No. 684,790. Patented Oct. 22, 1901.

H. M. BURDICK.

WHEEL CULTIVATOR.

(Application filed Sept. 30, 1899.)

(No Model.) 2 Sheets—Sheet 1.

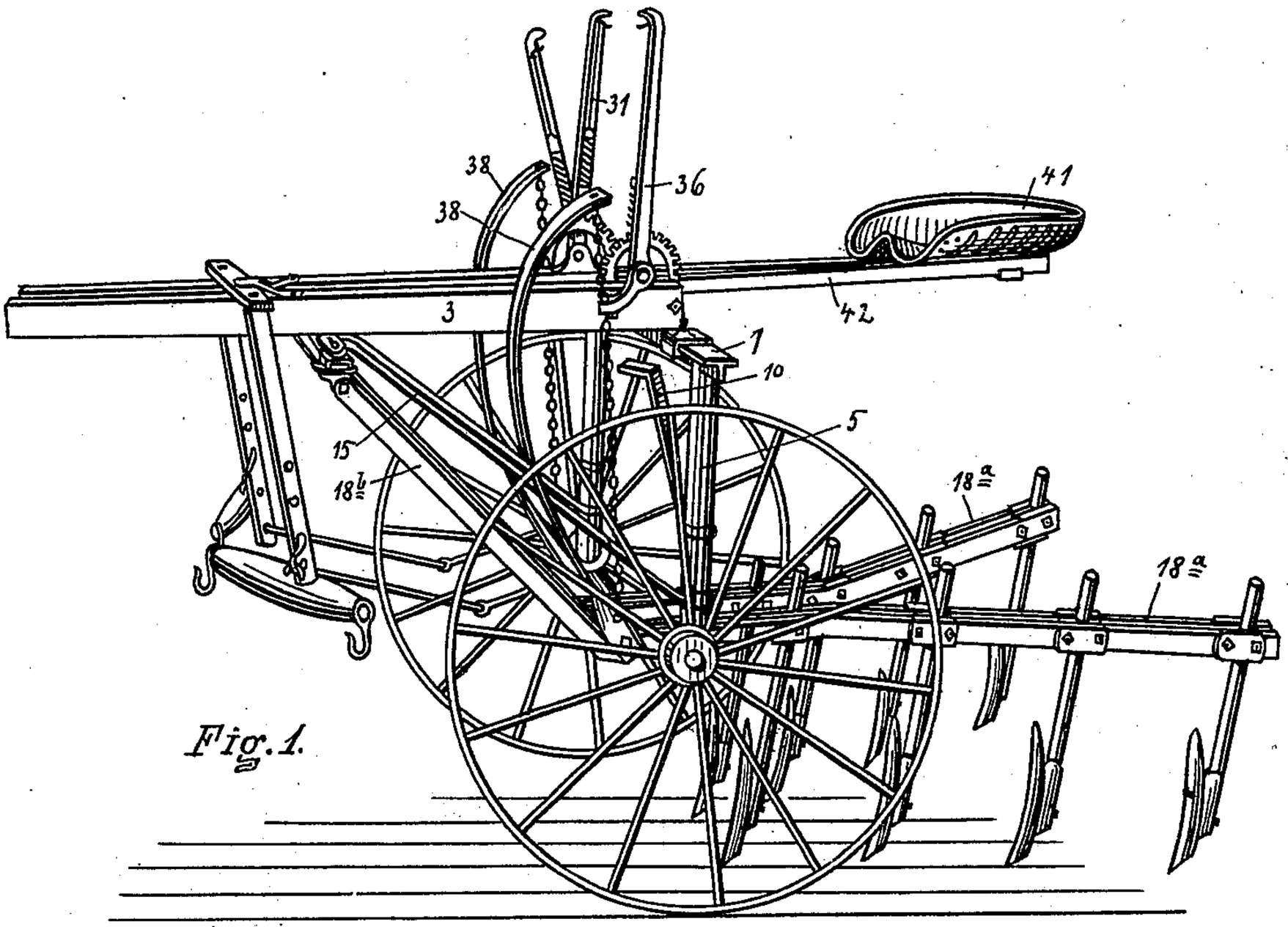

Fig. 1.

