

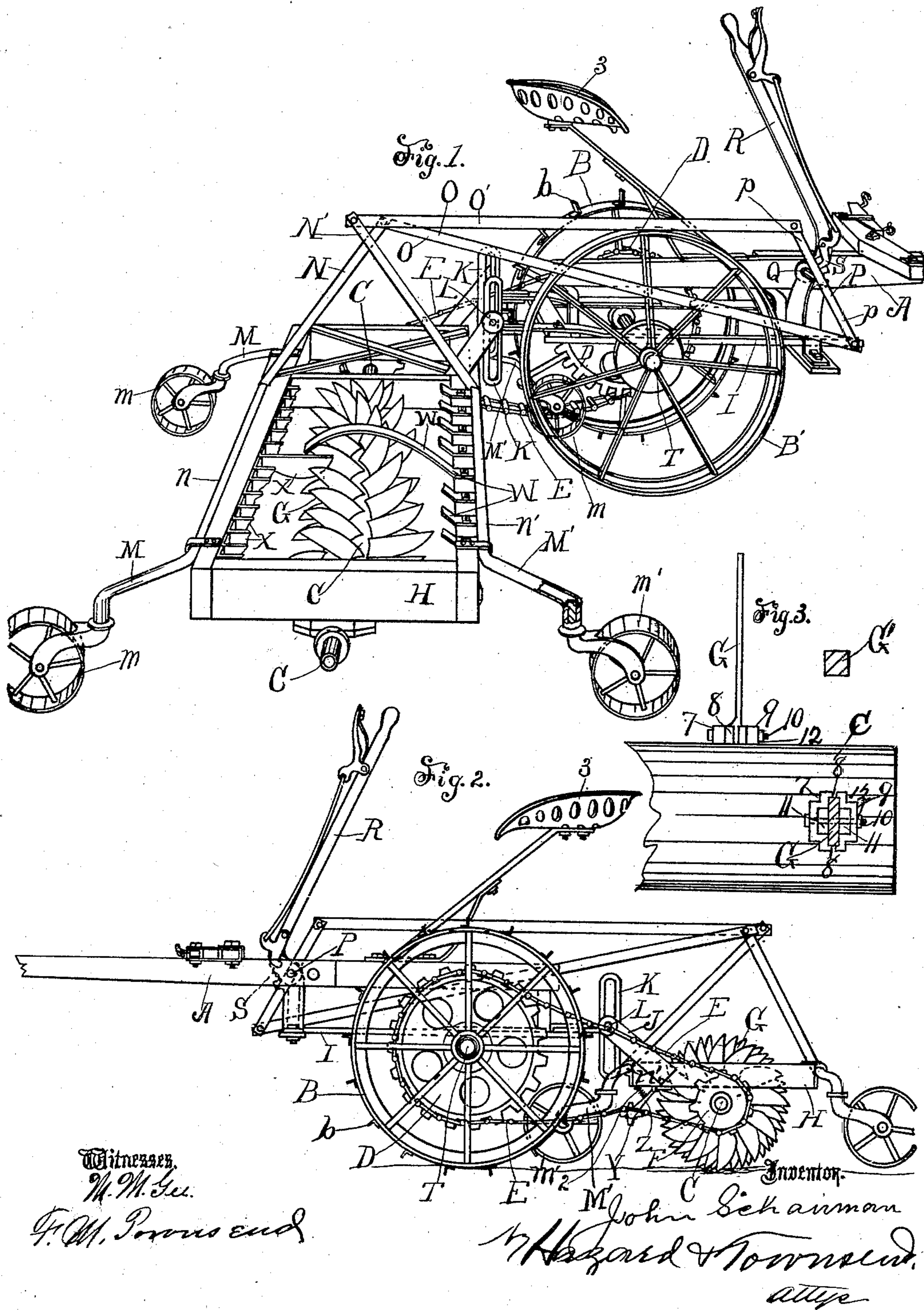
(No Model.)

2 Sheets—Sheet 1.

J. SCHAUMAN.
ORCHARD CULTIVATOR.

No. 474,763.

Patented May 10, 1892.



