

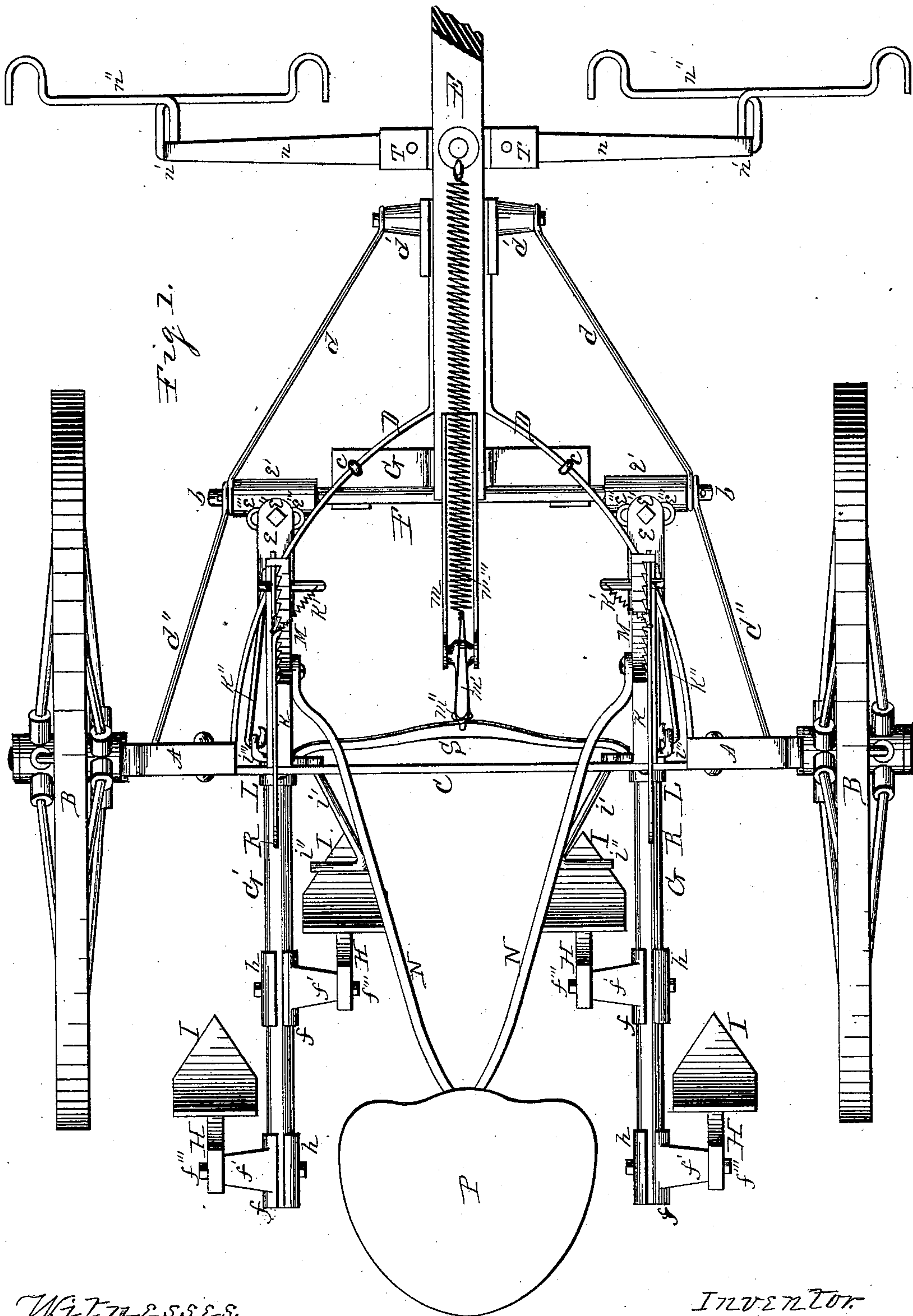
(No Model.)

4 Sheets—Sheet 1.

J. H. JONES.
CULTIVATOR.

No. 316,369.

Patented Apr. 21, 1885.



