172-340

DRAFTING

No. 823,238. PATENTED JUNE 12, 1906.

L. E. WATERMAN.

CULTIVATOR.

APPLICATION FILED MAR. 30, 1904.

5 SHEETS—SHEET 1.

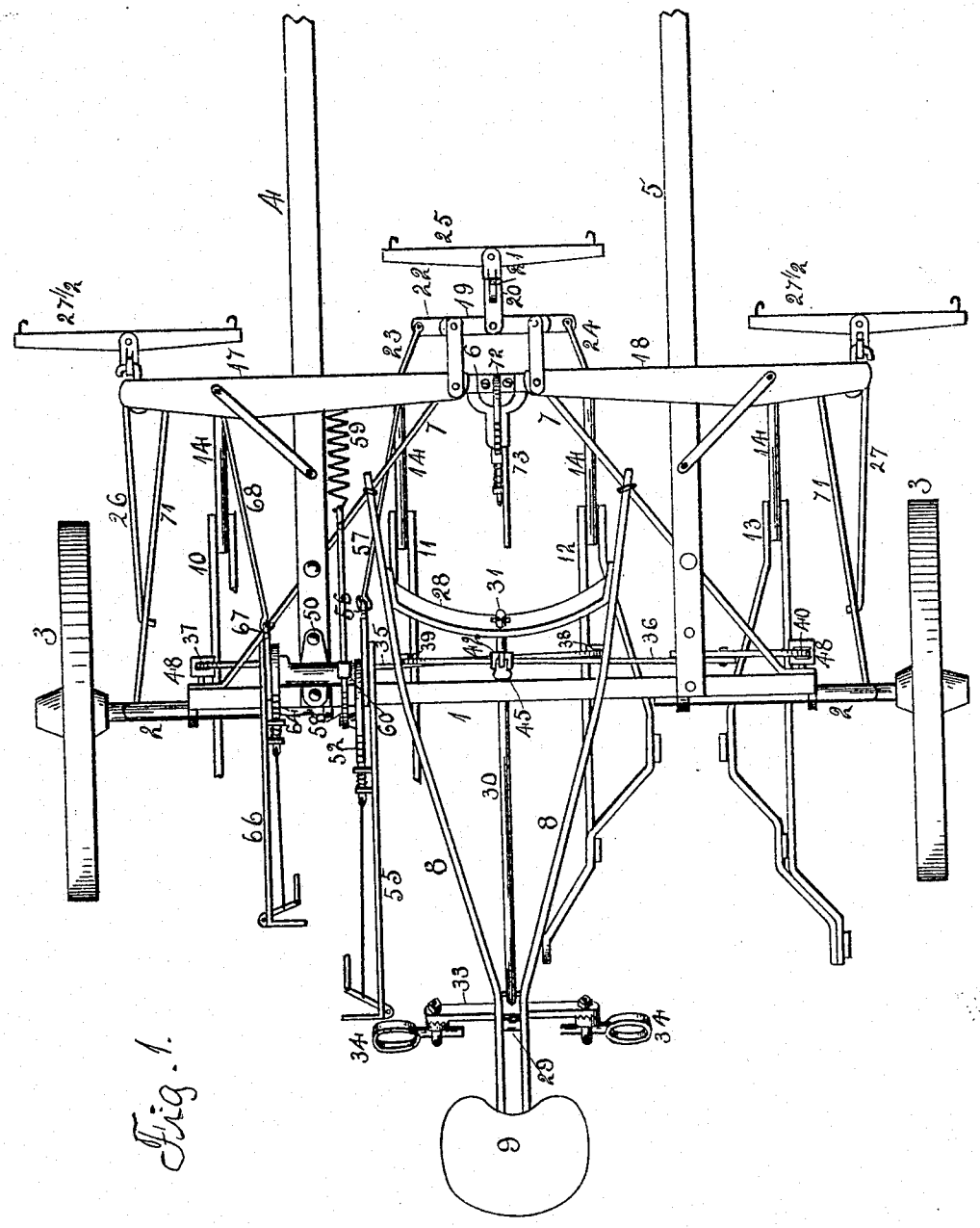


Fig. 1.

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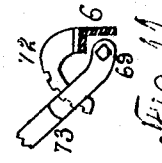


Fig. 11.