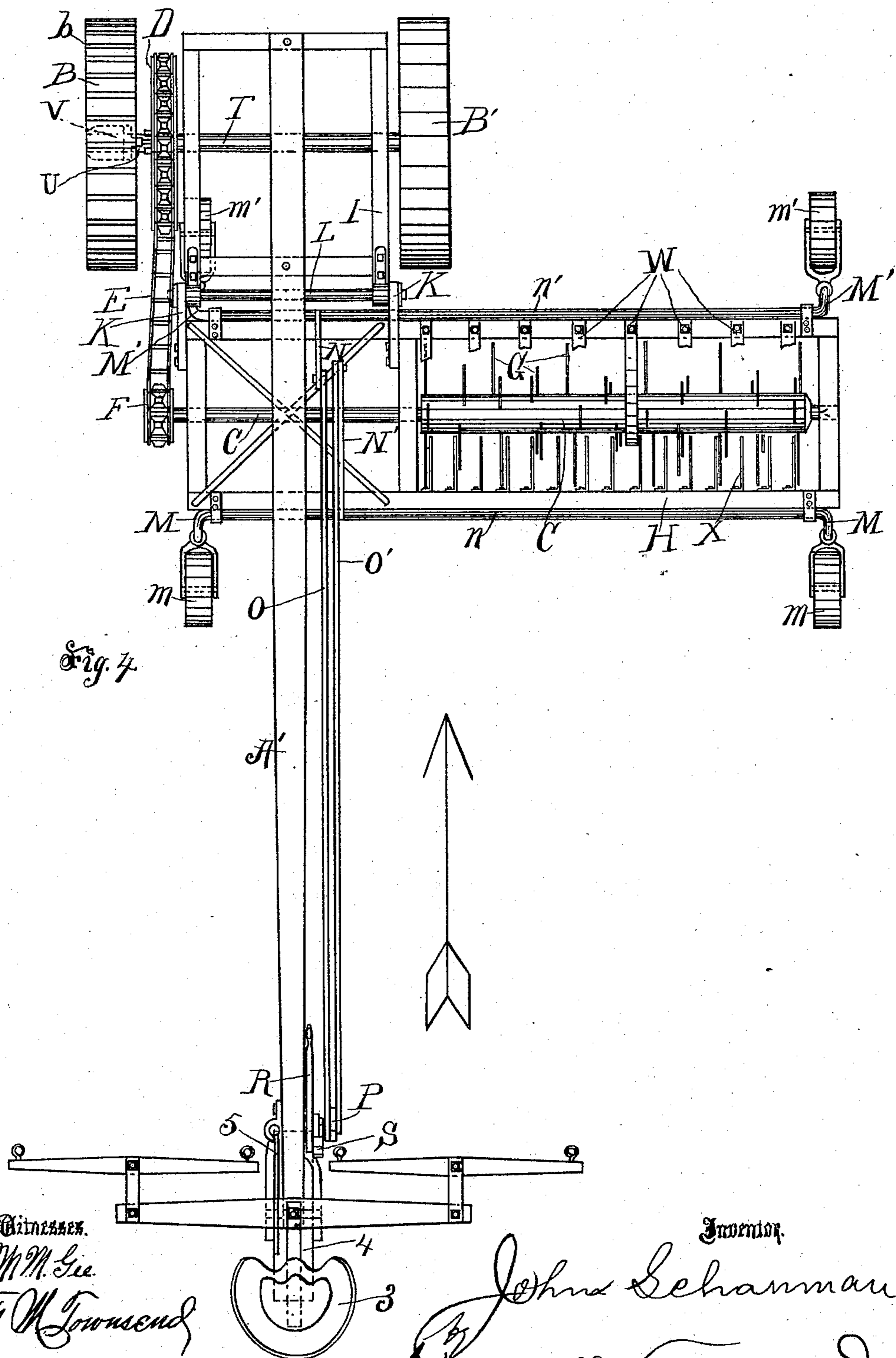
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Witnesses.
W. M. Lee.
H. M. Townsend.

Inventor.

John Schauman
Hazard Townsend.
att'y

UNITED STATES PATENT OFFICE.

JOHN SCHAUMAN, OF ANAHEIM, ASSIGNOR OF ONE-HALF TO HENRY GIESE,
OF LOS ANGELES, CALIFORNIA.

ORCHARD-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 474,763, dated May 10, 1892.

Application filed November 12, 1891. Serial No. 411,758. (No model.)