Witnesses.
C. C. Lorraine
A. O. Behr

INVENTOR.
James H. Jones.
Per. Jacob Behr

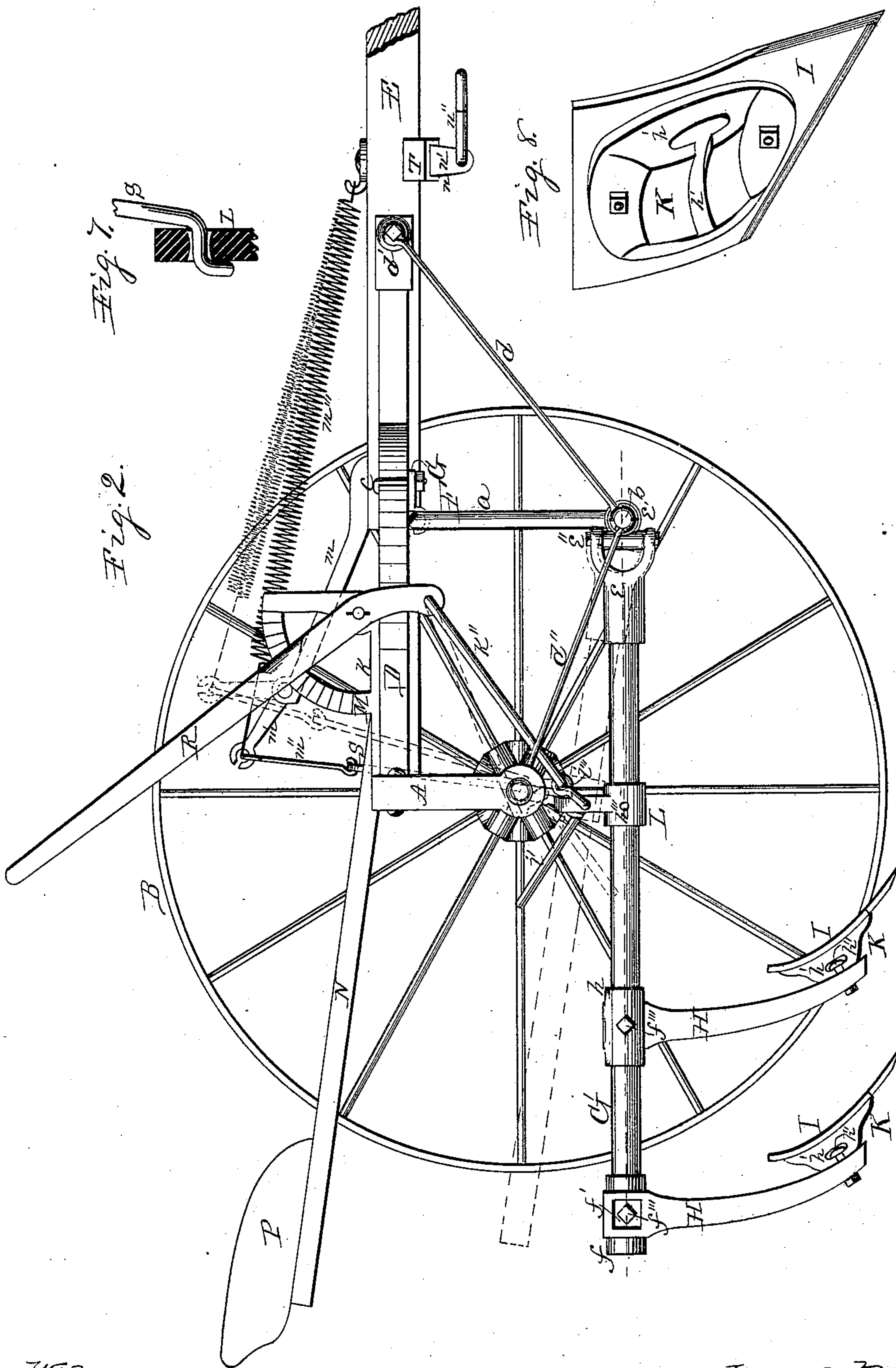
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