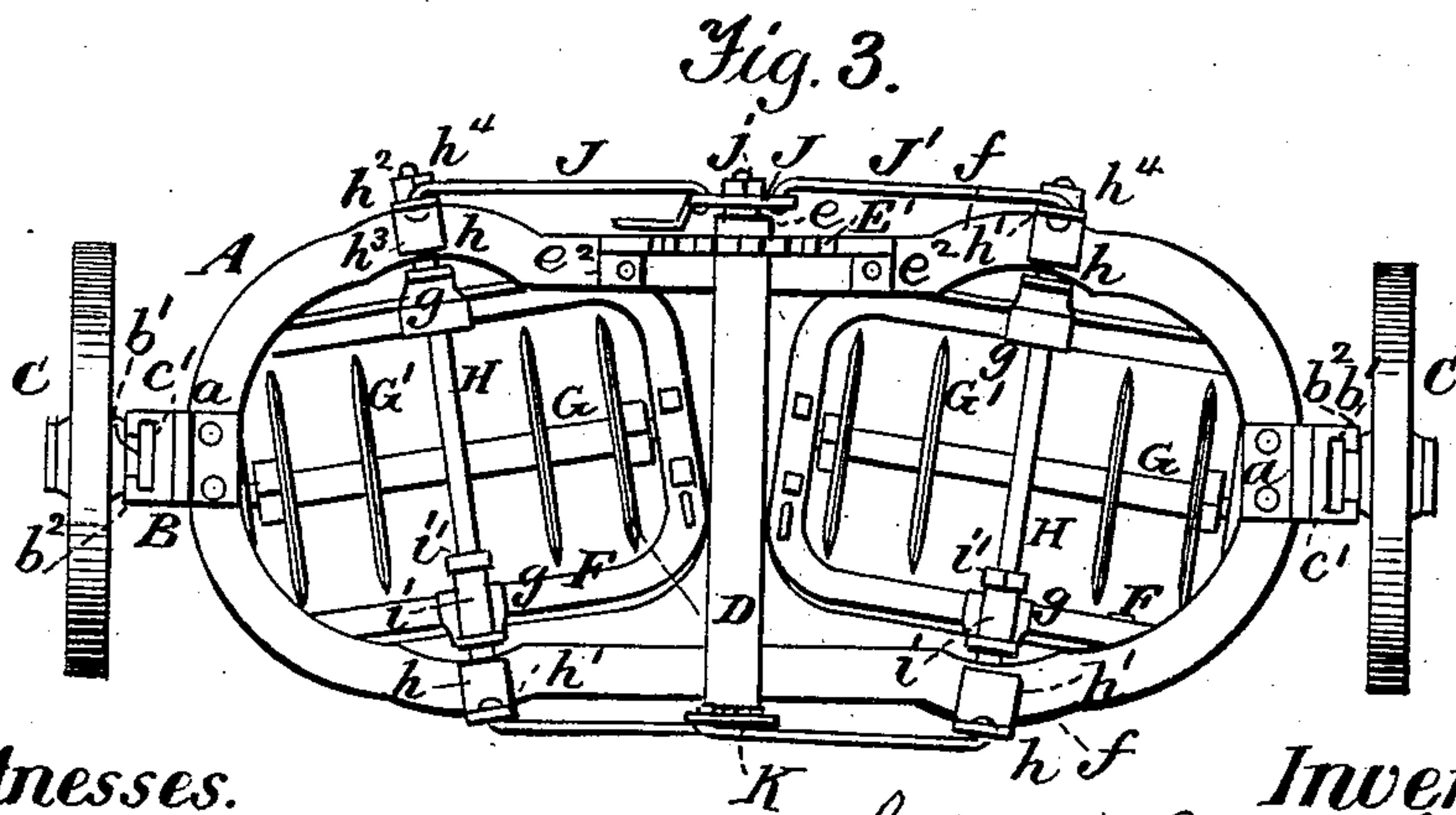
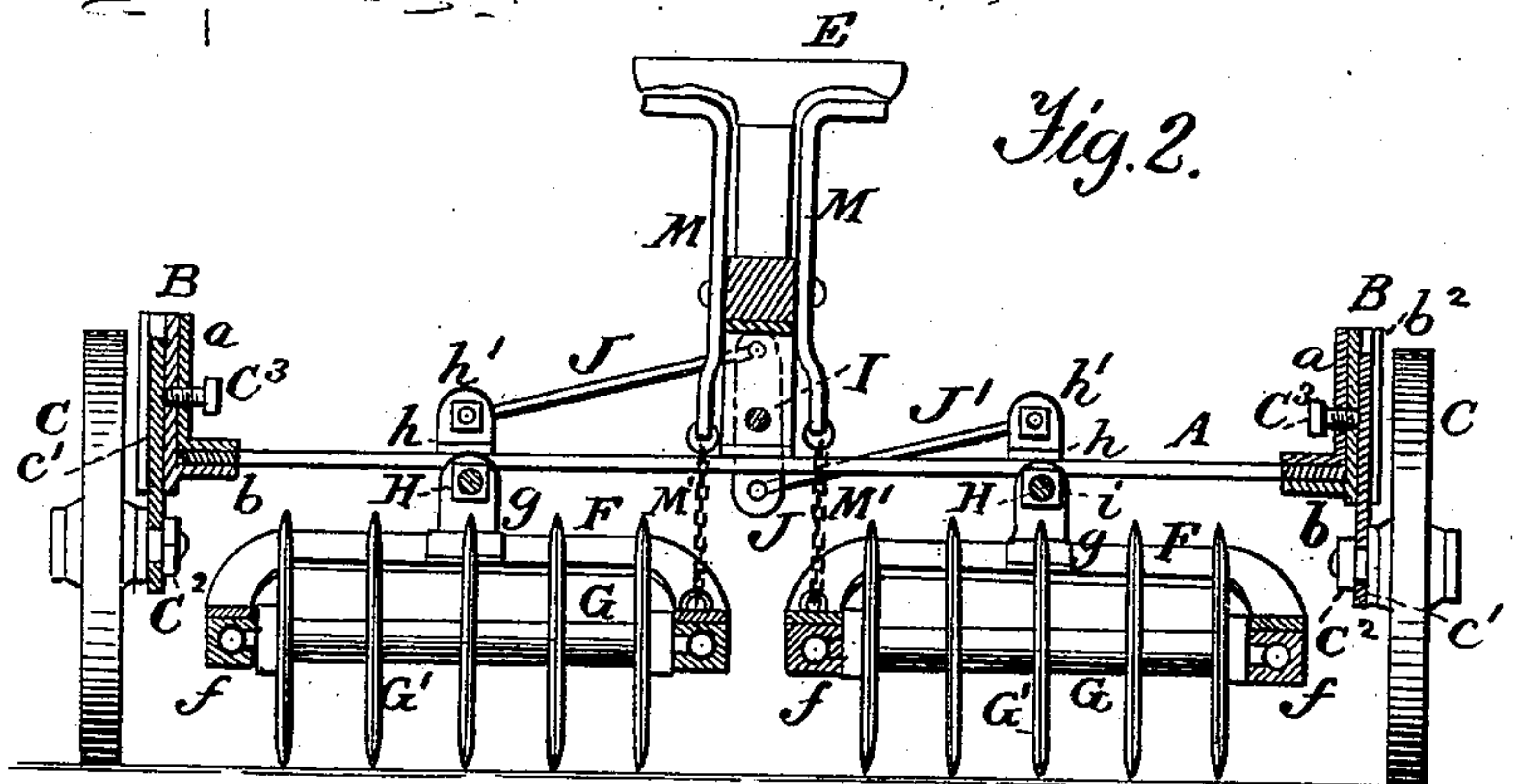
