(No Model.) 3 Sheets—Sheet 1.

R. CRACRAFT.

CULTIVATOR.

No. 299,626. Patented June 3, 1884.

Fig. 3.

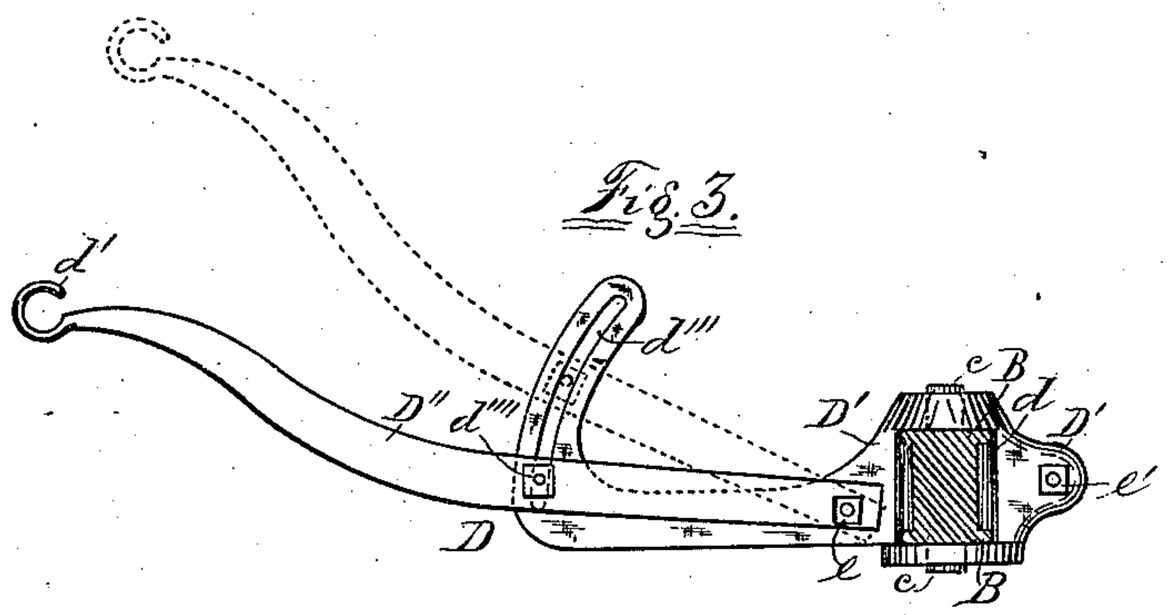


Fig. 2.