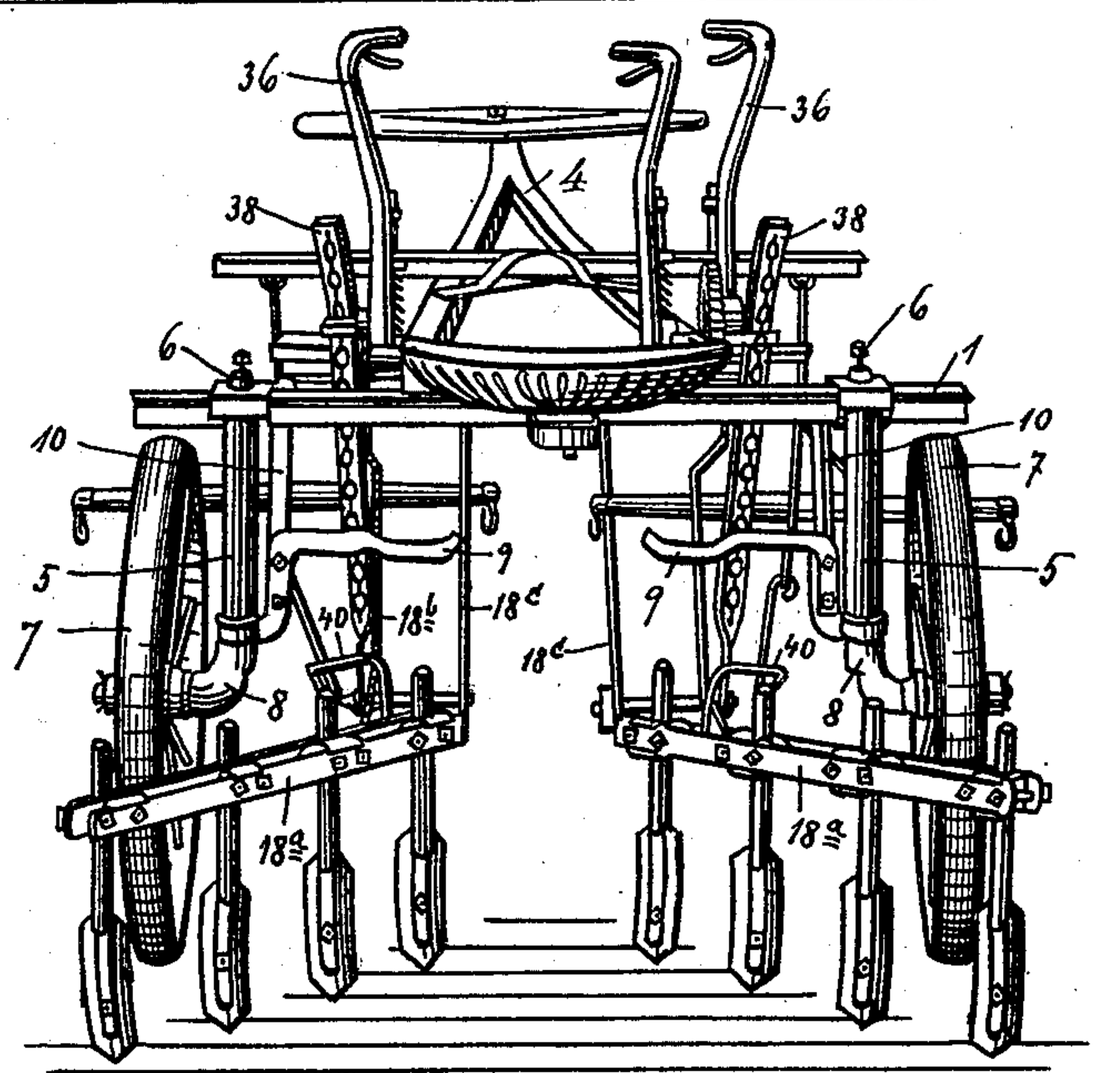

Fig. 2.

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Fig. 3.