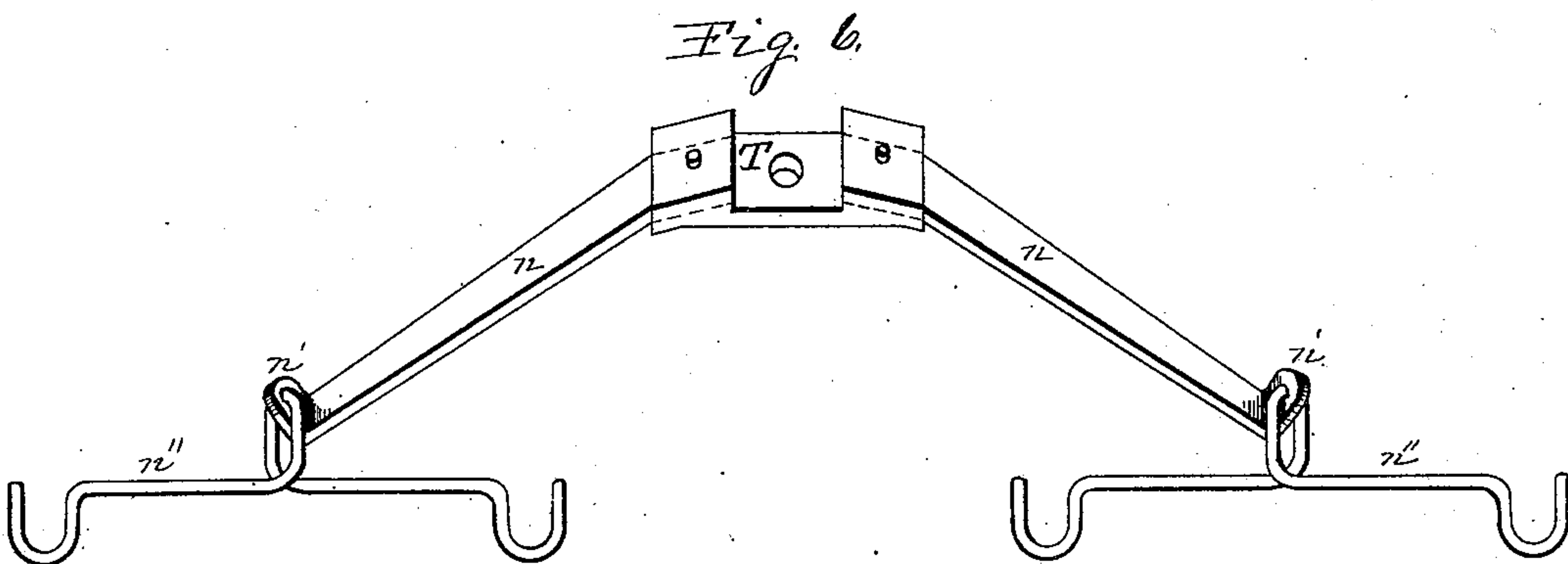
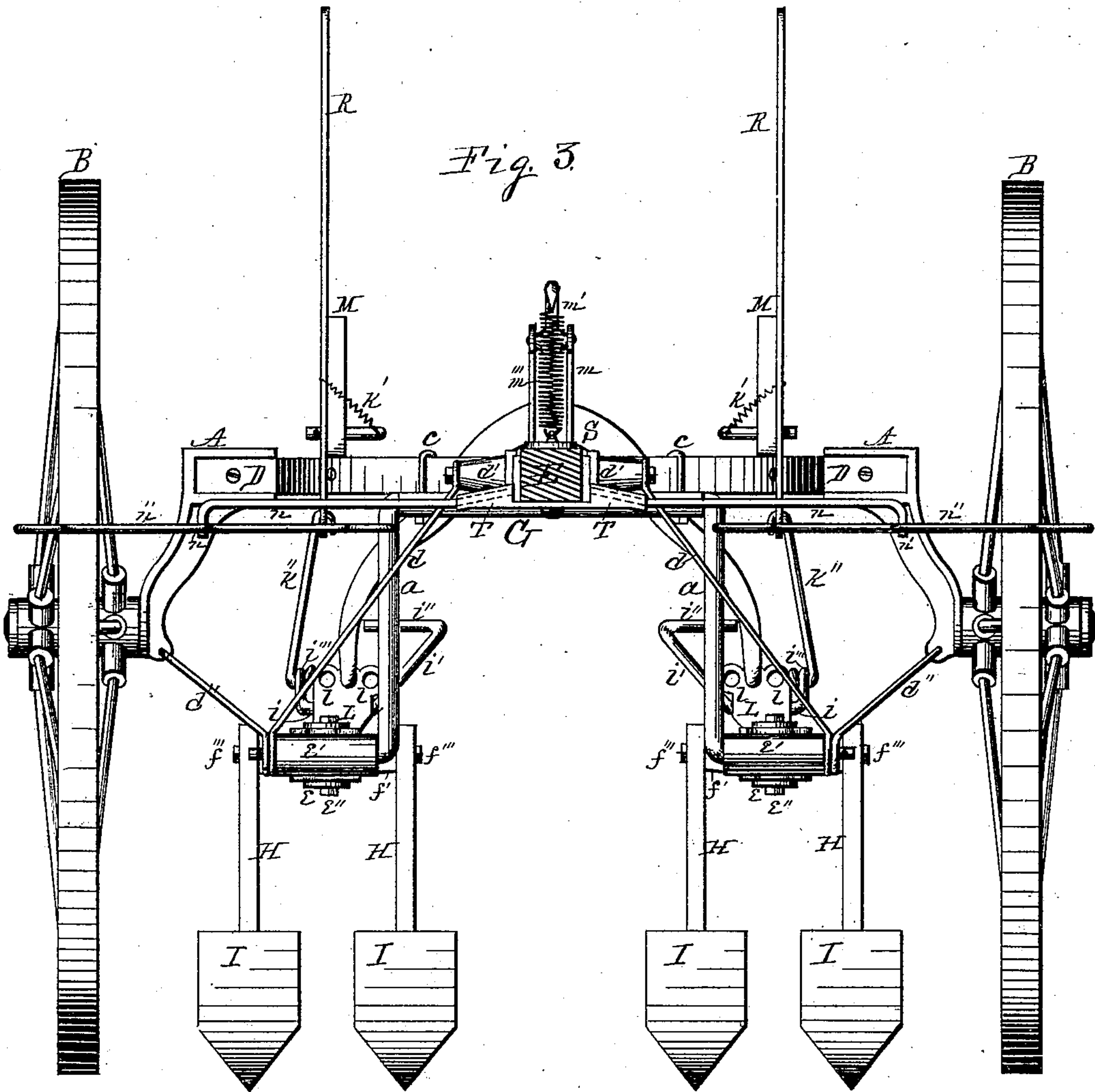
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