No. 675,431. Patented June 4, 1901.

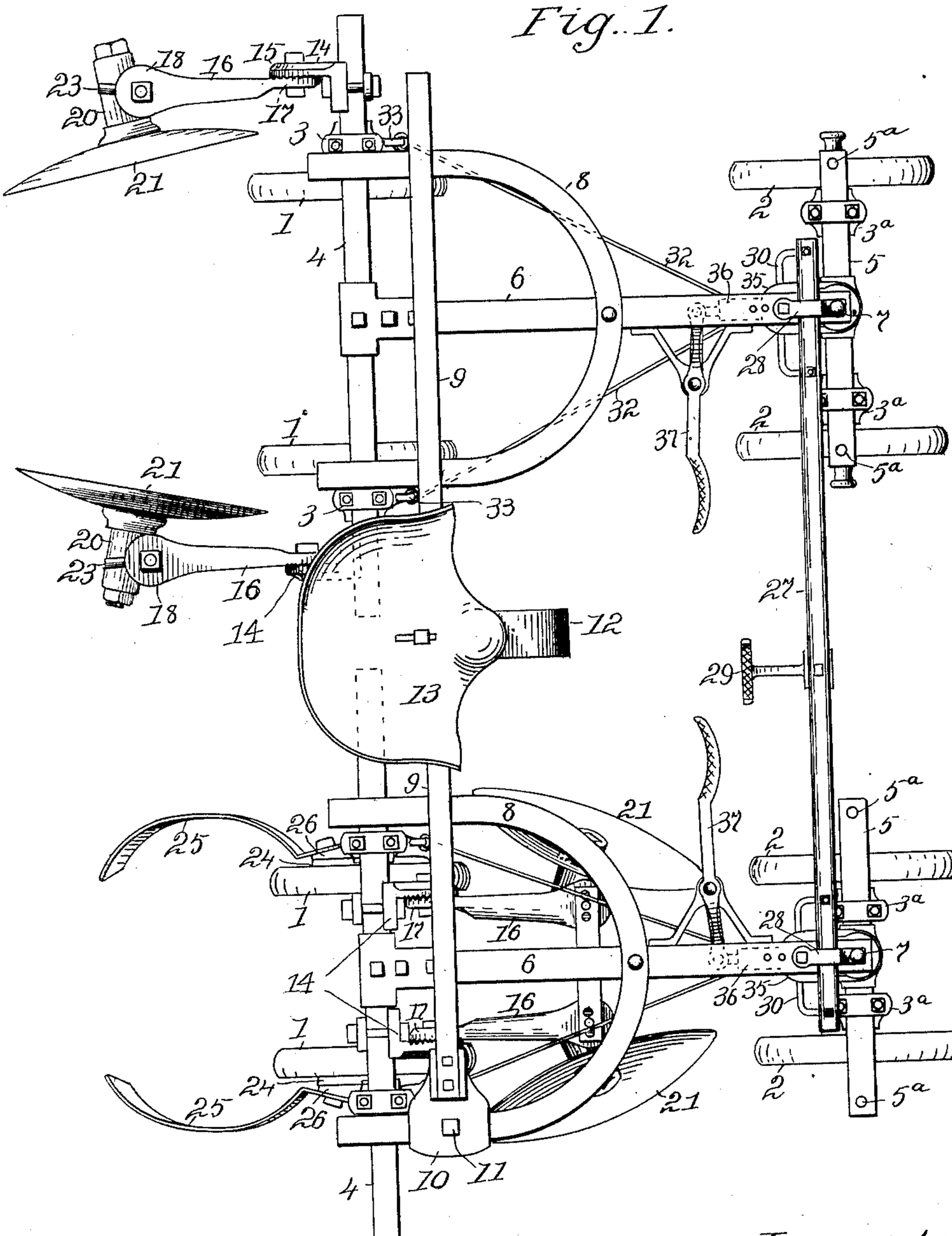
I. A. WEAVER.

LISTER CULTIVATOR.

