No. 816,449. PATENTED MAR. 27, 1906.

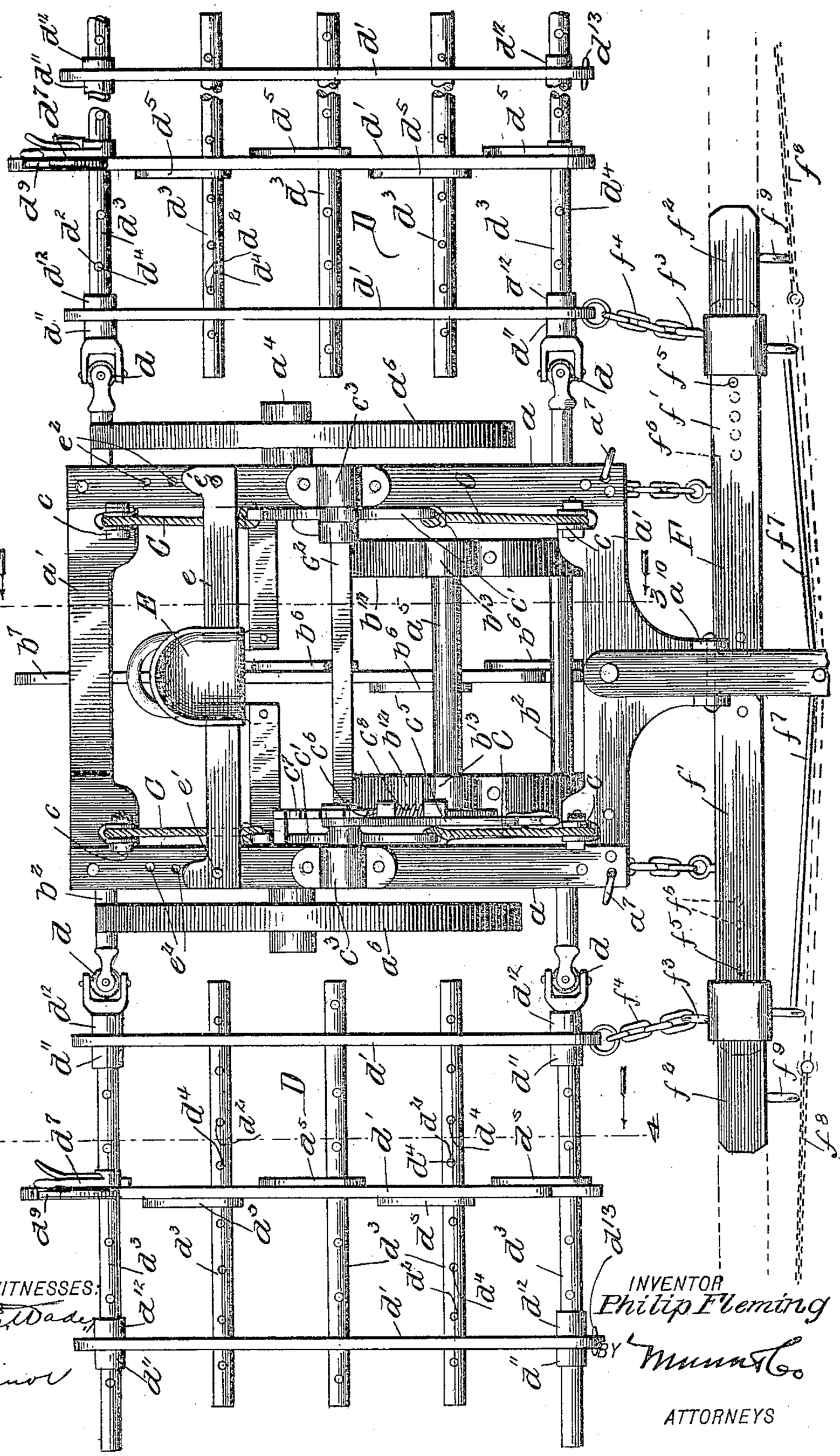
P. FLEMING.