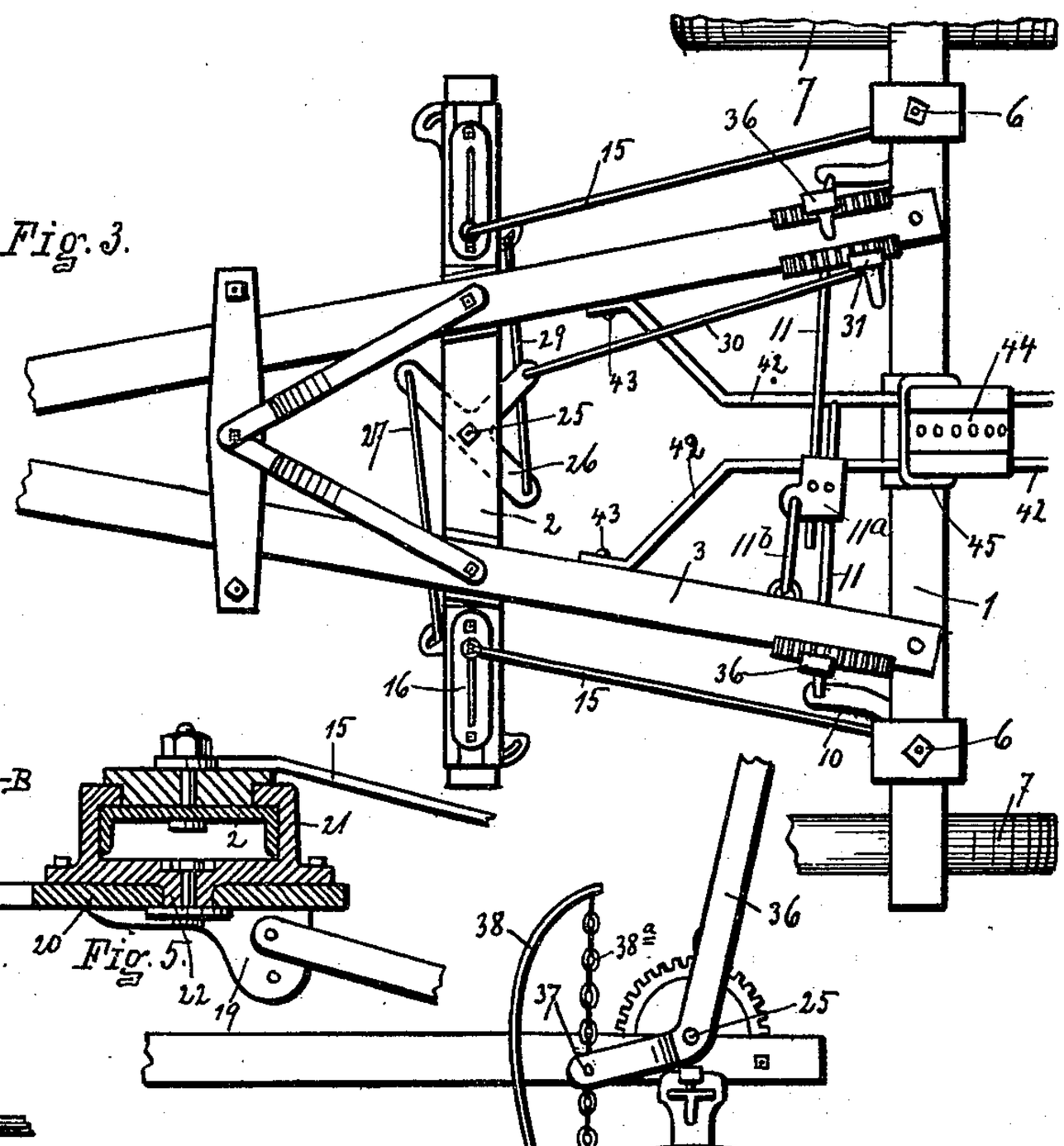

Fig. 4.

