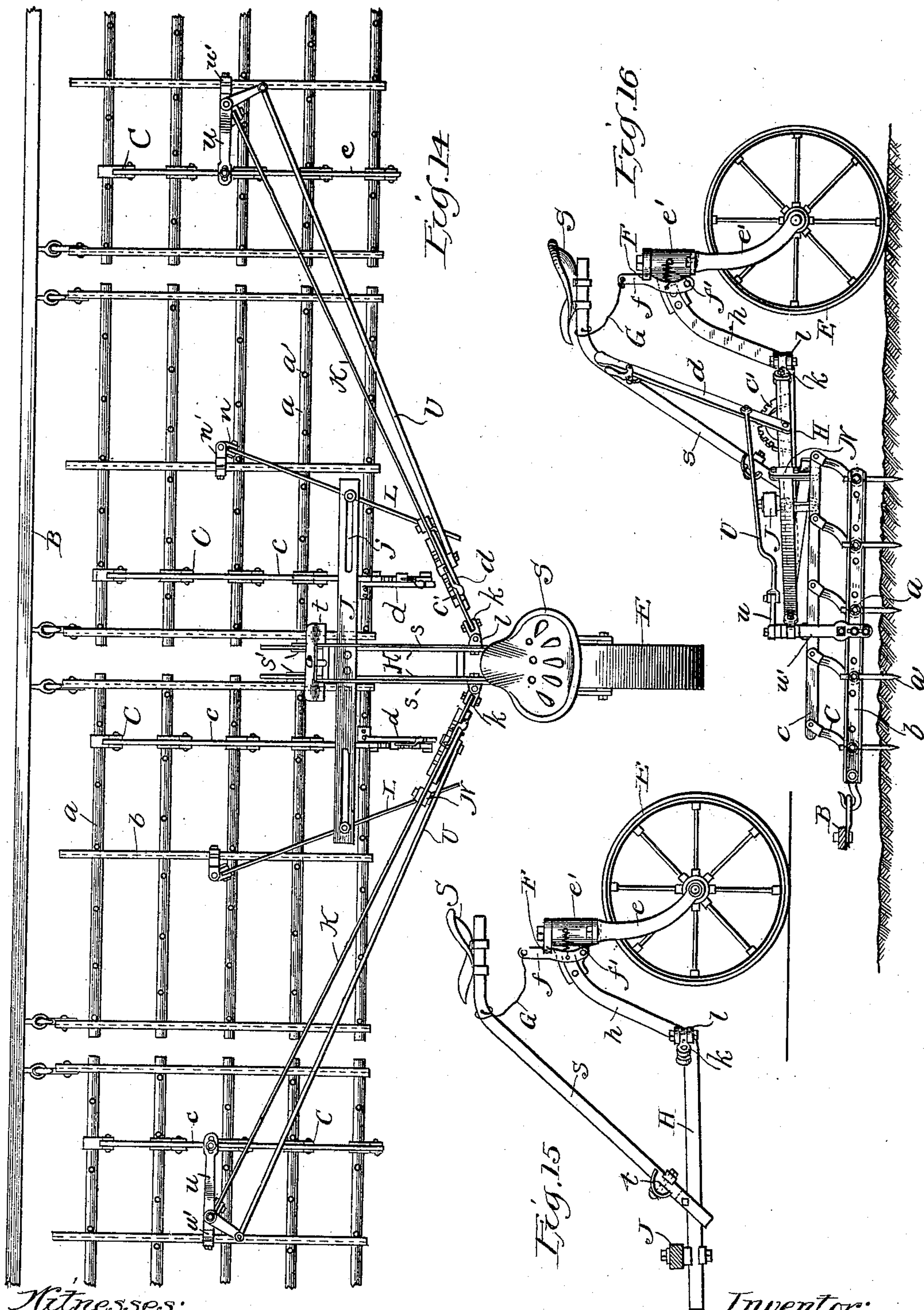
Patented Jan. 16, 1900.

