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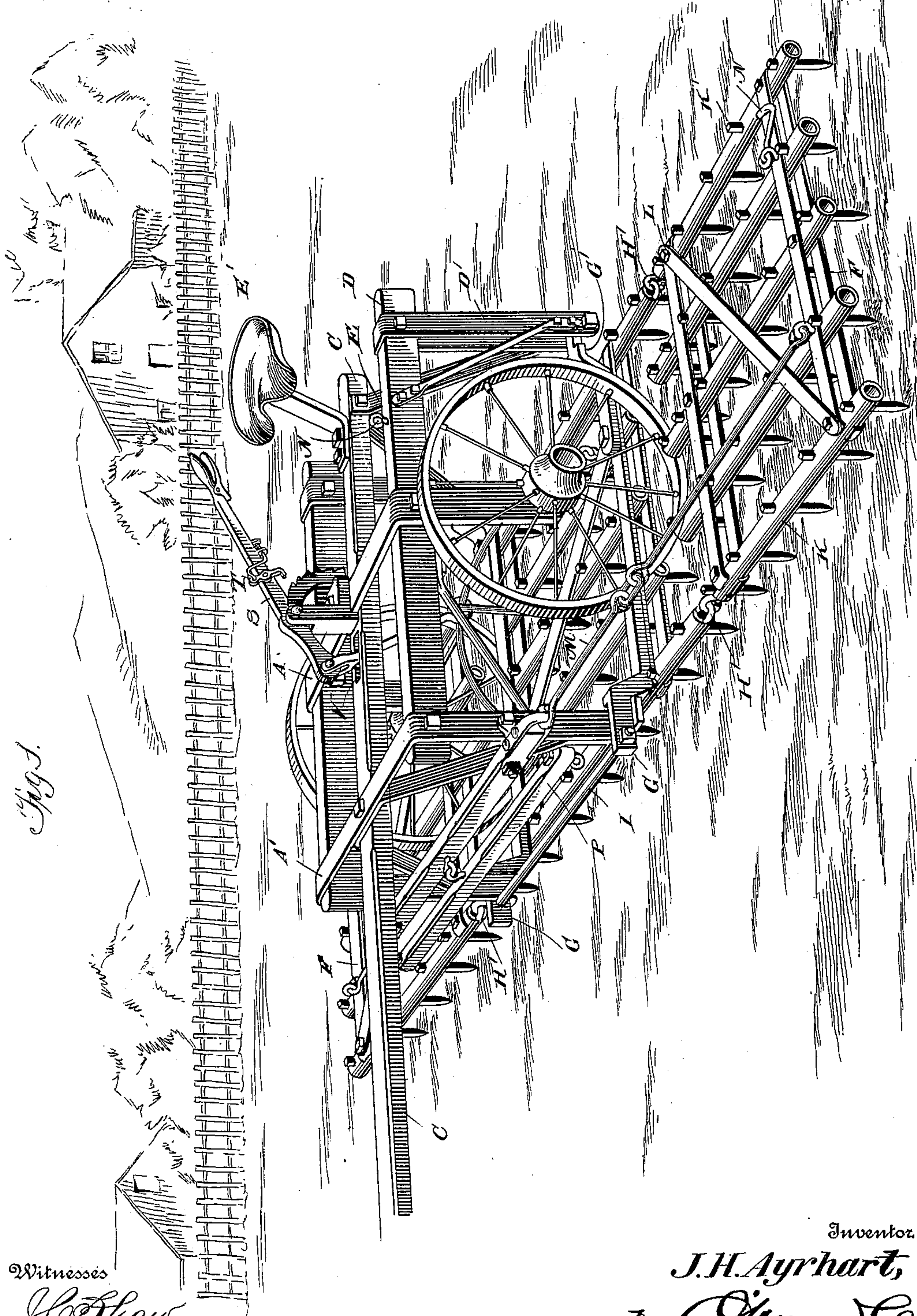
Patented July 12, 1898.

