

(No Model.)

2 Sheets—Sheet 1.

P. BROWN.
POTATO DIGGER.

No. 575,691.

Patented Jan. 26, 1897.

Fig. 1.

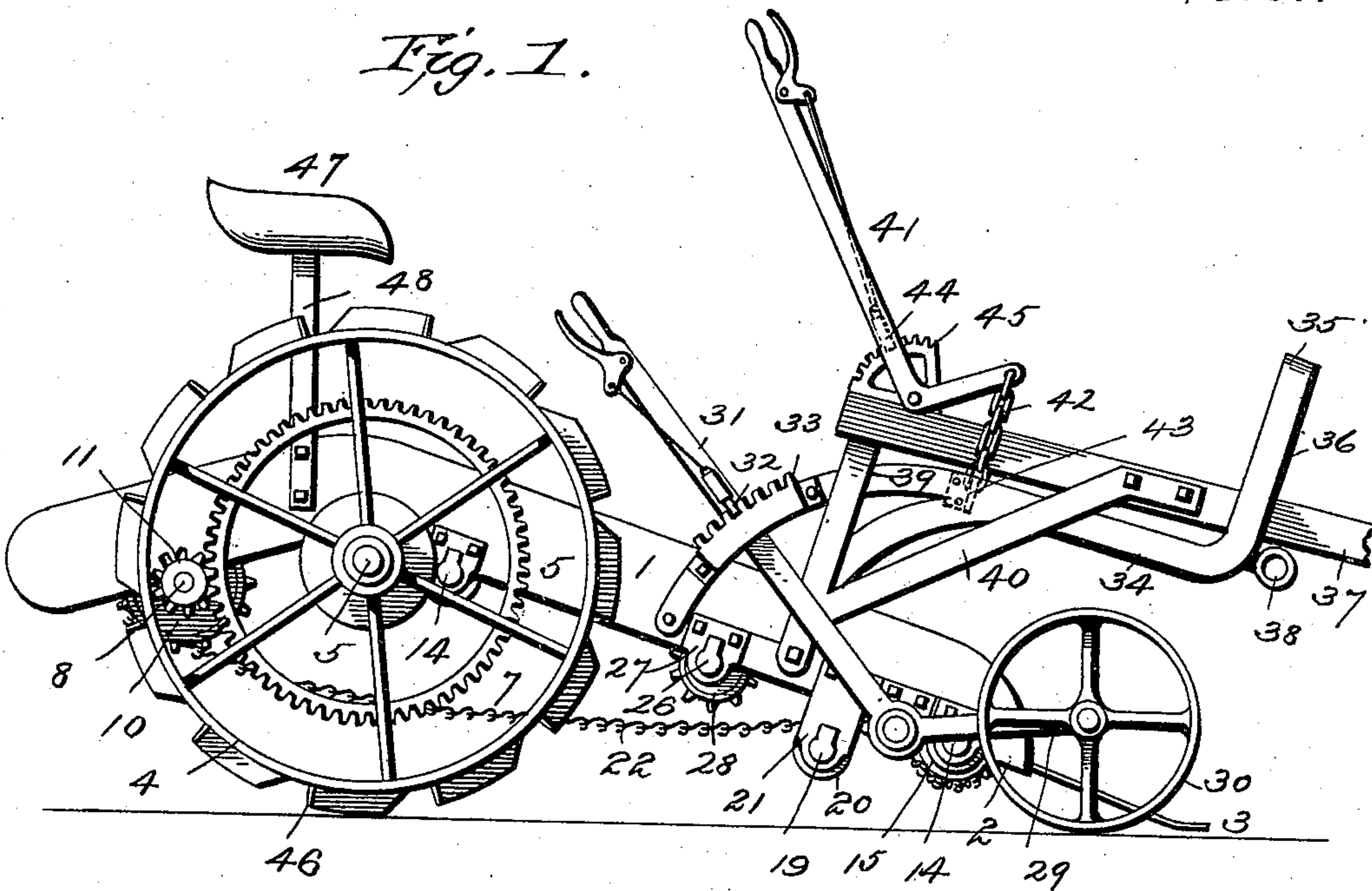
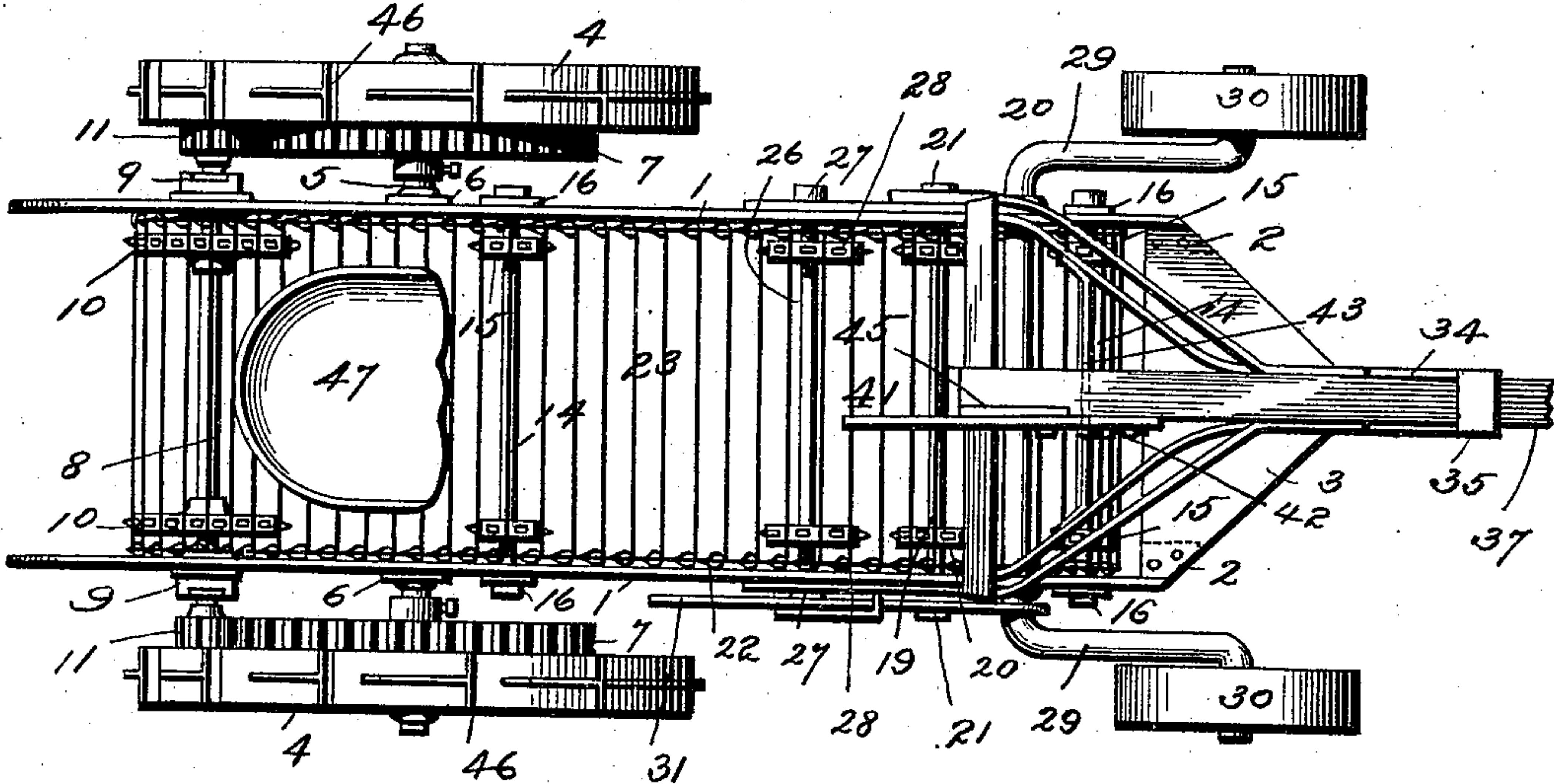


