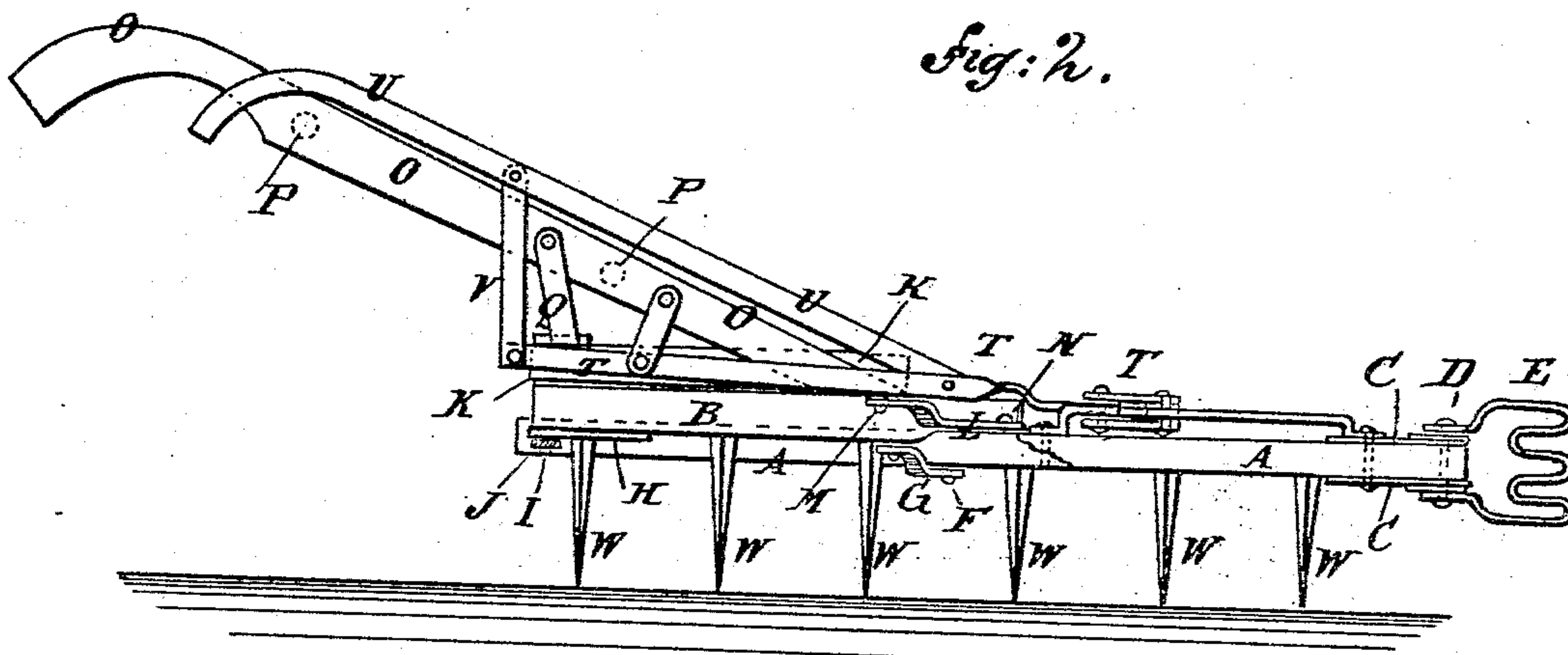
