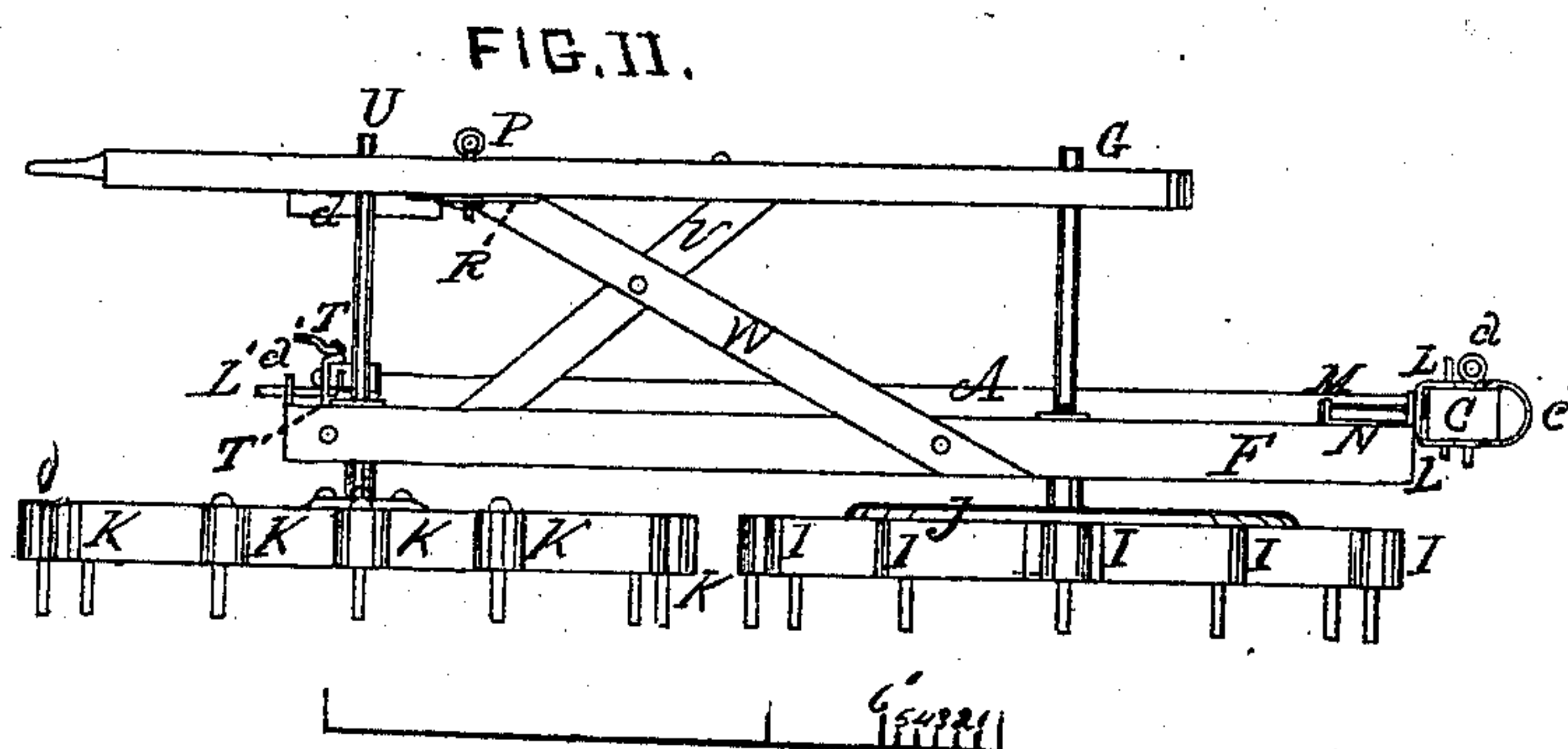