Fig. 2.



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Fig. 3.

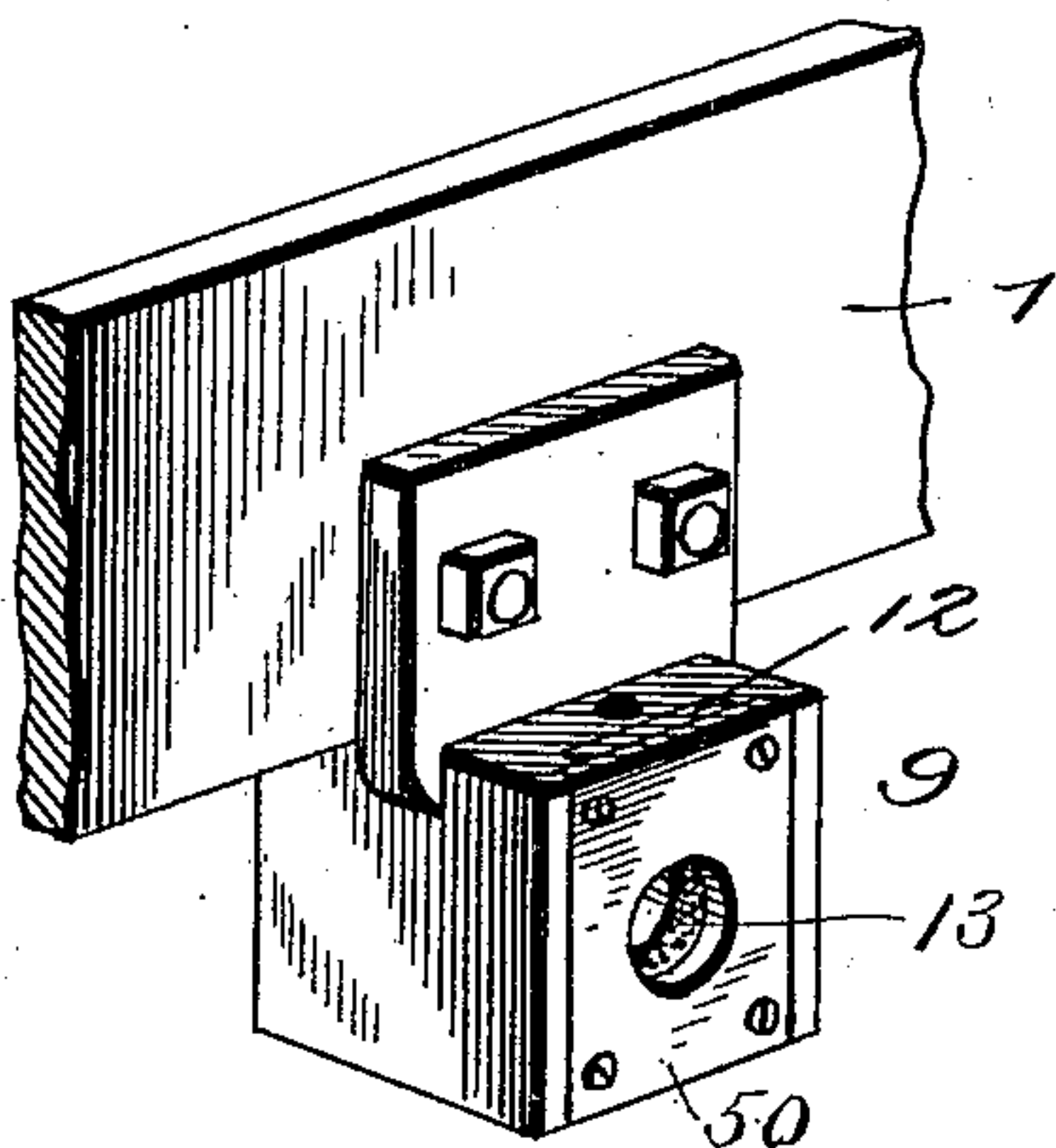


Fig. 4.