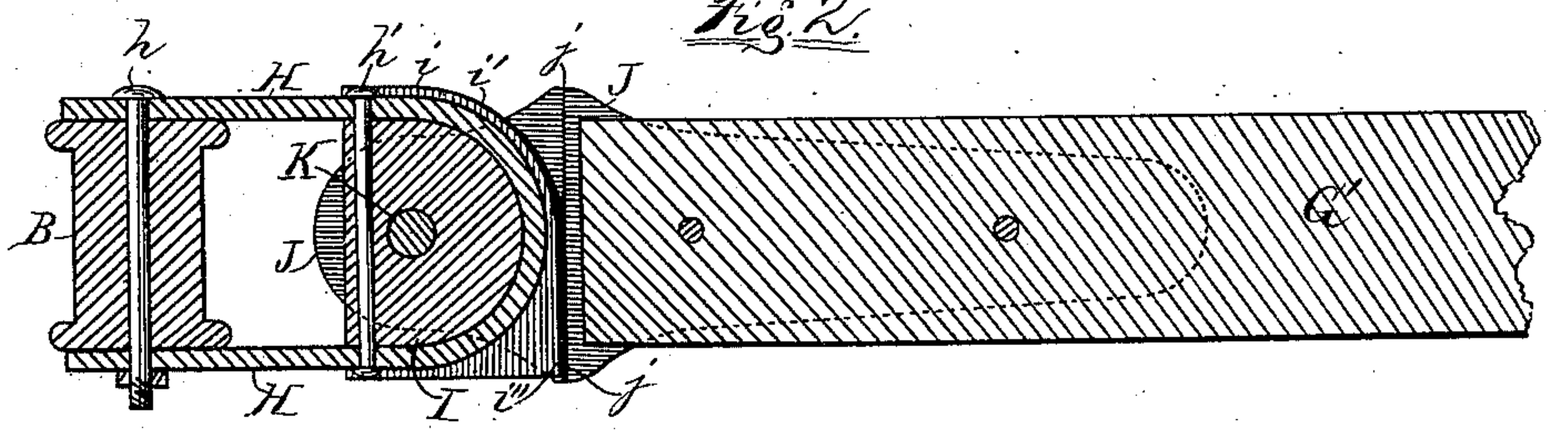
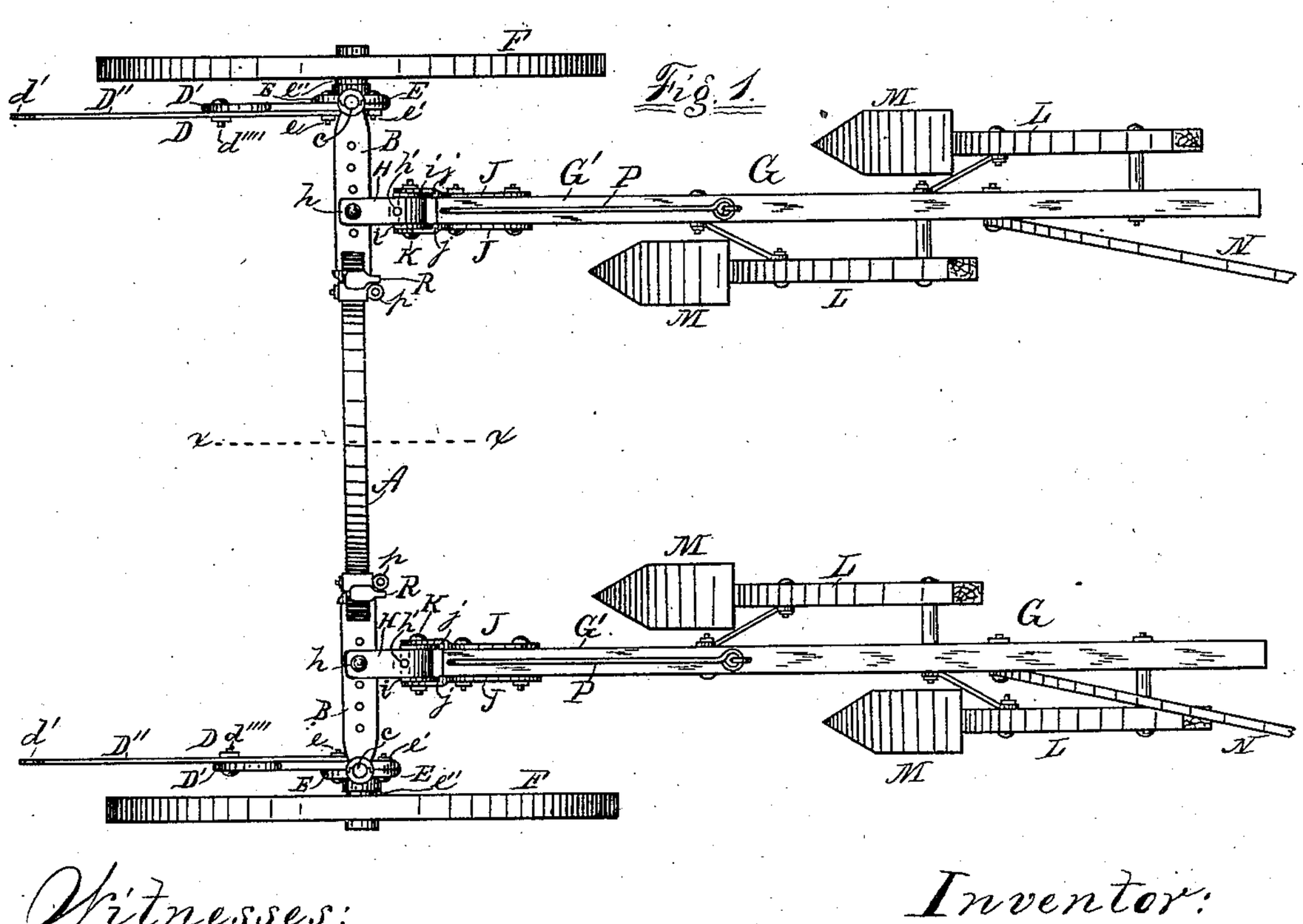