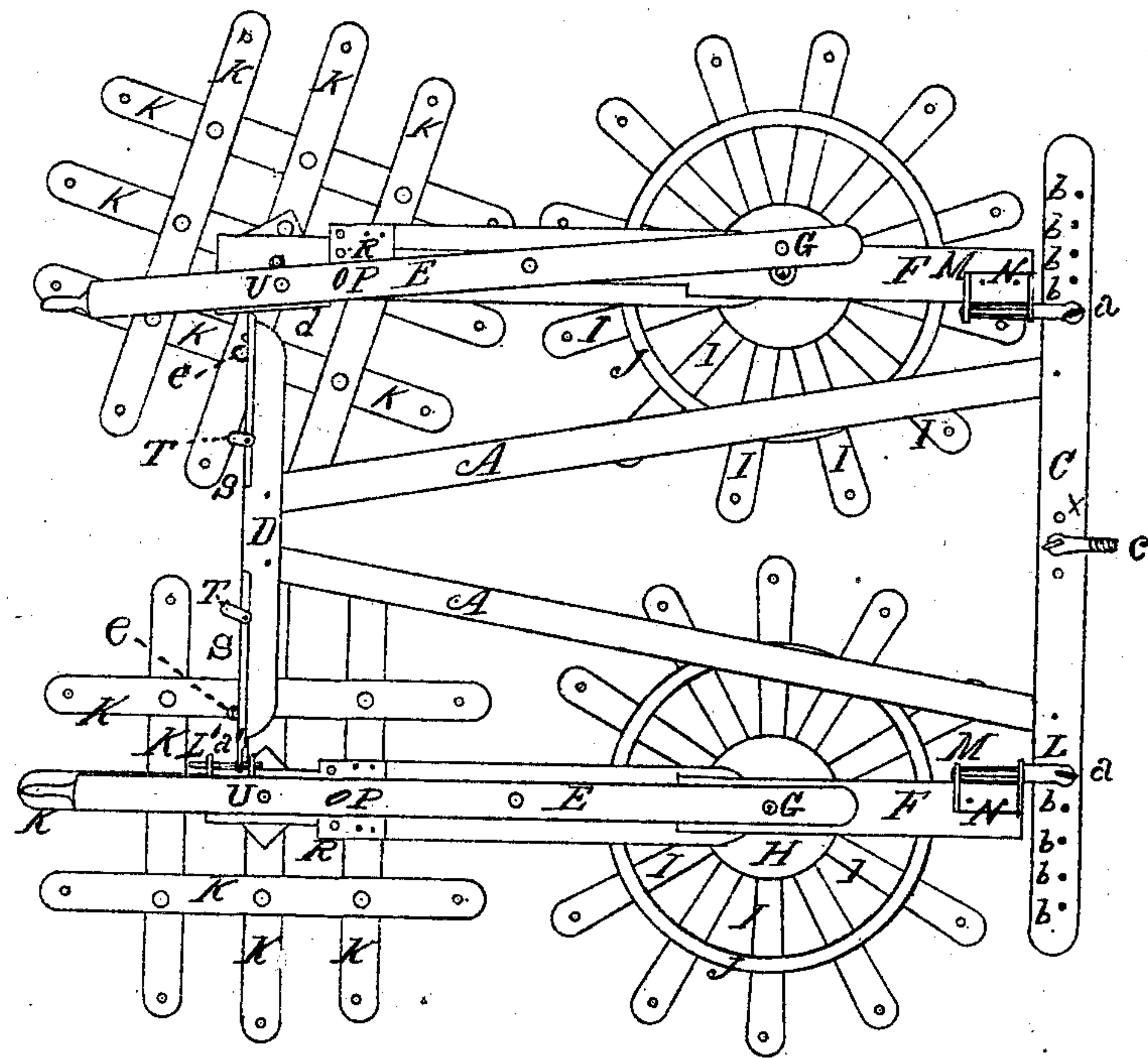