RIDING HARROW.

APPLICATION FILED OCT. 10, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



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C. E. Prince

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Philip Fleming

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ATTORNEYS

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3 SHEETS—SHEET 2.

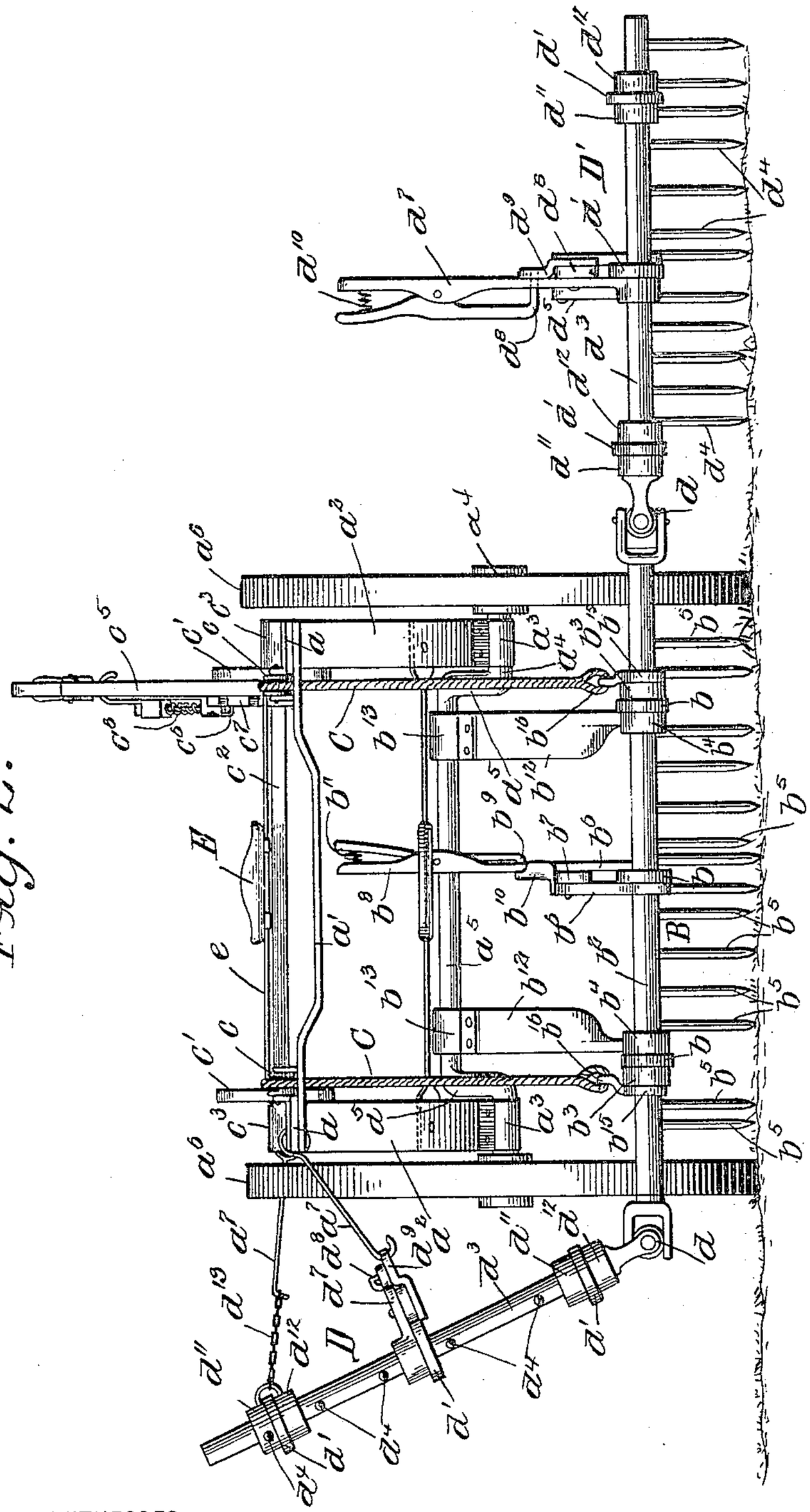

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

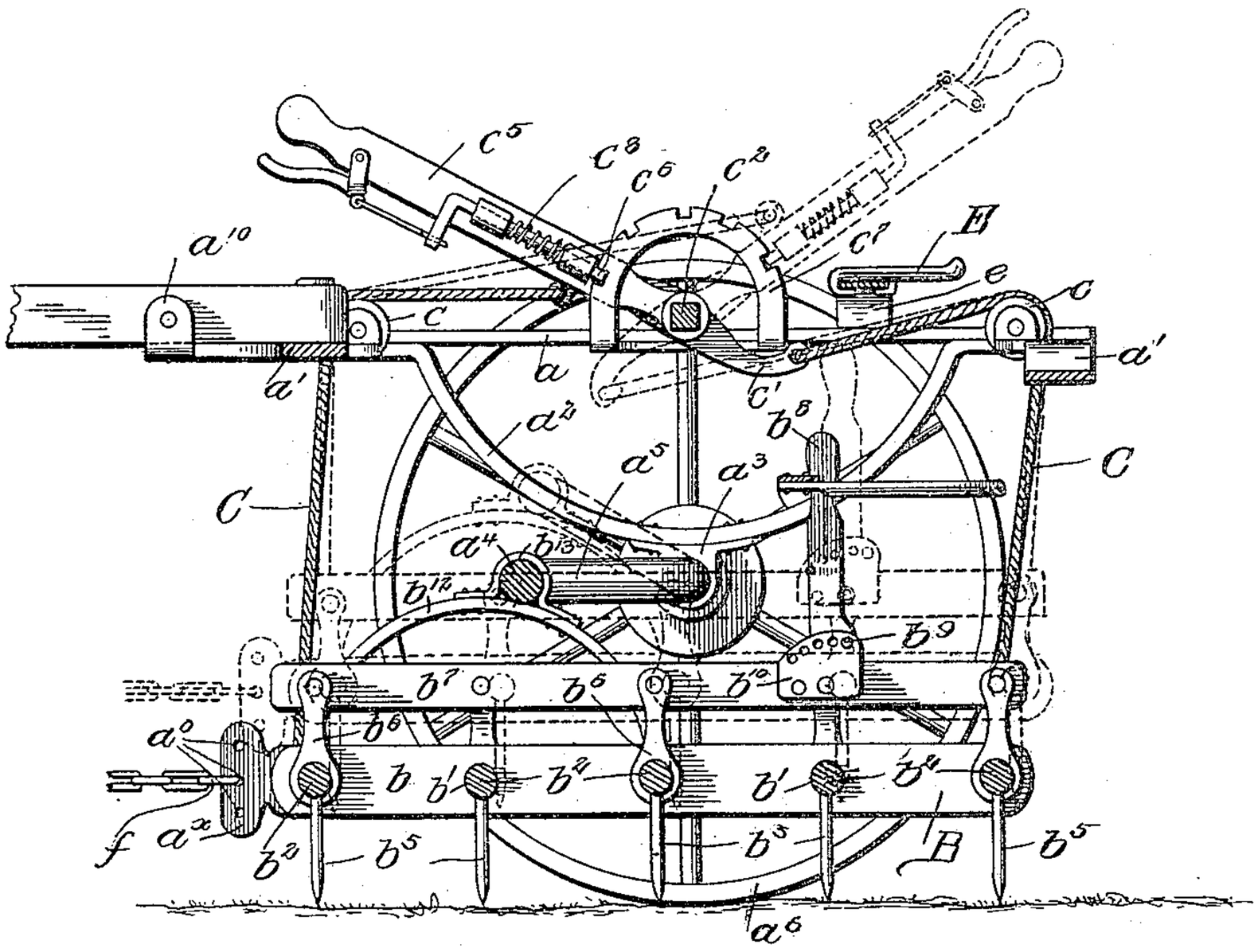
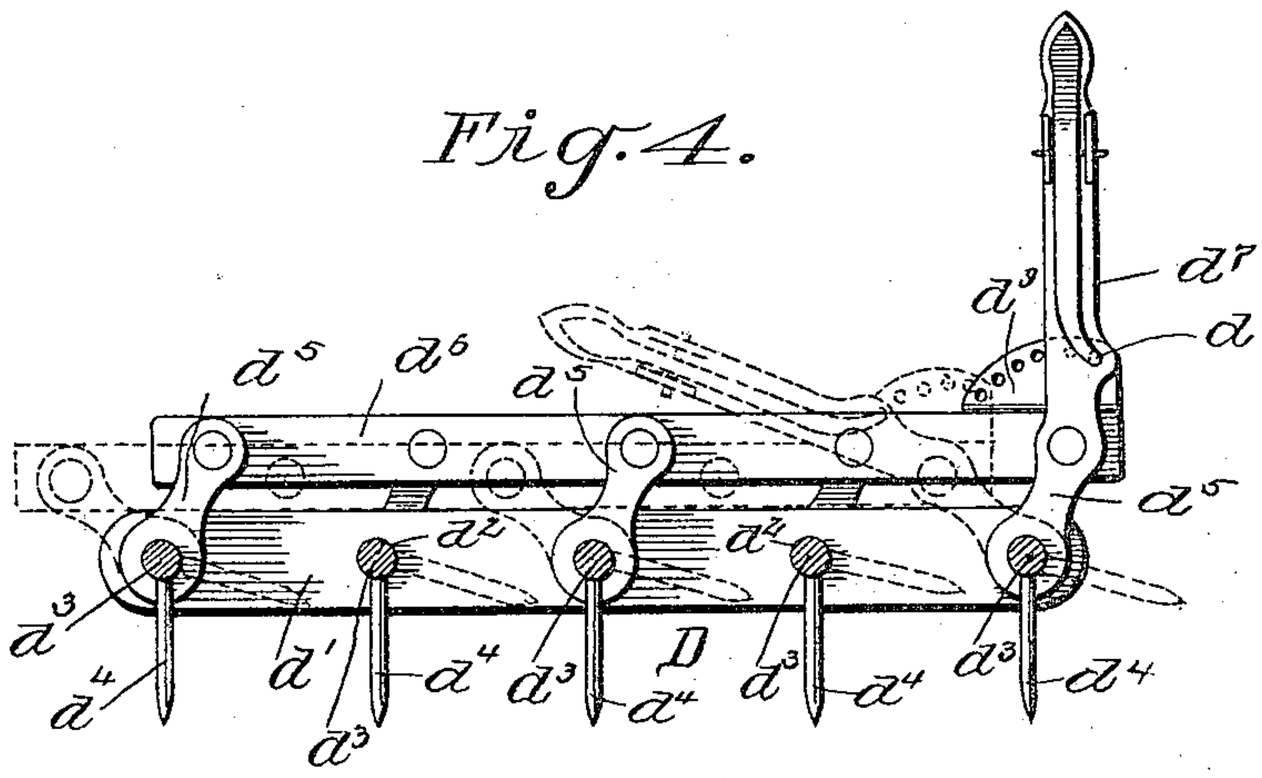


