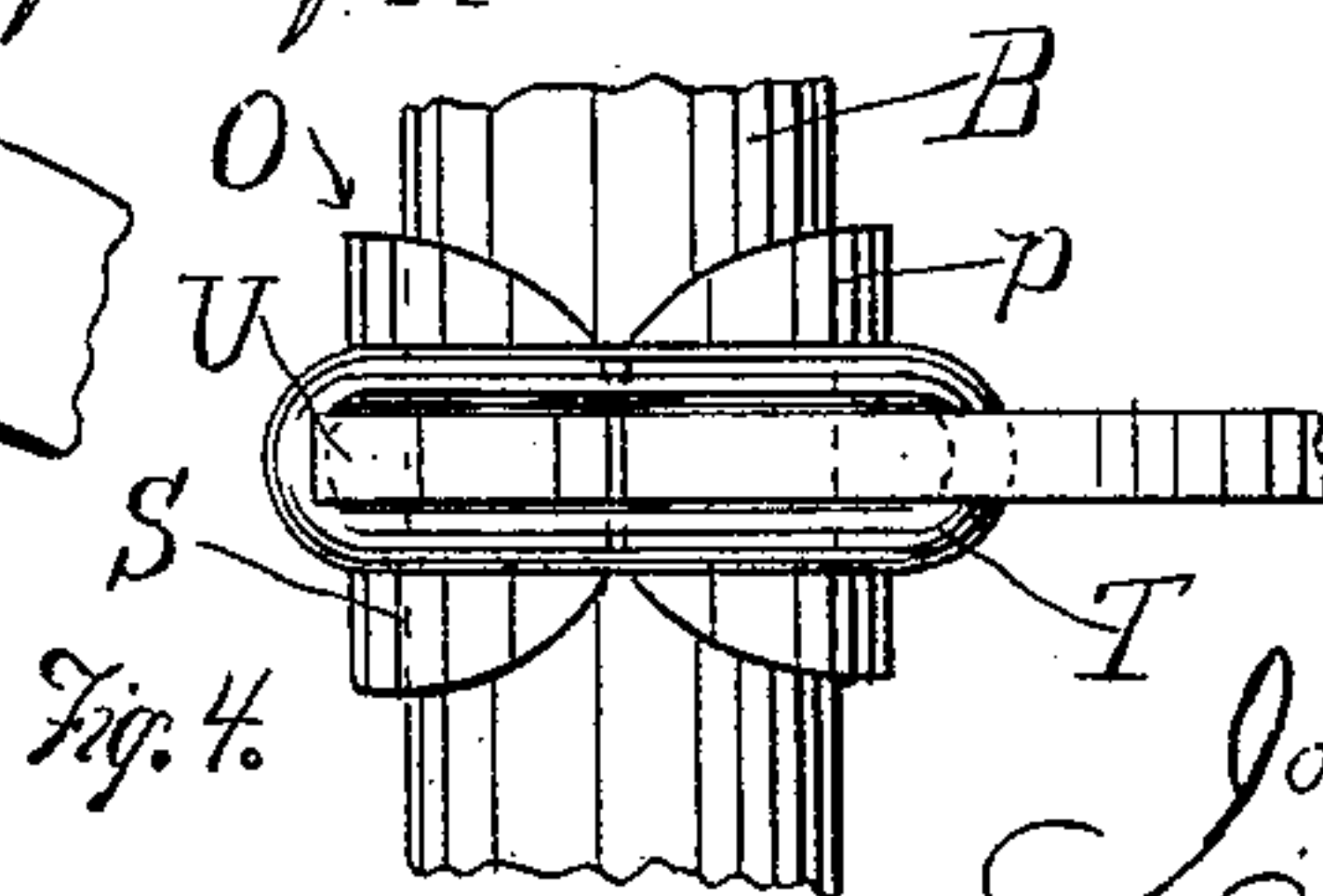