Fig. 1.



Witnesses:
E. R. Richards.
Chas. Gilchrist.

Inventor:
Richard Cracraft.
By W. B. Richards & Co. Atty.

(No Model.) 3 Sheets—Sheet 2.

R. CRACRAFT.

CULTIVATOR.

No. 299.626. Patented June 3, 1884.

Fig. 4

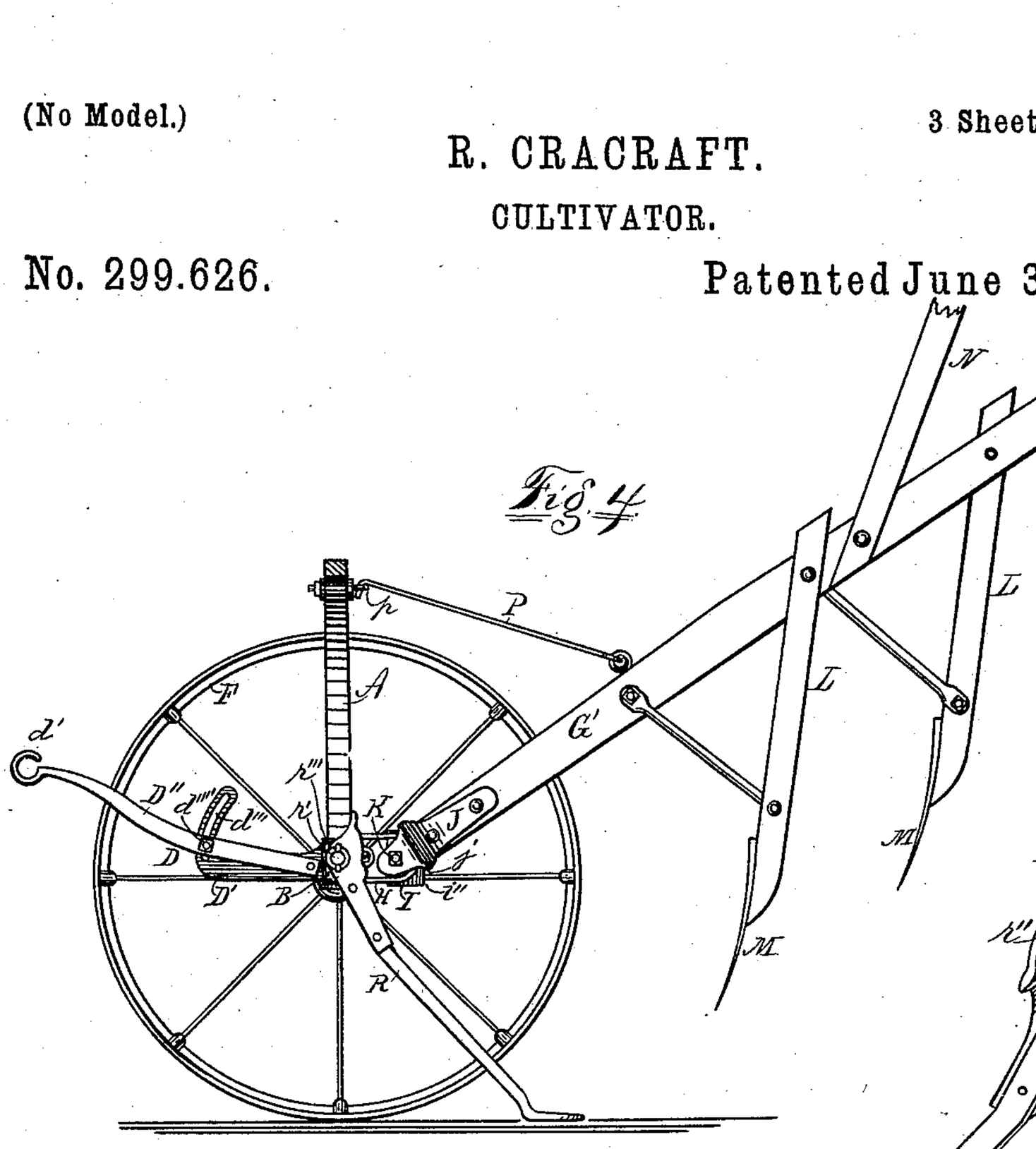


Fig. 6.

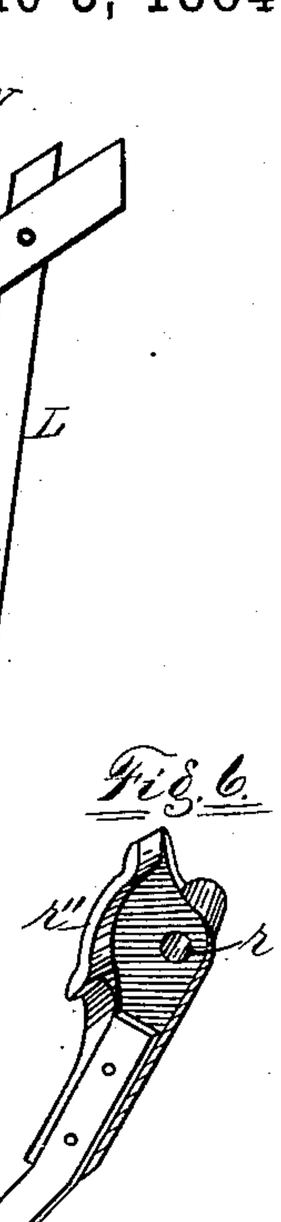


Fig. 5.

Witnesses:
S. R. Richards.
Chas. Gilchrist.

Inventor:
Richard Cracraft.
By Wm B Richards & Co
Atty.

(No Model.) 3 Sheets—Sheet 3.

R. CRACRAFT.

CULTIVATOR.

No. 299,626. Patented June 3, 1884.

Fig. 7.

