No. 721,335. PATENTED FEB. 24, 1903.

J. A. SMETHERS.

WHEEL CULTIVATOR.

APPLICATION FILED OCT. 14, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

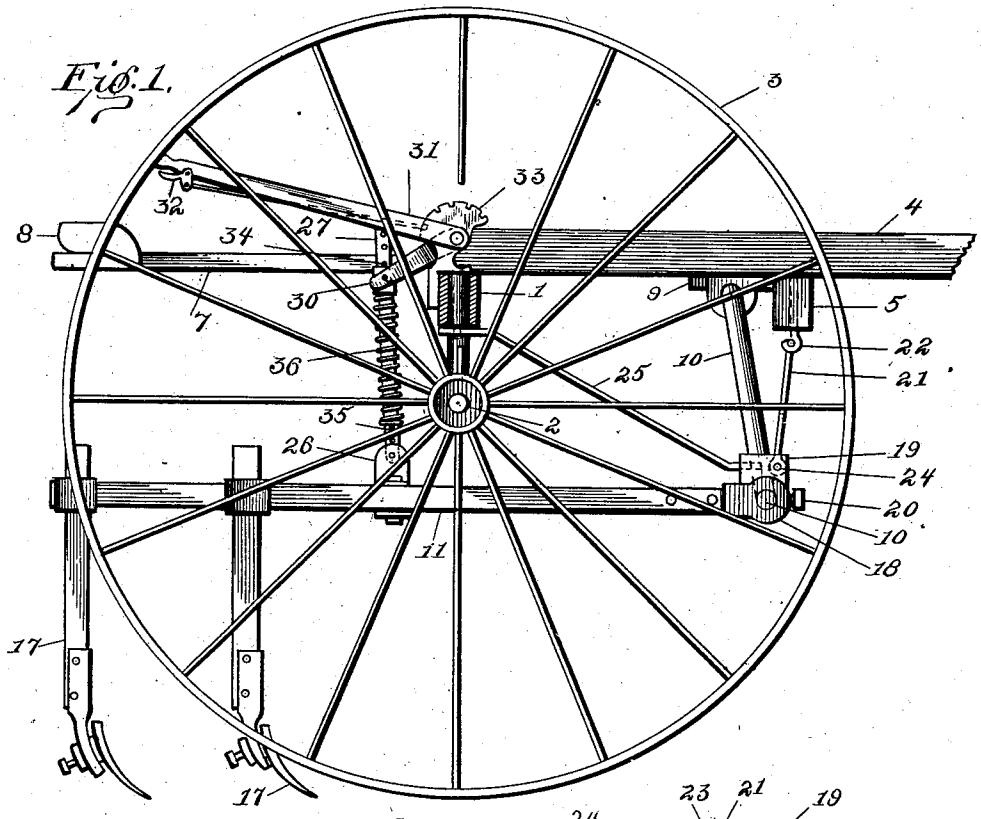


Fig. 4.

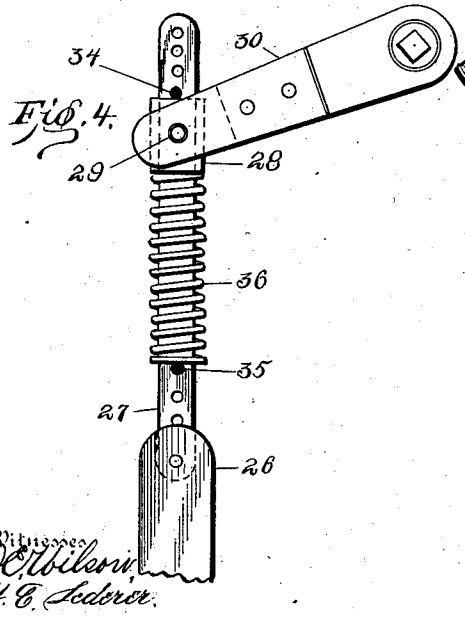
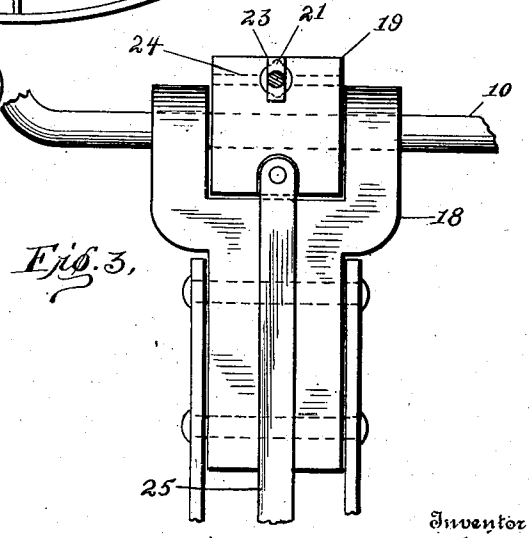


Fig. 3.