J. H. AYRHART.  
RIDING AND FOLDING HARROW.

(Application filed July 17, 1897.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses

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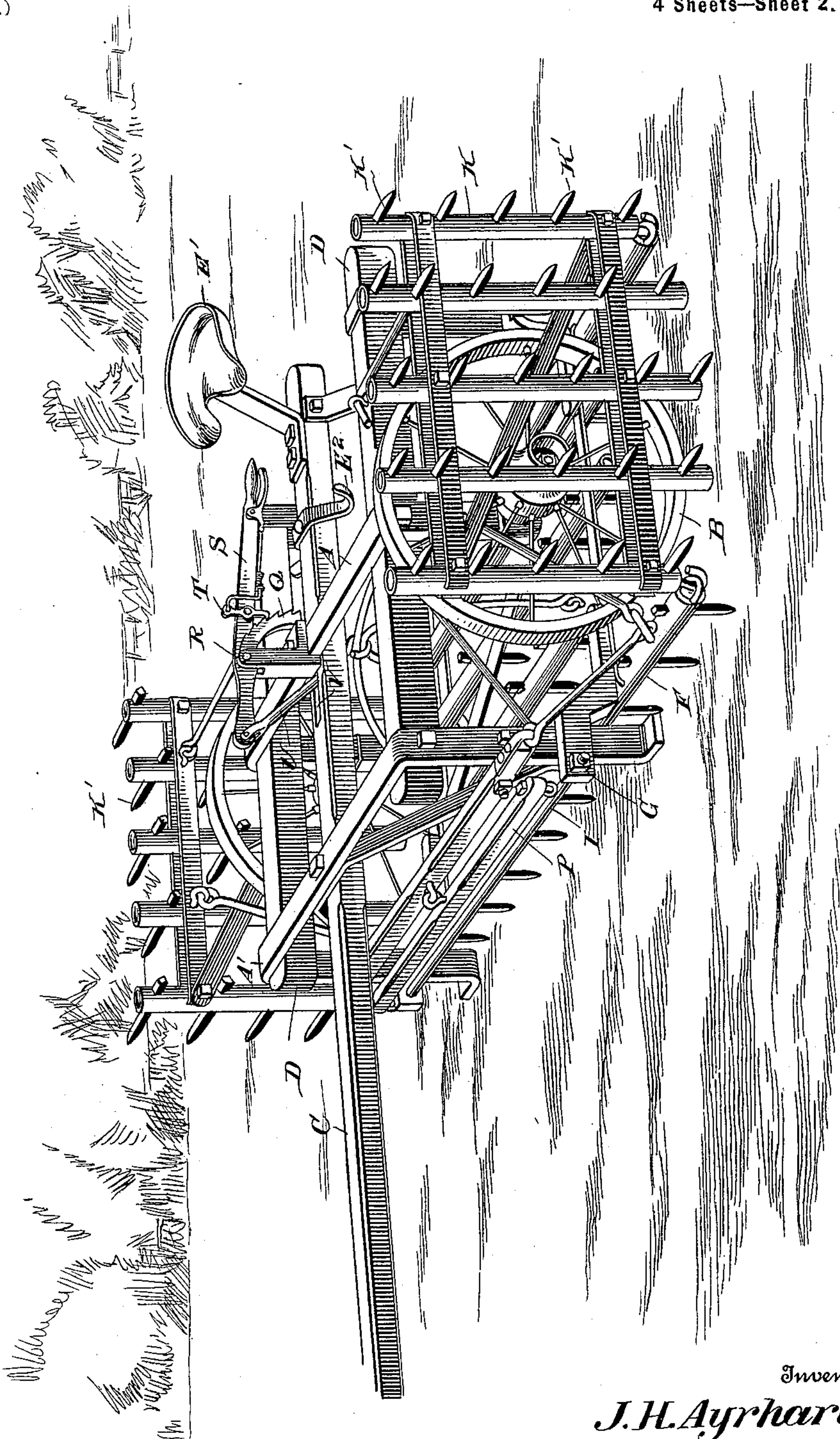
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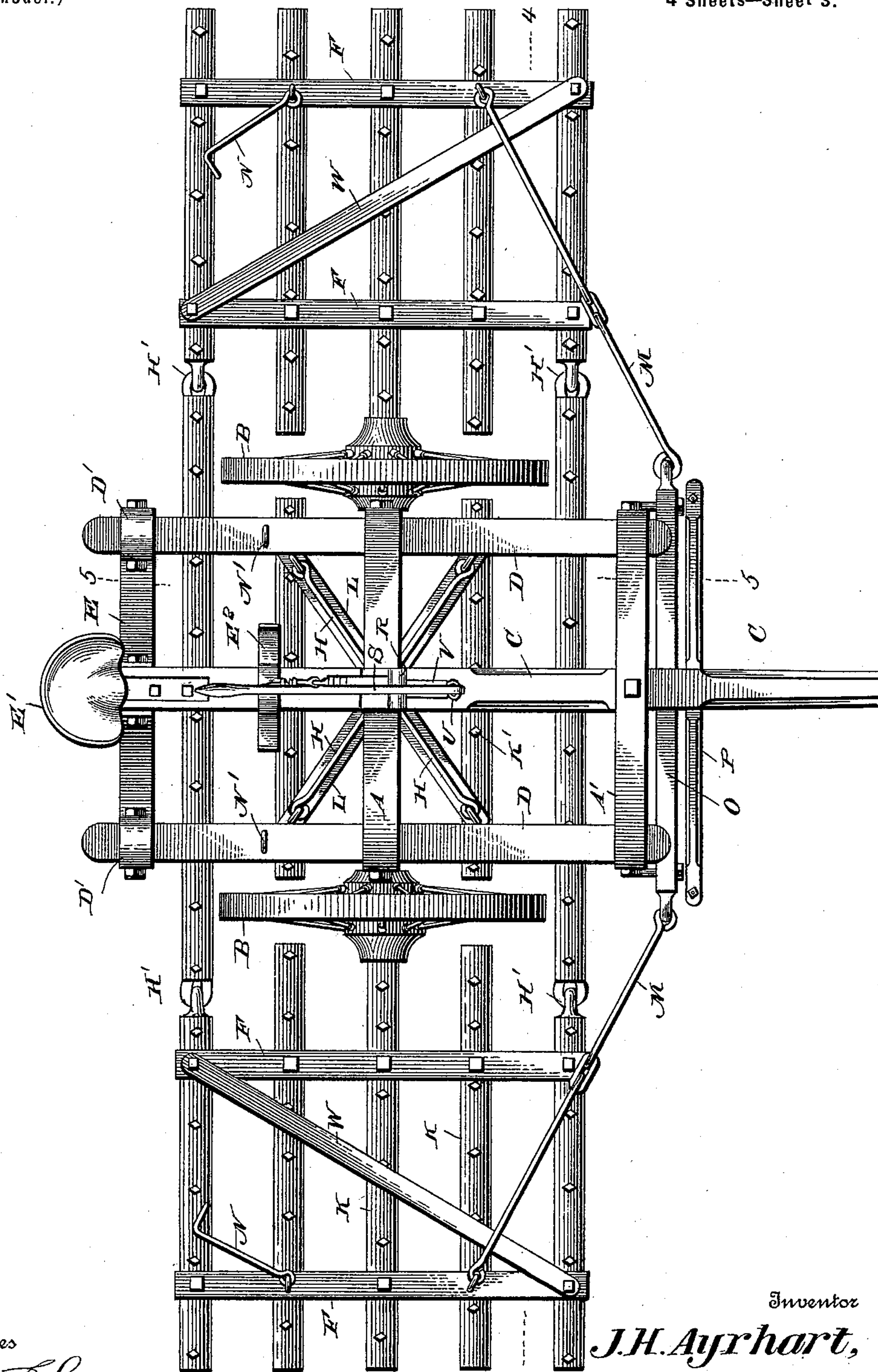
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Fig. 3.