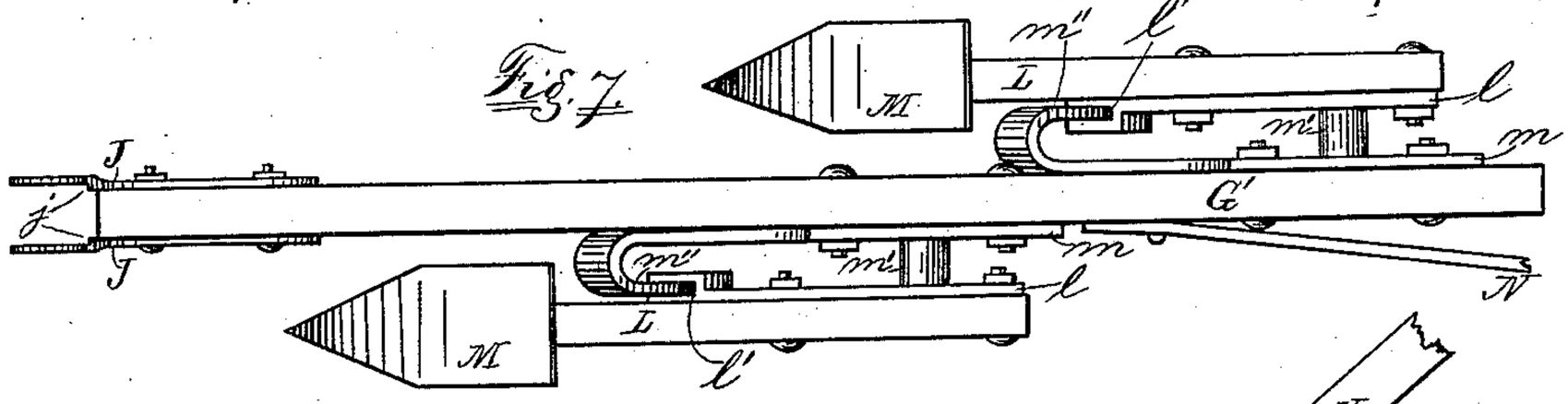


Fig. 8.