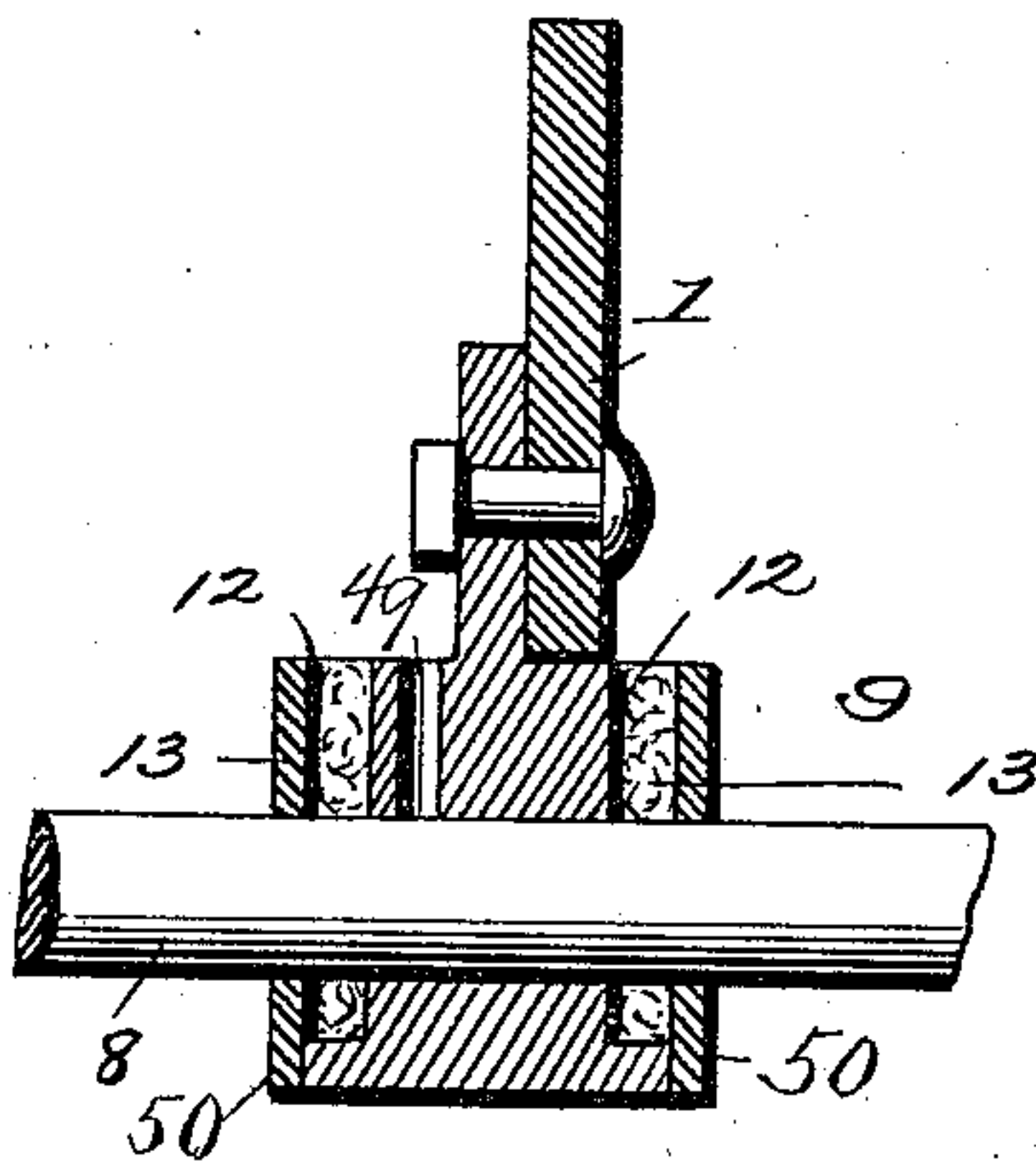


Fig. 5.

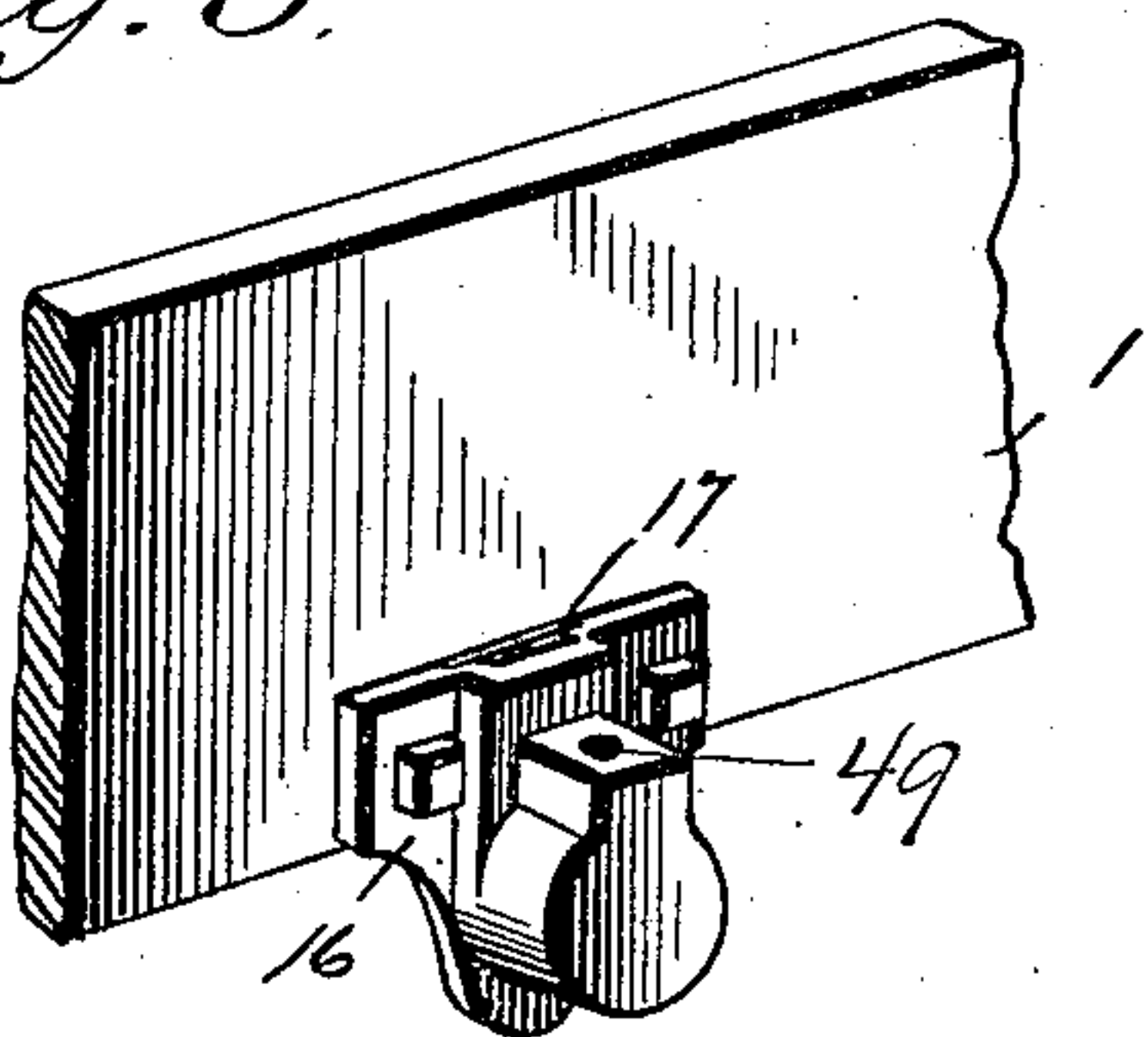


Fig. 6.