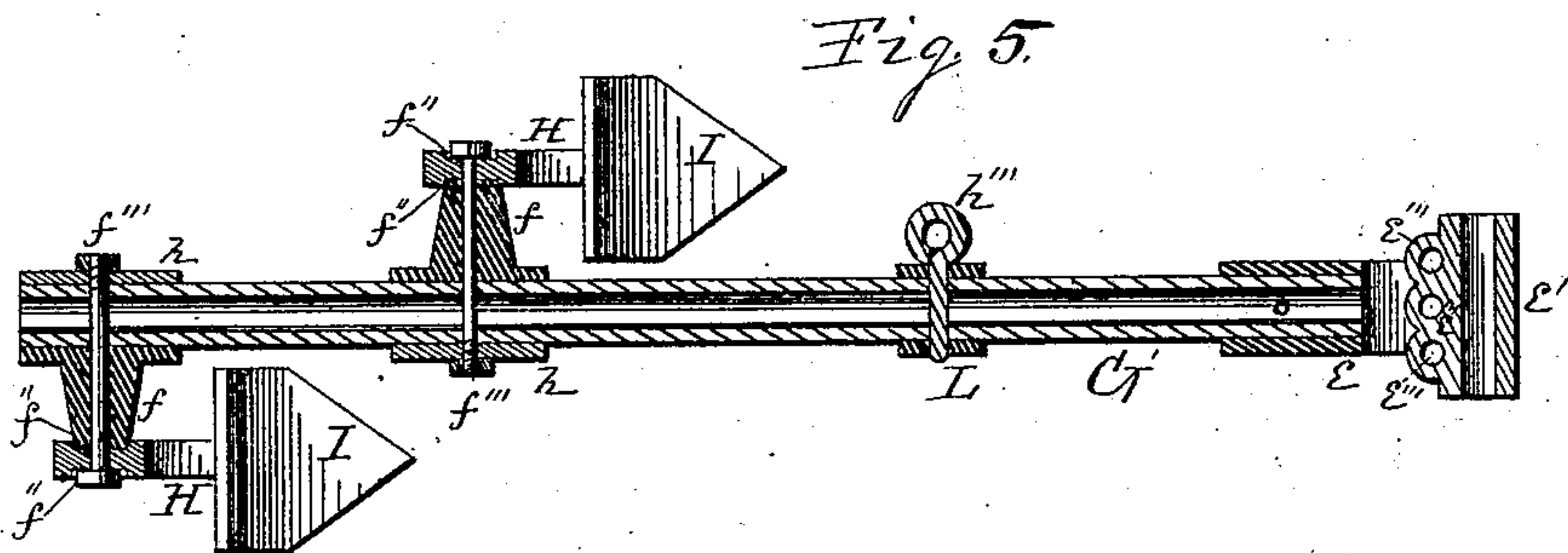
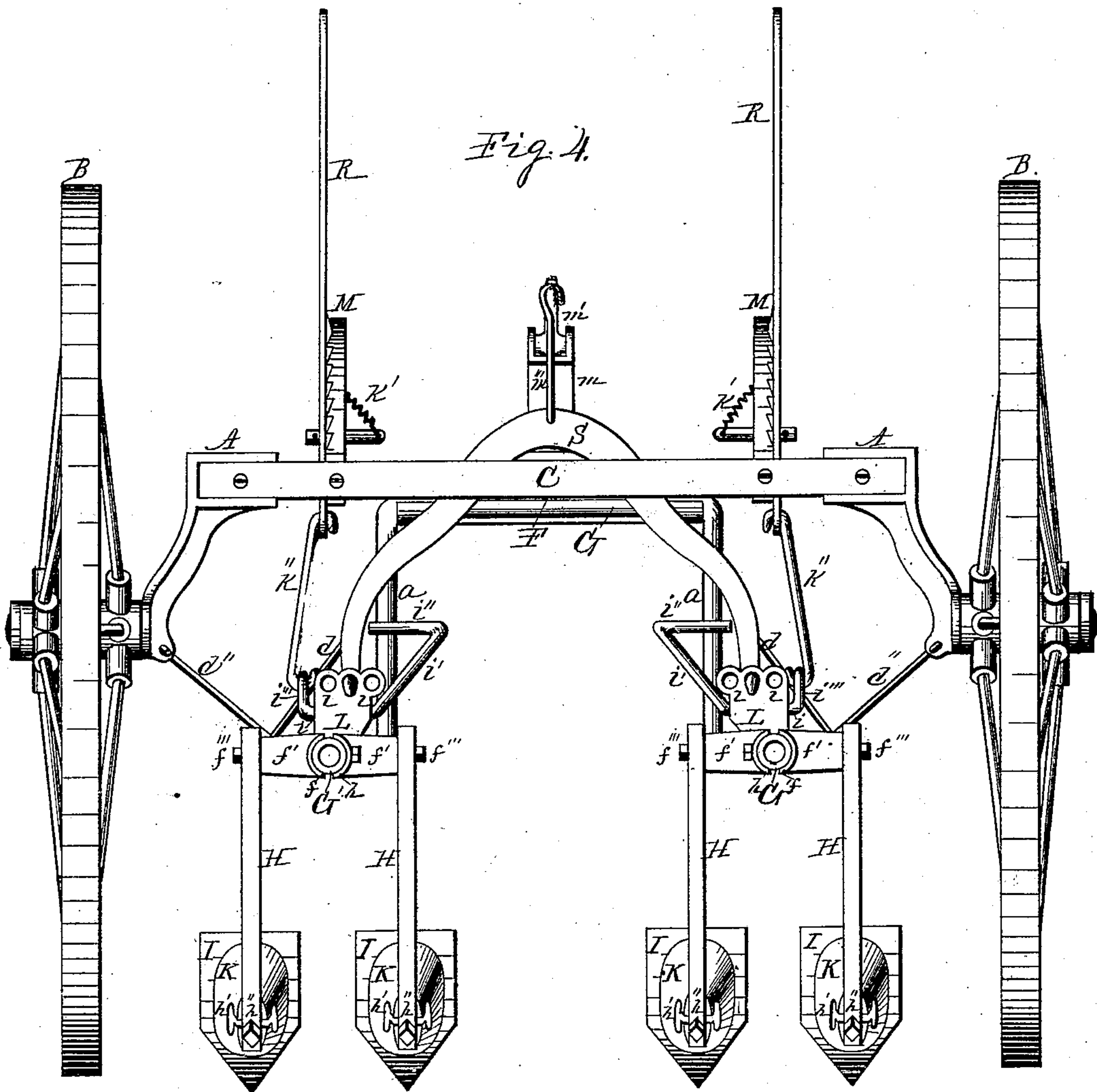
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UNITED STATES PATENT OFFICE