(Application filed Dec. 28, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



Witnesses
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Ina Graham.

Inventor
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Fig. 2

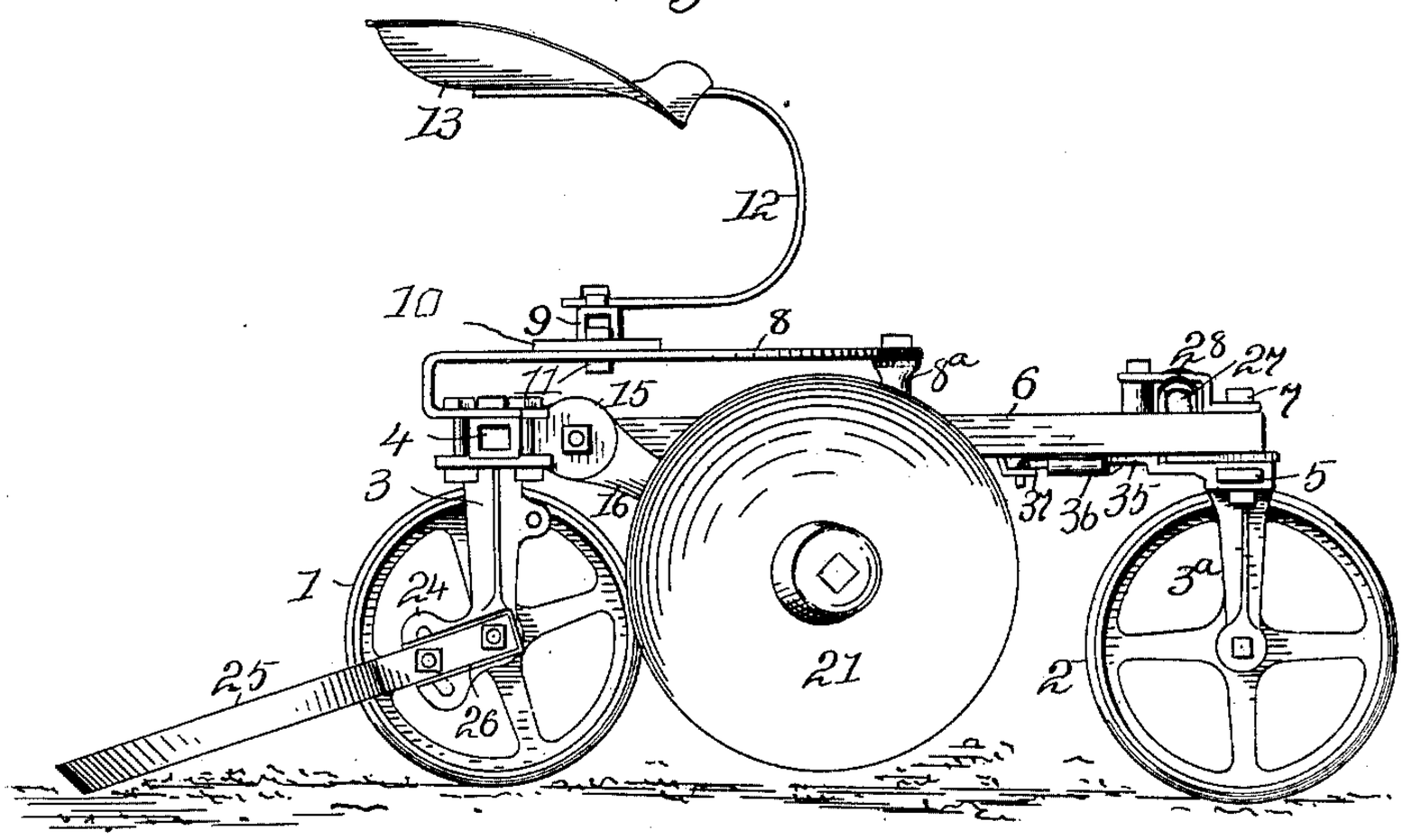

Fig. 6.