HENRY W. ROBINSON.

Improvement in Rotary Harrows.

No. 122,911.

Patented Jan. 23, 1872.



Scale of 3 Feet.

WITNESSES.

A. H. Chapin
E. E. Gibson

INVENTOR.

Henry W. Robinson
By G. d. Chapin, his
Atty

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FIG. III.

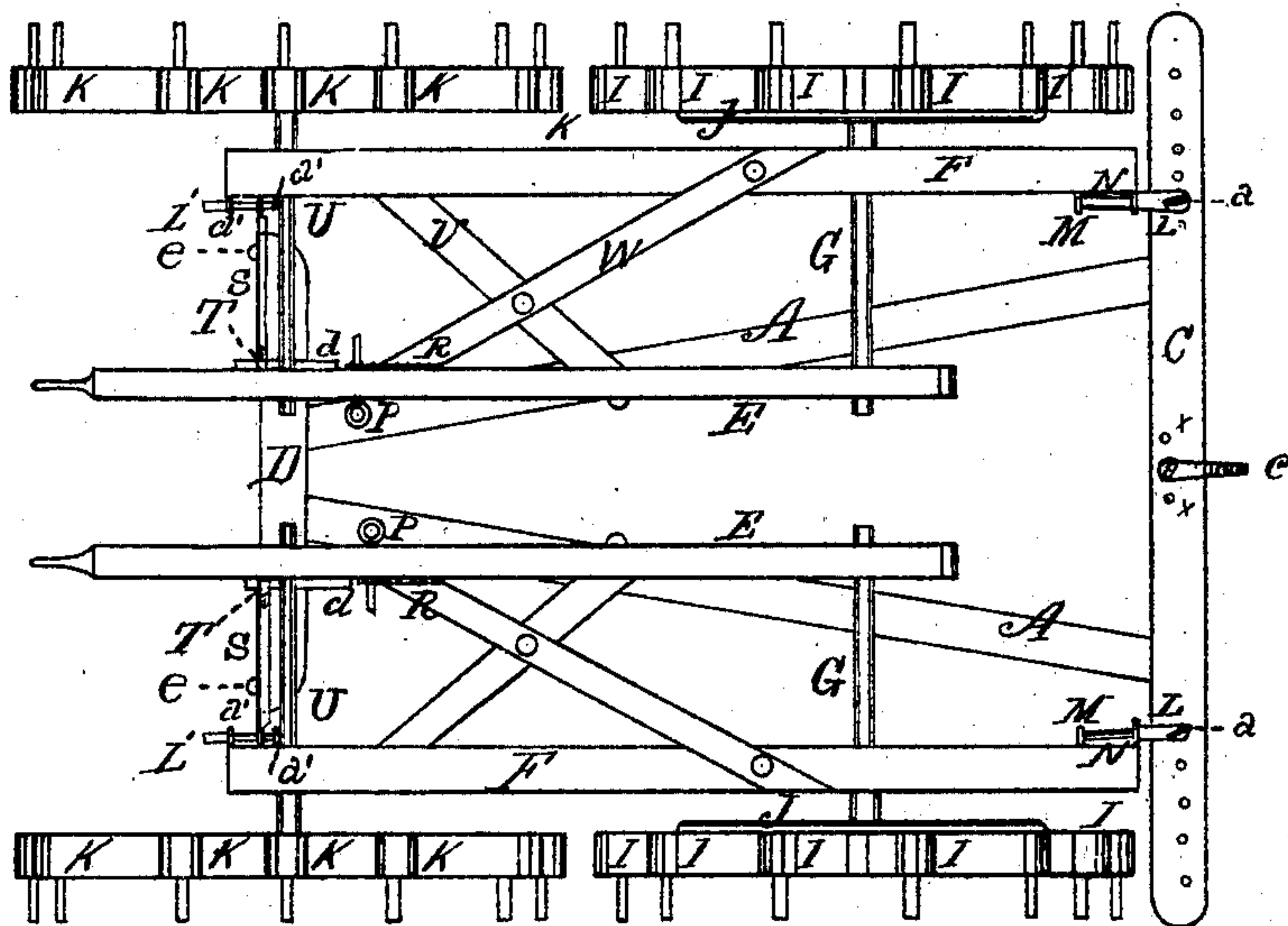


FIG. IV.