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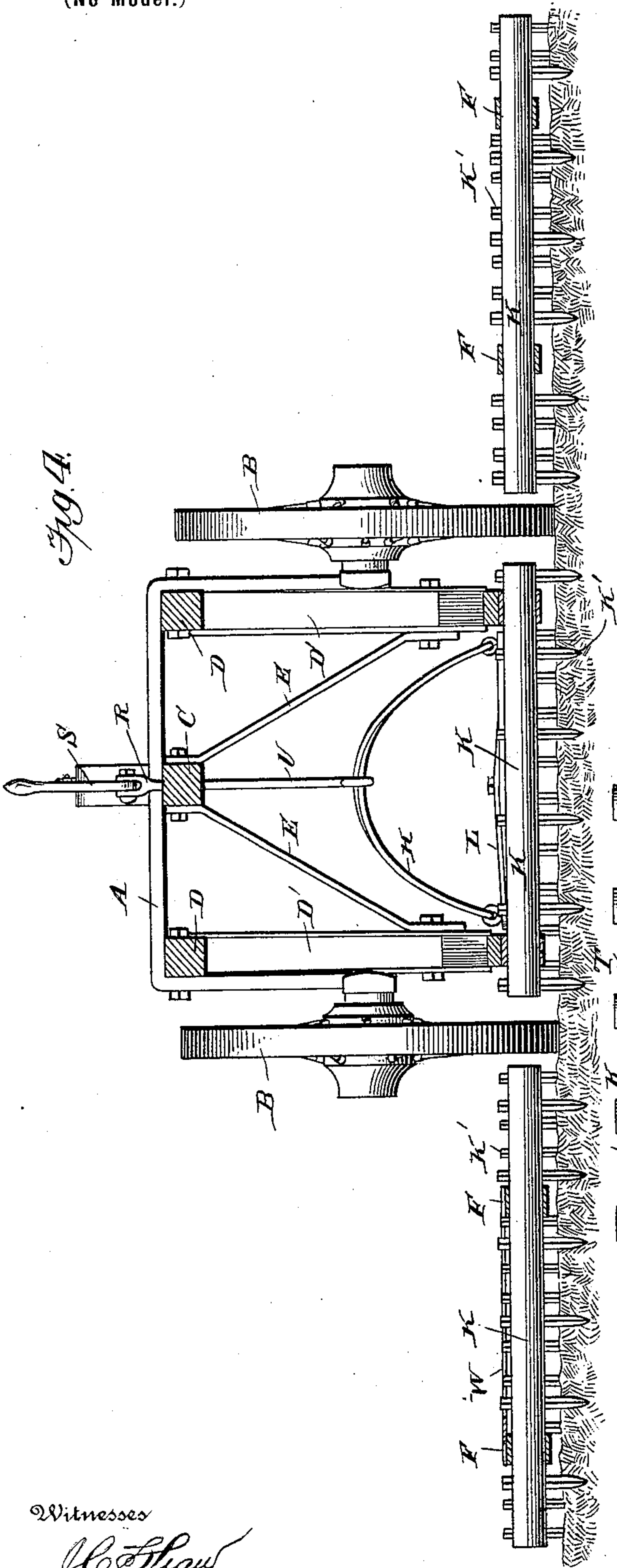