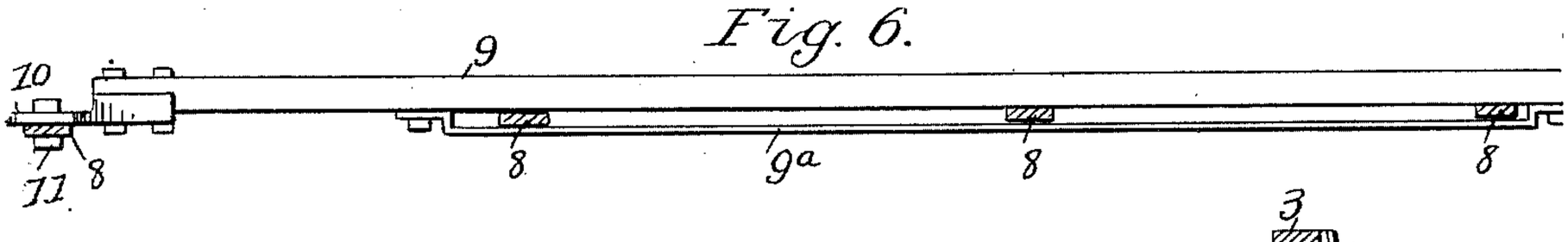

Fig. 4.

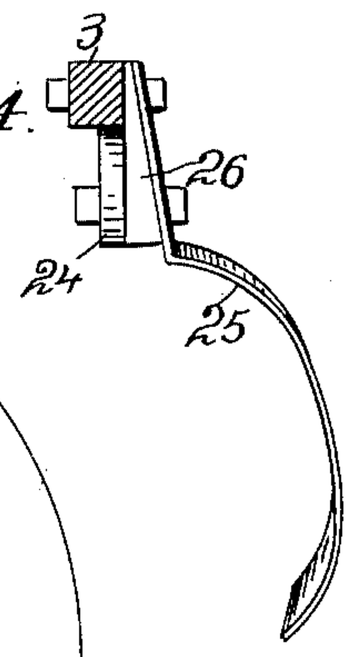

Fig. 3.

Fig. 5.

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Fig. 7.