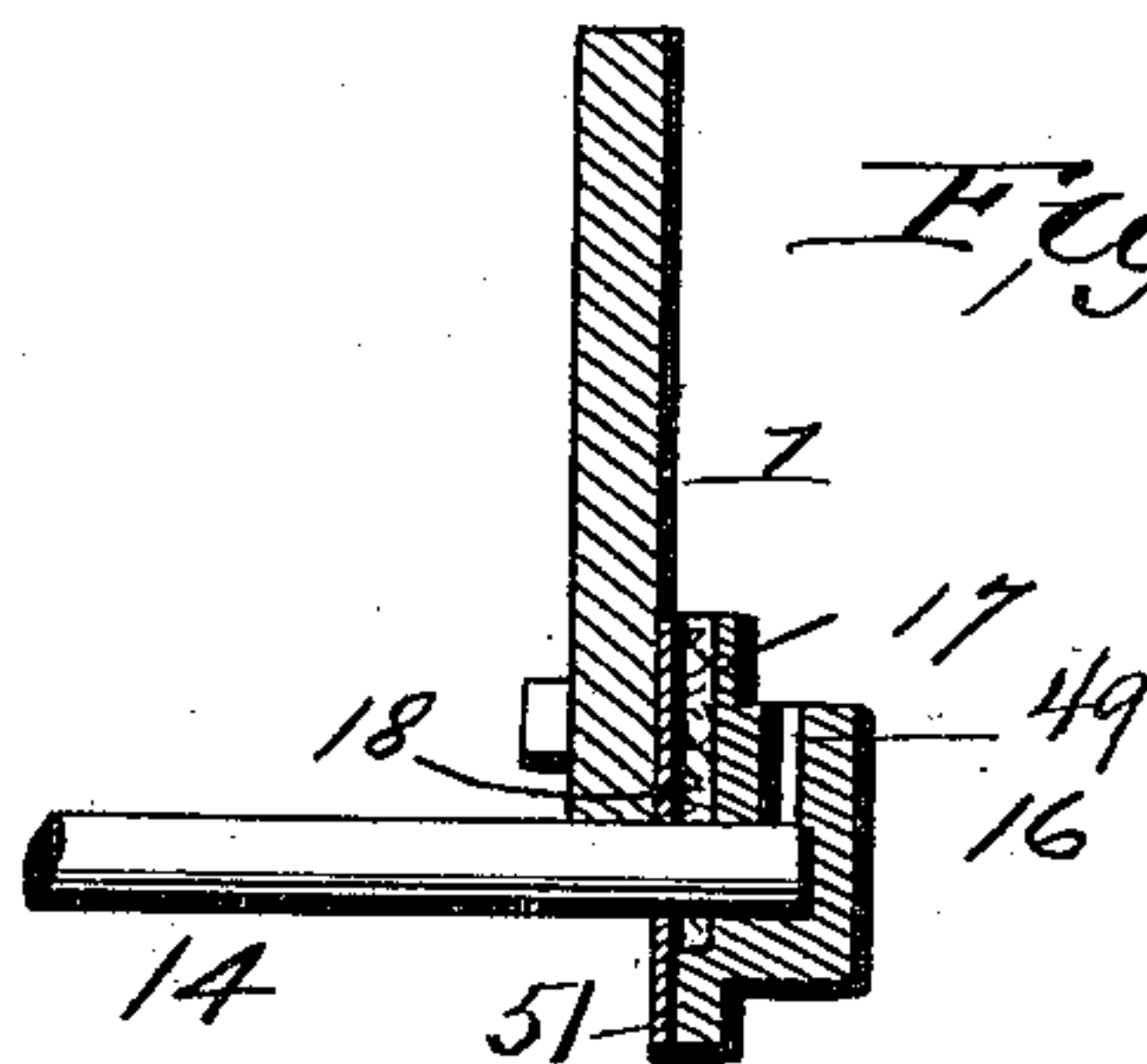


Fig. 7.