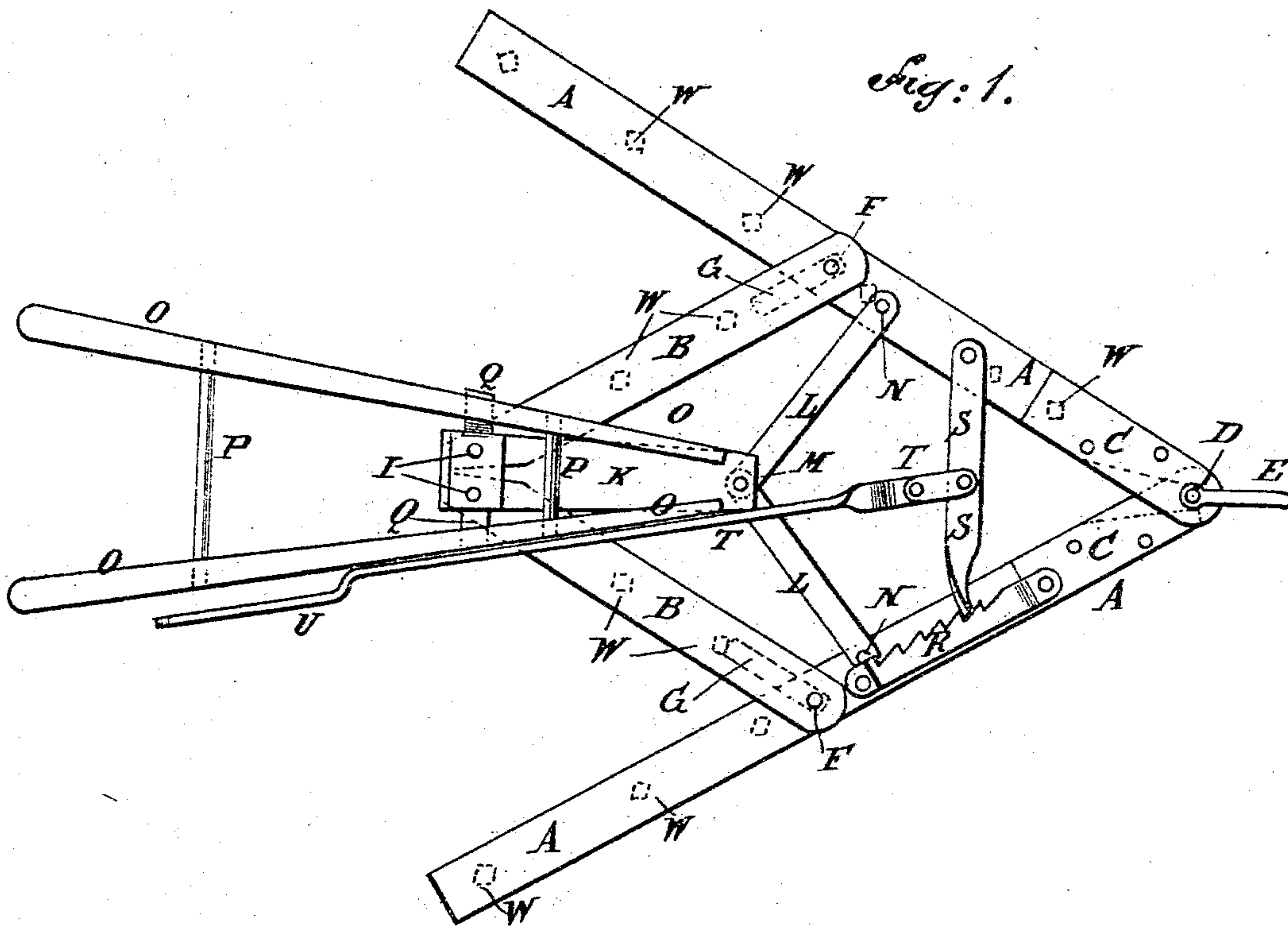