Fig. 4.



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UNITED STATES PATENT OFFICE.

PHILIP FLEMING, OF BURTON VIEW, ILLINOIS.

RIDING-HARROW.

No. 816,449. Specification of Letters Patent. Patented March 27, 1906.

Application filed October 10, 1905. Serial No. 282,214.

To all whom it may concern:

Be it known that I, PHILIP FLEMING, a citizen of the United States, and a resident of Burton View, in the county of Logan and State of Illinois, have invented certain new and useful Improvements in Riding-Harrows, of which the following is a specification.

My invention is an improvement in riding-harrows; and it consists in certain novel constructions and combinations of parts hereinafter described and claimed.

Referring to the drawings forming a part hereof, Figure 1 is a plan view of my improved riding-harrow. Fig. 2 is a rear elevation. Fig. 3 is a section on the line 3 3 of Fig. 1, and Fig. 4 is a section on the line 4 4 of the same figure.

In the practical application of my invention I provide a frame comprising the longitudinal bars a, connected at their ends by the cross-bars a'. Downwardly-projecting arched brackets a^2 are connected with the lower faces of the longitudinal bars, the brackets being provided with bearings a^3 for the reception of a main shaft a^4, having a cranked portion a^5 within the bearings and upon its ends without the bearings the supporting-wheels a^6.

A harrow-section B is supported below the frame by the main shaft. The section B comprises a plurality of parallel longitudinal plates b, spaced apart from each other and provided with a plurality of spaced perforations b', the perforations of each plate being in alinement with the perforations of the other plates. A series of rods b^2 traverse the openings in the plates, the outer rods of the series being provided with collars b^3 b^4 upon either side of the outer plates for retaining the plates in position with respect to the rods.

Each of the rods b^2 is provided with a series of harrow-teeth b^5, the teeth upon the alternate rods being staggered with respect to the teeth upon the intermediate rods. Upwardly-projecting arms b^6, rigid with the rods, are arranged adjacent to the central plate, and the arms are connected together by a bar b^7, the arms upon the alternate rods being arranged upon opposite sides of the bar. A lever b^8, integral with one of the arms, is provided with a catch b^9 for engaging a perforated quadrant b^{10} upon the bar, the catch being normally maintained in engagement with the quadrant by a spring b^{11}. Upwardly-projecting arched brackets b^{12} are connected with the rods, the upper surface of the brackets being provided with bearings b^{13} for engaging the cranked portion of the shaft a^4. The ends of the brackets b^{12} are provided with openings for receiving the rods and are arranged adjacent to the outer plates, being retained in their proper position by the collars b^4 upon the front rod and by collars b^{14} upon the intermediate rod. Rings b^{15}, having eyes b^{16}, are arranged upon the front rod adjacent to the collars b^3, and cables or chains C connect with the eyes b^{16} and extend upwardly over pulleys c, journaled in the frame, to arms c', secured to the shaft c^2, journaled in bearings c^3 upon the upper face of the longitudinal bars of the frame. The arms c' are arranged in oppositely-disposed pairs, the upwardly-projecting pair for receiving the cables attached to the front rods and the downwardly-projecting pair for receiving the cables attached to the rear rods. A lever c^5 is secured to the shaft c^2, the lever being provided with a catch c^6, normally retained in engagement with the quadrant c^7 by means of a spring c^8. When the shaft c^2 is rotated to the rear by the lever c^5, the movement of the arms elevates the harrow by means of the flexible connection of the arms therewith.

Lateral harrow-sections D D′ are arranged upon either side of the central section B and are connected thereto by a universal joint d between the outer rods of the side sections and the outer rod of the central section. The lateral sections D D′ are similar in all respects to the central section, comprising the longitudinal parallel plates d', provided with the spaced openings d^2 and the rods d^3, traversing the openings and provided with teeth d^4. A similar means is provided for varying the inclination of the teeth with respect to the sections comprising the upwardly-projecting arms d^5, connected together by a bar d^6, a lever d^7, integral with one of the arms, being provided for manipulating the bar. The lever d^7 is provided with a catch d^8, normally pressed into engagement with perforations in a quadrant d^9 upon the bar by means of a spring d^{10}. Collars d^{11} d^{12} are provided for retaining the plates in proper position with respect to the rods.

By means of the universal joint the outer ends of the side sections may be elevated and are retained in their elevated position by means of hooks a^7, secured to the corners of the main frame and engaging chains d^{13}, connected with the outer corners of the sections.