JAMES HERVA JONES, OF ROCKFORD, ILLINOIS, ASSIGNOR TO EMERSON,
TALCOTT & CO., OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 316,369, dated April 21, 1885.

Application filed September 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES HERVA JONES, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Cultivator, of which the following is a specification.

This invention relates to a class of cultivators known as "riding straddle-row cultivators;" and its object is to produce an improved light-weight steel cultivator at a small cost. To this end I have designed and constructed the cultivator represented in the accompanying drawings, in which—

Figure 1 is a plan view of a cultivator embodying my invention. Fig. 2 is a side elevation with one wheel omitted. Fig. 3 is a front elevation with driver's seat omitted. Fig. 4 is a rear elevation with the driver's seat omitted. Fig. 5 is a horizontal central section of one of the drag-bars. Fig. 6 is an isometrical representation of whiffletrees adjusted for low draft. Fig. 7 is a sectional representation showing the connection of the arched bar with the drag-bar; and Fig. 8 is an isometrical representation of the shovel-block.

In the figures, A represents the bracket-formed axle-arms fitted to receive the carrying-wheels B to revolve thereon. The upper inner end portions of the bracket-formed axle-arms A are grooved or recessed on their front and rear faces to receive the end portions of the axle-tree C, and the rear end portions of the curved hounds D. The axle-tree C and the curved hounds D are produced from bar material, preferably of steel, and are fixed in place to the axle-arms by means of a sufficient screw bolt or bolts passed through their overlapping portions.

At E is represented the tongue or pole, which is of the usual form, made of wood, and its rear end is placed between the forward ends of the hounds, and is fixed in place by means of sufficient screw-bolts passed through the parts.

The several parts, consisting of the bracket-formed axle-arms, axle-tree, curved hounds, and tongue, constructed and joined in the manner shown and described, constitute the

triangular supporting-frame of my improved cultivator to be mounted on carrying-wheels. The hounds D are produced in their curved form for the purpose which will hereinafter appear.