Fig. 4.

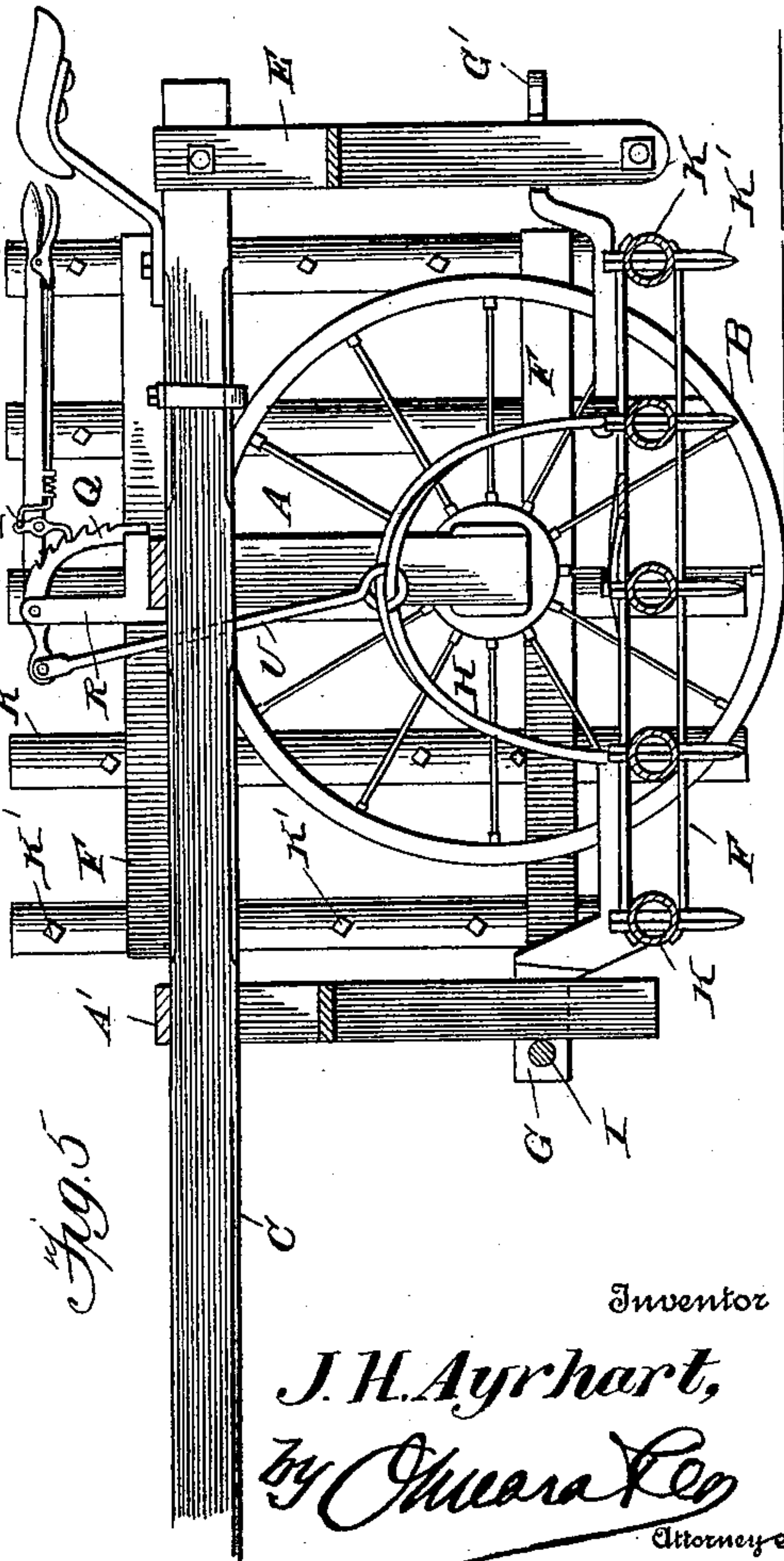
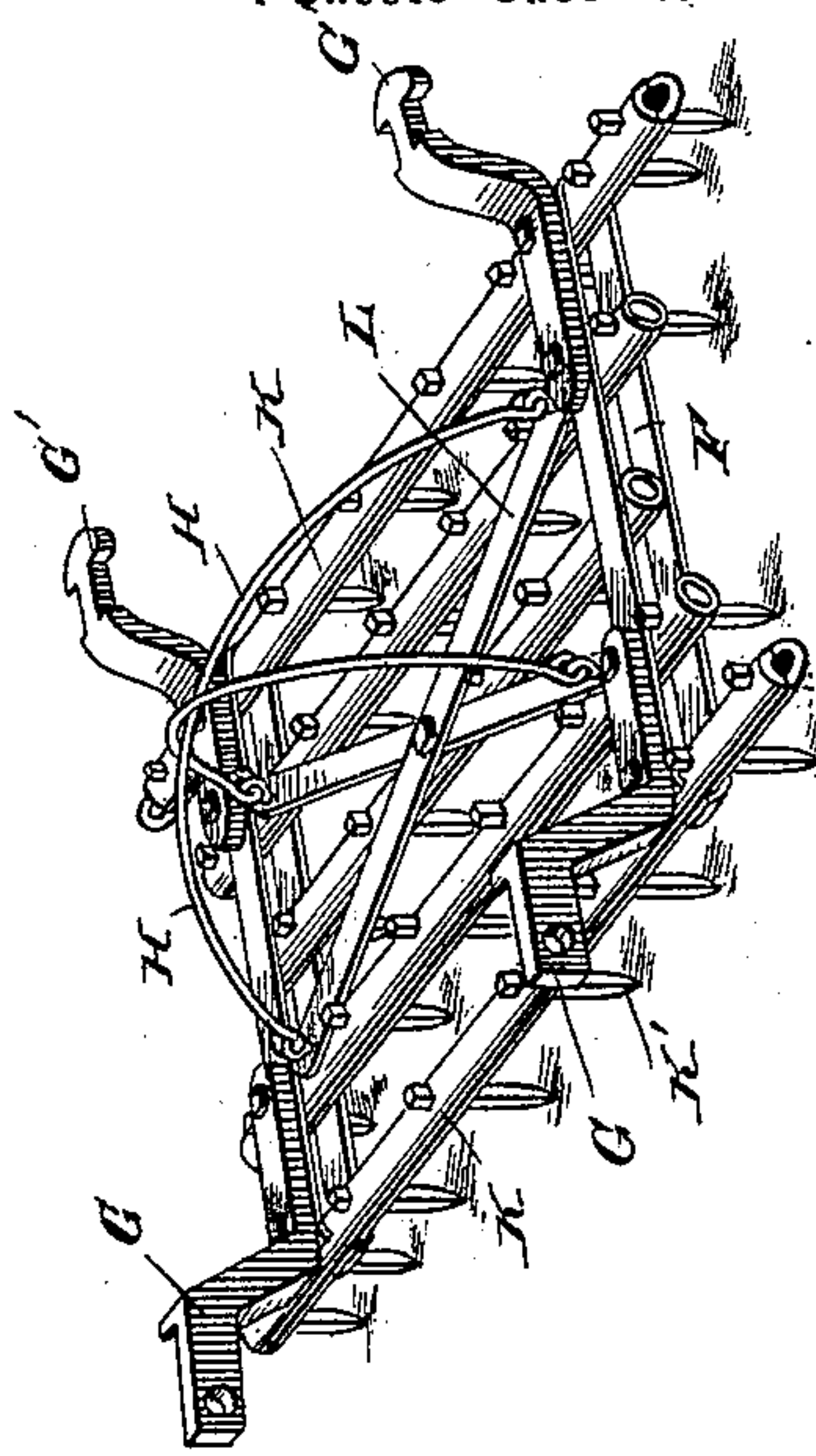