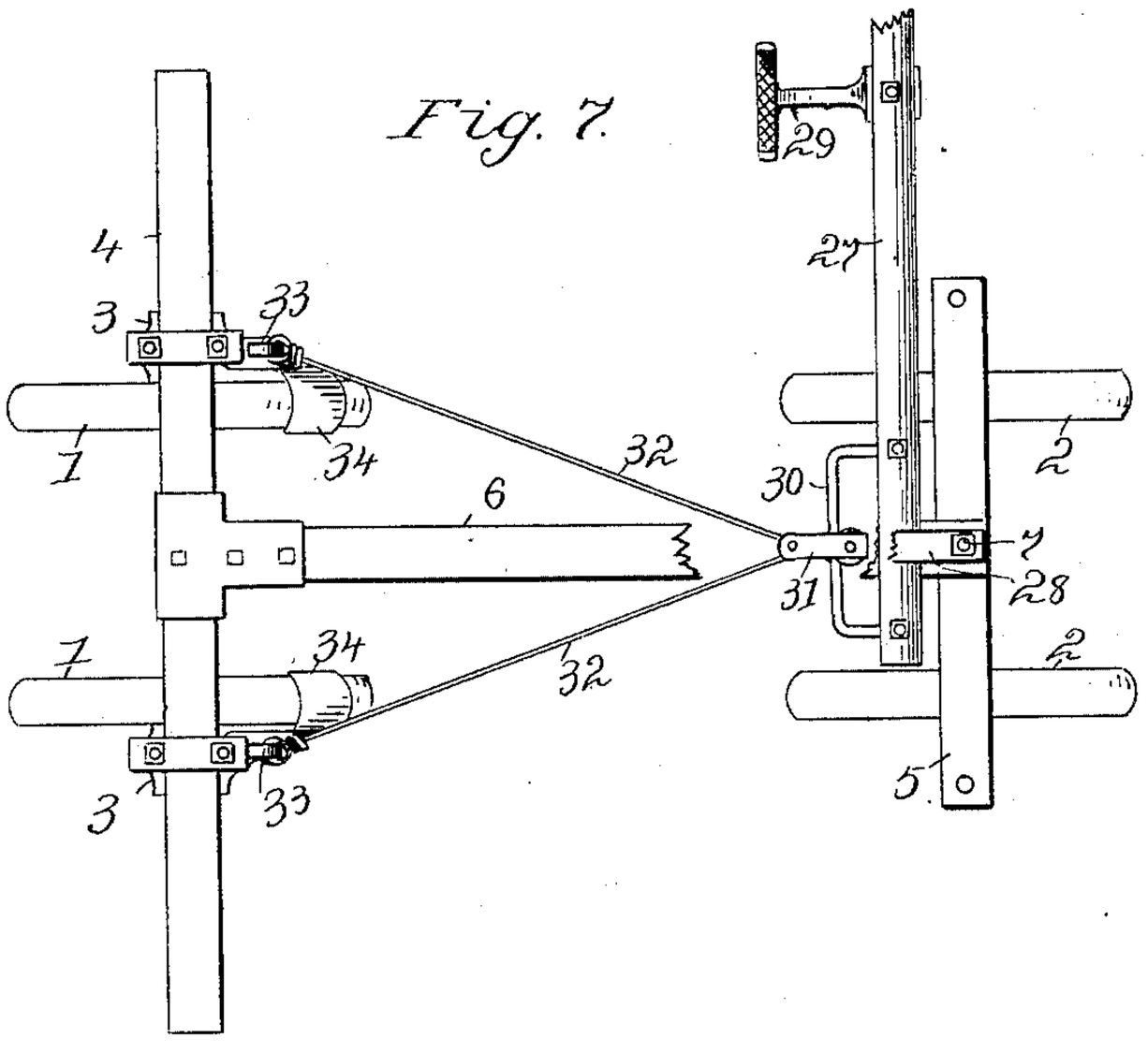
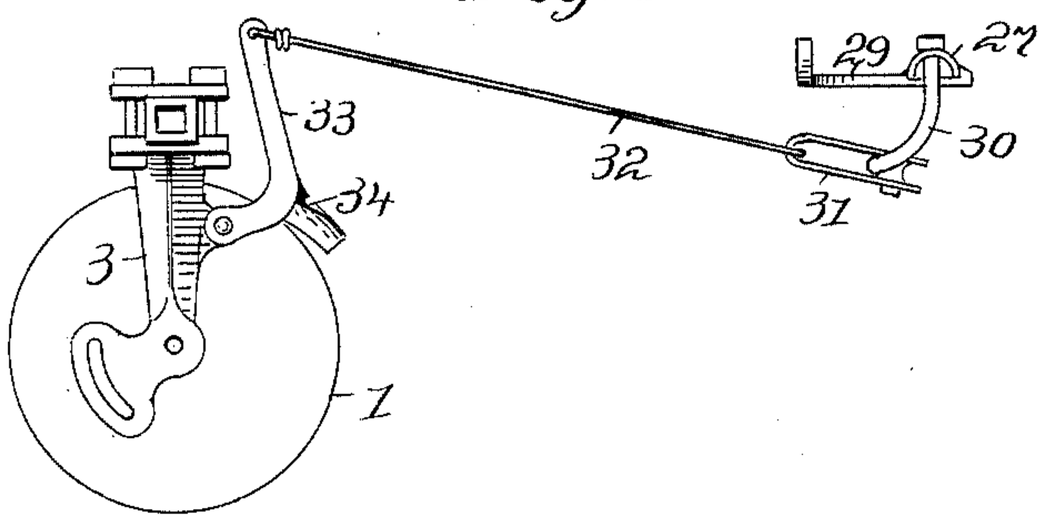


Fig. 8.



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his attorney.

UNITED STATES PATENT OFFICE.