At F is represented a crank-formed draft-bar, produced from bar material, preferably cylindrical in section. This draft-bar consists of a central horizontal portion, vertical arms *a* depending from each end thereof, and horizontal draft arms *b* projecting laterally outward from the lower ends of the vertical arms *a*. This draft-bar F is supported in position on the main frame forward of the axle-tree by means of a transverse bar or cross-head, G, having its rear edge produced in grooved clasp form to embrace the central portion of the draft-bar. This cross-head G, with the draft-bar in place therein, is fixed to the main frame forward of the axle-tree by means of a suitable bolt connecting its central portion with the rear end of the tongue, and staple or hook bolts *c* connecting its end portions to the outward-curving hound. This cross-head serves the double purpose of connecting the draft-bar to the main frame and supporting the main frame in the connection of the tongue with the curved hounds.

At *d* are represented rods connecting the outer ends of the draft-arms with the tongue by means of stud-supports *d'*, projecting laterally from the tongue, and fixed in place thereon by means of a screw-bolt extending through the parts.

At *d''* are represented brace-rods connecting the outer end of the draft-arms with the axle-arms. These brace-rods *d* and *d''*, in their connection with the main frame and with the draft-bar having a connection with the main frame, serve to support the draft-bar to resist the draft-strain, and form a truss to support the main frame at the connections of the tongue with the curved hounds.

At G' are represented tubular metallic drag-bars, having their forward ends fitted with a coupling-yoke, *e*, to embrace the coupling-sleeve *e'*, supported on the draft-arms of the draft-bar, and are connected therewith by means of a coupling-bolt, *e''*, passed through the parts, and are made laterally adjustable in

their connection with the sleeve by means of a series of holes, e''' , formed in the rear portion of the sleeve to receive the coupling-bolt.

The rear end portions of the tubular drag-bars are provided at proper intervals on opposite sides with shovel-supporting brackets, consisting of a semi-tubular sleeve, f , to engage the drag-bar, and a tubular bracket-arm, f' , rectangular in section, projecting laterally from the central portion of the semi-sleeve.

At H is represented a shovel-standard having its upper end fitted on both sides with a rectangular recess, f'' , to receive the projecting end of the tubular bracket f' . This tubular bracket-support and the shovel-standard fitted to the support are fixed in position on the drag-bar by means of a suitable screw-clamping bolt, f''' , passed through a semi-tubular washer, h , through the drag-bar, the tubular bracket, and shovel-standard. The employment of the semi-tubular sleeve f and the semi-tubular washer h in the connection of the shovel-standard with the tubular drag-bar serves to strengthen the bar and compensates for the material removed therefrom in boring the bar to receive the clamping-bolt.

At I is represented a shovel produced from plate-steel in a well-known form.

At K is represented a shovel-back of proper form to engage the rear face of the shovel, to which it is fixed by suitable screw-bolts or otherwise. This shovel-back is produced in concave form to engage the rounded front face of the shovel-standard, and it is fitted with a transverse slot, h' , of I form in section to receive the head end portion of a suitable holding or clamping bolt, h'' , in a manner to permit it to be passed through the slot freely, and that the inner or under face of the bolt-head will engage the inner face thereof. This back with a shovel thereto attached is fixed to the lower end of the shovel-standard by means of the holding or clamping bolt h'' , which is passed through the standard fitted for its reception, and by means of its screw-nut serves to fix the shovel in place thereon. This construction of the shovel-back and its connection with the shovel-standard is such that the shovel may be readily placed in position on the standard and as readily removed therefrom without removing the clamping or holding bolt from the standard, and permits the shovel to be adjusted on the standard to vary the angle on its face relatively with the line of draft when required to throw the earth either toward or from the plants.

At L is represented a socket-bracket fixed in position on the forward portion of the drag-bar by means of a screw-eyebolt, h''' , passed from the inside outward through the parts horizontally, with the eye of the bolt projecting laterally from the inner face of the bracket. These eyebolts h''' are designed to furnish a connection for the cross-head support of a center or fifth shovel or of a furrow-opener when the machine is employed as a seed-planter. This bracket L, immediately above its con-

nection with the drag-bar, is bored transversely relatively with the drag-bar in a horizontal plane to receive a foot-lever to oscillate freely therein.

The foot-lever, supported to oscillate in the bracket L, consists of a bearing portion, i , supported in the bracket L, an inclined lever-arm, i' , and a pedal-arm, i'' , on the inside of the drag-bar, to receive the foot of the operator, and an eye-formed lever-arm, i''' , on the outside of the drag-bar. The angle formed by the inclined lever-arm i' and the eye lever-arm i''' is preferably slightly less than a right angle.