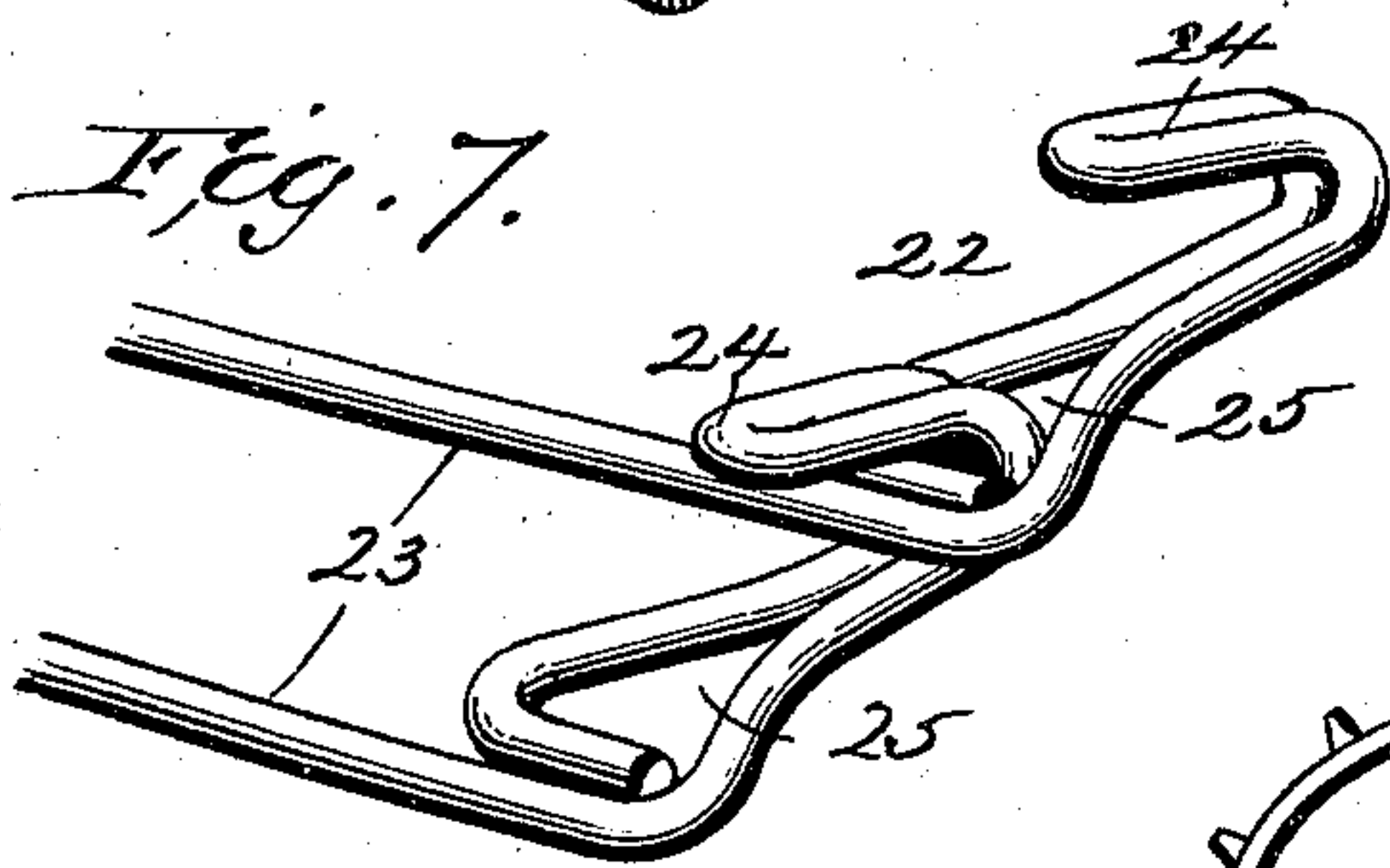


Fig. 8.