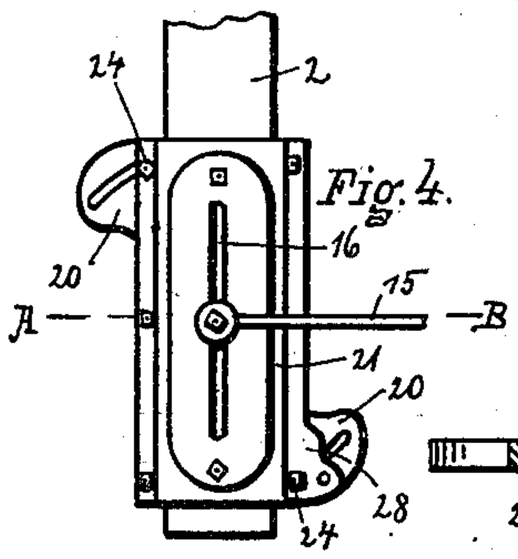

Fig. 5.

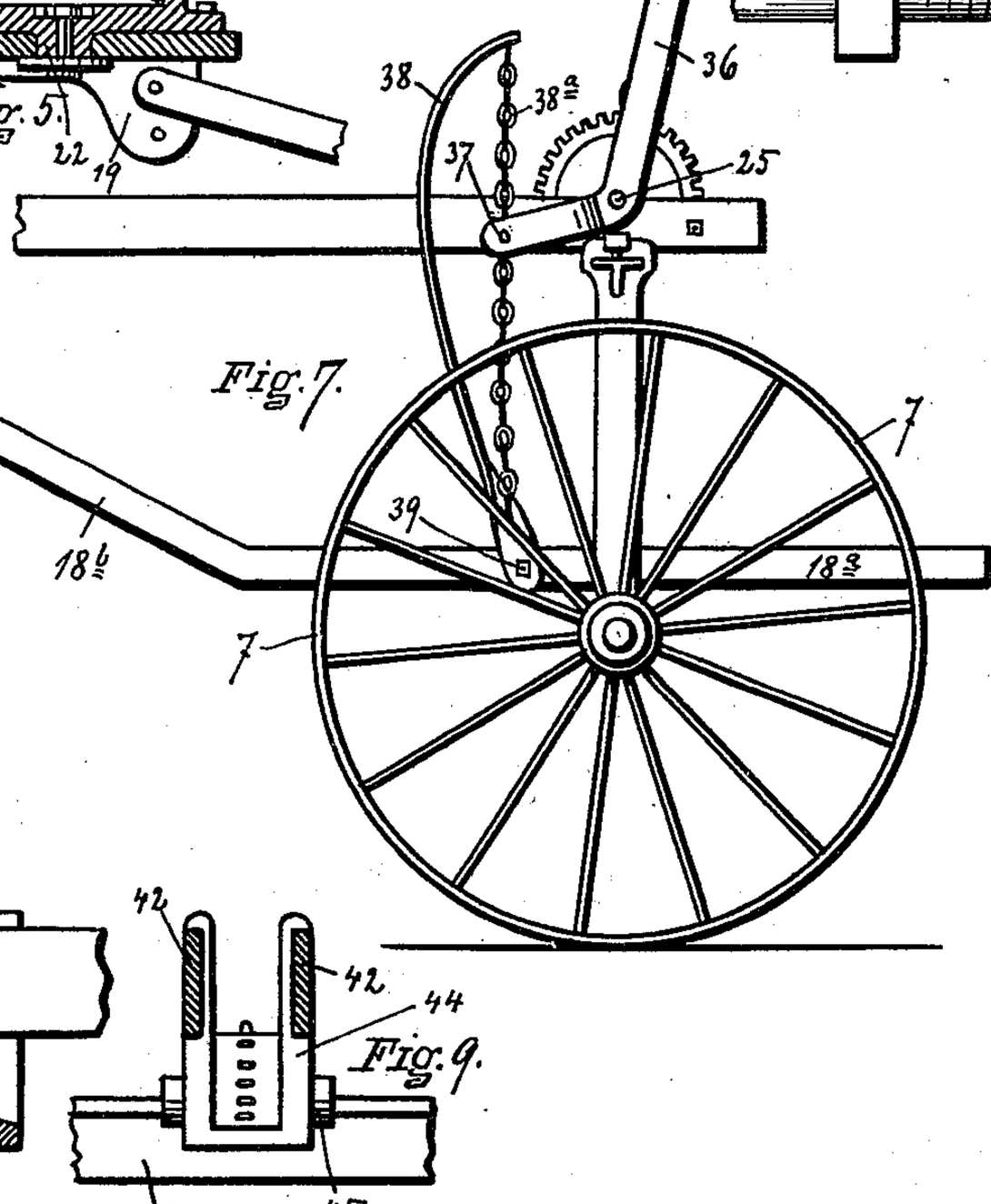

Fig. 6.

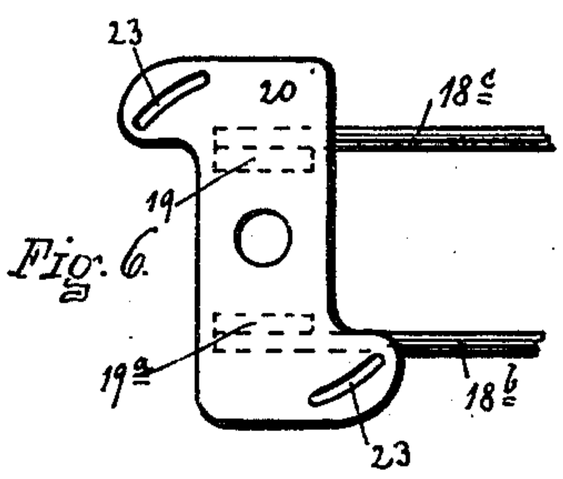

Fig. 7.

Fig. 8.

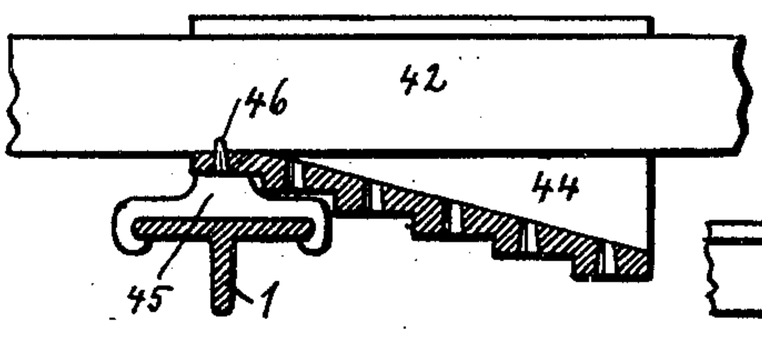

Fig. 9.

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UNITED STATES PATENT OFFICE.

HIRAM M. BURDICK, OF UTICA, NEW YORK, ASSIGNOR TO THE STANDARD HARROW COMPANY, OF UTICA, NEW YORK.

WHEEL-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 684,790, dated October 22, 1901.

Application filed September 30, 1899. Serial No. 732,174. (No model.)

To all whom it may concern:

Be it known that I, HIRAM M. BURDICK, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Wheel-Cultivators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 the numerals of reference marked thereon, which form part of this specification.

The object of my present invention is the production of a simple, practicable, and efficient wheel-cultivator which is strong and rigid in construction, although light, and capable of accommodation to various conditions of soil; and it consists, essentially, in the general construction and arrangement of the parts of the cultivator, as hereinafter more fully described and claimed.

In the drawings, Figure 1 shows a perspective view from the side of a cultivator embodying my improvements in construction. Fig. 2 is a perspective from the rear. Fig. 3 is a plan view of parts, showing details of the construction. Fig. 4 is a plan view of a gang-adjusting device employed in the construction, together with other details, which will hereinafter appear. Fig. 5 is a section taken on line A B of Fig. 4 on an enlarged scale. Fig. 6 shows in detail a portion of the construction shown in Fig. 4. Fig. 7 shows details of the machine in side elevation. Fig. 8 shows details, mostly in longitudinal cross-section, of a seat-adjusting mechanism employed in the construction. Fig. 9 shows from the rear parts shown in Fig. 8.