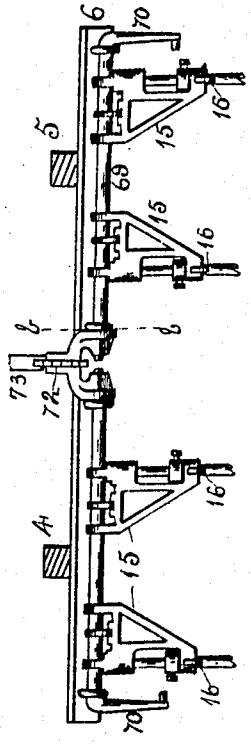


Fig. 10.

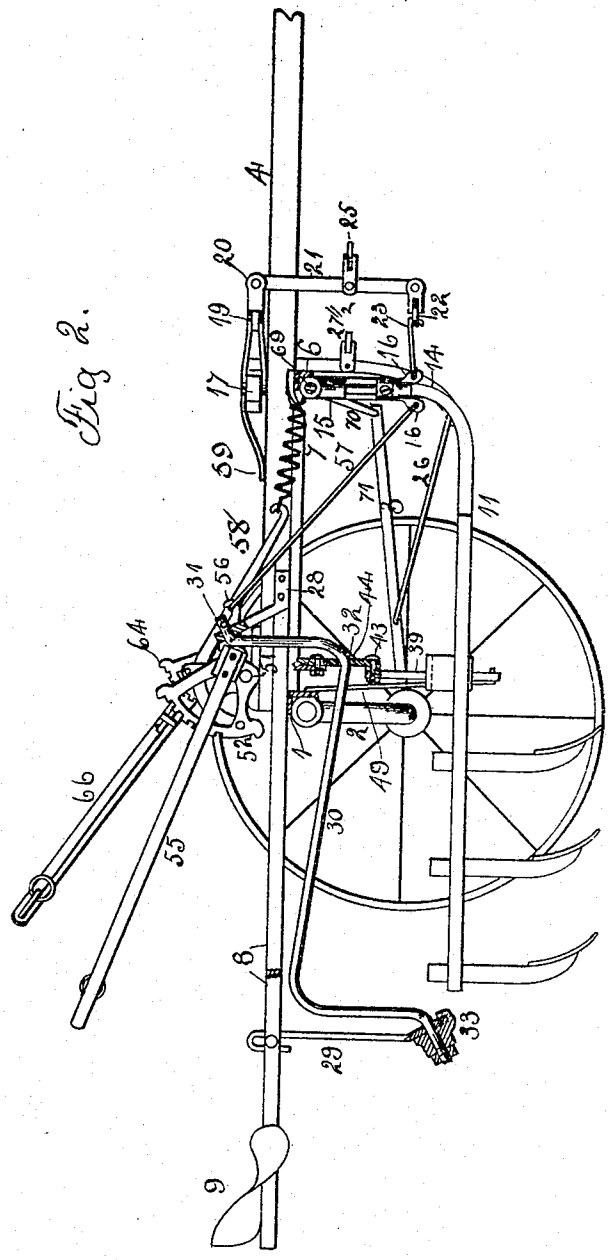


Fig 2.

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Fig. 5.

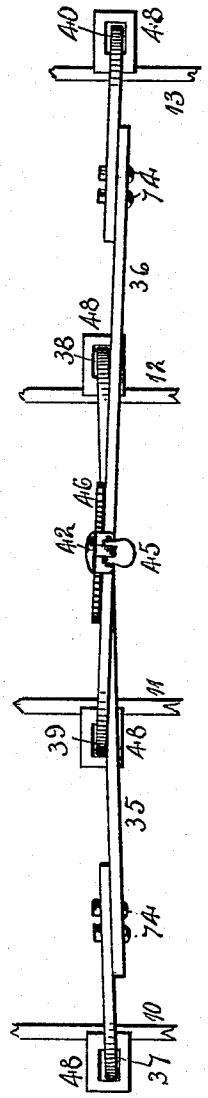


Fig. 3.