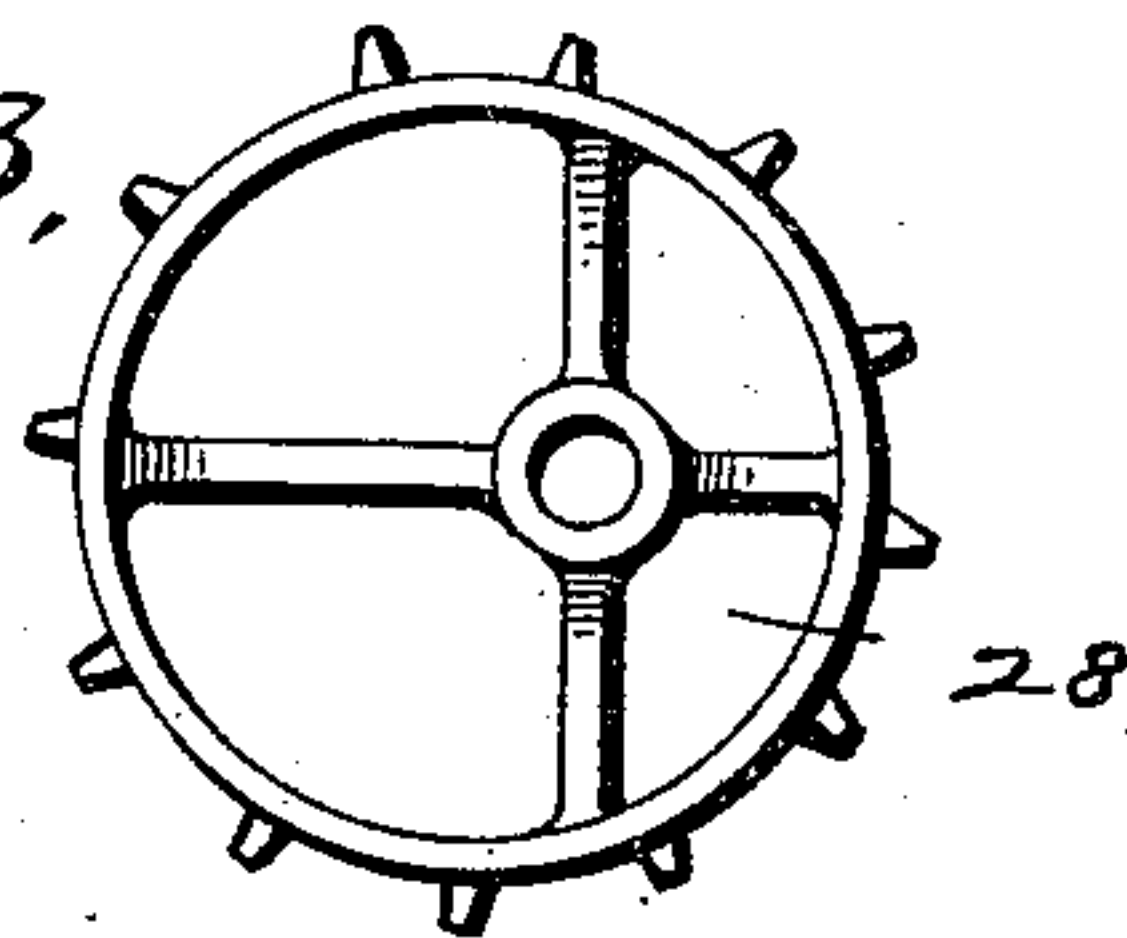
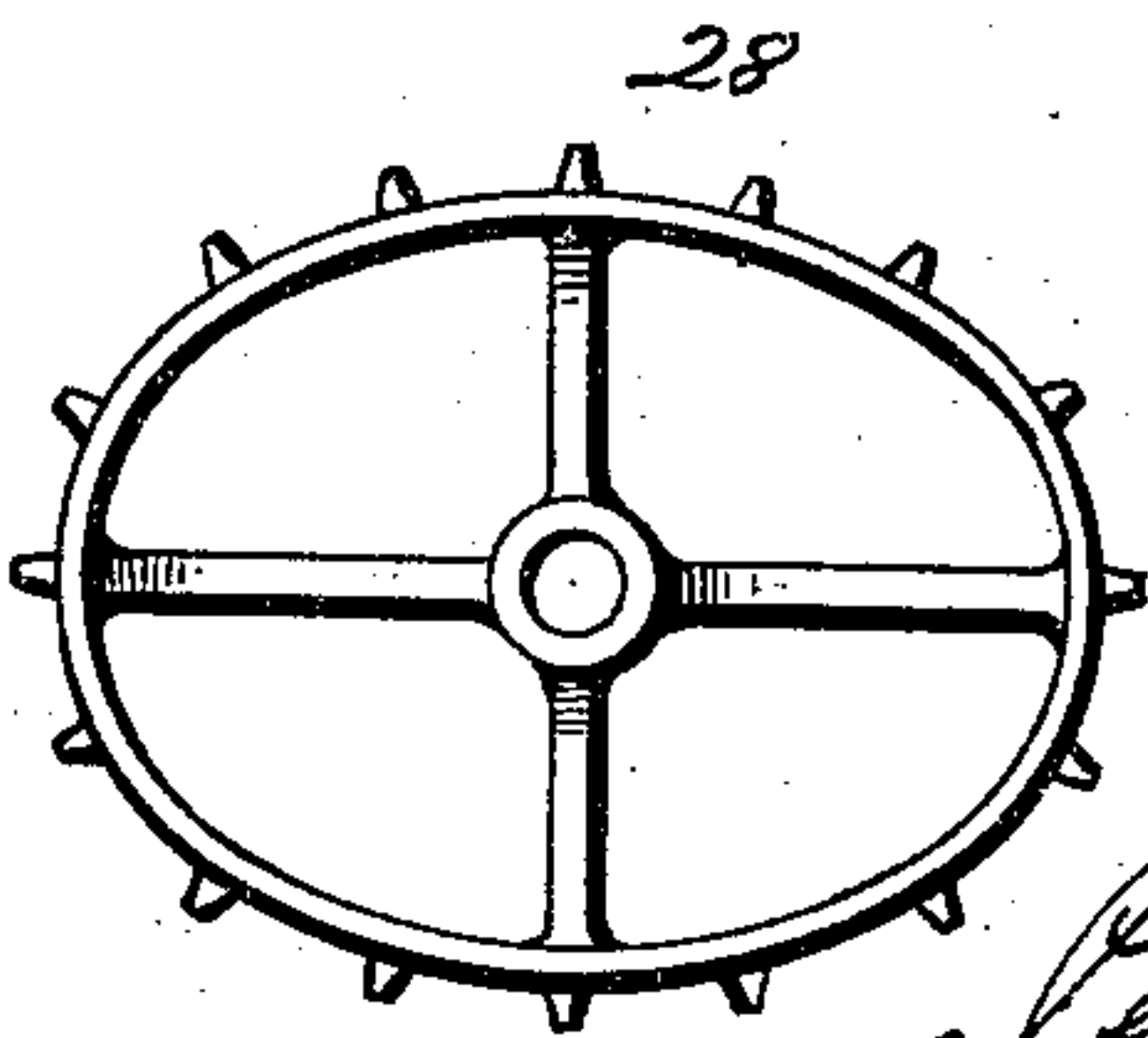


Fig. 9.