E. E. VOORHEES.
HARROW ATTACHMENT.

(Application filed Sept. 5, 1899.)

(No Model.)

5 Sheets—Sheet 5.



Witnesses:

H. E. Voorhees

Wm. A. Bell

Inventor:
E. E. Voorhees
By { H. M. Richards and
Raymond & Chubbuck, Attys.

UNITED STATES PATENT OFFICE.

ELMER E. VOORHEES, OF BLANDINSVILLE, ILLINOIS.

HARROW ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 641,418, dated January 16, 1900.

Application filed September 5, 1899. Serial No. 729,537. (No model.)

To all whom it may concern:

Be it known that I, ELMER E. VOORHEES, a citizen of the United States, residing at Blandinsville, in the county of McDonough and State of Illinois, have invented certain new and useful Improvements in Harrow Attachments, of which the following is a specification.

My invention relates to certain new and useful improvements in harrow attachments; and its primary object is to arrange the seat for the driver in such a manner that it can be adjusted to increase or decrease the weight bearing upon the sections of the harrow.

Another object of the invention is to lighten the sections of the harrow and provide an adjustable seat-support for the driver which can be regulated to throw the weight of the driver more or less upon the sections of the harrow to secure the best results.

A further object of the invention is to construct and arrange the different parts of a harrow so that the toothed bars may be rocked by the driver while remaining on his seat on the apparatus.

My invention also has in view to simplify and improve the general and detail construction of harrows and provide an attachment whereby the weight of the driver may be thrown more or less upon the teeth, adapted to be embodied with harrows having two or more sections.

With these and other ends in view my invention consists in the peculiar construction and arrangement of parts hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a top plan view of a harrow embodying my invention and having three sections. Fig. 2 is a detail enlarged view on the line 2 2 of Fig. 1, partly in section. Fig. 3 is a side elevation of the parts shown in Fig. 2. Fig. 4 is a top plan view, partly in section, showing a portion of the seat-support. Fig. 5 is a top plan view showing my invention embodied with a harrow having four sections, the outer sections being partly broken away. Fig. 6 is a sectional elevation on the line 6 6 of Fig. 1. Fig. 7 is a top plan view of a harrow embodying my invention and having two sections. Fig. 8 is a detail enlarged sectional view on the line 8 8 of Fig. 1. Fig. 9 is a similar view on the line 9 9 of Fig. 1. Fig. 10 is

also a similar view on the line 10 10 of Fig. 1. Fig. 11 is another detail enlarged sectional view on the line 11 11 of Fig. 1. Fig. 12 illustrates my invention as embodied in a three-section harrow and showing the device whereby the teeth-bars may be rocked while the driver remains on his seat. Fig. 13 illustrates the same device embodied in a two-section harrow. Fig. 14 also illustrates these teeth-bar-rocking devices adapted to be operated by the driver while remaining on his seat embodied in a four-section harrow. Fig. 15 is a sectional elevation on the line 15 15 of Fig. 1. Fig. 16 is also a sectional elevation on the line 16 16 of Fig. 12. Fig. 17 is a detail view showing a modification of my invention.

Referring to the drawings, in which like letters of reference denote corresponding parts in all of the figures, A designates a section of an ordinary rocking-bar harrow, which can be constructed in any desired manner adapted for the purpose of my invention, of any size and shape, but preferably lighter in weight than the ordinary sections of a like character heretofore made, for a reason hereinafter set forth in full. The sections of the harrow are connected to a draft-bar B, and to this bar the draft appliances are attached. The sections shown in the drawings each comprise the rocking bars *a*, carrying teeth *a'* and journaled in bearings in the parallel frame-bars *b*, each of said rocking bars *a* being connected by a link C with shifting rod *c*, in the construction illustrated, for example, in Figs. 1 and 6, a toothed segment *c'*, adapted to be engaged by the detent D, carried by the lever *d*, pivotally secured to the rear rocking bar and to the shift-rod *c* at *d'*. In this construction the direction of the teeth may be changed by operating the lever *d*, which carries the links C forward or backward and rocks the bars *a* in their bearings.