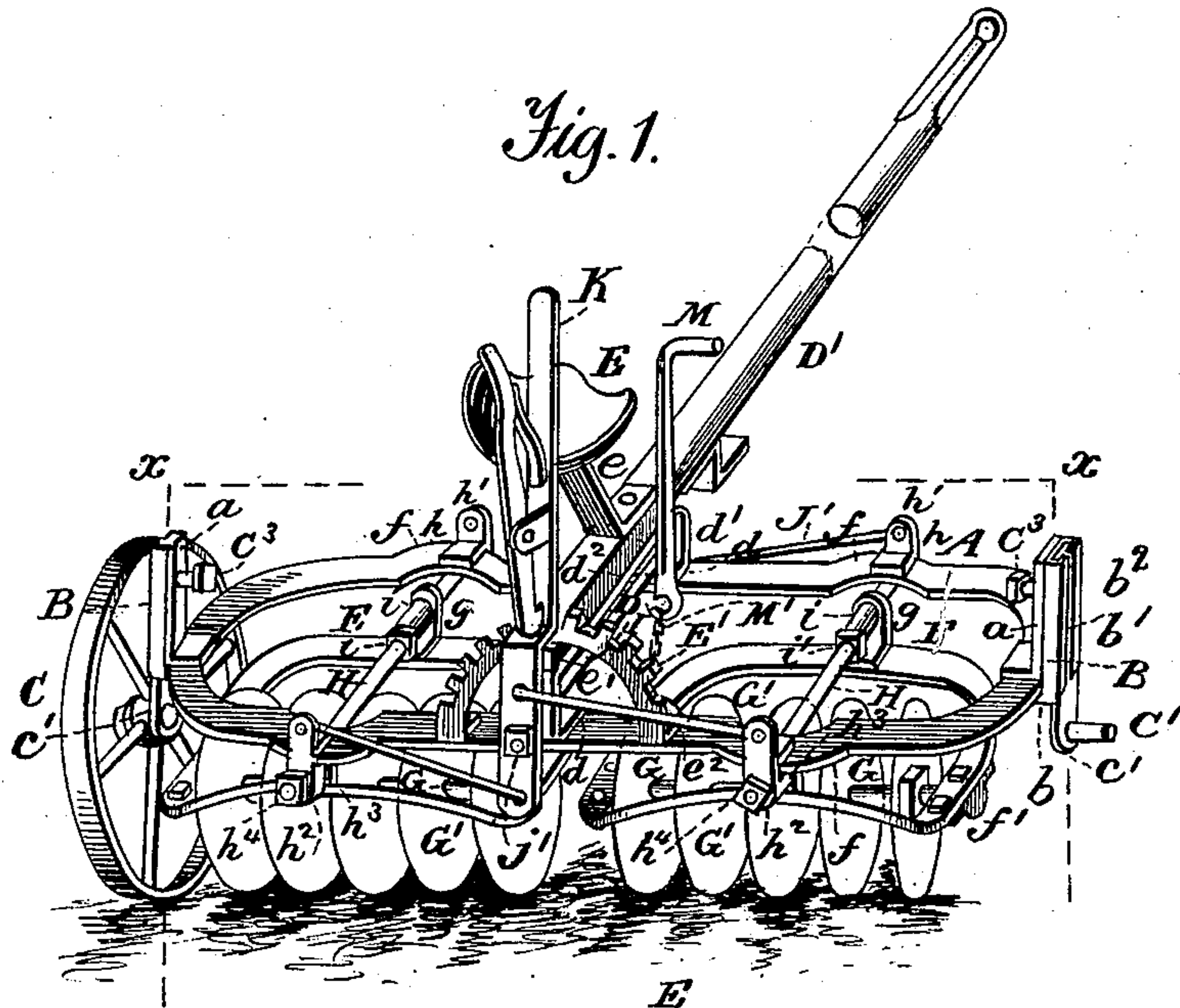