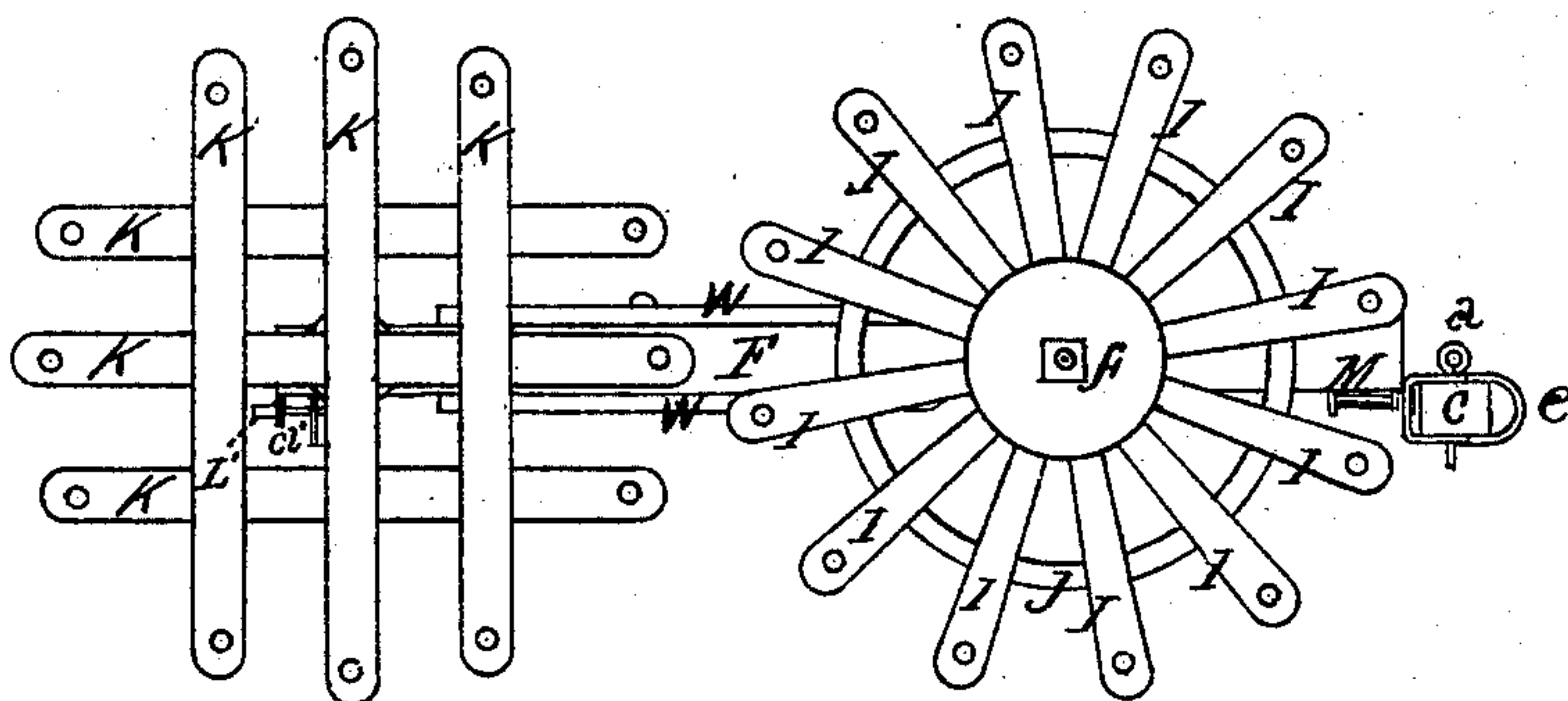
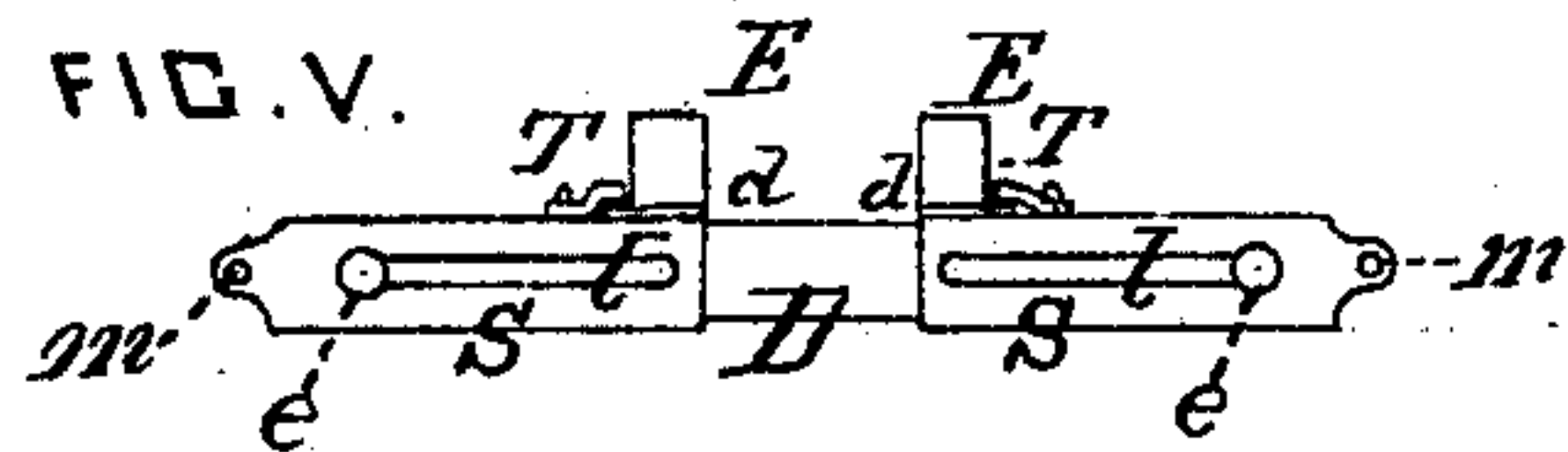


FIG. V.