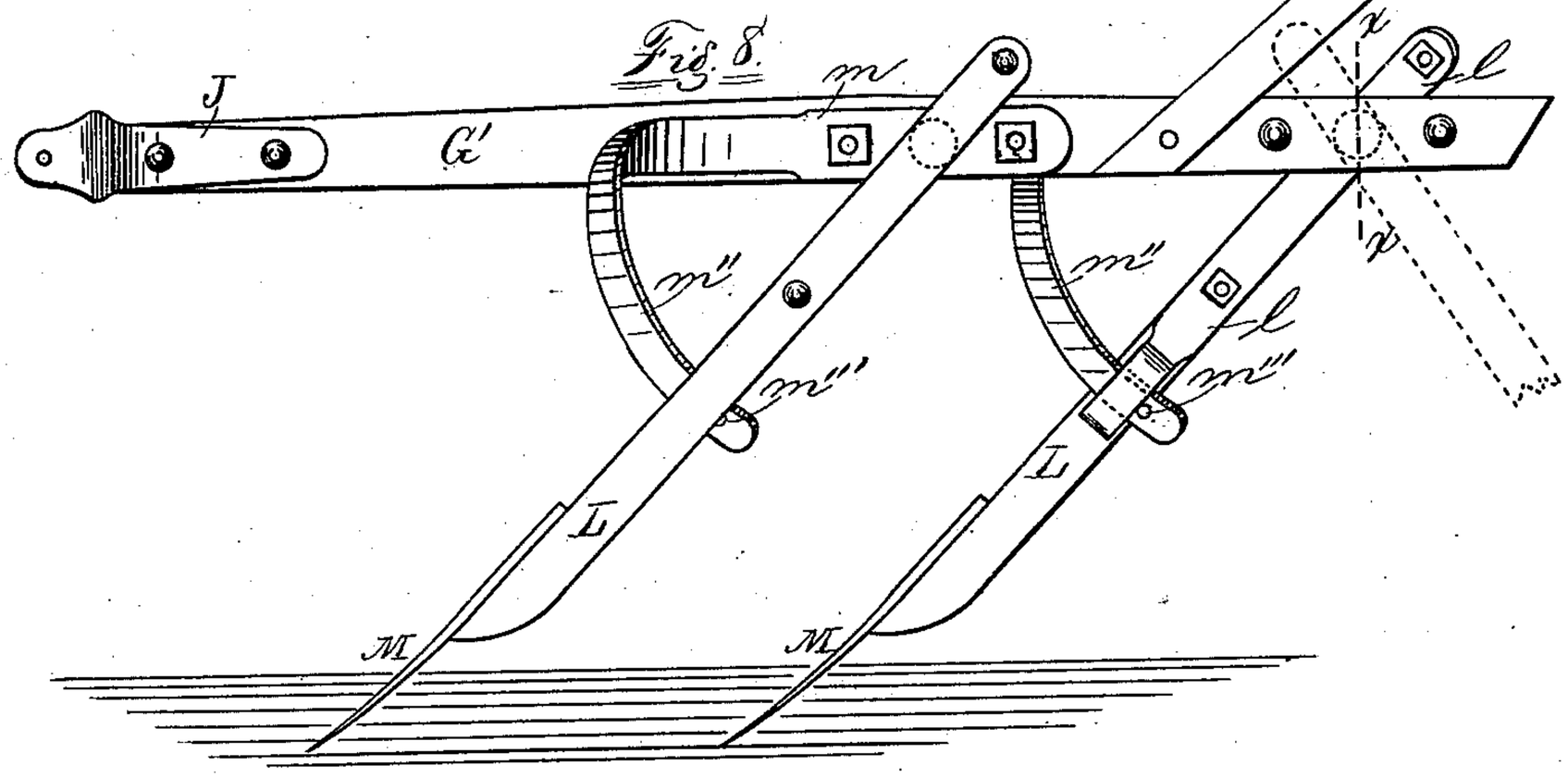


Fig. 9.