(No Model.)

G. W. ANSLEY & J. H. BOYD.
ROTARY OR DISK HARROW.

No. 407,463.

Patented July 23, 1889.



Witnesses.
A. Rusepert.
V. L. Mason.

Inventors
George W. Ansley & J. H. Boyd,
by Franklin P. Hough
their Attorney

UNITED STATES PATENT OFFICE.

GEORGE W. ANSLEY AND JOSEPH H. BOYD, OF MEDICAL LAKE, WASHINGTON TERRITORY.

ROTARY OR DISK HARROW.

SPECIFICATION forming part of Letters Patent No. 407,463, dated July 23, 1889.

Application filed February 11, 1889. Serial No. 299,543. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. ANSLEY and JOSEPH H. BOYD, citizens of the United States, residing at Medical Lake, in the county of Spokane, Washington Territory, have invented certain new and useful Improvements in Rotary or Disk Harrows; and we do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in roller or disk harrows; and the novelty resides in the peculiarities of construction and in the combinations, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawings, and then particularly defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a perspective view of a harrow constructed in accordance with our invention. Fig. 2 is a section through the line xx of Fig. 1. Fig. 3 is a plan view of the tongue and driver's seat removed.

Like letters of reference indicate like parts throughout the several views.

Reference now being had to the details of the drawings by letter, A designates the frame, formed of metal in substantially the shape shown—that is, rectangular or elongated, and preferably with rounded ends. On each side of the frame, on the upper face thereof, I secure the L-shaped bar a , and to the under side I secure the flange b of the uprights B, which upon their outer faces are formed with the vertical recess or groove b' , with the guide-flanges b^2 formed integral therewith.

