

No. 660,669.

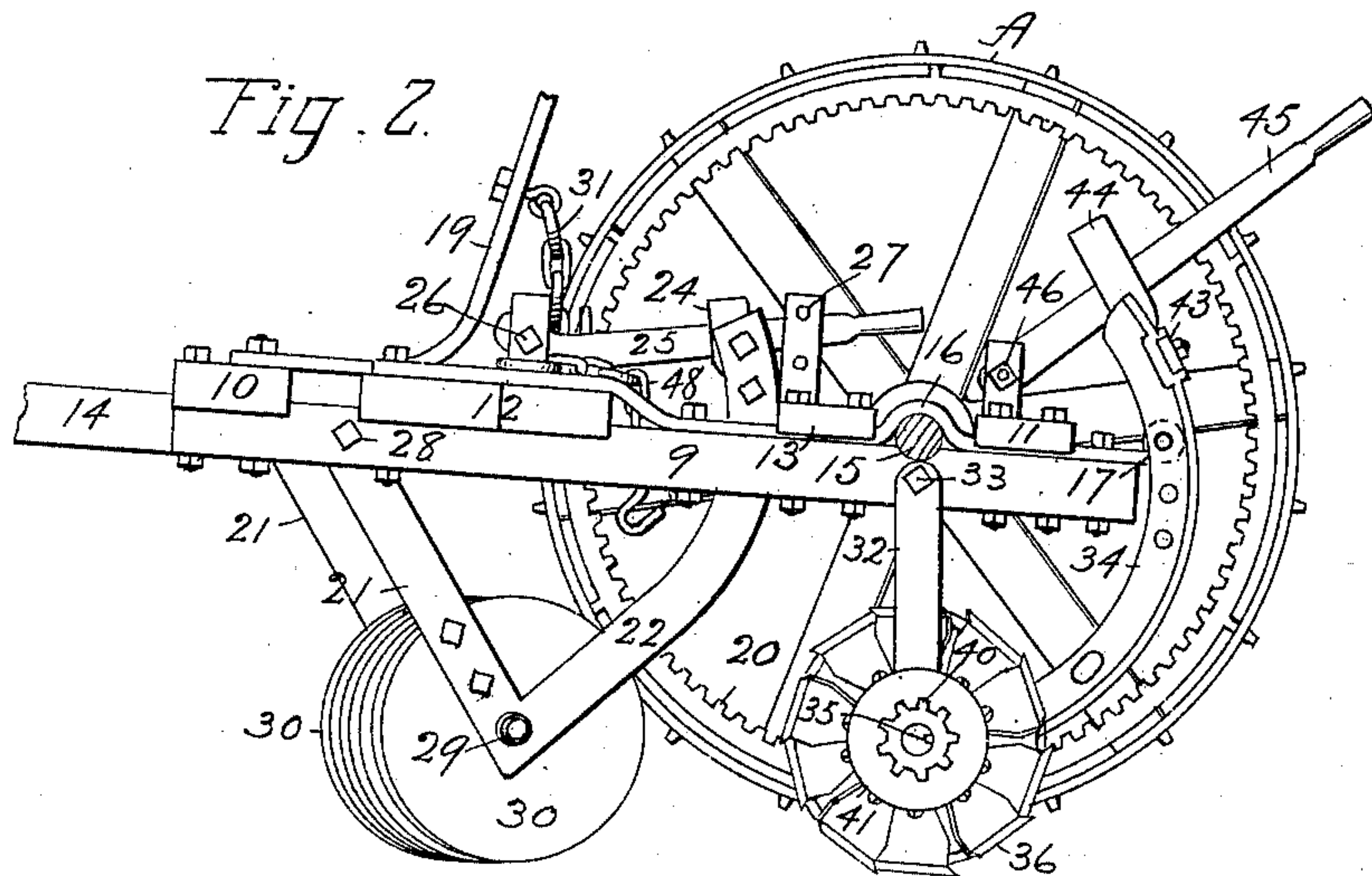