Referring to the reference characters in a more particular description, the frame of my improved cultivator consists of a rear main cross-bar 1, preferably of T-shaped steel, and a front cross-bar 2 and longitudinal pieces 3 3, which may have their front ends extended and brought together, forming a pole for the cultivator. Secured to either end of the main bar 1 and projecting downwardly therefrom are the wheel-sockets 5 5. These sockets are adjustably secured on the frame-bar by a set-screw 6, which when loosened permits the sockets to be adjusted inwardly or outwardly on the bar 1, whereby the distance between the wheels may be regulated. The wheels 7 are mounted upon the horizontally-projecting portion of the piece 8, the vertical portion of which enters the socket 5, in which it is free to turn, forming a pivotal connection. To the piece 8 is connected an inwardly-projecting arm 9, which as to its inner end serves as a foot-rest for the operator and by means of which the machine may be guided when being used as a flexible wheel-cultivator. The wheels are connected by means of the upwardly-extending arms 10, which are secured on the piece 8 at their lower end and are connected by a rod 11 at their upper end. The rod 11 is provided with an adjustable connection 11^a, whereby it may be lengthened or shortened to correspond with the width to which the wheel-sockets may be adjusted on the bar 1. A hook 11^b on the frame is adapted to engage an eye on piece 11^a and secure the parts when the cultivator is not used as a flexible wheel-cultivator. A brace 15 connects the lower end of the socket 5 with the cross-bar 2 of the frame. The brace 15 is adjustably secured by a bolt passing through a slot in the block 16, secured on the projecting ends of the cross-bar 2. The adjustment mentioned is provided to permit the forward end of the brace 15 to be adjusted to conform to the adjustment of the socket 5 on the main bar 1 in varying the width or distance apart of the wheels. The tooth-gangs are made up, preferably, of parallel bars, the teeth being mounted in the horizontal divergent portions 18^a thereof, while the forward portions of the tooth-gang bars are carried upward and separated, as shown at 18^b and 18^c. The upper ends of the bars 18^b and 18^c are pivoted to lugs 19 and 19^a on the turn-plate 20. The plate 20 is mounted upon the slide 21 on the cross-bar 2 in the following manner: The slide 20 is provided with a boss 22, projecting downwardly on its under side, which is received in the central opening 20^a of the turn-plate 20. The plate is held to the slide by a bolt and washer, as shown. The turn-plate 20 has a limited amount of swinging movement with reference to the slide 21, determined by the length of the slotted opening 23, and may

be rigidly secured to the slide 21, so as not to turn, by tightening the bolts 24 24, which pass through the slots 23 and the corners of the slide 21. It will thus be observed that by loosening the bolts 24 the gangs, and particularly the portions which carry the teeth, can be moved toward and from each other, turning on the bosses 22 as pivots, and when adjusted to the desired position may be secured by tightening the bolts 24. It will also be noted that the gangs may be adjusted or moved toward and from each other by the movement of the slide 21 on the end of the cross-bar 2. For producing a simultaneous movement of the gangs toward and from each other, as well as providing for their convenient adjustment in this respect, the following mechanism is provided: Pivoted at 25 on the cross-bar 2 there is provided a three-armed piece 26, which I call a "spider." From one of the arms of the spider 26 to one of the slides 21 there extends a connecting-rod 27, engaging in an ear, as 28, on the slide 21, as particularly shown in Fig. 4. A connecting-rod 29 extends from another arm of the spider 26 to the slide on the other side of the machine. From the third arm of the spider 26 extends a connecting-rod 30 to the lever 31, pivoted upon the frame and provided with a rack and catch by means of which the lever may be secured in any desired position of adjustment.

It will be noted with reference to the gang-handling mechanism just described that the slides 21 may be moved toward the outer end of the bars 2, and the bolts 24 may be loosened, permitting the rear ends of the gangs to be brought quite close together, in which position the gangs are adapted to operate on a very narrow strip of earth, adapting the machine to use in cultivating between drills close together without the necessity of removing any of the teeth from the gang, and obtaining the results of the work of the greatest number of teeth that the machine is capable of carrying. When so adjusted, the gangs may be moved together or apart by the operation of the slides heretofore described, whereby the gangs can be made to cultivate more or less close to the row which the cultivator straddles, as the operator may desire.