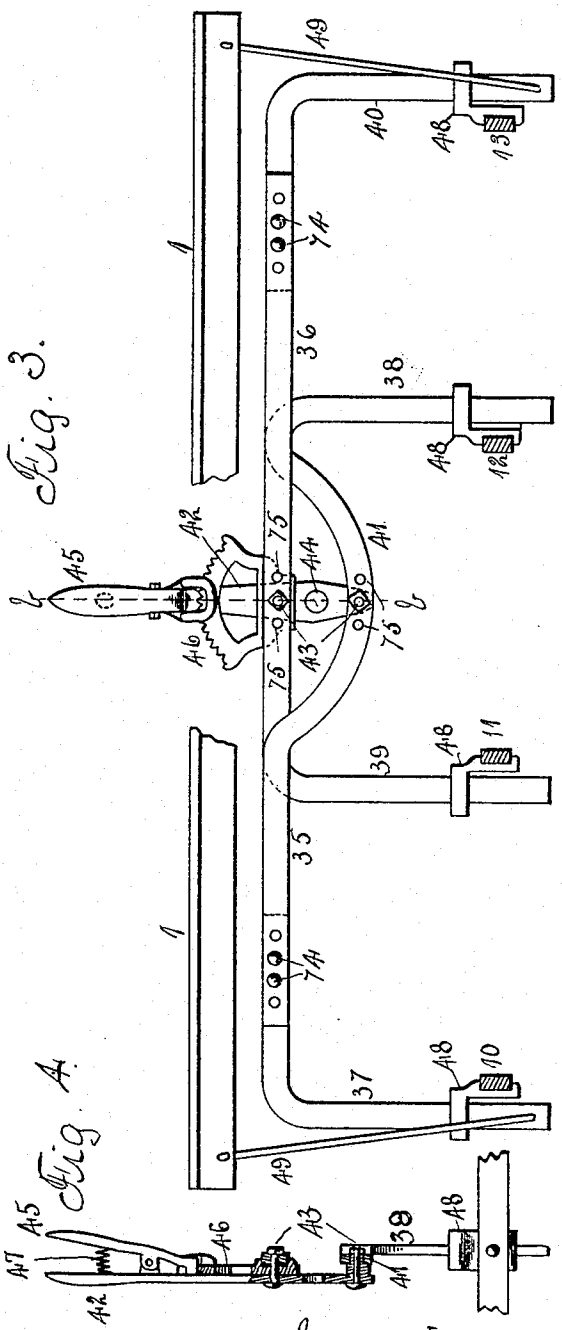


Fig. 4.

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5 SHEETS—SHEET 4.

Fig. 7.

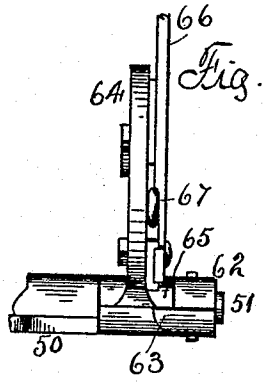


Fig. 6.

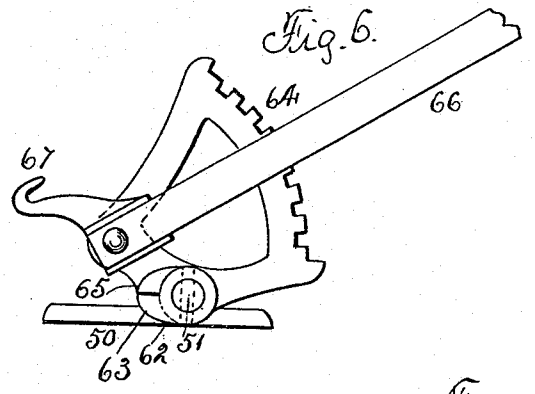


Fig. 8.

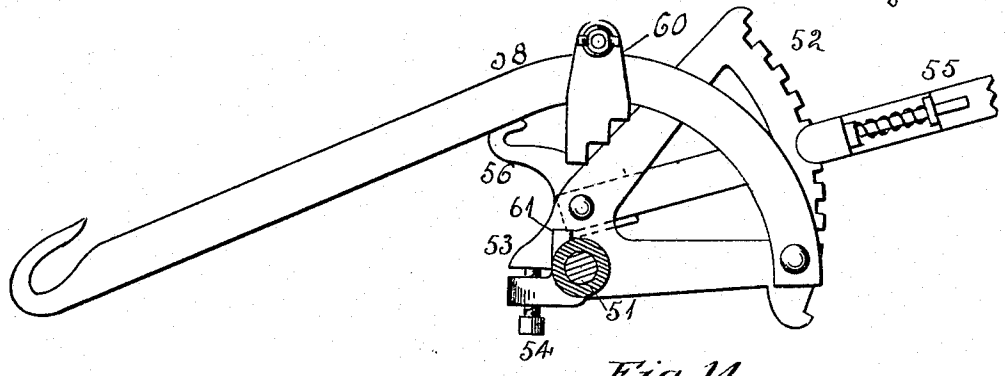


Fig. 14.