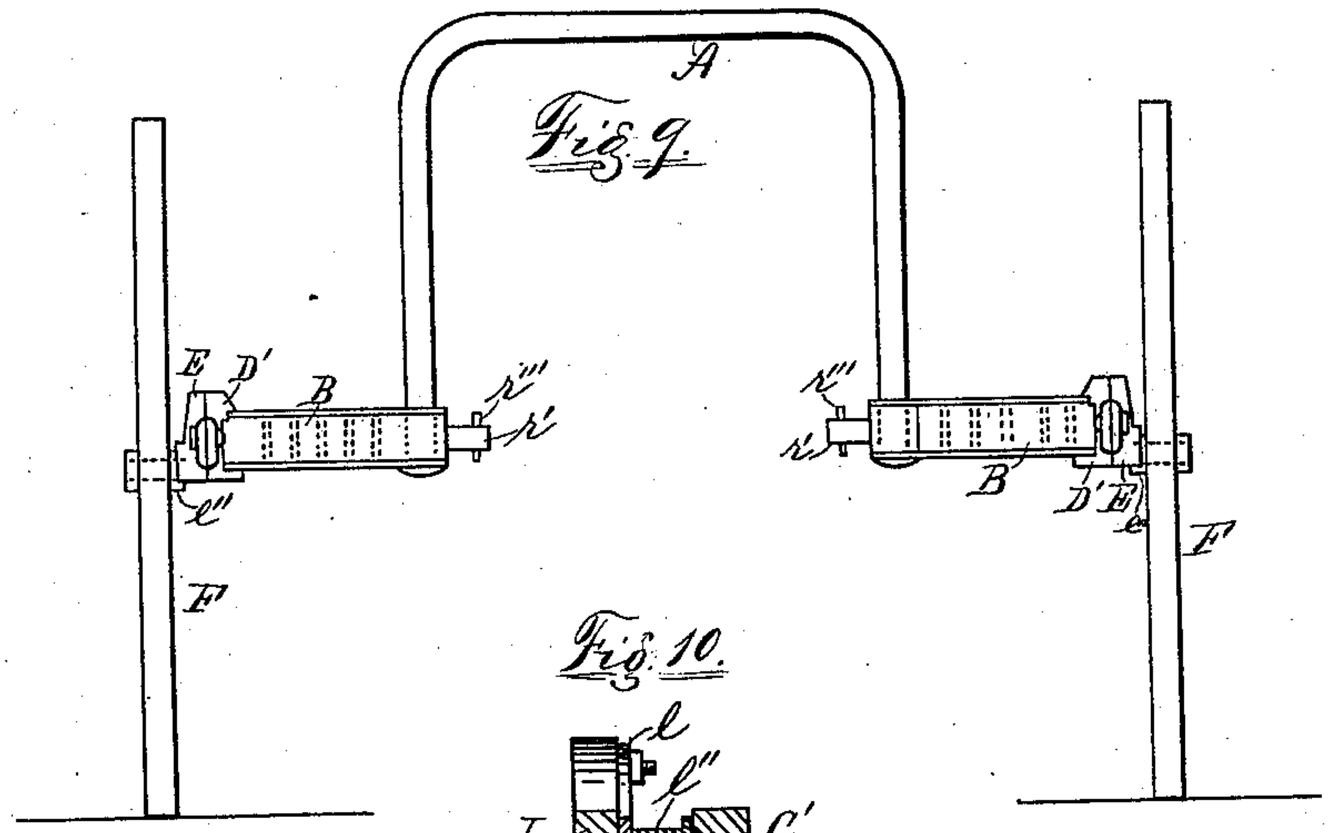


Fig. 10.