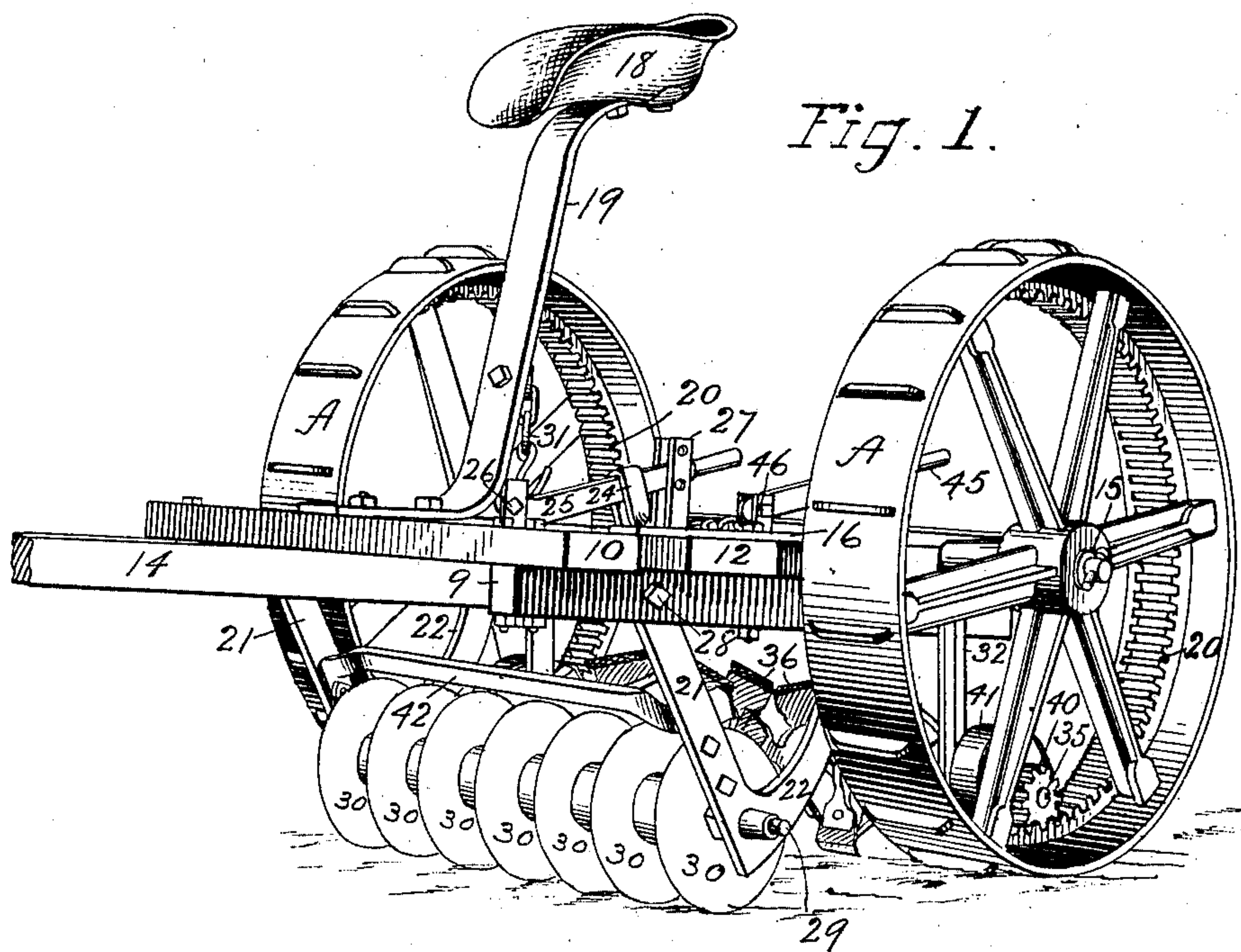
Patented Oct. 30, 1900.