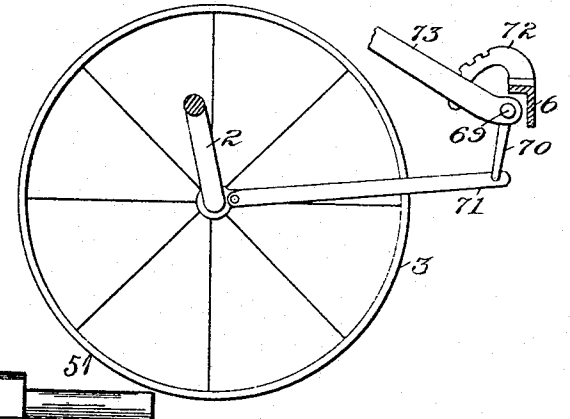
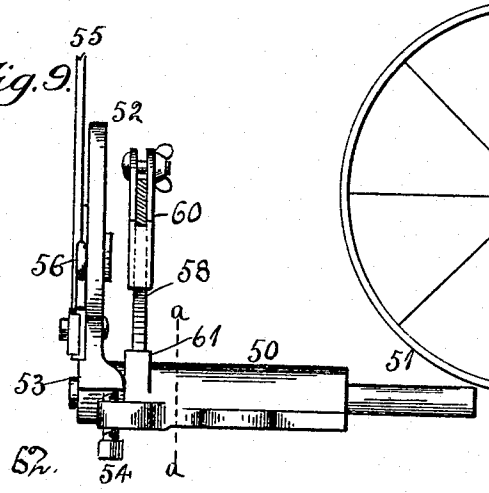


Fig. 9.



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5 SHEETS—SHEET 5.

Fig. 12.

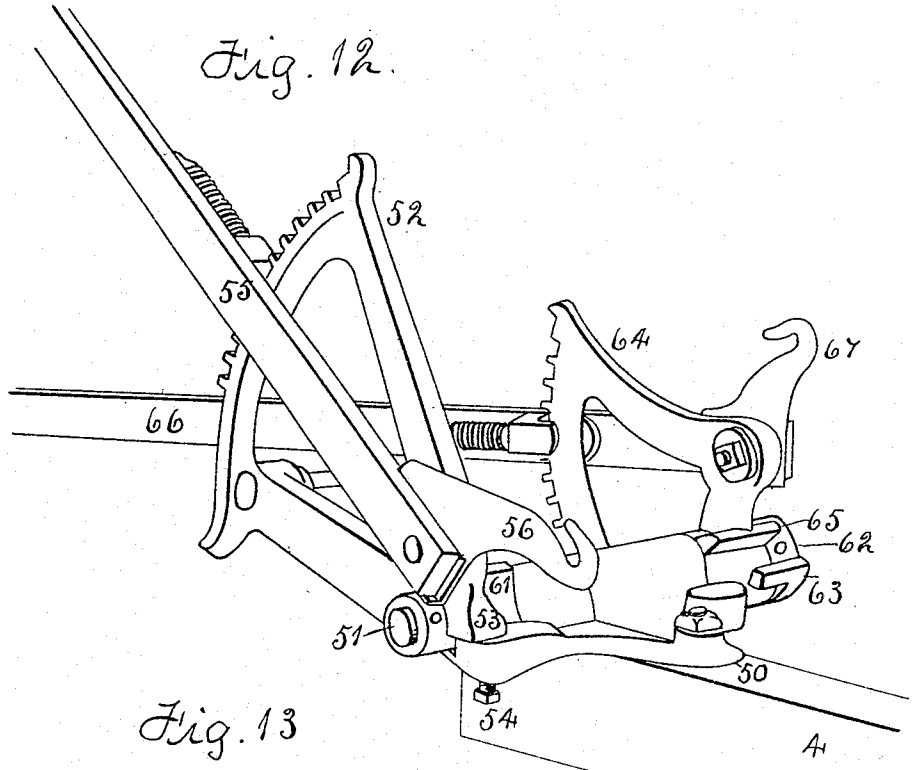
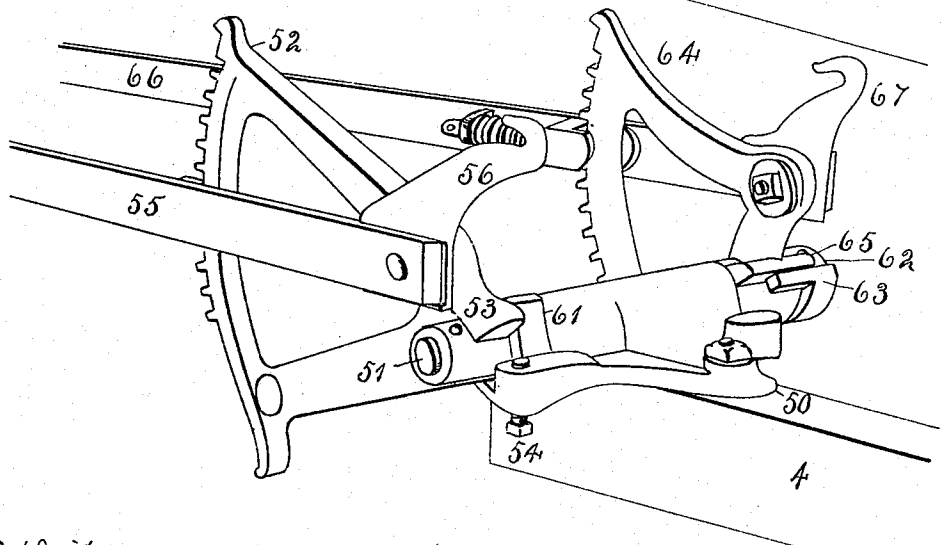