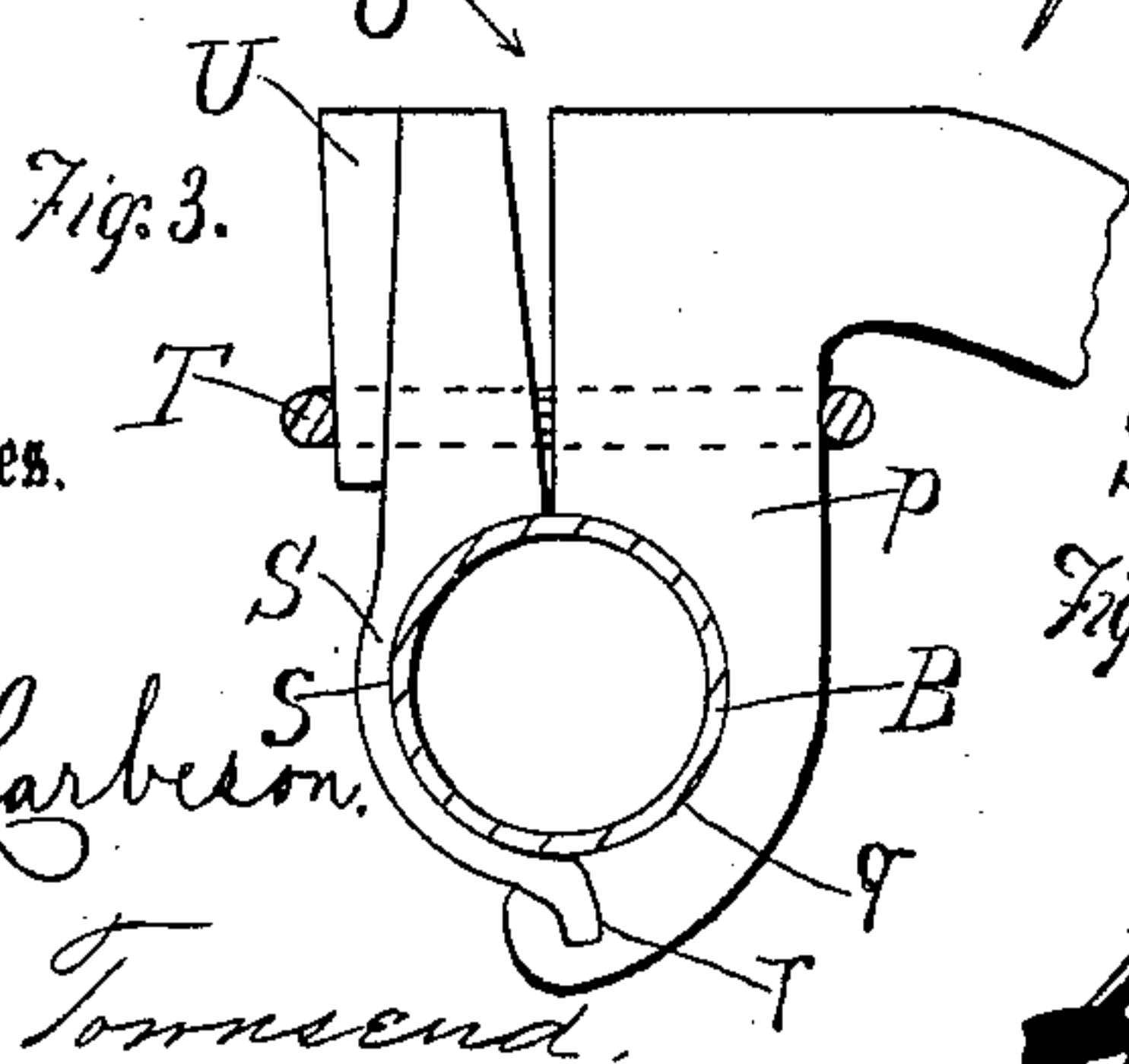
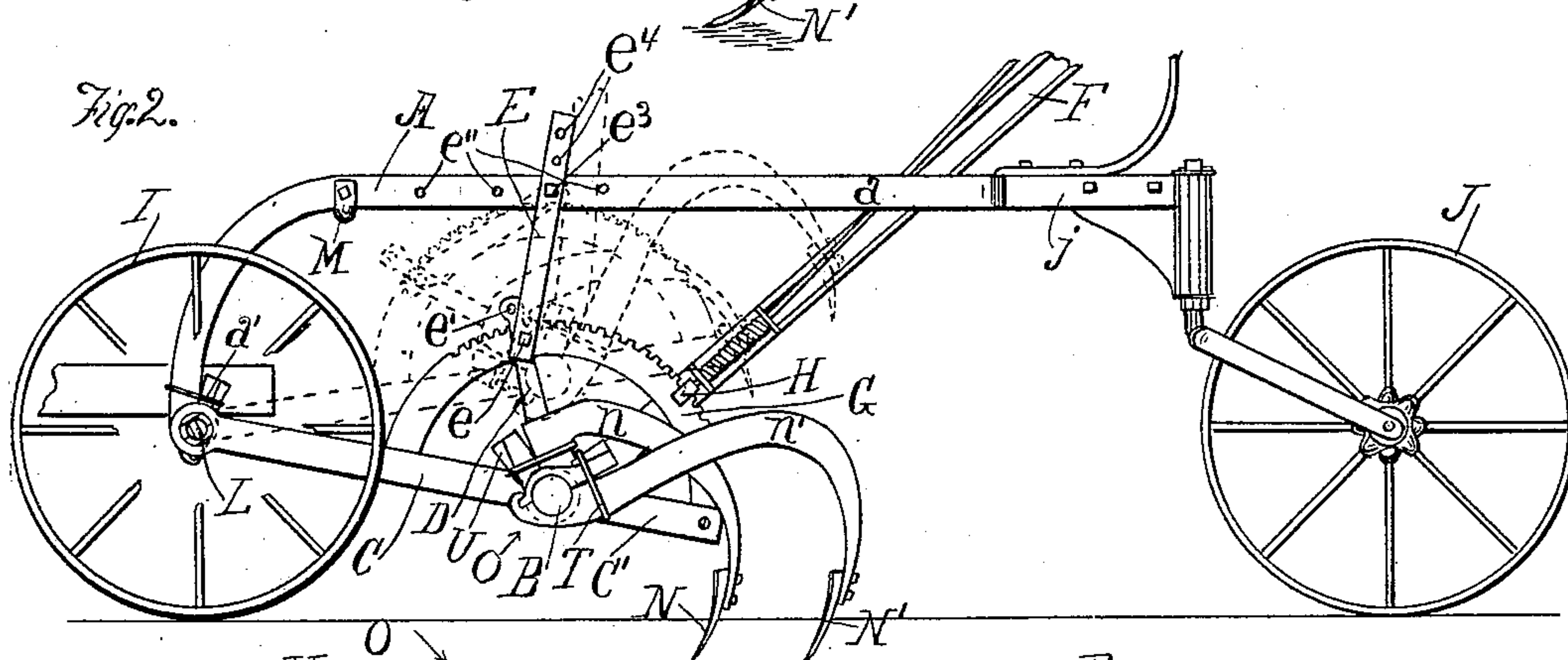