A. TAPLIN.
CULTIVATOR.

(Application filed Dec. 4, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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Fig. 3.

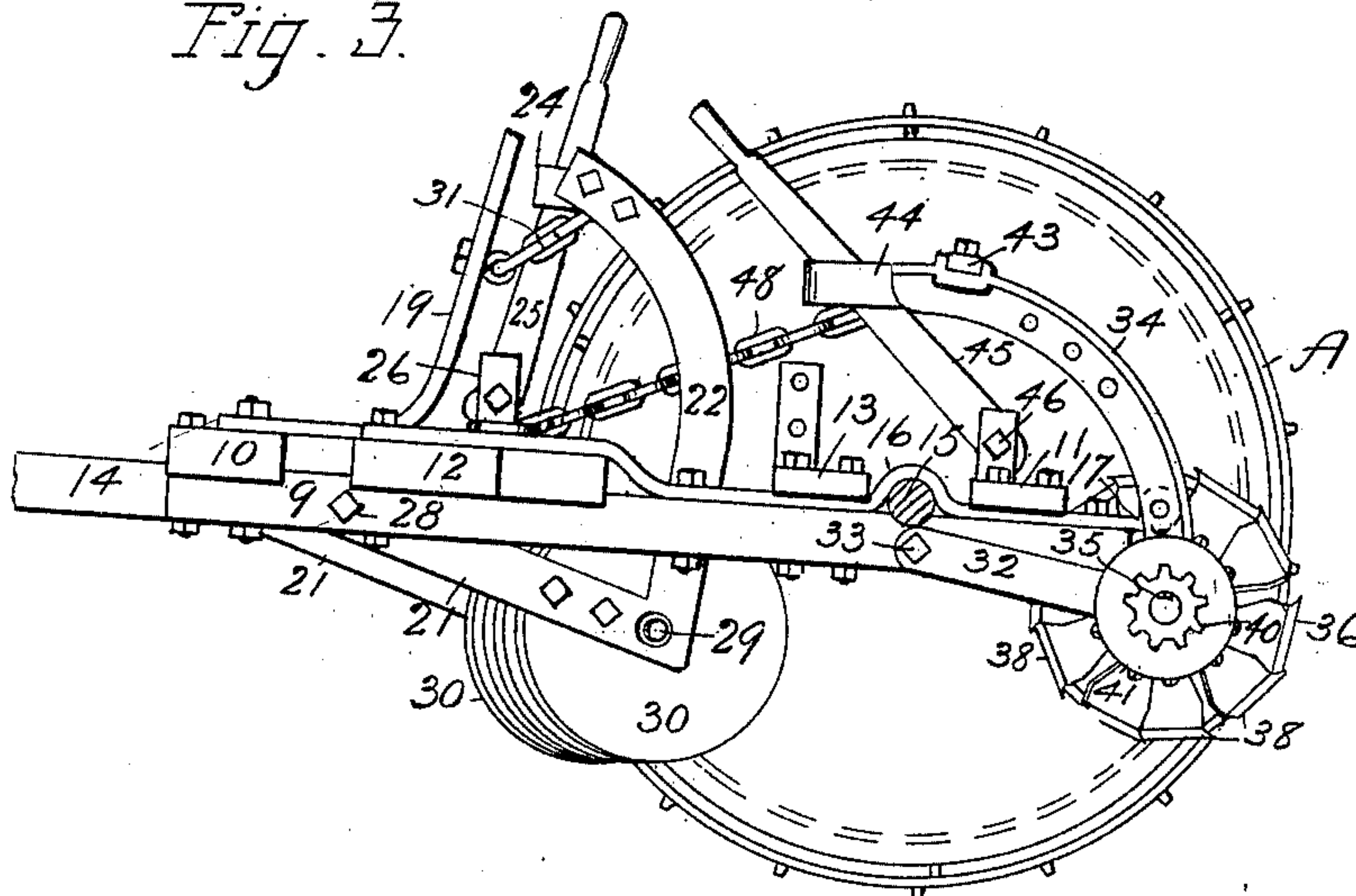
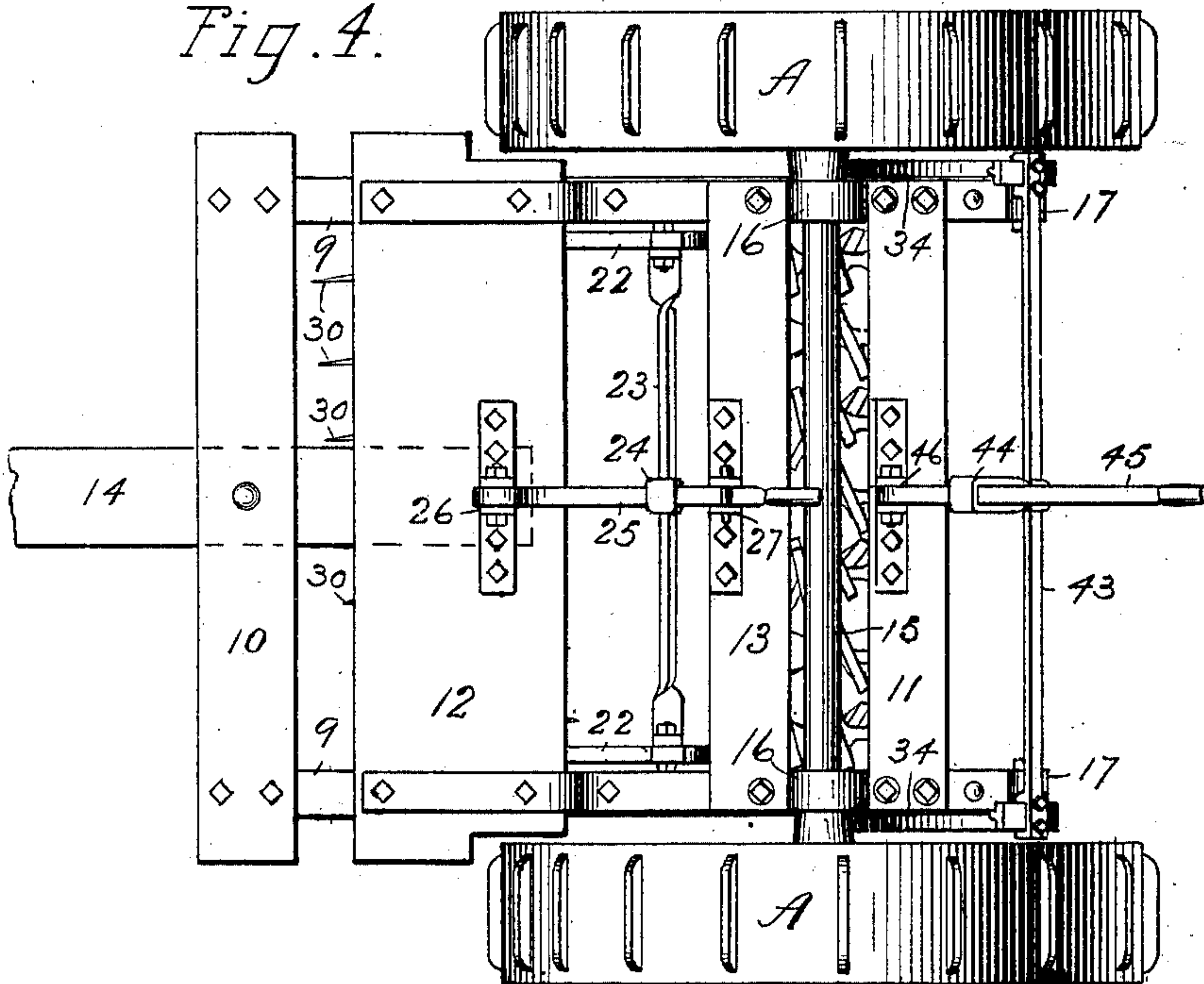