To all whom it may concern:

Be it known that I, JOHN SCHAUMAN, a citizen of the United States, residing at Anaheim, in the county of Orange and State of California, have invented a new and useful Improvement in Orchard-Cultivators, of which the following is a specification.

My invention pertains to wheel-cultivators, and relates particularly to that class of cultivators designed to cultivate the ground close to the body and under the limbs of orchard-trees.

The object of my invention is to produce a wheel-cultivator which will cultivate the ground at one side of the path of the supporting-wheels of the machine and yet avoid all side draft.

My invention consists, essentially, of the combination, in a wheel-cultivator, of a traction driving-wheel, a rotary cutter-shaft provided with cutters and mounted in a frame at one side of the path of the supporting-wheels of the cultivator, and operative means connecting the driving-wheel with the rotary cutter-shaft to rotate such shaft in the same direction as the driving-wheel and at such a rate as to cause the periphery of the cylinder generated by the rotation of the cutters to travel independent of the friction of the ground thereupon as fast or faster than the periphery of the driving or supporting wheels, so that the cutters will tend to advance their side of the machine as rapidly or more rapidly than the side of the machine supported by the driving-wheel, so that the side draft upon the tongue of the machine is wholly avoided.

My invention also comprises minor features of construction hereinafter set forth.

The accompanying drawings illustrate my invention.

Figure 1 is a perspective view of the machine as it is designed to ordinarily be constructed. Fig. 2 is a plain side elevation of the same on the side opposite that seen in Fig. 1. Fig. 3 is an illustration in two views of the device for securing the teeth to the cylinder of the cutter-shaft. Fig. 4 shows a modified form of the machine in which it is arranged as a front-cut machine with the power to be applied from behind to drive the machine. This is a plan view and shows the sprocket-wheel thrown out of gear with the driving-wheel.

The cultivator is provided with a tongue A and with supporting-wheels B B' in the manner of ordinary wheel-cultivators, except that one of the supporting-wheels B is provided with spurs *b* to adapt it to serve to drive the cutter-shaft C through the medium of suitable transmitting mechanism, such as the driving sprocket-wheel D, arranged to be rotated by the traction driving-wheel B, the sprocket-chain E, and the driven sprocket-wheel F, which is fixed to the cutter-shaft so that the rotation of the driving-wheel B will cause the rotation of the shaft.

I do not limit my claims to the particular form of transmitting mechanism shown, as it is obvious that other mechanism may be devised to carry out my invention without the use of the specific means stated.

I prefer to gear the machine so that the periphery or outer points of the cutters will travel faster than the traction driving-wheel, as the side draft may thus be wholly avoided. The cutters G are arranged upon the cutter-shaft in a series of spirals and in alternating positions along the shaft so that the ground will be thoroughly pulverized thereby. As shown, there are four series of spiral rows of cutters, each of which makes a complete revolution about the shaft in the length of the shaft. In this form there are always six of the cutters in contact with the earth at any time when the cutters are lowered. This supports the cutter-shaft and frame evenly, so that in running over the hard earth all jar or jumping is avoided.

In order that the cutters may be raised from or inserted into the ground, the shaft is journaled in a vertically-movable frame H, which is secured to the sulky-frame I of the machine by means of the attaching-arms J, fixed to the cutter-frame and pivoted to suitable pivotal attachments (such as the pivot-rod L) to the vertical guides K, which are fixed to the sulky-frame. The pivot-rod is arranged to slide up and down in the guideways K when the cutter-frame H is raised and lowered. A series of caster-arms M M', having caster-wheels *m m'*, are journaled to the cutter-frame H by means of the lever-bars *n n'*, carrying such caster-arms and journaled to the cutter-frame and connected by suitable levers N N' with the respective connecting-rods O O', which are secured, respectively, to the op-

posite arms p p' of the T-lever P, the stem Q of which is secured to the operating-lever R, which is pivoted to the sulky-frame I, and is provided with the double-acting catch S, so that the operation of the lever R will raise or lower the caster-wheels m m' with relation to the cutter-frame. When the caster-wheels are forced down, they press upon the ground and thus force the cutter-frame up to withdraw the cutters from contact with the ground, while a reverse movement will lift the wheels, thus adding their weight to that of the cutter-frame to force the cutters into the ground. In the drawings the caster-wheels are shown elevated above the ground.