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UNITED STATES PATENT OFFICE

HENRY W. ROBINSON, OF WOODSTOCK, ILLINOIS.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. 122,911, dated January 23, 1872.

SPECIFICATION.

Specification describing certain Improvements in Adjustable Rotary Harrow, invented by HENRY W. ROBINSON, of Woodstock, in the county of McHenry and State of Illinois.

The first part of my invention consists of the combination of rotary harrows, so arranged that their under sides may conform to the surface of the ground to be tilled, and so that they may have any required adjustment to or from each other for pulverizing the soil to a greater or less extent, as may be required, as the whole is hereinafter fully set forth and shown.

In the drawing, Figure 1, sheet 1, is a plan view of the harrow in position for use; Fig. 2, same sheet, a side elevation of the plan shown at Fig. 1. Fig. 3, sheet 2, is a plan view of the harrow as arranged to move to and from a field, the several harrows performing the functions of wheels; Fig. 4, same sheet, an elevation of Fig. 3; Fig. 5, sheet 2, a rear view of the rear adjusting devices.

C represents the front frame piece of the harrow, and D the rear frame piece, which are held in rigid parallel positions by braces A A, the part D being made considerably shorter than the piece C for reasons which the pivoting attachment clearly represents. F F are the adjustable beams which support the shafts of the harrows, and which are provided with eye-plates M N and pivoted clevises L as fastenings to hold the beams to the forward frame piece C in position to rotate. A series of holes, *b b b*, are made in each end of the part C for the convenience of adjusting the harrows to or from each other, for tilling the soil more or less thoroughly or running on both sides of a row, one or both forward ends of the beams F being moved outward, as the case may require, by lifting out a clevis-pin, *a*. The rear frame piece D is provided with slotted plates S S, which are jointed to the rear ends of the beams F by means of ear-straps *a'* and bolt L', or other suitable devices which will allow the beams F to swing at least one-fourth of a circle. The plates S are held to the part D by means of screws *e e*, which pass through the slots *t*, this arrangement being such that the

plates may be moved longitudinally on the frame piece D, so as to throw the rear harrows to or from each other, as may be required for tilling different soils. V W represent brace-frames, which are rigidly fastened to the beams F and support levers E, which are pivoted to the top ends of braces V. The shafts G U pass through the levers, and are thrown in opposite directions out of vertical positions by swinging the levers to the right or left on the plates R R fastened to the top ends of the braces W, said plates having a series of holes in them, as shown in Fig. 1, sheet 1, so that pins or bolts P put through the levers and into the plates will hold the levers in position when adjusted. The shafts G U are rigidly fastened to the harrows I, J, *f*, and K, and pass through slotted boxes or bearings in the beams, so that when they are thrown out of vertical lines, as above described, the harrows will be inclined relative to a horizontal plane, and incline in opposite directions. This arrangement is necessary to enable the harrows properly to cultivate ground having an undulated surface. The harrows may be made with radial arms to support the teeth, as shown at I I I, &c., or they may be made of suitable timbers intersecting each other; but in either case the outer ends should be cut off on the line of a circle, so that the harrows will perform the function of wheels when being moved from or to a field. The means for holding the harrows in a vertical position when they are traveling over ground, and when the braces W V and levers E are brought flat on the braces A and frame piece, as shown at Figs. 3 and 4, Sheet 2, consists of metal plates *d*, fastened to the insides of levers E, and of buttons T, fastened to the plates S S and arranged to swing over the projecting edges of said plates S. The draft attachment consists of a clevis, *c*, which has a longitudinal adjustment on the frame piece by means of a series of holes, *x*, so that the harrow can be drawn more or less cornerwise, and thus more thoroughly pulverize the soil, the clevis having ordinary notches, if required, to give a proper draft pitch.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. The combination of the pivoted levers E, brace-frames W V, adjustable beams F, shafts U G, and holes for adjusting the harrows to work on undulated soil, as described.

2. The combination of the adjustable beams F, frame A D C, clevis attachments M N L,

slotted plates S, and ear attachments *a'* T', for adjusting the harrows to and from each other, as and for the purpose set forth.

HENRY W. ROBINSON.

Witnesses:

THOS. M. COOK,

CHAUNCEY BIGELOW.