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALVIN TAPLIN, OF FORESTVILLE, CONNECTICUT.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 660,669, dated October 30, 1900.

Application filed December 4, 1899. Serial No. 739,067. (No model.)

To all whom it may concern:

Be it known that I, ALVIN TAPLIN, a citizen of the United States, residing in Forestville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Cultivators, of which the following is a specification.

My invention relates to improvements in cultivators; and the main objects of my improvement are simplicity and economy in construction and convenience and efficiency in use.

In the accompanying drawings, Figure 1 is a perspective view of my cultivator. Fig. 2 is a side elevation of the same with the axle in cross-section. Fig. 3 is a like view of the same with the cutters and hoe elevated so as to be out of action. Fig. 4 is a plan view with the seat removed. Fig. 5 is an enlarged rear elevation showing a portion of the rotary hoes and connected parts. Fig. 6 is an enlarged detached side elevation of one of the rotary hoes with one of its blades detached. Fig. 7 is a detached side view of one of the hoe-blades. Fig. 8 is an edge view of the same.

The frame is composed of two side rails 9 9 and end cross-pieces 10 and 11. The frame is also provided with a cross-plank 12 and cross-piece 13 and any suitable neap or draft-pole 14. The axle 15 may be mounted on the frame in any ordinary or suitable manner. As shown, it is placed across the top of the side rails 9 9 and a strap of iron 16 passed over it and secured to the said side rails, the said strap extending under the cross-piece 13 and end cross-piece and terminating at its rear end in an eye 17. The seat 18 and its support 19 may be of any ordinary construction. The driving-wheels A A, their internal gear 20, and engaging pinions 40 are the same as those of an ordinary mowing-machine.

In front of the axle 15 I pivot to the inner side of each side rail a swinging angle-arm consisting each of the main member 21 and supplemental member 22. The upper ends of the supplemental members are connected by a cross-bar 23, Fig. 4, having a loop or eye 24, through which eye the operating-lever 25 extends. Said lever is pivoted to a fixed support 26 on the frame, and its long end when down enters the slotted post 27 and may be held therein to hold the cutters down to their

work at different heights by means of a pin in one or the other of the two or more holes in the said slotted post. The main member 21 of the angle-arms is pivoted by its upper end to the side rail by the bolt 28, and at the lower end of said member (which is the angle or junction of the two members 21 and 22) I mount the shaft 29 for the series of disk cutters 30. I prefer to mount these parts so that the shaft 29 for the disk cutters stands somewhat slanting across the frame instead of extending squarely across the same. In connection with the angle-arms I provide a cross-tie 42, that is secured to the main member 21 of said arms. I provide the support 19 for the seat with a chain and hook 31 for hooking to the cross-bar 23 of the swinging angle-arms, as shown in Fig. 3, to hold the cutters on said arms out of action when it is desired to move the machine from place to place.

Underneath the axle I pivot to the frame, by means of the bolts 33, the swinging arms 32, said arms having at their lower ends the segments 34, extending upwardly therefrom along by the sides of the eyes 17 at the rear ends of the side rails. These arms 32 at their lower ends carry the shaft 35, upon which shaft I mount a series of rotary hoes 36, each hoe consisting of a hub or wheel with five arms 37 and blades 38, secured thereon by screws or bolts 39. The said shaft 35 has at each end a loose pinion 40 for engaging with the internal gear 20 of the driving-wheels A A. Said pinion is connected with the shaft 35 to drive it by means of the ratchet-hub 41, having internal ratchet mechanism, whereby when the pinion is in engagement with the internal gear of the driving-wheel and the machine is drawn forward the motion of the said pinion is imparted to the said shaft and the rotary hoes thereon; but when the machine is moved backwardly the ratchet mechanism permits the pinion to rotate without imparting any motion to the said shaft. I consider it unnecessary to show the ratchet mechanism inside of the ratchet-hubs 41, because it is of an ordinary construction and in common use upon mowing-machines for the same purpose.

The upper or outer ends of the segments 34 are connected by the lifting-bar 43, having a

lifting-eye 44, through which the lever 45 extends, said lever being pivoted to the frame at 46. The segments extend along by the sides of the eyes 17 at the rear ends of the side rails 9 9 and are provided with holes or a curved slot, so that they may be fastened at different heights to said eyes by means of pins or bolts 47, Fig. 5. A chain 48 is secured to the frame, so that the rotary hoes may be swung upwardly out of action and secured by the said chain, as shown in Fig. 3.

The series of rotary hoes is made up, as shown, by seven of the five bladed wheels or hoes arranged closely together on the shaft 35, with a given blade in each hoe about one-sixth of a revolution in advance of the corresponding blade in the hoe at its left-hand side, as shown in Fig. 5, whereby the blades extend spirally around the shaft in the complete series. They are all so connected with the shaft 35 as to necessarily rotate therewith. I so connect them to the shaft in a cheap and efficient manner by making a straight longitudinal groove 49 in said shaft from end to end or from one end through all that portion of the said shaft that is to receive a hoe, and I cast hoes through the hubs of the hoes 36 with an inwardly-projecting web or projection 50. I obtain the spiral effect by varying the position of the said web one-sixth of a revolution in each hub when casting the same. For example, suppose the hoe shown in Fig. 6 to be the first hoe slipped upon the shaft 35 over the left-hand end thereof and to be like the right-hand hoe in Fig. 5. Then the next hoe, the one on the left in Fig. 5, would have its web or projection 50 in the position indicated by the broken lines in Fig. 6 just above and one-sixth of a revolution from the web 50. (Shown by full lines in said Fig. 6.) When all the hoes have thus been slipped upon the shaft, their hubs substantially abut against each other and the hubs of the segments 34, so that when said segments are mounted, as shown, the longitudinal movement of the several hoes on the shaft is limited, while the said hoes necessarily rotate with the shaft 35 without the employment of set-screws and without any liability of slipping in the rotary direction on the said shaft.