In the drawings, the sprocket-wheel D is represented movable upon the axle T of the sulky, and provided with a clutch U, arranged to engage its fellow clutch V upon the driving-wheel B. It may be found preferable to so arrange the clutch that the sprocket-wheel D need not be moved to throw it out of gear and into gear with the driving-wheel. The arrangement of the clutch may be varied without affecting the character of my invention, and the modifications are not illustrated, as they will readily suggest themselves to mechanics.

The cutter-frame is provided with the rearwardly-projecting fender arms or guards W, one of which is shown intact in Fig. 1, and the rest of which are shown only in part, being broken away to expose the view. These fenders are designed to shield the cutters from the limbs when passing under the trees. Cleaners X are secured to the rear of the cutter-frame and project forward to intercept the accumulations of weeds or trash which may gather upon the cutter. Only one of these cutters is shown intact, the others being broken away to free the view. The sprocket-chain E is loose to allow free action of the parts, and a supporting-wheel Y is provided to sustain the under portion or swag of the chain. The wheel Y is sustained by the pivoted lever Z, which is pivoted to the cutter-frame and is supported at its free end by the spring 2, secured to the said frame. When the cutter-frame is raised or lowered, the spring 2 operates to take up any slack chain which might result from such change.

In the modified form shown in Fig. 4 the only change over that shown in Figs. 1 and 2 is that which is necessary to adapt the machine for use with the horses hitched behind the machine—that is to say, the seat 3 and lever R are arranged at the rear of the push-tongue A', which is provided with a caster-wheel 4, having a lever 5, by which it is controlled to guide the machine in the same manner as headers are guided. By preference the cutters or teeth are removably secured to the cutter-shaft. For this purpose I employ the form of construction shown in Fig. 3. The shaft is provided with a series of flanged standards 7, fixed to and projecting from the

shaft and arranged at intervals along the shaft in spiral lines, as indicated by the position of the teeth in Fig. 1. Such standards are provided with the tooth-retaining flanges 8 8. The binding-cap 9 is provided with corresponding tooth-retaining flanges, and the bolt 10 is passed through the standard, the tooth, and the cap, as illustrated in Fig. 3, and is secured in place by a nut 12, screwed thereon, to clamp the parts together.

The cap and standard are each provided with an offset 11 at their mid-width to receive and retain a tooth more nearly square in cross-section than that shown in the drawings as being attached to the cylinder. G' shows such a tooth in cross-section. The tooth and cap when in place engage the face of the shaft.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a wheel-cultivator, of the traction driving-wheel, a rotary cutter-shaft provided with cutters and mounted in a frame at one side of the path of the supporting-wheels of the cultivator, and operative means connecting the driving-wheel with the rotary cutter-shaft to rotate such shaft in the same direction as the traction driving-wheel and at such a rate as to cause the periphery of the cylinder generated by the rotation of the cutter to travel as fast or faster than the periphery of the traction driving-wheels, so that the cutters will tend to advance their side of the machine as rapidly or more rapidly than the side supported by the driving-wheels.

2. In a wheel-cultivator, the combination of the traction driving-wheel, a rotary cutting-shaft provided with the cutters and mounted in a frame at one side of the path of the supporting-wheels of the cultivator, the driving sprocket-wheel arranged to be rotated by the traction driving-wheel, the driven sprocket-wheel fixed to the cutter-shaft, and the sprocket-chain arranged to connect the said sprocket-wheels to rotate the cutter-shaft in the same direction as the traction driving-wheel.

3. In a wheel-cultivator, the combination of the supporting-wheels, the sulky-frame and tongue, the guides secured to the sulky-frame, the cutter-frame, the cutter-shaft journaled therein, the attaching-arms fixed to the cutter-frame and secured to the sulky-frame by pivotal attachments arranged to slide in the guideways, the caster wheels and arms, the lever-bar carrying such caster-arms and journaled to the cutter-frame, the levers N N', secured thereto, the operating-lever, the T-lever secured thereto, and the connecting-rods connecting the opposite arms of the T-lever with their respective levers N N'.

JOHN SCHAUMAN.

Witnesses:

JAMES R. TOWNSEND,
F. M. TOWNSEND.