Fig. 5.

Fig. 6.



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# UNITED STATES PATENT OFFICE.

JOHN H. AYRHART, OF DEDHAM, IOWA.

## RIDING AND FOLDING HARROW.

SPECIFICATION forming part of Letters Patent No. 607,008, dated July 12, 1898.

Application filed July 17, 1897. Serial No. 644,919. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. AYRHART, residing at Dedham, in the county of Carroll and State of Iowa, have invented a new and useful Riding and Folding Harrow, of which the following is a specification.

This invention relates to improvements in harrows, and has for its object to provide a folding harrow or one having lateral wing portions which may be folded or drawn up to a vertical position when it is desired that they shall be out of service.

A further object of my invention is to provide means whereby the harrow-beams both in the central frame and the lateral wings may be lifted and retained in an elevated position, so that no engagement between the harrow-teeth and the ground shall occur.

My improved device is intended to constitute in its entirety a folding and riding harrow; but the folding mechanism may be applied to other than riding-harrows, in which after the wings are folded leave only the teeth in the central harrow-section to be dragged over the ground as the harrow is moved from one scene of action to another or upon a road.

My complete harrow, however, comprehends a frame, and consists of a number of novel and desirable features and coacting parts, hereinafter fully described and shown.

In the drawings herewith, forming part of this specification, in which like parts are indicated by similar letters of reference, Figure 1 is a perspective view of my improved folding harrow in operative position. Fig. 2 is a similar view showing it in a folded and raised position. Fig. 3 is a top plan view of the harrow and frame. Fig. 4 is a transverse section on line 4 4 of Fig. 3. Fig. 5 is a longitudinal section on line 5 5 of Fig. 3. Fig. 6 is a perspective detail of the central harrow-section.

In the construction of my improved harrow I provide, first, a strong rectangular supporting-frame consisting of transverse portions A and A', the latter having secured at its free ends projected spindles for the wheels B. The portion A should be exceedingly strong, as the entire weight of the harrow is suspended therefrom, and should be constructed of tough iron of a strength equal to that of a

heavy wagon-axle. Suitably secured to said cross portions A and A' is a projected tongue C, and also secured to the said portions is the longitudinal side portions of the frame D, which may be constructed of wood. Secured to said longitudinal portions D, adjacent to their rear ends, I provide double-walled hangers D' for the purpose hereinafter explained, and also as continuations of the portions A' I provide downwardly-projected ends, which, in conjunction with the portion D', serve as guides for the central section of the harrow. The said portions D' are provided with suitable braces E, as are also the portions A', said braces being in a suitable manner secured by means of bolts passing through the portions A' and D' and also through the tongue C. Mounted upon the rear portion of the tongue C, I provide a seat or saddle E', and adjacent thereto foot-rests E<sup>2</sup>.

I next proceed to describe the construction of the central harrow-section, which consists of a plurality of harrow-beams K, secured by transverse bars F and by diagonal brace portions L. The said harrow-beams K, as well as the teeth K', are in each of the sections of my improved harrow of the same form and construction and are therefore indicated by the same reference-letters. The said harrow-beams are preferably constructed of iron or steel piping, apertured transversely at suitable intervals for the passage therethrough of the harrow-teeth K', which, as usual in the construction of harrows, are placed in differential alinement, so as to effect a more thorough operation. It will be observed in Fig. 6 of the drawings that the ends of the inner beams do not project as much as the outer beam, they being shortened, so as to provide room for the tread of the wheels B.