Fig. 13



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UNITED STATES PATENT OFFICE.

LEWIS E. WATERMAN, OF ROCKFORD, ILLINOIS, ASSIGNOR TO EMERSON MANUFACTURING COMPANY, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS.

CULTIVATOR.

No. 823,238. Specification of Letters Patent. Patented June 12, 1906.

Application filed March 30, 1904. Serial No. 200,806.

To all whom it may concern:

Be it known that I, LEWIS E. WATERMAN, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Two-Row Cultivators, of which the following is a specification.

The invention relates to improvements in two-row cultivators, in which the beams can be raised separately or in pairs, in which the four drag-bars are connected by a bail in two sections adjustably connected, and in which the drag-bars are moved transversely through the lever connection with the bail.

In the accompanying drawings, Figure 1 is a plan view of a cultivator containing my improvements. Fig. 2 is a side elevation. Fig. 3 is a transverse section of the drag-bars, showing the bail connection therewith. Fig. 4 is a vertical section on dotted lines *b*, Fig. 3. Fig. 5 is a plan view of the bail and its connection with the drag-bars. Fig. 6 is an end elevation of the lifting-lever mechanism for the outer drag-bars. Fig. 7 is a front elevation of the same. Fig. 8 is a section on dotted lines *a*, Fig. 9, showing the lifting-lever mechanism for the inner drag-bars. Fig. 9 is a front elevation of the same. Fig. 10 is a transverse section in rear of the cross-bar 6. Fig. 11 is a section on dotted lines *b*, Fig. 10. Fig. 12 is a perspective view of one set of lifting-levers, in which one lever is shown moved independent of the other. Fig. 13 is a similar perspective view in which both lifting-levers are moved by a movement imparted to one of them. Fig. 14 is a vertical section showing the counterbalancing arrangement.

The main frame is composed of the transverse beam 1, to which are connected the axles 2, supported by the wheels 3. To the beam 1 are connected two poles 4 and 5, and a cross-bar 6 connects the poles forward of the axles. Brace-bars 7 connect the beam 1 and cross-bar 6, to which the poles are connected, and a seat-frame 8 has a connection with the brace-bars, and rests upon the beam 1 and supports a seat 9 in rear of the axle. To the cross-bar 6 is pivotally connected a shaft 69, having depending ends 70, which are connected to the axles by the links 71. Four drag-bars 10, 11, 12, and 13 each have a vertical section 14, which is pivotally supported in the bracket 15, depending from the shaft 69, to which it is pivotally connected. The lower ends of the brackets 15 have eyes 16 extending therefrom. A toothed quadrant 72 is supported by the cross-bar 6, and a hand-lever 73 has a connection therewith and an engagement with the toothed quadrant. By means of the lever 73 the shaft 69 is rocked, which, through the link 71, connected to the axle, rocks the axle to balance the cultivator. To the cross-bar 6 are pivoted two eveners 17 and 18. The inner ends of these eveners are connected by a bar 19, having a linked connection with the eveners. To the center of the bar 19 is connected a forked arm 20, having a vertical bar 21, pivoted between the forks. To the lower end of the bar 21 is pivoted a cross-bar 22, and a link 23 connects one end of the cross-bar with one of the inner drag-bars 14, and a link 24 connects the outer end of the cross-bar with the other inner drag-bar. A swingletree 25 has a connection with the vertical bar 21. The outer ends of the eveners have a connection with the axle through the links 26 and 27 and support swingletrees 27½.