Witnesses:
L. R. Richards
Chas. Gilchrist.

Inventor:-
Richard Cracraft,
By W. B. Richards & atty.

UNITED STATES PATENT OFFICE.

RICHARD CRACRAFT, OF BERWICK, ILLINOIS, ASSIGNOR TO THE BERWICK AGRICULTURAL COMPANY, OF SAME PLACE.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 299,626, dated June 3, 1884.

Application filed December 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, RICHARD CRACRAFT, a citizen of the United States, residing at Berwick, in the county of Warren and State of Illinois, have invented certain new and useful Improvements in Cultivators; and I do hereby 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 letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to tongueless cultivators; and it consists in constructions and combinations hereinafter described.

In the accompanying drawings, which illustrate my invention, and in which the similar letters of reference apply to like parts in all of the figures—

Figure 1 is a top plan; Fig. 2, an enlarged sectional elevation of the coupling; Fig. 3, an enlarged side elevation of one of the draft-bars; Fig. 4, a sectional elevation in line *x x*, in Fig. 1. Fig. 5 is same sectional elevation as Fig. 4, but showing the parts in different relative positions. Fig. 6 is a perspective of the runner or shoe. Fig. 7 is an enlarged top plan of one plow-gang, showing my improved brace. Fig. 8 is a side elevation of Fig. 7. Fig. 9 is a rear elevation of the axle and wheels. Fig. 10 is a sectional elevation in line *x x* in Fig. 8.

Referring to the drawings by letters, A is the ordinary arched central portion of the axle, to which horizontal end pieces, B, are bolted or otherwise secured. Studs *c c* project—one upward and one downward—from the outer end of each end piece, B.

D′ is a plate or bar, with an opening, *d*, through its rear end, through which the outer end of the end piece, B, passes.

E are plates or blocks, secured by bolts *e e′*—one to each plate D′—and have each a stub-axle, *e″*, projecting, on which the wheels F are journaled. The studs *c* are fitted loosely in a vertical bearing between the plates D′ and E, so that swinging the bars D′ laterally will swing the wheels F on the studs *c*.

D are the draft-bars, formed of the bars D′, heretofore partly described, and bars D″, with hooks *d′* on their forward ends, to which the draft-animals are attached. The rear end of each bar D″ is loosely fitted on the bolt *e*. The front ends of the bars D′ are bent upwardly, and have a slot, *d‴*, through which and through the bar D″ a bolt, *d⁗*, passes. The bars D″ may be adjusted and held after adjustment by the bolt *d⁗* and its nut, as shown by dotted lines at Fig. 3. By means of this adjustment of the draft-bar a portion of the force exerted by the draft-animals in drawing the cultivator may be utilized in exerting an upward force on the rear ends of the gangs G, and thus aid in manipulating the gangs, and also cause them to run lighter. The amount or degree of the upwardly-acting force on the rear ends of the gangs may be adjusted by the extent of adjustment of the bar D″ on the bar D′.

H is a strap or joint-piece secured at its ends to the end piece, B, by a bolt, *h*, which passes through the end piece, B, and strap H. A block, I, is held in the rear bent part of the strap H by a bolt, *h′*. The sides *i* of the block I project laterally beyond the sides of the strap H, as shown at Fig. 1, and the rear side of said block is formed as shown at Fig. 2, rounding or convex at its upper rear portion, *i′*, and straight at its lower rear portion, *i″*. The beam-plates J are secured one to each side of a plow-beam, G′, and extend forward one on each side of a block, I. The beam-plates have vertical shoulders *j* on their confronting sides. When the plow-gangs are in working positions, the shoulders *j* come in contact with the straight part *i″* of the block I, as shown at Fig. 2, and lock the gangs and axle, so that a downward draft on the forward ends of the draft-plates D may exert an upward force on the rear ends of the plow-gangs, and so that the arch A may be sustained by the plow-beams from falling forward when the draft is not on. The rounded portion *i′* of the blocks I will permit the plow-gangs to be raised at their rear ends, turning on the bolt K, which passes through the beam-plates J and the block I.