The several blades in each wheel or hoe extend obliquely to the axis of said wheel, as shown. This I accomplish by casting the arms 37 with a flat seat at the proper angle and with a shoulder or rabbet 51, whereby a simple flat blade with a forwardly-bent cutting edge 52 will stand at the proper angle by merely bolting or otherwise securing it to the flat seat on said arms, as best illustrated in Figs. 6, 7, and 8.

For use the disk cutters 30 may be lowered and secured in the position for penetrating the soil to the desired depth, thereby cutting the soil and somewhat loosening it preparatory to the action of the rotary hoes. When it is desired to have the hoes cut to the ex-

treme limit of their capacity, the segments 34 are so fastened as to secure the arms 32 in the vertical position, as shown in Fig. 2. If desired to cut or hoe the ground to less depth, the segments and the hoes may be elevated by swinging on the arms 32, so as to penetrate the soil to any extent desired, and then fastened in place, as before described. As the machine is drawn along the internal gear of the driving-wheels and the pinions connected with the shaft 35 impart a rapid rotary movement to the series of hoes, the blades on the lower side thereof moving rearwardly. The blades in the several wheels come so closely together longitudinally of their shaft that practically the entire surface of the ground over which the said hoes travel is thoroughly hoed and all grass and weeds effectually cut up. This cultivator is particularly adapted for hoeing broad surfaces—as, for example, the ground between the rows of trees of orange groves or the like.

It should be noted that the arms 32 are hung underneath the axle and concentric thereto, so that while the pinions will remain in gear with the internal gear 20 when in any position where the blades can come in contact with the ground the said pinions, by reason of hanging the arms eccentrically to the axle, will be wholly disengaged from the internal gear 20 when the said pinions are sufficiently elevated, as shown in Fig. 3, so that the machine may be drawn along whenever desired without driving the said pinions.

It is apparent that some changes from the specific construction herein disclosed may be made, and therefore I do not wish to be understood as limiting myself to the precise form of construction shown and described, but desire the liberty to make such changes in working my invention as may fairly come within the spirit and scope of the same.

I claim as my invention—

1. The combination of the frame of the machine with the driving-wheels, the series of rotary hoes driven by said driving-wheels, the advance disk cutters on the shaft 29, the swinging angle-arms within which the said cutter-shaft is mounted, the said arms being pivoted to the side rails of the said frame upon which the said hoes are mounted, a cross-bar connecting the supplemental members of the said arms and the operating-lever 25, whereby the said disk cutters may be raised and lowered without raising and lowering the said hoes, substantially as described.

2. The combination of the frame, with the disk cutters mounted on angle-arms at the forward end of the said frame, the driving-wheels and the series of rotary hoes driven by the said driving-wheels mounted on swinging arms independently of the arms that carry the said disk cutters and arranged to hoe the ground traversed by the said disk cutters, substantially as described.

3. The combination of the frame with the driving-wheels and axle, a series of rotary

10 hoes driven by the said driving-wheels, swinging arms within which the shaft for the said hoes is mounted, and a pivotal connection of said arms and frame that is eccentric to the
5 said axle, substantially as described.

4. The combination with the frame and main wheels of the machine, of the rotary hoes driven by the said main wheels, the swinging arms and segments by which the said hoes
10 are mounted for swinging on the said frame, a lifting-bar 43 connecting the said segments and the lifting-lever connected with the said lifting-bar, substantially as described.

5. The combination with the frame and
15 main wheels of the machine of the rotary hoes driven by the said main wheels, the swinging arms 32 by which the said hoes are mounted

for swinging on the frame, the segments 34 rigid with said arms and extending upwardly at the rear of said arms, the eyes 17 on the
20 side rails at the rear of the axle and means for connecting the said segment with the said eyes, substantially as described.

6. The several hoes consisting each of a hub and oblique arms having seats for flat
25 blades, the shoulders 51 at the inner ends of the said seats and the several blades having their flat sides secured to the said seats, and their inner ends against the said shoulders, substantially as described.

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