Projected forwardly of the central harrow-section I provide guide portions G and projected rearwardly guide portions G'. I also provide, secured adjacent to the ends of the brace-rods L, lifting rods or bails H, crossing each other diagonally, these bails being for the purpose of lifting the central section of the harrow, as well as the lateral wings, hereinafter described.

Upon either side of the harrow-frame I provide a harrow-section consisting of similar



harrow-beams K, with teeth K' and with diagonal brace-rods W. The outer beams of each of said lateral sections of the harrow are hinged to the outer end of the forward and rear beams of the central portion at points H, such hinging being effected by the means of eyes upon one beam engaging with similar eyes in such manner as to permit the lifting up to a vertical position of said outer wings. In suitable connection with each of said wings I provide a hinged rod M, having their inner ends secured within eyes formed upon the ends of a transverse bar O, secured upon the forward portion of the harrow-frame. I also provide upon each of the lateral portions of the harrow a hook N, adapted to engage with an eye N', secured in each of the portions D, so that the lateral portions of the harrow after being raised may be retained in such position by means of said hooks.

To the transverse bar O, I secure in any suitable manner a doubletree P.

I next provide means for lifting the central harrow-section, which consists of a curved rack-bar Q, mounted centrally of the harrow-frame upon the tongue portion C, and a pivot-head R. Pivoted within the upper end of said head R, I provide a lifting-lever S, having secured thereto a pawl T, adapted to engage with said curved rack-bar Q. At the forward end of the lever S, I pivot a pitman U through a slot V in said tongue C, the lower end of said pitman being formed into an eye adapted to encircle the bails H at their point of diagonal intersection. The central section of the harrow is permitted to have only a vertical movement, the guide portions G and G' being respectively retained within the downwardly-projected portions A' and D', the form of the portion G' being such that said portions are confined within the double-walled hangers D' and the forward portion G against the outer surface of the hangers A', and they are retained in such position forwardly by means of a transverse bar I, passing through apertures in each of said portions G.

By means of the supporting hinged rods M the lateral wing portions of the harrow are held at all times in exactly the same horizontal plane as the central harrow, as when the same is lifted or lowered the wings are also lifted or lowered, whether the latter be in a folded position at the time of such lifting or otherwise, and it is immaterial whether the central section be elevated prior to folding the wings F or after the wings have been folded. The lateral wings may be provided with other braces than those herein indicated,

as W, although it is believed that one brace will be sufficient.

My improved harrow may be so constructed as to permit the instant detachment of the lateral wing portion whenever so desired, or the harrow may be operated with one wing portion and the other raised, or both raised, as preferred or whenever necessary. In harrowing in new ground containing stumps or other obstructions the swath of the harrow may be at any time adjusted to the degree of obstruction presented.

I do not prescribe any particular size as to the construction of the parts herein shown, as there is a great divergence of views as to the proper width of a harrow. My improved folding harrow may, however, be constructed of any desired width either as to the central portion or the wings, and the different parts may be of different sizes, if desired. By the use of my device I provide a harrow easily operated and easily adjusted and which may be expeditiously released from engagement with the ground, and in using which the engagement is adjustable to suit the various classes of soil upon which it may be used.

Having thus described my invention, its construction and uses, what I claim as new, and desire to secure by means of Letters Patent, is—

1. In a folding harrow, the combination with a central harrow-section, of side sections hinged thereto, rods hinged to said side sections adjacent to the outer ends thereof, and rods hinged at one end to the harrow-frame and at their opposite ends to the first-named rods, substantially as set forth.

2. In a harrow, the combination with the frame having guides depending from the rear portion thereof, a harrow-section having projections adapted to move in said guides and provided with shoulders which engage the guides, bars depending from the forward part of the frame, shouldered projections upon the forward part of the harrow-sections, said projections adapted to engage the bars with the shoulders thereof abutting thereagainst, a rod connecting the projections at the forward end of the harrow-section, whereby said section is movable vertically but is prevented from lateral movement, bails secured to the harrow and intersecting each other, an operating-lever, and a link connected to said lever and to the bails at their point of intersection, substantially as set forth.

JOHN H. AYRHART.

Witnesses:

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