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NO MODEL. 2 SHEETS—SHEET 2.

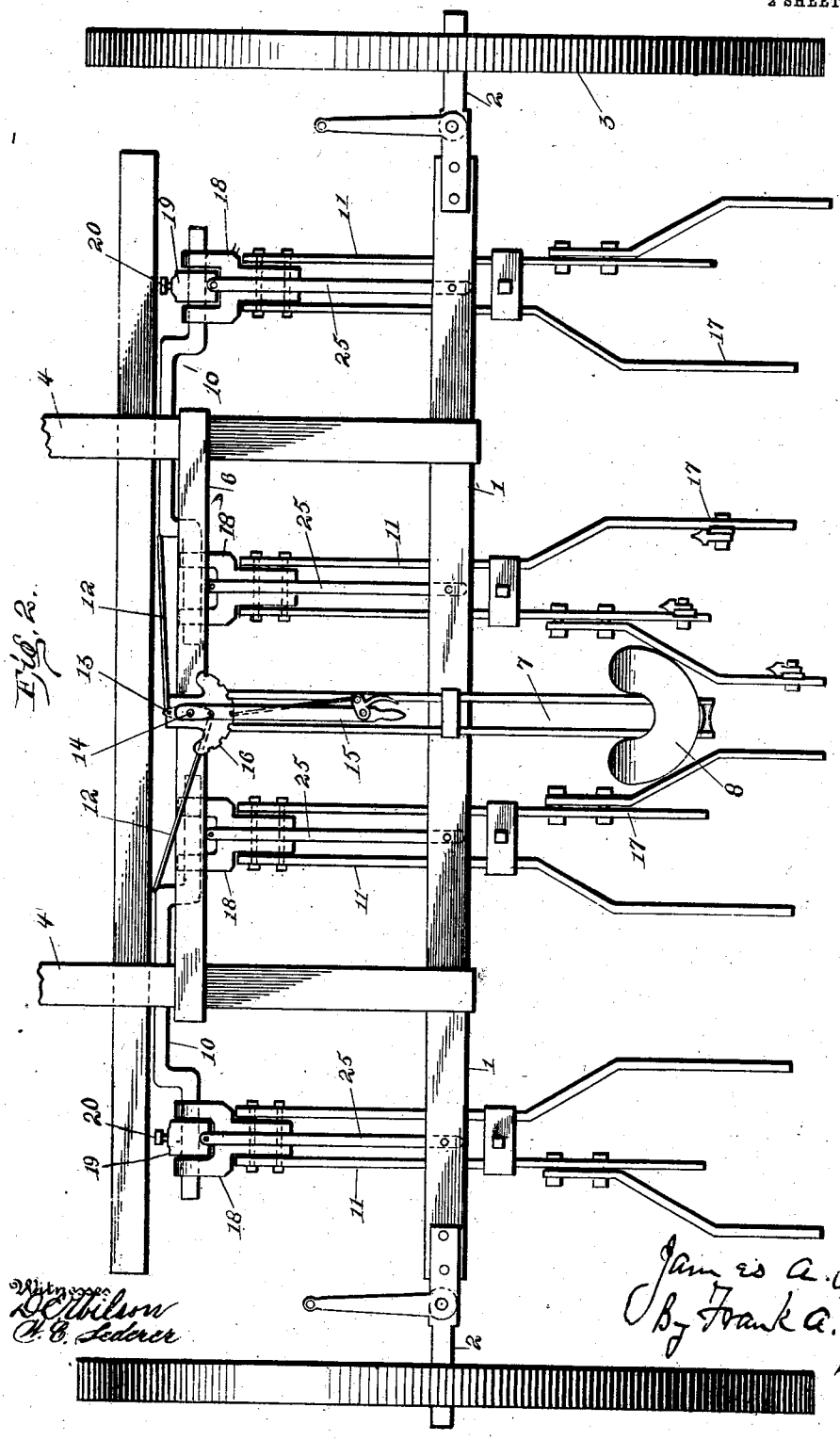


Fig. 2.