At the rear of the apparatus is a caster-wheel E, journaled in a fork *e*, which has its upper end secured in a socket-casting *e'*, said casting having a series of teeth F on one side thereof, with which a locking device *f*, pivoted on said socket-casting, is adapted to engage, being under the tension of a spring *f'*, so that when the harrow is traveling in straight rows the caster-wheel will be locked rigidly with the frame and on the turns the locking de-

vice can be withdrawn from engagement with the teeth F by means of a string or chain G to permit of the caster-wheel conforming to the desired turn.

5 The seat-supporting frame H consists of a pair of parallel bars, which are bent upwardly and rearwardly at *h* and connected with the socket-casting *e'*. The forward ends of these bars, constituting the seat-support, 10 are fastened between the clamping-plates I to the under side of a cross-plate J by means of the bolts *i*. (See Fig. 9.) This cross-plate is provided with slots *j* at its outer ends, for a purpose hereinafter described.

15 The seat-support, it will be observed, is carried at its rear end by the caster-wheel and by the cross-plate J at its forward end, and this cross-plate is supported on rods extending from the harrow-sections to the seat- 20 support. In Fig. 1 I have shown how my invention is embodied in a three-section harrow, and in this construction, as well as when the invention is embodied in a four-section harrow, I will use the two long rods K, con- 25 nected to the seat-support and to one of the frame-bars *b* of the outer sections of the harrow, and the short rods L, connected with the middle frame-bar *b* of the middle section and to the plate J and long rods K.

30 The long rods and short rods are constructed and attached to the respective parts in a similar manner, and it will therefore only be necessary to describe one side in detail. The long rod K is pivotally secured to a swivel *k* 35 by a pivot-pin *k'*, said swivel being in turn pivotally supported in the bracket *l*, fastened to one of the bars forming the seat-support, Fig. 4, so that said rod K is capable of a movement in any direction. The forward 40 end of the long rod K is pivotally secured in a swivel M, pivoted on an arm *m*, fastened to the frame-bar *b* of the section Fig. 6.

The short rod L passes through a clamp N, hanging from the long rod K, Fig. 10, and its 45 forward end is pivoted in a swivel *n*, mounted on a bracket *n'*, rigidly fastened on the frame-bar *b* of the section Fig. 2.

There are several different ways in which the cross-plate J may be connected with the 50 short rods L, and in Figs. 8 and 17 I have shown two different ways in which this can be done.

Referring to Fig. 8, the short rod L is supported in a clamp O, hanging from a swivel 55 as carried by the bolt *o'*, which extends up through the slot *j* in the cross-plate and is provided with a nut P and washer *p* of greater diameter than the cross-diameter of the slot. This provides for any adjustment of the short 60 rod L with relation to the cross-plate J. In Fig. 17 I have shown a bracket Q, provided with a slot *q*, and a bolt *o'*, passing through the slots *qj*, whereby the bracket can be secured in place when adjusted in any position 65 on the cross-plate, said bracket being also provided with ears *q'*, in which the rod L is

fastened by means of a pin R. The seat S is carried on a post, which consists of two bars *s*, having the inwardly-bent lugs *s'* at their 70 lower ends to bear against the under sides of the seat-support H. A bolt T passes through and connects the two bars *s* above their lower ends, so that when said bars are arranged on the support the bolt T will engage the upper 75 side of the seat-support, while the lugs *s'* will engage the under side, thereby securing the seat-post in its adjusted position on the support. *t* designates a foot-rest which is fastened to the seat-post by a bolt *t'*, Fig. 11.

In Fig. 1, showing a three-section harrow, 80 Fig. 5, showing a four-section harrow, and Fig. 7, showing a two-section harrow, I have illustrated the ordinary devices employed for adjusting the rocking bars carrying the teeth, comprising the lever *d*, shifting bar *c*, and 85 links C, connecting the shifting bar to the tooth-bars. It will be observed, however, that the driver will be unable to operate the levers *d* while remaining on his seat in the constructions shown in these figures; but in Figs. 90 12, 13, and 14 I have arranged devices in order that this operation may be performed by the driver without moving from his seat.