IRA A. WEAVER, OF SPRINGFIELD, ILLINOIS, ASSIGNOR TO THE SATTLEY MANUFACTURING COMPANY, INCORPORATED, OF SAME PLACE.

LISTER-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 675,431, dated June 4, 1901.

Application filed December 28, 1900. Serial No. 41,402. (No model.)

To all whom it may concern:

Be it known that I, IRA A. WEAVER, of the city of Springfield, county of Sangamon, and State of Illinois, have invented a certain new and useful Lister-Cultivator, of which the following is a specification.

This invention provides a cultivator capable of performing the different operations incident to the cultivation of listed corn in a superior manner and without some of the detrimental effects attendant on the use of lister-cultivators as at present constructed. It is exemplified in the structure hereinafter described and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a plan of a cultivator embodying my invention. Fig. 2 is a side elevation of the cultivator with the near front wheel and standard therefor removed and the brake and wheel-scraper mechanism omitted. Fig. 3 is an enlarged detail, in side elevation, of the shank for the disks. Figs. 4 and 5 are plan details of the adjusting appliance for the cultivating-knives. Fig. 6 is a detail in front elevation of the seat-supporting bar. Fig. 7 is a detail in plan of the wheel-scraper and brake mechanism. Fig. 8 is a detail of the wheel-scraper and brake mechanism in side elevation.

The cultivator-frame comprises a pair of four-wheel trucks, in each of which the wheels are held with their axes parallel while in operation and the trucks are held against independent horizontal tilt to any material extent. The rear wheels of the trucks are shown at 1 and the front wheels at 2. Standards for the rear wheels are shown at 3. Standards for the front wheels are shown at 3^a. The cross-bars for the rear wheels, with which the standards connect, are shown at 4, and the cross-bars for the front wheels are shown at 5. The front and rear cross-bars are connected together by means of reaches 6, which are rigidly secured to the rear cross-bars at all times and are rigidly attached to the front bars while the cultivator is in operation. An arc-formed bar 8 is connected one with each of the rear cross-bars and with the reach of the truck, and such bars 8 are raised above the truck between connections therewith. The rear ends of the bars 8 bend first downward in the rear of the rear cross-bars 4 and then forward to form seats on the bars, and the front arc-formed parts are attached to the reaches through struts 8^a, as is shown in Fig. 2. A seat-bar 9 is fastened at one end to a widened plate 10, and the plate is pivotally attached at 11 to an outer part of one of the arc-formed bars 8. The seat-bar extends from the pivoted plate across the cultivator, resting freely on the bars 8, and along its under side and separate therefrom extends an auxiliary bar 9^a, (shown only in Fig. 6,) which is attached at intervals to bar 9 and which bears loosely against the under surfaces of the different members of the arc-formed bars 8. A seat-support 12 is fastened onto the bar 9 at about the longitudinal center thereof, and onto the upper end of the seat-support the seat 13 is secured. A bar 27 extends across the front ends of the trucks and is loosely supported on the front ends of the reaches. This bar forms a foot-rest, and its under side is flattened, so as to tend to lie always in one position on the reaches with respect to its rotary movements. As a matter of preference the foot-bar is made of U-bar material. It rests with its convex surface uppermost, and it is held from motion frontward and backward on the trucks by straps 28. The straps 28 embrace the upper surface and the front and back sides of the foot-bar, holding the foot-bar in position near the ends of the reaches, but not interfering with rocking or endwise motion in the bar. The foot-bar provides means for actuating brakes and scrapers for the rear wheels, and to that end it is provided near its ends with a pair of crank-bars 30 and between its ends with a foot-lever 29. The crank-bars 30 connect each at both of its ends with the foot-bar and extend parallel with the foot-bar below the front ends of the reaches 6. The scrapers and brakes for the rear wheels consist each of a lever 33, which is pivotally connected with a wheel-standard and extended upward from its pivot, and of a shoe 34, which may be brought into contact with the periphery of a wheel by swinging the upper end of lever 33 forward. The shoe is designed to act as a brake to control the travel of the cultivator when the cultivating disks and knives are out of the ground and also to act as a

scraper to keep the periphery of the wheel cleared of soil that might otherwise adhere thereto, and its form may be varied to any extent consistent with its purpose. Connections are made between the crank-bars and the brake-levers so that backward rock of the foot-bar will apply the brakes, and these connections each comprise a traveler 31, adapted to run along the crank-bar, and a line 32, running through a loop in the traveler and connecting at each end with one of the brake-levers.