At M is represented a segment fitted with side ratchet-teeth of saw-tooth form. The base of these ratchets consists of the bars k , having their rear ends engage the axle-tree, to which they are securely fixed by suitable screw-bolts. The forward ends of these base-bars k are curved on their outer face to engage the inner face of the curved hounds, to which they are securely fixed by sufficient screw-bolts passed through the parts. The construction and connection of these ratchets serve as braces to strengthen the main frame.

The seat-supporting frame is produced from a suitable metallic bar, N, in one piece, bent in V form, having its ends pivotally connected to the base-bars k of the ratchets, from which connection it extends rearward over the axle-tree on which it is supported. On the rear end of this seat-supporting frame the driver's seat P is fixed in a manner capable of a lengthwise adjustment thereon to properly balance the machine to adapt it to the use of parties varying in size or weight.

At R are represented lifting and holding levers having their fulcrum-support on a stud-journal projecting from the axial center of the segment-ratchet. These levers are produced on their upper edge in catch form to engage the teeth of the ratchets.

At k' is represented a spring, one end of which is connected to a stud-support projecting inward from the axial center of the segment-ratchets, from which it extends obliquely outward and rearward to engage the lifting and holding lever at a point rearward of its fulcrum-support in such a manner that its spring action will operate to hold the lever in contact with the ratchet in a manner to permit it to be disengaged therefrom by an outward pressure on the rear free arms of the levers.

At k'' is represented a supporting-link employed to connect the forward end of the lifting and holding lever with the eye-formed lever-arm i''' of the foot-lever in such a manner that the vertical movement of the free handle end of the lever R will raise or lower the rear end of the drag-bars, and by means of their connection with the teeth of the segment-ratchets serve to regulate the running depth of the shovels, and, when desired, serve to support the drag-bars elevated for transportation.

It will further be seen that the connection of the supporting-link with the foot-lever furnishes the means by which the driver, mounted in his seat, by depressing the inclined pedal-arm of the foot-lever with his feet, can elevate the rear ends of the drag-bars to carry the shovels in turning and getting the machine into position for cultivating, or for other purposes requiring the lifting of the shovels.

The upper end of the socket-bracket L is provided with a series of holes, *l*, to receive the end portions of a suitable sway-bar.

At S is represented an arched sway-bar produced from bar material in a suitable curving form. The end portions of this sway-bar are produced in the reverse curved form clearly shown in Fig. 7, and are reduced to a rounded form of proper size to freely enter the holes *l* in the bracket L, and when in place its reverse curved form serves as a lock to prevent accidental displacement. This sway-bar, S, is designed to connect the drag-bars to hold them in their relative position, and to cause a unison of lateral movement, and by means of the series of holes *l* in the brackets L the relative position of the drag-bars may be varied to cultivate closer to or farther from the plants.

At *m* is represented a bracket-support fixed to the rear end of the tongue, from which it extends rearward, inclining upward; and to its uprising rear end is pivoted a lever-support, *m'*, in a manner to permit of a swinging movement lengthwise of the cultivator, limited in its upward forward movement to about a vertical position. The upper end of the lever-support *m'* is slotted to receive a supporting-link, *m''*, connecting it with the crowning portion of the sway-bar.

At *m'''* is represented a spiral spring connected at its forward end to the tongue, and at its rear end with the forked end of the pivoted lever *m'* in such a manner that its spring action tends to lift and hold the lever-arm *m'* in a vertical position.

From this construction and arrangement of the parts it will be seen that when the drag-bars are depressed to their working position, as shown in the solid lines in Fig. 2, the several parts connected therewith will be in the position therein shown in the solid lines, in which position the tension-line of the spring will be in such position relatively with the fulcrum of the lever-support that its lifting force will be slight. In raising the shovel-beams the lifting force of the spring *m'''* will increase to assist in lifting them until the supporting-arm has reached its limited vertical position, as shown in the dotted lines, to support the drag-bars elevated in such a manner that a straight downward pressure on the rear portion of the drag-bars will carry them to their working position.

At T is represented the central portion of an evener, notched on the upper face and pivotally connected at a proper point to the under face of the tongue in a manner to permit

a sufficient oscillatory movement of the evener on its pivotal connection with the tongue. The end portions of this central portion, T, is fitted with sockets inclining downward, as represented in dotted lines in Figs. 2 and 6.

At *n* are represented lever-arms produced in taper form from bar material, having their inner ends fitted to enter the end sockets in the central portion, T, and are removably held in place by a pin passed through the parts. The lever-arms *n* are bent at their connection with the central portion in such a manner as to place them in a horizontal plane, as shown in Fig. 3. The outer ends, *n'*, of these lever-arms are bent downward, and are perforated to receive a single-tree connection.

At *n''* are represented single-trees, in this instance produced in a single piece from suitable bar material, and are link-jointed to the downturned ends of the lever-arms. These several parts, constructed and arranged as shown in Fig. 3, constitute the high-draft evener. These lever-arms *n*, with the single-trees attached, are made removable and reversible, and capable of being placed in the central portion, T, in the position shown in Fig. 6, in which position their outer ends depend and produce a low-draft evener.