At the rear of the frame the hooks a^7 are arranged to engage the perforations in the quadrants d^9 in the toothed quadrants on the side sections.

A seat E is arranged upon a cross-plate e, the plate being provided at either end with pins e' for engaging a series of perforations e^2 in the longitudinal bars of the main frame. By engaging the pins in different holes of the series the seat may be moved backward or forward on the bars for the purpose of adjusting it with respect thereto. The side plates of the central section are provided with brackets $a^\times$, having transversely thereof a series of perforations a^0 for engagement by the hooks f of the doubletrees F.

The doubletrees F are composed of a plate f', having slidably mounted upon either end thereof relatively short plates f^2, the relatively short plates being provided with hooks f^3 for engagement by the chains f^4 upon the inner plate of the side harrow. By this arrangement the draft upon the machine is equalized, and it may be still further distributed by extending the sliding bars f^2 and connecting the hooks with the outer plate of the lateral harrows. The sliding plates are held in their adjusted position by means of pins f^5, engaging alined perforations f^6 in the plates.

In operation the central and side harrows would be lowered into contact with the ground and the teeth adjusted at a suitable inclination with respect to the harrows. In moving the machine from place to place the outer end of the side harrows would be elevated and engaged with the hooks on the frame and the central harrow would be elevated out of contact with the ground, thus leaving all parts free from the ground except the wheels. If desired, a tongue may be secured directly to the frame, and for this purpose I provide brackets a^{10} upon the front of the machine. Rods f^7, provided at their outer ends with chains f^8 for engaging eyes f^9 upon the relatively short plates, are provided for limiting the outward movement of the short plates, the rods being attached at their inner ends to the tongue.

If desired, coil-springs may be arranged on the pivot-pin of the tongue, on either side thereof and between the tongue and the lugs a^{10}. This arrangement reduces the strain of turning somewhat.

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

1. In a riding-harrow and in combination, a main frame comprising longitudinal bars and cross-bars connecting the ends of the longitudinal bars, downwardly-projecting arched brackets on the longitudinal bars, bearings on the brackets, a main shaft journaled in the bearings, and having a cranked portion therebetween, wheels on the ends of the shaft, a harrow-section below the frame, upwardly-projecting arched brackets on the harrow-sections, bearings on the brackets for engaging the cranked portion of the main shaft, a shaft journaled on the main frame above the main shaft, oppositely-projecting arms on the shaft within the frame, pulleys journaled at the corners of the frame, eyes on the corners of the harrow-sections, flexible connections between the eyes and the oppositely-projecting arms and engaging the pulleys, a lever secured to the shaft, a toothed quadrant on the frame, a spring-actuated catch on the lever for engaging the teeth of the quadrant, and harrow-sections arranged upon either side of the central section and movably connected thereto.

2. In a riding-harrow and in combination, a main frame, brackets extending below the frame, a shaft journaled in the brackets and having a cranked portion, wheels on the ends of the shaft, a harrow-section below the frame, bearings on the harrow-section for engaging the cranked portions of the shaft, a shaft journaled in the frame, oppositely-arranged pairs of arms on the shaft, means for rotating the shaft, and a flexible connection between the arms and the harrow-section.

3. In a riding-harrow and in combination, a frame, a shaft journaled on the frame and having a cranked portion, wheels on the ends of the shaft, a harrow-section supported by the cranked portion, a second shaft journaled on the frame and provided with oppositely-arranged pairs of arms, a flexible connection between the arms and the harrow-section, and means whereby to rotate the second shaft.

4. In a riding-harrow, the combination with the frame having depending brackets, of a shaft journaled in the brackets and having a cranked portion, wheels on the ends of the shaft, a harrow-section having brackets provided with bearings for engaging the cranked portion of the shaft, and means on the frame for elevating and depressing the harrow-section.

PHILIP FLEMING.

Witnesses:
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