C C are wheels journaled upon the stub-axes C' and secured thereon against endwise displacement by means of the nuts C^2 , each of said stub-axes having secured thereto a vertical bar or plate c' , which works in the groove or recess b' in the upright and guided

by the flanges b^2 . These bars are vertically adjustable in said grooves, and are held in their adjusted positions by means of the set-screws C^3 , which pass through the bars a and the uprights B and bear against the plates c' .

Secured to the frame A and extending in the line of draft is the bar D, the ends of which are bent to form the flanges d , which are secured to the upper face of the frame, the vertical portions d' , and the horizontal portion d^2 , on which rests and is supported the tongue D' , which is secured thereto and is provided at its forward end with the usual draft attachments.

E is the driver's seat, carried by a support e , attached or secured to the tongue by the same bolt that secures the tongue to the horizontal portion d^2 of the bar D. The rear end of the tongue is formed with a shoulder e' , and E' is a curved rack-bar resting on the said rear end of the pole and bearing against said shoulder, the ends of said bar being bent at right angles, as shown at e^2 , and secured to the upper face of the rear portion of the frame A.

The front and rear bars of the frame A, at points about midway between the ends and the center, are formed upon their inner faces with the curves f , for a purpose hereinafter described.

F F are frames formed, preferably, of flat metal and made rectangular in shape, with the ends bent downward upon a lower plane than the sides, and upon the under faces of these ends are secured boxes or bearings f' , in which are journaled the shafts G, carrying a plurality of disks or rollers G' , of ordinary construction. These bearings or boxes may be of any known construction; but I prefer a chambered box to receive a ball on the end of the shaft and waste or packing in said chamber.

The side bars of the frames F are provided with lugs or brackets g , through holes in which pass the shafts H, one end of each of which is bent upon itself, as shown at h , to embrace the side bar of the frame A, and is formed or provided with an upwardly-extending bracket h' , the other end of the shaft passing through a lug h^2 , depending from the guide h^3 , and provided with a nut h^4 . These lugs g in the move-

ment of the frames by mechanism hereinafter described are guided by the curves *f* of the frame A.

The frames F rock on their bearings independent of each other, and are thus free to adjust themselves to any inequalities in the ground.

On each shaft H is placed a sleeve *i*, and *i'* is a nut screwed on said shaft and adapted to bear against said sleeve and bind it against the lug *g* to allow the said frames F to rock less easily when occasion may require.

Journalled in the vertical portion *d'* of the bar D is the shaft I, the forward end of which is provided with the lever J, the ends of which are connected by means of the rods or bars J' with the brackets *h'*. To the other end of the bar D is secured the lever K by means of an adjusting-nut *j'*, and said lever upon opposite sides of its fulcrum is pivotally connected with the lugs *h*². The lever K is provided with a suitable locking-catch to engage the rack-bar E and hold said lever and the frames F in their adjusted position. The movement of the lever changes the inclination of the frames F in relation to the line of draft.

M is a foot-lever pivoted to the tongue, and its hooked end is connected by means of a cord or chain M' with the inner end of the disk-frame F, there being two foot-levers—one upon each side of the tongue, one for each disk-frame—said foot-levers being for the purpose of raising the inner ends of the disk-frames, as will be readily understood.

The device is simple, easily adjusted, and will be found to be very efficient in operation.

What we claim to be new, and desire to secure by Letters Patent, is—

1. The combination, with the frame A, of the

longitudinal shafts supported at their ends on the frame A, the frames F, free to oscillate on said shafts, and the disks carried by a shaft arranged transversely of the frames F, substantially as and for the purpose specified.

2. The combination, with the frame A and the two independent harrow-frames free to oscillate independently of each other on longitudinal shafts, of the transverse shafts journaled in said frames and carrying the disks, the shaft I, and connections between said shaft and the longitudinal shafts of the harrow-frames, substantially as shown and described, and for the purpose specified.

3. The combination, with the frame A, formed with the curves *f*, of the harrow-frames provided with the lugs *g*, and the means for adjusting said frames, substantially as and for the purpose specified.

4. The combination, with the frame A and the tongue, of the independent rocking harrow-frames, the pivoted foot-levers, and the chains connecting said levers with the inner ends of the harrow-frames, substantially as and for the purpose specified.

5. The combination, with the frame A and the two independent harrow-frames, of the shafts of said harrow-frames, the shaft I, the operating-lever on one end of said shaft I, and the rods connecting the shafts of the harrow-frames with the said lever and shaft I, substantially as and for the purpose specified.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE W. ANSLEY.
JOSEPH H. BOYD.

Witnesses:

GEO. M. FORSTER,
J. C. EATON.