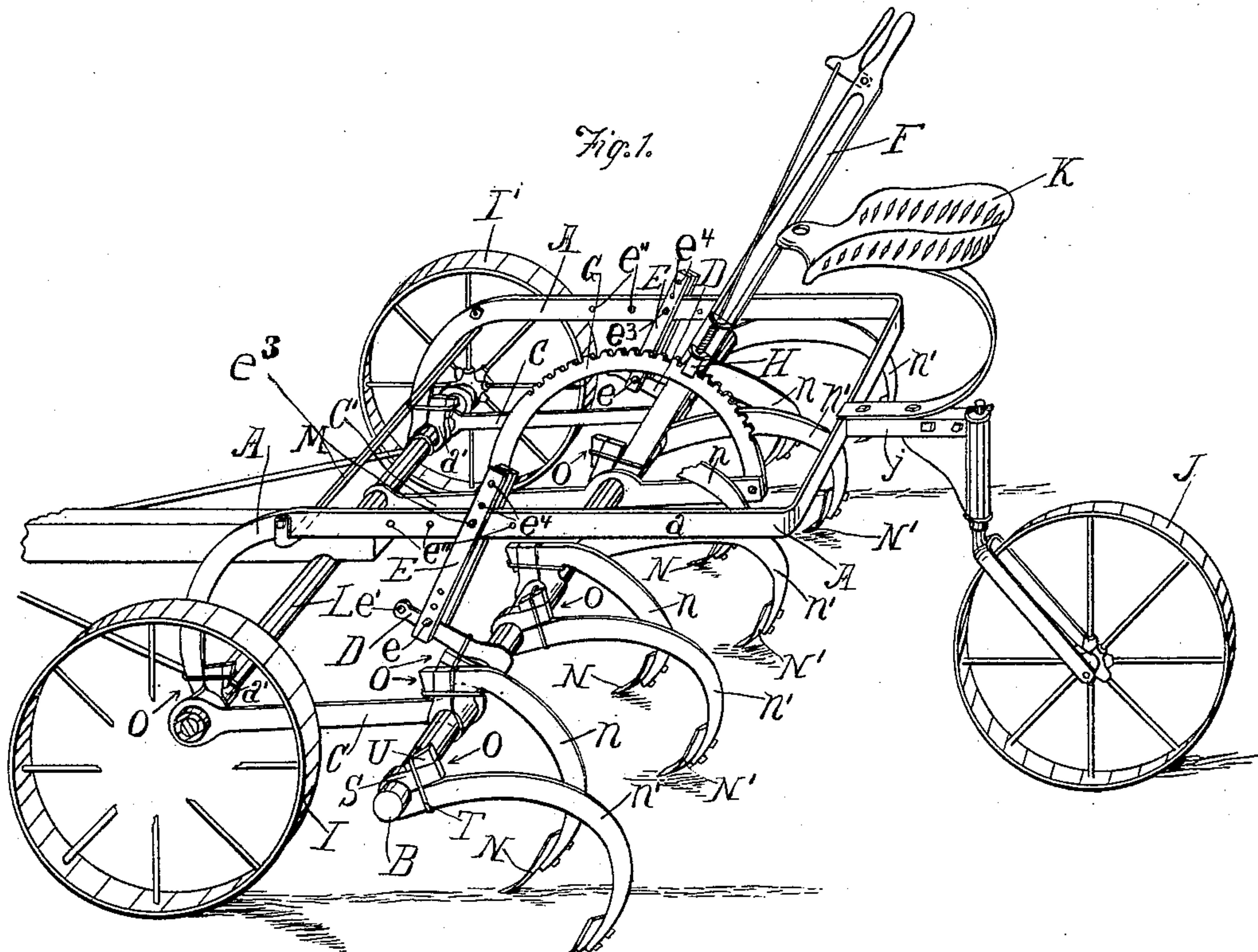