L are ordinary standards with ordinary

plows, M, and N are ordinary handles. At Fig. 1 I have shown an ordinary manner of connecting the standards L with the plow-beams, and at Figs. 7, 8, and 9 I have shown my improved brace and connection of these parts. A plate, *l*, is bolted, as shown, to each standard. The lower end of the plate *l* has a hole, *l'*, through it, and the upper end has a projecting stud, *l''*. *m* is a plate bolted, as shown, to the plow-beam, and has a tubular stud, *m'*, projecting from one side, in which the stud *l''* is fitted loosely, and riveted at its outer end, as shown at Fig. 10. The forward end of the plate *m* is extended and bent, as shown at Figs. 7 and 8, downward and rearward to form a brace, *m''*, which passes through the hole *l'* in the plate *l*. An ordinary wooden break-pin, *m'''*, is placed in each brace, *m''*, in rear of the plate *l*, so that when the plows strike what they cannot break through the pins *m'''* will break and the tubular studs *m'*, turning on the studs *l''*, will allow the standard to swing rearward, as shown by dotted lines at Fig. 8.

P are hook-rods hinged to the plow-beams, and may be engaged with eyes *p* on the axle to suspend the plow-gangs, as shown at Fig. 4.

R are shoes for sustaining the axle when the plows are suspended, as last described. The lower ends of shoes R are of ordinary construction, and their upper ends have each a hole, *r*, which is fitted loosely on a pin, *r'*, which project one from the inner end of each end piece, B. (See Fig. 9.) Each shoe R has a flange, *r''*, projecting from one side at its upper end, (see Fig. 6,) which flange rests against the rear side of the arch A, as shown at Fig. 4, when the shoe is adjusted to sustain the plows in an elevated position. A key, *r'''*, retains the shoe on the pin *r'*. By withdrawing the pin *r'''* and sliding the shoe outward on the pin *r'* until the flange *r''* is clear of the arch A the shoe R may be turned upward, as shown at Fig. 5, and the key *r'''* again inserted to hold it.

I do not claim, broadly, the coupling which permits the plow-gangs to be raised at their rear ends, and which is provided with a stop or lock, which prevents the arched axle falling forward, and which will also act to raise the rear ends of the gangs when the arched axle is tilted or turned over forwardly; nor do I limit my claim for the vertically-adjustable draft-plate to its combination with the stop or lock joint I have shown and described, as it is applicable to any joint of the class last described; but

What I claim is—

1. In a tongueless cultivator, in combination with the arched axle and wheels, and plow-gangs connected to the axle by a joint which permits free movement of the gangs upwardly, but limits their downward movement, a draft-plate constructed in two parts, an angular part, D', rigidly connected with the wheel-spindle plate, and the part D'', hinged to the angular part D' at its rear end and its forward end adjustable vertically with reference to the parts D', substantially as and for the purpose specified.

2. In combination with the arched axle and wheels, vertically-adjustable draft-plate, and plow-gangs hinged to the axle, the blocks I, constructed as described, and adapted to coact with the beam-plate J, having shoulders *j*, substantially as and for the purpose specified.

3. In a tongueless cultivator, in combination with an arched axle and plow-gangs hinged thereto, and provided with devices for suspending the gangs to the axle, a shoe constructed as described and reversibly attached to the axle, substantially as and for the purpose specified.

4. In a cultivator, in combination with the plow-beams and plow-carrying standards, the plate *l*, having hole *l'* and stud *l''*, and the plate *m*, having tubular stud *m'* and bent brace *m''*, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD CRACRAFT.

Witnesses:
J. F. COLWELL,
P. R. RICHARDS.