For elevating and depressing the gangs of teeth the following mechanism is employed: Upon the frame there is pivoted at 35 a bell-crank lever 36, provided with a rack and catch, as shown, whereby it may be secured in any desired position of adjustment. The short arm of the lever 36 is connected at the point 37 with a chain or flexible connection 38ª, extending between and connected to the opposite ends of the bow-spring 38. The lower end of the spring 38 is connected with the gang at 39. When the lever 36 is operated to the rear from the position shown in Fig. 7, the gangs will be elevated from the ground, and the machine will be carried on the wheels 7 entirely. When the lever 36 is operated to a position forward of that shown in Fig. 7 and secured, the spring 38 will be put under tension to throw the gang downwardly, whereby the teeth are forced more or less into the earth, depending upon the amount of tension that is given to the spring 38. When the teeth have entered the ground sufficiently under the impulse of the spring 38, the action is limited by the chain 38ª becoming taut—that is to say, that portion of the chain above the point where it is connected with the lever 36. The spring 38 operates at its full tension to force the teeth into the ground under this method of operation up to the point that it is limited in its action by the chain 38ª, and the spring is not necessarily stiff in order to accomplish the desired result. The chain 38ª being connected to the opposite ends of the spring enables the spring to be removed from the machine and replaced without encountering difficulties in putting the spring under tension, which would be the case if the chain were not connected to both ends of the spring. Thus the spring can be put under tension at the factory and need not afterward be disturbed by the user of the implement. The tooth-bars are also provided with foot-rests 40, in position to be conveniently reached by the foot of the operator sitting on the seat 41. The operator can exercise a certain amount of control over the gangs with his foot, particularly when the bolts 24 are loose. The seat 41 is mounted on the rear portion of the substantially horizontal arms 42, which are pivoted to the frame at 43. The elevation of the seat 41 is adjusted by means of a sliding step-block 44, having a series of steps on its under side adapted to rest on the rest 45, mounted on the main bar 1. The block 44 is provided with a series of openings, one in each of the steps, adapted to receive a pin 46 on the rest 45, whereby the step-block 44 is secured in position when it has been adjusted to the desired position.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the frame mounted upon carrying-wheels, an operator's seat arranged between the wheels at the rear of the frame, a transverse cross-bar on the forward portion of the frame, trailing gangs of teeth arranged between the carrying-wheels and below the seat, slides on the cross-bar to which the trailing gangs are attached and adjusting mechanism for moving the slides and adjusting the gangs and a lever arranged at the operator's position connected with said adjusting mechanism, substantially as set forth.

2. The combination of the frame mounted upon wheels, a cross-bar arranged on the forward portion of said frame, slides mounted on said cross-bar, means for simultaneously adjusting said slides toward and from the central line of the machine by a lever from the operator's position, a turn-plate pivoted upon

each of said slides, trailing tooth-gangs attached to said turn-plates, respectively, and means for locking said turn-plates to said slides, substantially as set forth.

3. The combination of the frame mounted upon carrying-wheels, the vertically-adjustable trailing tooth-gangs and the adjusting mechanism consisting of the bow-spring connected with the gang at its lower end, the flexible connection spanning the bow of the spring and an adjusting and holding lever connected with said flexible connection intermediate of its points of attachment to the spring, substantially as set forth.

4. The combination in a straddle-row cultivator, of the main frame including the rear main cross-bar 1, and the forward cross-bar 2, the laterally-adjustable sockets 5 mounted and secured on the main bar 1, pivotal wheel-bearing pieces engaging in said sockets, carrying-wheels, connections between the pivotal wheel-bearing pieces on the opposite sides of the machine, a brace connecting said sockets 5 with the said front cross-bar, substantially as set forth.

In witness whereof I have affixed my signature, in presence of two witnesses, this 18th day of September, 1899.

HIRAM M. BURDICK.

Witnesses:
E. WILLARD JONES,
SARAH A. BROWN.