While not indispensable, it is a convenience to provide for turning the front axle-bars on the reaches in turning the cultivator around at the ends of the field, and in this instance such provision resides in a pivot 7, a notched plate 35, rigid with the front cross-bar, and a spring-bolt 36, attached to the under side of the reach in position to engage the notch in plate 35 when the front cross-bar is at right angles with the reach. A foot-lever 37 connects with the spring-bolt and provides means whereby the bolt may be drawn from contact with the notched plate preparatory to turning the cultivator around.

The cultivating appliances are disks and knives for the first plowing, as shown at the lower end of Fig. 1 of the drawings, and disks alone for subsequent plowings, as shown at the upper end of Fig. 1. When the knives are used, the disks are set in front of the rear cross-bars with their concave surfaces presented forward and outward, and the knives are extended rearward to pare off the ridges left between the furrows made by the disks and the row of corn and to carry the soil from the ridges toward the corn. In subsequent plowings the knives are detached from the cultivator-frame and the disks are set behind the rear cross-bars and inclined so as to throw the soil toward the corn. Special means for securing the disks in their different positions and for adjusting both the disks and the knives form a part of this invention and such provision is as follows: The disks 21 are journaled each in a boxing 20, and such boxing has an extension 19, which is centrally bored and radially serrated in its upper face. A shank 16 has a circular end 18, which is centrally bored and radially serrated in its under surface. A wedge-shaped disk 22 is serrated in both its upper surface and its lower surface to conform to the serrations of bearings 18 and 19, and it is also centrally bored. The wedge-shaped disk is placed between bearings 18 and 19, and the three parts are held together by means of a bolt and nut. The disk may be swung around the bolt so as to present either of its surfaces to the soil at any desired angle therewith, and the wedge may be turned to tilt the cultivating-disk out of the vertical. When the thick side of the wedge-shaped disk is forward, as shown in Fig. 3, or in a reversed position, the position of the cultivating-disk with relation to the vertical will not be disturbed; but when the wedge-bearing is turned less than a one-half rotation the cultivating-disk will be tilted out of the vertical to an extent dependent in part on the degree of inclination of the two faces of the wedge and in part on the extent of the rotation of the wedge. A pin 23 provides means for turning the wedge-shaped disk around when the securing-bolt is loosened. A bracket 14 is adapted to be attached to rear cross-bars 4, and the extended part of the bracket is serrated and centrally bored. The serrated face of the bracket is in a vertical plane, and the upper end of the shank 16 is shaped to conform to and coact with the extension of the bracket. A binding-bolt holds the end of the arm rigidly against the bracket, and when the bolt is loosened the shank may be swung up or down to give the cultivating-disk the required position with relation to the surface of the ground so as to regulate the depth of the furrow. The bracket 14 is attachable to either the front side or the rear side of the rear cross-bar, and each of the disks has a shank, wedge, and bracket similar to the one specifically described.

The rear standards 3 have rearward extensions 24 running back from the spindles of the wheels, and the extensions are slotted in their ends concentric with the spindles. The cultivating-knives 25 are each attachable to the extensions 24 by means of two bolts, one of which is in line with a wheel-spindle and the other of which extends through the slot. A wedge-formed block 26 fits between the knife and the extension 24 and is held in position by the bolts that secure the knife. When the wedge-block is turned small end to the rear, as shown in Fig. 1, the rear end of the knife is thrown inward, when the thick end of the wedge is presented to the rear the rear end of the knife is thrown outward, as shown in Fig. 4, and when the wedge-block is omitted, as shown in Fig. 5, the rear end of the knife occupies an intermediate position.