From the seat-support depends a bar 29. Between the bars of the seat-support is located and secured thereto a brace-bar 28, having a central opening. A rod 30 has a pivotal connection at the end 31 with the brace-bar 28 and at its other end with the bar 29 and has a central portion 32, located below a line drawn between its ends. To the rear end is connected a cross-bar 33, at the ends of which are adjustably secured foot-rests 34. The foot-rests are adjustable in their lengthwise direction and on a pivotal center in order that they may be adjusted to suit the attendant.

The drag-bars are connected by a bail (shown in detail at Figs. 3, 4, and 5) and consist of two main sections 35 and 36, the latter provided with depending arms 39 and 40. The section 35 has a depressed center portion 41. The arms 37 and 40 are made adjustable in connection with their main sections by the bolts 74 in order that the distance between the two arms of a section may be varied. A lever 42 has a pivotal connection with both sections at the points 43, and centrally between these points is formed an opening 44. This opening receives the portion 32 of the rod 30, as shown at Fig. 2. A thumb-latch 45 has a pivotal connection with the lever 42 near its upper end. A toothed quad-

rant 46 has a connection with the section 36 of the bail and with which the thumb-latch makes a connection. A spring holds the thumb-latch in engagement with the toothed quadrant. The arms of the sections of the bail pass through loops 48, connected to the drag-bars, thereby forming a connection between all the drag-bars. The outer arms of each section of the bars are suspended from the beam 1 of the main frame by the links 49, which hold the sections of the bail in alinement, so that all parts will move together.

By reason of the foot-lever having a connection with the bail and as the two sections of the bail are locked together the attendant can move the bail transversely of the main frame, thereby moving the drag-bars on their pivotal centers and swing them back and forth while cultivating the corn, and all four drag-bars move together. By means of the lever 42 and toothed quadrant 46 the two sections of the bail can be adjusted with respect to each other, which will move the two drag-bars for a row of corn toward or from the center of the row in order that the shovels for a row of corn will always be centrally of the row and when adjusted may be so secured, and this adjustment does not interfere with the operation of the foot-lever 34. By suspending the bail by the links 49 and the center connection the drag-bars can be raised and lowered independently of the bail. The toothed quadrant 46 and lever 42 by reason of the holes 75 can be adjusted therewith so as to move the bars 38 and 39 toward and from the center of the row when the bars 37 and 40 are adjusted, which will locate the shovels of a row the same distance from the center of the row. To the rear end of each of the poles 4 and 5 is secured the lifting-lever arrangement for the drag-bars, and as such arrangement is the same for each pair of drag-bars a description for one pair will be sufficient. To the upper face of the pole 4 is secured a bracket 50, supporting a shaft 51, having its ends projecting beyond the bracket. To the inner projecting end of the shaft is fixedly secured a toothed quadrant 52, having a forwardly-extending projection 53, which comes in contact with a set-screw 54, supported by the bracket 50, and limits the forward movement of the toothed quadrant. A hand-lever 55 has a pivotal connection with the toothed quadrant 52 and has the usual dog engagement with the toothed quadrant. A hook 56 has a connection with the hand-lever and has a connection by the rod 57 with one of the inner drag-bars.

An arm 58 has a pivotal connection with the toothed quadrant 52 in rear of the pivot-support of the quadrant and extends forward therefrom, to the free end of which is connected a spring 59, the other end of which has a connection with the main frame of the cultivator. The action of this spring is to hold the quadrant against the set-screw 54. To the arm 58 is adjustably connected a block 60, having its lower edge formed in steps. By means of the hand-lever 55 the quadrant may be rocked downward, which will raise the drag-bar connected therewith until the block 60 comes in contact with the stop 61. By adjusting the block 60 along the arm 58 any one of the steps thereof may be brought to engage the stop, which will vary the movement of the quadrant. By means of the dog connection with the quadrant the drag-bar can be adjusted to the proper working depth.