(No Model.)

J. E. DALY & A. A. NEIL.
ORCHARD CULTIVATOR.

No. 482,081.

Patented Sept. 6, 1892.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN E. DALY, OF GLENDORA, AND ALBERT A. NEIL, OF COVINA, CALIFORNIA.

ORCHARD-CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 482,081, dated September 6, 1892.

Application filed April 12, 1892. Serial No. 428,775. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. DALY, residing at Glendora, and ALBERT A. NEIL, residing at Covina, in the county of Los Angeles and State of California, citizens of the United States, have invented a new and useful Improvement in Orchard-Cultivators, of which the following is a specification.

One object of our invention is to provide improved, simple, and powerful means whereby the shovel-beam may be actuated to raise and lower the shovels and whereby the shovels can be easily set to a uniform depth in the ground when in operation.

Another object is to provide a specially-light shovel-beam and to adjustably secure the shovels thereto.

Another object of our invention is to provide cheap and simple means for clamping the parts together, the same comprising a suitable frictional clip for securing the shanks of the shovels to the tubular shaft or beam, such clip being adapted to be easily adjusted and quickly removed and applicable for securing various other parts of the machine together.

The accompanying drawings illustrate our invention.

Figure 1 is a perspective view of our improved cultivator. Fig. 2 is a side elevation of the same, showing the arrangement of the lever and operative parts for raising and lowering and leveling the cutter teeth or shovels. The shovels are shown by full lines as inserted in the ground, while dotted lines indicate the position of parts when the shovels are elevated. Fig. 3 is a detail of our improved frictional clip arranged to secure a shovel-shank in place upon the cylindrical beam, the link being shown partly in section. Fig. 4 is a view looking down on the top of the clip when secured to the beam.

Our invention comprises the combination of a wheel-supported cultivator-frame A, a shovel-beam B, provided with shovels arranged in front and rear series N N', draft-bars C C', arranged to pivotally connect the beam with the frame, the tilting arm D, fixed to the beam, a link E, pivotally connecting such arm with the frame, and means for rotating the beam and retaining it in position. The means for rotating the beam and retain-

ing it in position comprise the operating-lever F, the rack G, and pawl H.

The frame of the machine is supported by the two front wheels I I' and the rear caster-wheel J, located midway of the width of the machine. The seat K is mounted at the rear of the frame above the coster-wheel. The rack G is fixed to one of the draft bars C', which is journaled to the axle L and to the beam B, as shown in the drawings. The link E is pivoted to the frame above the beam B and the tilting arm D is arranged to extend forward in an upward oblique direction, and the lower end of the link E is pivoted thereto by the pivot e, so that the pivotal joint uniting the two is practically between the axle L of the cultivator and the shaft B, but above their plane. The frame A is formed of a bar a, provided with suitable journals a' at its front end and bent at its mid-length to form the rear of the frame. The front ends are curved upward from the journals a' and are braced by the brace M, which serves for a foot-rest. The caster-bracket j is fixed to the rear portion of the frame-bar a and the seat K is attached to such caster-bracket.

In practice the operator ordinarily sits upon the seat and manipulates the operating-lever F to insert the shovels into the ground or to retract them therefrom. The shovels are arranged in front and rear series N N' and are connected with the beam B by means of the shanks n n', which are clamped to the beam by frictional clips.