The trucks run each in a lister-furrow and move sidewise to and from each other as the furrows converge and diverge. The horses are hitched to the front bars at 5^a or in some suitable manner, and they may travel at slightly variant speed, drawing one truck slightly in advance of the other, without impairing the efficiency of the cultivator. As the wheels run along in the furrows they readily ride over cornstalks and other trash and do not tend to drag them along in front of or under the truck, as do the sleds commonly used in lister-cultivators. The wheels hold in the furrows against side pull better than sleds do, for the reason that the rolling motion will feel its way toward the bottom of the furrow and for the further reason that the wheels do not have so long a surface in contact with the ground to conform to and so follow depressions made by turning the frames slightly to one side. The wheels will

keep breaking down into the bottom of the furrow when the pull is sidewise, while sleds when once slightly diverted will readily follow the new direction and be held in their wrong course by the depressions they make.

The flat plate of the seat-bar forms a bearing that prevents the bar from tilting, and so there is no need to make the bar so wide as if both ends were free to slide. The arc-formed bars are embraced by the seat-bar and the auxiliary bar 9^a, and through the seat-bars and the bars 8 the trucks hold each other from tilting sidewise in the furrows.

I claim—

1. A four-wheel truck for lister-cultivators in which the wheels are held against independent side swing.

2. A four-wheel truck for lister-cultivators in which the wheels are held against independent side swing and against independent tilt.

3. A frame for lister-cultivators comprising a pair of operatively-rigid four-wheel trucks the wheels of which are held against independent side swing and tilt.

4. In a frame for lister-cultivators the combination of a pair of operatively-rigid four-wheel trucks the wheels of which are held against independent side swing and tilt, and a bar connecting the trucks and holding each truck against tilting independent of the other.

5. In a truck-frame for lister-cultivators, the combination of a front cross-bar, a rear cross-bar, a reach stiffly connecting the two bars, standards rigidly attached one to each side of the center of the two bars and a wheel journaled on each of the standards.

6. In a truck-frame for lister-cultivators, the combination of a front cross-bar, a rear cross-bar a reach rigidly connected with the rear cross-bar and pivotally connected with the front cross-bar, wheels journaled on standards attached to the bars and a lock to hold the front cross-bar from turning with relation to the reach.

7. In a lister-cultivator, the combination of a pair of furrow-following frames, and a seat-bar connected with one frame by a vertical pivot and laid across the other frame.

8. In a lister-cultivator, the combination of a pair of furrow-following frames, a seat-bar connected with one of the frames by means of a vertical pivot and laid across the other frame, and an auxiliary bar under the seat-bar embracing parts of the frames.

9. In a lister-cultivator the combination of a pair of furrow-following frames, a seat-bar extended across the rear parts of the frame and a foot-bar extended loosely across the front parts of the frames.

10. In a lister-cultivator the combination of a pair of furrow-following trucks, a seat supported from the rear parts of the trucks a foot-bar extended across the front parts of the trucks, levers fulcrumed adjacent to the rear wheels, shoes on the levers to bear against the peripheries of the wheels and connections between the foot-bar and the levers whereby the shoes may be made to bear against the wheels when the foot-bar is rocked.

11. In a lister-cultivator, the combination of a pair of trucks, a foot-bar extending across the trucks, crank-bars and a foot-lever on the foot-bar, levers fulcrumed adjacent to the rear wheels of the trucks and having shoes adapted to engage the wheels, travelers on the crank-bars and lines running through the travelers and connecting at each end with a shoe-lever.

12. In a lister-cultivator the combination of a pair of trucks, a foot-bar having a flat under side that rests on the trucks, scraper and brake-shoes for the rear wheels, a lever for the foot-bar and connections between the foot-bar and the brake-shoes whereby when the bar is rocked on one of its edges the brake-shoes will be applied.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

IRA A. WEAVER.

Witnesses:
M. E. JENKINS,
W. E. LEWIS.