By this construction I produce a high and low draft evener capable of use when the machine is employed either as a riding or walking cultivator. This construction of evener, in connection with the adjustable seat, when the machine is used as a riding-cultivator, furnishes the means of adjustment for balancing the machine to adapt it to operators varying in height or weight, or to be used as a walking-cultivator when the seat is removed, and handles attached to the beams.

In the cultivation of hilled or rowed plants rapid movements of the shovel-beams or drag-bars are required to conform to the sinuosities or zigzag form of rows or hills, and for various purposes the beams require to be often raised or lowered. For these reasons it is desirable to obtain sufficient strength of beams with the least possible weight. This I accomplish in the employment of wrought tubular metallic beams suitably re-enforced by means of sufficient segments or semi-tubular sleeves to embrace the beams when perforated, or at all needful points. By means of suitable re-enforces I am enabled to produce a sufficient beam from much lighter tubular material.

I claim as my invention—

1. The combination, with the triangular frame consisting of the grooved axle-arms, and the axle-tree, curved hounds and tongue, of a crank draft-bar, and braces connecting the draft-arms of said bar to the axle-arms and to stud-supports projecting laterally from the tongue, substantially as set forth.

2. The combination, with the main frame and with the cross-head fixed thereto, and having its rear edge of groove-clasp form, of a crank-formed draft-bar supported in the grooved cross-head, substantially as set forth.

3. The combination, with the segment-ratchet, and with a hand-lifting lever having a pivotal connection therewith, of an obliquely-arranged spring connected with the axial center of the ratchet and with the lever at a point rearward of its pivotal connection with the segment, substantially as and for the purpose set forth.

4. The combination, with the herein-described shovel-standard support, of a shovel-standard, said shovel-standard recessed on opposite sides to receive the standard-support, substantially as and for the purpose set forth.

5. The combination of a tubular or cylindrical drag-bar, a shovel-standard support with semi-tubular base to engage the drag-bar, a semi-tubular washer to engage the side of the drag-bar opposite the standard-support, a shovel-standard recessed to engage the standard-support, and a clamping-bolt extending through the parts to fix them in position on the drag-bar, substantially as and for the purpose set forth.

6. The combination, with the tubular or cylindrical drag-bar, of a socket-bracket placed thereon, and an eyebolt passed through the parts to fix the bracket in place, and as a connection to a cross head of a center shovel, as and for the purpose set forth.

7. The combination, with the socket-bracket on the drag-bar, of a foot-lever, substantially as described, said foot-lever having a fulcrum-support in the socket-bracket and a link-connection with a lifting and holding lever, substantially as and for the purpose set forth.

8. The combination, with the main frame and with the drag-bar, of a socket-bracket fixed to the drag-bar, a foot-lever having its fulcrum-support in the socket-bracket, a hand-lever and ratchet mechanism fixed to the supporting-frame, and a link connecting the foot-lever with the hand-lever, substantially as and for the purpose set forth.

9. The combination, with the socket-bracket fixed to the drag-bars, of an arched sway bar to connect the drag-bars, said sway-bar fitted to engage the socket-brackets in a self-locking manner, and made adjustable to vary the dis-

tance between the drag-bars, substantially as and for the purpose set forth.

10. The combination, with the bracket-support having a fixed connection with the rear end of the tongue, of a lever-support pivoted to the free end of the bracket-support, capable of a limited upward swinging movement in the lengthwise direction of the cultivator, substantially as and for the purpose set forth.

11. The combination, with the arched sway-bar, and with the lever-support pivotally connected with a bracket-support on the tongue, of a link connecting the sway-bar to the pivoted support, substantially as and for the purpose set forth.

12. The combination, with the lever-support pivotally connected with the bracket-support on the tongue, of a lifting and supporting spring connecting the free end of the supporting-lever and with the forward portion of the tongue, substantially as and for the purpose set forth.

13. The combination, substantially as herein described, of a sway-bar connecting the drag-bars, a link connecting the sway-bar with a pivoted supporting-lever, and a lifting and supporting spring connecting the supporting-lever with the main frame, substantially as and for the purpose set forth.

14. In a cultivator, the herein-described evener, consisting of a central portion having a pivotal connection with the tongue, and provided with inclined end sockets, bent lever-arms fitted to the end sockets of the central portion, and outer ends fitted for the connection of single-trees, said lever-arms made reversible to produce a high or low draft, substantially as and for the purpose set forth.

15. In a cultivator, the combination, with a seat made adjustable lengthwise of the machine, of an evener having bent lever-arms made reversible, substantially as and for the purpose set forth.

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Witnesses:

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