To the outer end of the shaft 51 is secured a collar 62, having an inward projection 63, and between the collar and the bracket 50 is located a toothed quadrant 64, having a forwardly-extending projection 65, which engages the projection 63 of the collar, thereby limiting the forward movement of the quadrant. A hand-lever 66 has a pivotal connection with the toothed quadrant and has the usual dog connection with the teeth of the quadrant. A hook 67 has a connection with the hand-lever and has a connection with one of the outer drag-bars by the link 68. By means of the hand-lever 66 the toothed quadrant 64 can be rocked on its shaft-support, which will raise the outer drag-bar, and by means of the dog connection therewith the drag-bar can be adjusted to place the shovels in the proper working position. As the collar 62 has a connection with the shaft 51 and as the shaft has a connection with the toothed quadrant 52, it will be evident that as the quadrant 52 is rocked the quadrant 64 will be rocked with it, thereby raising both drag-bars by the one hand-lever, but permitting the outer drag-bar to be raised independently of the inner drag-bar. As the spring 59 exerts its influence through the quadrant 52 to the quadrant 64 below the center of the quadrants, its action will be to assist in raising the drag-bar when both are raised by the hand-lever 55. It will be noticed at Fig. 2 that the connection between the lifting-lever and the drag-bar is at a point on the vertical portion of the drag-bar which allows a short movement of the connection to raise the drag-bar. It will also be noticed that the swingletree 25 has a connection with the inner drag-bar, thereby making a direct connection with the parts operated upon.

By connecting the poles 4 and 5 to the beams 7 and to the frame 1 and cross-bar 6 a rigid frame is had. By making the bar 69 in two sections joined by a yoke to which the hand-lever is connected the connection of the hand-lever with the sections is facilitated; otherwise it would be necessary to thread the shaft, it being a single piece, through a collar having a connection with the hand-lever.

I claim as my invention—

1. In a cultivator, the combination of a main frame, two drag-bars, and means whereby the working depth of the shovels supported by the drag-bars can be independently adjusted and one drag-bar capable of being raised and lowered independently of the other drag-bar and both drag-bars capable of being raised and lowered in unison, said raising and lowering movements of the drag-bars being independent of the working adjustment of the shovels.

2. In a cultivator, the combination of a main frame, two drag-bars, two pivotally-supported toothed quadrants, a hand-lever for each quadrant, connections by which each hand-lever moves a drag-bar, one quadrant capable of a rocking movement independently of the other quadrant and both quadrants capable of being rocked by a rocking movement imparted to one quadrant and a stop limiting the movements of the quadrants in one direction.

3. In a cultivator, the combination of a main frame, two drag-bars, two pivotally-supported toothed quadrants, a hand-lever for each quadrant, connections by which each hand-lever moves a drag-bar, one quadrant capable of a rocking movement independently of the other quadrant and both quadrants capable of being rocked by a rocking movement imparted to one quadrant, and an adjustable stop limiting the movement of one quadrant in one direction.

4. In a cultivator, the combination of a main frame, two drag-bars, two pivotally-supported toothed quadrants, a hand-lever for each quadrant, connections by which each hand-lever moves a drag-bar, one quadrant capable of a rocking movement independently of the other quadrant and both quadrants capable of being rocked by a rocking movement imparted to one quadrant, an arm having a pivotal connection with one of the quadrants, and a spring connection between the arm and a stationary support.

5. In a cultivator, the combination of a main frame, two drag-bars, two pivotally-supported toothed quadrants, a hand-lever for each quadrant, connections by which each hand-lever moves a drag-bar, one quadrant capable of a rocking movement independently of the other quadrant and both quadrants capable of being rocked by a rocking movement imparted to one quadrant, an arm having a pivotal connection with one of the quadrants, an adjustable stop carried by the arm, and a spring connection between the arm and a stationary support.

6. In a cultivator, the combination of a main frame, two drag-bars pivotally supported thereby, two pivotally-supported toothed quadrants, a hand-lever for each quadrant, a connection between each hand-lever and a drag-bar whereby one quadrant may be moved independently of the other and both moved by the movement of one.