(No Model.)

W. BOATNER.  
ADJUSTABLE HARROW.

No. 321,676.

Patented July 7, 1885.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIE BOATNER, OF WOODVILLE, MISSISSIPPI.

## ADJUSTABLE HARROW.

SPECIFICATION forming part of Letters Patent No. 321,676, dated July 7, 1885.

Application filed September 4, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIE BOATNER, of Woodville, in the county of Wilkinson and State of Mississippi, have invented certain  
5 new and useful Improvements in Adjustable Harrows, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming part of this specification, in  
10 which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of one of my improved harrows. Fig. 2 is a side elevation of the same, part being broken away.

15 The object of this invention is to provide harrows constructed in such a manner that they can be readily adjusted narrower or wider, as the work to be done may require.

The invention consists in an adjustable harrow constructed with outer and inner toothed bars, a center bar and its braces hinged to each other, to adapt the said harrow to be contracted and expanded. The hinged parts of  
20 the harrow are supported against the resistance of the soil by a ratchet-bar attached to one of the outer toothed bars and a pawl pivoted to the other outer toothed bar. The pawl can be raised from the ratchet-bar by a lever pivoted to the center bar of the harrow, to allow  
25 the said harrow to be contracted by the resistance of the soil, as will be hereinafter fully described.

A represents the side or outer bars of the harrow-frame, and B the inner bars. The  
35 forward ends of the outer bars, A, are beveled upon their inner sides, as indicated by dotted lines in Fig. 1, and have iron plates C attached to their upper and lower sides, the ends of which plates project in front of the said ends  
40 of the bars A. The projecting ends of the plates C of the two bars overlap each other, and are perforated to receive the bolt D. The bolt D also passes through the eyes of the clevis E, to which the draft is applied. The  
45 forward ends of the inner bars, B, are hinged to the upper sides of the middle parts of the outer bars, A, by bolts F, and the connection is strengthened by the braces G, attached to the lower ends of the said bolts F and to the

lower sides of the said inner bars, B. The  
50 rear ends of the inner bars, B, are beveled upon their inner sides, are strengthened by plates H, attached to their lower sides, and are hinged by bolts I and a yoke, J, or by a U-bolt to each other and to the rear end of the  
55 center bar, K. The forward end of the center bar, K, is kept in position by two braces, L, the inner ends of which are hinged by a bolt, M, to the said forward end of the center bar. The outer ends of the braces L are hinged to  
60 the side bars, A, a little in front of the outer ends of the inner bars, B, by bolts N. To the forward part of the center bar, K, are attached the forward ends of the handles O, the rear  
65 parts of which are connected and held at the proper distance apart by rounds P. The handles O are supported at the proper height by the braces Q, the upper ends of which are attached to the said handles, and their lower  
70 ends are attached to the rear end of the center bar, K.

R is an iron bar, in the inner edge of which are formed ratchet-teeth, and which has its ends bent downward and outward, and perforated to receive the nails, screws, or bolts by  
75 which it is secured to the bar A, so that its toothed middle part will be raised above the said bar A. With the teeth of the ratchet-bar R engages the forward end of the pawl S, the rear end of which is pivoted to the other bar,  
80 A. To the middle part of the pawl S is pivoted the forward end of the lever T, which is pivoted to the edge of the center bar, K. To the lever T is attached the forward end of the inclined hand-piece U, which is connected with  
85 the rear end of the lever T by a brace, V. The brace V is made of such a length as to raise the handle of the hand-piece U to such a height that it can be conveniently reached and operated by the plowman without releasing the  
90 handle O.

If desired, the lever T, hand-piece U, and brace-bar V can be made in one piece by so bending the said lever as to bring its handle into proper position. The forward end of  
95 the lever T is jointed to allow the pawl S to move freely, the said front being so made as to have a lateral but no vertical play. With



this construction the harrow can be expanded by raising the rear end of the said harrow by means of the handles O, and then pushing the center bar, K, forward with the foot until the said harrow has been expanded to the desired width.

The harrow can be contracted by operating the lever T U V to raise the pawl S above the ratchet-bar R, and then starting the horse forward, when the resistance of the ground will force the bars A inward, the pawl S being lowered into the teeth of the ratchet-bar R when the harrow has been contracted to the desired width.

The bars A and B are provided with harrow-teeth W, which may be varied in number, as the size of the harrow and the character of the work to be done may require.

In the case of large harrows a seat for the driver can be attached to the center bar, K, the handles O being omitted, if desired.

This harrow can also be used as a cultivator, and can be quickly adjusted or changed without removing the hands from the handles.

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

1. The herein-described harrow, consisting

of the outer bars, A, pivoted together at their forward ends, the center bar, K, the inner bars, B, having their outer ends pivoted to the outer bars and their inner ends to the rear end of the center bar, and the braces L, pivoted to the outer bars and to the forward end of the center bar, as set forth.

2. In an adjustable harrow, the combination, with the hinged toothed bars A B, the center bar, K, and the braces L, of the ratchet-bar R and pawl S, substantially as herein shown and described, whereby the said toothed bars will be held in place against the resistance of the soil, as set forth.

3. In an adjustable harrow, the combination, with the hinged toothed bars A B, the center bar, K, the braces L, and the ratchet-bar R and pawl S, of the lever T U V, substantially as herein shown and described, whereby the said pawl can be readily raised from the ratchet-bar when the harrow is to be contracted, as set forth.

WILLIE BOATNER.

Witnesses:

W. W. LANEHART,

W. H. MORGAN.