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UNITED STATES PATENT OFFICE.

JAMES A. SMETHERS, OF BEATRICE, NEBRASKA, ASSIGNOR TO DEMPSTER MILL MANUFACTURING COMPANY, OF BEATRICE, NEBRASKA.

WHEEL-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 721,335, dated February 24, 1903.

Application filed October 14, 1902. Serial No. 127,277. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. SMETHERS, a citizen of the United States, residing at Beatrice, in the county of Gage and State of Nebraska, have invented certain new and useful Improvements in Wheel-Cultivators, of which the following is a specification.

My invention relates to improvements in straddle-row wheel-cultivators of the type designed for the cultivation of two rows of plants simultaneously and in which the drag-bars carrying the gangs of cultivating-shovels extend rearwardly from cranked share-bars or frames mounted in suitable bearings in the front of the machine, which cranked bars or frames are provided with means for moving them back and forth laterally, carrying with them the attached drag-bars, whereby the said shovels may be made to travel at any desired distance from the rows of plants being cultivated. An example of the construction referred to may be seen in the patent of S. I. Bailor, No. 571,146, dated November 10, 1896.

My present invention relates particularly to improved means of mounting the cranked share-bars in the frame, attaching the drag-bars thereto, providing for elevating each drag-bar independently, and regulating the degree of such elevation.

In the accompanying drawings, Figure 1 is a side elevation of a cultivator constructed according to my invention with the parts not immediately involved in my improvements omitted. Fig. 2 is a similar top plan view of the same. Fig. 3 is a top plan detail view, on a larger scale, showing the connections between the share-bars and drag-bars. Fig. 4 is a side elevation, on a larger scale, of the means for raising and lowering the drag-bars.

1 indicates the main sill of the machine, which carries at its outer end the rotatable stub-axles 2, on which the wheels 3 are mounted. The two tongues 4 extend forwardly from sill 1 and are connected by the cross-bars 5 6. A rearwardly-extending bar 7 supports the driver's seat 8.

In journal-boxes 9 on the under side of the tongues 4 are loosely secured the central bends or arches of the cranked share-bars 10. Each machine is provided with two of said bars, the same consisting of arched portions and depending portions, as shown, and to said depending portions are pivotally attached the drag-bars 11. Said share-bars 10 are capable of horizontal movement in either direction in the boxes 9, said movement being effected by connecting-rods 12, pivotally connected to said arches and extending inwardly to pivotal connections with the opposite ends of a rotatable arm 13, mounted on a vertical pivot 14. Said arm may be rotated in either direction and held fixed at any desired point by means of the lever-and-ratchet device 15 and toothed segment 16. The movement of said lever 15 in either direction will therefore move simultaneously both the share-bars 10, carrying with them the drag-bars 11 and the gangs of shovels 17, either inwardly or outwardly, as may be desired.

The drag-bars 11 are secured at their front ends to a bifurcated draw-head 18, each arm or projection of which is bored to receive, and form a pivotal connection with, one of the depending horizontal portions of the share-bars 10. In the recess between the said projections of each draw-head a set collar 19 is adjustably mounted on the bar 10 and is capable of being secured thereon in any desired position by means of a set-screw 20, extending through said collar and bearing against bar 10. This method of attaching the drag-bars furnishes means of regulating their positions laterally in addition to the operation of lever 15 and connected parts, as before described. The collar 19 is further supported by a link 21, pivotally connected to said collar and extending forwardly and upwardly to a pivotal support 22 on the cross-bar 5. Link 21 preferably enters a slot or recess 23 in the upper portion of collar 19 and is pivotally engaged therein by a bolt 24, extending through the collar transversely to said slot. The walls of said slot are slightly cut away, as shown in Fig. 3, to permit link 21 to take any necessary inclination laterally.

Diagonal braces 25 also extend from the collars 19 upwardly to the sill 1, being pivoted or otherwise attached to said sill and collars 19, so as to admit of a slight rotary movement laterally when the bars 10 are operated horizontally by the movement of lever 15. Such lateral movement being slight at any time, the main function of said braces of giving support and steadiness to the bars 10 and the joints connecting them with the drag-bars is not interfered with.