Great facility of operation and adjustment of the shovels N N' is secured by the contrivance shown. When it is desired to insert the shovels into the ground or withdraw them therefrom, the lever F is moved backward or forward sufficiently to accomplish the purpose. The operation of the lever produces a duplex movement on the part of the beam, viz: a partial rotation on its own axis and an up-and-down movement in the arc of a circle, with the axle L for center and draft-bars C for radius. The tilting arm D is adjustably secured to the cylindrical beam B by our improved frictional clip and can be set at any angle relative to the shovels desired, and it is provided with a series of piv-

ot-holes e' to allow the link E to be pivoted close to or farther from the beam B, and the link can be adjusted accordingly by means thereof and by means of the holes e'' in the cultivator-frame, arranged to receive the pivot-bolt e^3 . By this means the movements of rotation and elevation of the beam can be changed with relation to each other and the parts are easily put together in constructing the machine. The shanks of the shovels are adjustably clamped upon the beam B by means of said improved clip, so that the shovels N N' can be adjusted relative to each other to be inserted into the ground to a uniform depth, (greater or less,) as may be desired.

The machine, as shown in Fig. 1, is set with the points of the front shovels resting on the top of the ground, and a back movement of the lever will lower the rear shovels more rapidly than the front shovels, so that when set to the depth indicated in Fig. 2 the points of the shovels maintain a common level. To make the shovels maintain a common level when set deeper into the ground, the bolt e^3 must be removed and the link or hanger E lowered and pivoted to the frame by inserting the bolt e^3 through the beam and one of the upper pivot-holes e^4 , according to the depth required. When the projecting lever is thrown back, the partial rotation of the beam B will move the rear shovels more rapidly than the front shovels for the reason that they are at greater radial distance from the beam than are the front shovels. When the beam is rotated backward, the joint formed by the link E and the rigid arm D is expanded, thus forcing the beam downward toward the ground at the same time that the shovels are being inserted into the ground. This operates practically as a toggle-joint to force the shovels into the ground. In raising the shovels the forward rotation of the beam not only elevates the shovels, but also swings the beam upward with great rapidity, depending in degree upon the distance of the pivot e^3 from the axis of the beam.

The shovel-shanks $n n'$ are fastened to the beam B by means of the clips O, which comprise the combination of the bracket or stem portion p of the clip, (to which is united the shank of the shovel,) provided with the socket q to receive the shaft or other part to be clamped, and also provided with a recess r at one side of such socket, arranged to receive the clamp member S, such clamp member provided with a socket s , arranged to receive the beam or other part to be clamped, the end of such clamp member S being arranged to fit into the recess r in the bracket, and the stem of such member being arranged to extend along the stem p of the bracket, the clip-link T, arranged to embrace the stems of the bracket and of the clamp member and a suitable key U, inserted within the clip-link

to press the stems toward each other. The clamping-sockets q and s are of a combined depth less than sufficient to fully inclose the beam or other part to be clamped therein, so that the stems of the bracket and clamp member are held apart when the clip is in place upon the beam or other part to be clamped. When the key is driven into place, it springs the stems toward each other, thus firmly clamping the beam or other member of the machine within the sockets q and s . In practice the shanks are only secured sufficiently tight to hold them rigid under ordinary strain, but are not so tight as to prevent the shank from slipping on the cylindrical beam when the shovel strikes a root, boulder, or other obstruction, which otherwise might break the machine.

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

1. The combination set forth of the wheel-supported cultivator-frame, the beam provided with shovels arranged in front and rear series, draft-bars arranged to pivotally connect the beam with the frame, the tilting arm fixed to the beam, the link pivotally connecting such arm with the frame, and means for rotating the beam and retaining it in position.

2. The combination set forth of the wheel-supported cultivator-frame, the axle journaled thereto, the beam provided with shovels arranged in front and rear series, the draft-bars arranged to pivotally connect the beam with the frame, the link pivoted to the frame above the beam, the tilting arm fixed to the beam and arranged to extend forward in an upward oblique direction and pivoted to the link, so that the pivotal joint uniting the two is practically between the axle of the cultivator and the beam, the operating-lever fixed to the beam, a rack fixed to one of the draft-bars, and a pawl mounted on the lever and arranged to engage the rack.

3. In a cultivator, the combination set forth of parts to be clamped, the clip-bracket provided with a socket arranged to receive the part to be clamped and also provided with a recess at one side of such socket to receive the clamp member S, such clamp member provided with a socket arranged to receive the part to be clamped, the end of the clamp member being arranged to extend along the stem of the bracket, the clip-link arranged to embrace the stems of the bracket and of the clamp member, and a suitable key inserted within the link to press the stems toward each other.

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