Referring to Figs. 12, 13, and 14, showing, 95 respectively, a three, two, and a four section harrow, it will be observed that the lever *d* is mounted on the long arm K, which also carries the segment *c'*, and this lever is connected by a link U with one arm of a bell-crank *u*, 100 mounted on a post *u'*, the other arm of said bell-crank being connected with the shifting bar *c*. Each of the outer sections of the harrow is provided with one of these lever-ad- 105 justing devices and the levers are located on the rods K, close to the seat-support, so that they can be easily operated by the driver while remaining on his seat. In the three-section and four-section harrows the middle section or sections is provided with the ordi- 110 nary adjusting devices, as hereinbefore described, and shown in Fig. 6, and the lever thereof may be arranged so that it can also be operated by the driver while remaining in his seat.

My improved attachment provides a har- 115 row which has many advantages over those generally in use at the present time, and particularly in the respect that the sections and all of the parts of the harrow and attachment, in fact, can be made comparatively light and 120 the seat-post adjusted on the seat-support in the proper position to throw the weight of the driver upon the sections to secure the necessary weight thereon. If desired, the seat-post may be reversed in the manner shown in dot- 125 ted lines in Fig. 6 in order to place the weight of the driver farther forward over the sections. I am thus enabled, it will be observed, to secure a desired amount of weight on the harrow-sections, while at the same time mak- 130 ing the harrow itself lighter in weight, this result being accomplished by utilizing the

weight of the driver in the manner pointed out hereinbefore.

In the embodiment of my invention as hereinbefore described and shown in the drawings the seat-post is adjustably mounted on a support which is carried at one end by the caster-wheel and at its forward end by a cross-plate resting on rods connected to the sections of the harrow and to the support itself, thereby throwing upon the sections of the harrow whatever weight there may be upon the forward ends of the seat-support.

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

1. An attachment for sectional harrows comprising a seat-support partly carried by, and directly attached to, each section of the harrow and a seat-post adjustably mounted on said support, substantially as described.

2. An attachment for sectional harrows comprising a seat-support partly carried by, and directly attached to, each section of the harrow and a seat-post loosely and adjustably connected to said support, substantially as described.

3. An attachment for harrows comprising a seat-support partly carried by the sections of the harrow, a seat-post having its lower end arranged to engage the under side of the support and a cross-plate to engage the upper side of said support, substantially as described.

4. An attachment for harrows comprising a seat-support, rods connected to the sections of the harrow and to said support, a cross-plate supported by said rods and connected with the seat-support and a seat-post mount-

ed on said seat-support, substantially as described.

5. An attachment for harrows comprising a seat-support, rods connected with the sections of the harrow and said support, a cross-plate supported by said rods, the forward end of the seat-support being adjustably connected with said cross-plate, and an adjustable seat-post carried by said support, substantially as described.

6. An attachment for harrows comprising a cross-plate, a seat-support mounted on a caster-wheel at its rear end and having its forward end adjustably secured to said cross-plate and rods connected with the sections of the harrow and said seat-support and carrying the cross-plate, substantially as described.

7. An attachment for harrows comprising a cross-plate, a seat-support mounted on a caster-wheel at its rear end and having its forward end adjustably secured to said cross-plate and rods having a universal-joint connection at their forward ends with the sections of the harrow and at their rear ends with the seat-support and carrying the cross-plate, substantially as described.

8. A harrow attachment comprising a seat-support, rods extending from the harrow-sections to said support and partly supporting the same, said harrow-sections having rocking tooth-bars and a device carried by said rods for adjusting said tooth-bars, substantially as described.

ELMER E. VOORHEES.

Witnesses:

E. L. DELANEY,
JOS. B. LITTLE.