Each drag-bar 11 has attached to it at a suitable point a clip or shackle 26, to which is pivoted a lift-rod 27, extending vertically upward and passing loosely through a housing or box 28, which housing is pivotally connected at 29 with a rigid arm 30 of a rocking lever 31, pivoted on the machine-frame and provided with a spring-catch 32, engaging a toothed segment 33, by means of which said lever, and consequently the drag-bar and gang of shovels, may be held fixed at any desired elevation. The lift-rods 27 contain, preferably, a series of holes adapted to receive stop-pins 34 35, the upper pin 34 being located above box 28 and the lower pin 35 being below and bearing against a spring 36, preferably surrounding lift-rod 27, and with its upper end bearing against box 28. When the lever 31 and its arm 30 are rotated or lifted upward, the box 28, pivoted to said arm, bears against the stop-pin 34 and raises the drag-bar to any height which may be desired either while it is in operation or out of use. When in operation, the lift-rod 27 is free to move upward in box 28, such movement being only restricted by the interposed spring 36. Said spring permits the drag-bar and shovels to rise to avoid slight obstructions or inequalities in the ground and at the same time may be made to exert any desired amount of pressure downward, forcing the shovels more or less into the soil, according to the position of lever 30 and the degree of tension given to the spring.

In operating the cultivator three horses are preferably employed, one between the tongues and one on the outer side of each tongue, and two rows of plants are cultivated simultaneously. The shovels may be set to travel ordinarily at any desired distance from the rows by the adjustment of the draw-heads 18 at the proper points on the bars 10 by means of the movable collars 19, set-screws 20, &c. This may be called for the sake of distinction the "permanent adjustment;" but when in the course of operation irregularities in the rows of plants are encountered or the rows are uneven or crooked a temporary lateral adjustment of the gangs of shovels in either direction to correspond with the irregularities of the rows may be effected by the manipulation of the lever 15. The provision for raising each gang of shovels independently of the others is also a material advantage in implements of this class.

While I have shown and described the preferred way of forming the draw-heads 18, I do not wish to limit myself to the precise details set forth, as the same may be modified somewhat without departing from the principle of that feature of my invention. For example, instead of making the draw-head forked with a recess in its front end, within which is located the set collar 19, to which the link 21 and brace 25 are pivotally attached, I may make the draw-head solid or without the fork or recess and employ two set collars, one upon each side of the draw-head, with a link 21 and brace 25 pivoted to one of said collars. It is also obvious that my improvements are applicable not only to cultivators, but also to all forms of plows, harrows, cutters, or other wheeled agricultural implements in which the operating-tools, whether shovels, plows, teeth, cutters, or otherwise, are carried or propelled by a rearwardly-extending bar, beam, or frame, which is pivotally attached at its forward end to any suitable part of the machine.

Having described my invention, I claim as new and desire to secure by Letters Patent—

1. In a cultivator, or like implement, the combination of the main frame, transversely-extending share-bars mounted in said frame, means controlled by the operator for simultaneously adjusting said share-bars longitudinally, either inwardly or outwardly, and drag-bars attached to said share-bars, said attachments each consisting of a draw-head having a recess in its front end, projections on each side of such recess, horizontally bored to receive the share-bar, a set collar adjustably mounted on the share-bar between said projections, an upwardly and forwardly projecting pivotal link connecting said collar with a fixed member of the frame, and a rearwardly-extending, pivotally-mounted brace connecting said collar and frame, substantially as set forth.

2. In a cultivator, or like implement, the combination of the main frame, cranked share-bars depending from and journaled in said frame, means controlled by the operator for adjusting said share-bars longitudinally, either inwardly or outwardly, and drag-bars attached to said share-bars, said attachments each consisting of a draw-head containing a recess, projections on each side of such recess bored to receive said share-bar, a set collar adjustably mounted on said share-bar within said recess, an upwardly-extending pivoted link connecting said collar with a fixed member of the frame, and a rearwardly-extending, pivotally-mounted brace connecting said collar and said frame, substantially as set forth.

3. In a cultivator or like implement, the combination with the main frame and laterally-adjustable, transversely-extending share-

bars mounted therein, of drag-bars, for carrying the working tools, pivotally attached to said share-bars and having both a vertical and lateral movement thereon, adjustable collars or stops mounted on said share-bars and adapted to limit such lateral movement, links depending from the frame and pivotally connected to said collars, and rearwardly-extending braces pivoted to said collars and to said frame, substantially as set forth.

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

JAMES A. SMETHERS.

Witnesses:
HARRY W. SCHAFER,
F. H. KLINE.