7. In a cultivator, the combination of a main frame, two drag-bars pivotally supported thereby, two pivotally-supported toothed quadrants, a hand-lever for each quadrant, a connection between each hand-lever and a drag-bar, whereby one quadrant may be moved independently of the other, and both moved by the movement of one, and a spring exerting its force on both through a connection with one.

8. In a cultivator, the combination of a main frame, two drag-bars pivotally supported thereby, a bracket, a shaft supported by the bracket, a toothed quadrant fixedly connected to the shaft, a hand-lever connected to the quadrant and having a connection with a drag-bar, another quadrant pivotally supported by the shaft, a collar connected to the shaft with which the last-mentioned quadrant engages, and a hand-lever for the last-mentioned quadrant having a connection with a drag-bar.

9. In a cultivator, the combination of a main frame, a drag-bar pivotally supported thereby, a rocking toothed quadrant, a hand-lever for the quadrant, a connection between the hand-lever and drag-bar, an arm having a pivotal connection with the quadrant, a spring connected to the main frame and with the arm, and a stop device movably supported by the arm.

10. In a cultivator, the combination of a main frame, two drag-bars pivotally supported by the main frame, a bracket supported by the main frame, a shaft supported by the bracket, a toothed quadrant fixedly connected to the shaft, a hand-lever having an engagement with the quadrant and having a connection with a drag-bar, another quadrant pivotally supported by the shaft, a hand-lever for the quadrant having a connection with a drag-bar and a connection between the shaft and last-mentioned quadrant whereby the quadrant is rocked by the rocking movement of the shaft but capable of a rocking movement independently of the shaft.

11. In a cultivator, the combination of a main frame, two drag-bars pivotally supported by the main frame, a bracket supported by the main frame, a shaft supported by the bracket, a toothed quadrant fixedly connected to the shaft, a hand-lever having an engagement with the quadrant and having a connection with a drag-bar, another quadrant pivotally supported by the shaft, the quadrant fixedly connected to the shaft capable of engaging the last-mentioned quadrant and imparting a rocking movement thereto, and a hand-lever for the last-mentioned quadrant having a connection with a drag-bar.

12. In a two-row cultivator, the combination of a main frame, two sets of drag-bars, a two-section bail connecting the drag-bars, each section connecting the outer drag-bar of one set and the inner drag-bar of the other set, a toothed segment supported by one section of the bail, a hand-lever for the segment, pivotally connected with each section of the bail.

13. In a two-row cultivator, the combination of a main frame, two sets of drag-bars, a two-section bail connecting the drag-bars, each section connecting the outer drag-bar of one set and the inner drag-bar of the other set, a lever having a pivotal connection with both sections and means for locking the lever against movement in an adjustable manner.

14. In a two-row cultivator, the combination of a main frame, two sets of drag-bars pivotally supported thereby, a two-section bail connecting the drag-bars, each section connecting the outer drag-bar of one set and the inner drag-bar of the other set, a toothed segment supported by one section of the bail, a hand-lever for the segment, pivotally connected with each section of the bail also to a center support.

15. In a two-row cultivator, the combination of a main frame, two sets of drag-bars pivotally supported thereby, and a two-section bail connecting the drag-bars, each section connecting the outer drag-bar of one set and the inner drag-bar of the other set, each section in two parts adjustably connected.

16. In a two-row cultivator, the combination of a main frame, two sets of drag-bars pivotally supported thereby, a two-section bail connecting the drag-bars, each section connecting the outer drag-bar of one set with the inner drag-bar of the other set, a connection between the sections, a rod connected with the connection between the bails and extending rearward therefrom, and a foot-lever for moving the rod.

17. In a cultivator, the combination of a main frame, two drag-bars supported thereby, a bail connecting the drag-bars, a rod having a pivotal connection with the bail and having a rearward arched portion, and a foot-lever connected with the rod.

18. In a cultivator, the combination of a main frame, axles pivotally supported by the main frame, wheels connected to the axles, two bars extending transversely of the main frame and located end to end and each having a depending outer end, connections between the depending ends of the bars and the axles, a stationary toothed quadrant located adjacent to the inner ends of the bars, a yoke connected to the inner ends of the bars and a hand-lever connected with the yoke and having an engagement with the toothed quadrant.

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