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UNITED STATES PATENT OFFICE.

PETER BROWN, OF GREELEY, COLORADO.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 575,691, dated January 26, 1897.

Application filed December 26, 1894. Serial No. 532,981. (No model.)

To all whom it may concern:

Be it known that I, PETER BROWN, a citizen of the United States, residing at Greeley, in the county of Weld and State of Colorado, have invented certain new and useful Improvements in Potato-Diggers; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 figures of reference marked thereon, which form a part of this specification.

My invention relates to potato-diggers, and among its objects it seeks to provide improved means for raising the forward part of the machine, including the wheels which regulate the depth of the plow, entirely free of the ground, so as to facilitate the turning of the machine at the end of the row; also, to provide an improved arrangement of the shafts which sustain the endless carrier, so as to protect the journals from the dirt or earth which falls from off the potatoes; also, to provide an improved construction of chain carrier whereby its life is greatly prolonged, and it has finally for its object to generally improve and simplify the construction of the machine.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, the invention consists in the construction and in the combination of parts hereinafter particularly described and then sought to be specifically defined by the claims, reference being had to the accompanying drawings, forming a part hereof.

Figure 1 is a side view of the potato-digger. Fig. 2 is a plan view of the same. Fig. 3 is a perspective of one of the journal-boxes through which the rear shaft passes. Fig. 4 is a vertical section through the same. Fig. 5 is a perspective of one of the journal-boxes in which the ends of the shafts carrying the pulley-wheels and eccentrics rest. Fig. 6 is a vertical section through the same. Fig. 7 is a detail perspective of a portion of the chain carrier, showing the hooks and eyes thereon. Fig. 8 is a side view of the eccentric used to vibrate the chain carrier when the soil is dry and light. Fig. 9 is a similar view of the oval eccentric used when the soil is moist and heavy.

In the drawings the numeral 1 designates the frame of the machine, which is preferably made of metal and constitutes the sides of the machine, which sides at the forward end of the frame are bent inwardly at right angles to the plane of the sides, so as to form a support 2, to which the plow 3 may be bolted. The frame is carried by the main drive-wheels 4 and their stub-axles 5, the axles being attached by clamps 6 or otherwise to the sides of the frame. The drive-wheels 4 turn upon the axles 5 and are provided each with a cog-wheel 7, the drive-wheels being provided with any approved well-known form of clutch which will permit the wheels to turn in one direction, but not in the other, so that motion will be transmitted to an endless carrier in only one direction, the clutches not being illustrated, as the same do not form any part of the invention.

The numeral 8 designates a shaft supported at the rear of the frame 1 in boxes 9, attached to the sides of the frame, said shaft being provided with sprocket-wheels 10 for transmitting motion to the endless-chain carrier or separator, motion being imparted to shaft 8 through pinions 11 on the end thereof, meshing with the cog-wheels 7, attached to the main drive-wheel. The boxes 9 are provided with cavities 12 on both their inside and outside faces, which cavities are filled with cotton-waste 13 or other suitable material, so as to exclude dirt or sand from the journal-boxes. The sides 50 of the boxes will be removable and be secured by bolts or other means.

The numerals 14 designate shafts provided with pulleys 15, over which the endless-chain carrier or separator passes, and by which it is guided and sustained, one of the shafts being located at the forward end of the frame 1, so that the carrier or separator will pass around the same. These shafts have their ends journaled in boxes 16, which, it will be observed, are placed outside of the frame 1 and secured to the sides thereof, so that the journals of the shafts where they enter the boxes will lie outside of the carrier and chain, thus having them in a position where they will be free from the dirt or earth which may fall through the carrier or separator. It will also be observed that the ends

of the shafts 14 pass only partially through the journal-boxes 16, and that the outside faces of the latter are closed. These journal-boxes have cavities 17, formed in their inside
 5 faces, to receive cotton-waste 18 or other suitable material which will exclude dirt and sand from the journals of the shaft where they enter the boxes. The inside faces 51 of the boxes may be removable and be secured
 10 by bolts or other means. Beneath the frame 1, at the forward portion thereof and back of the end shaft 14, is a shaft 19, which has secured to it pulleys 20, over which the endless-chain carrier or separator passes, the pulleys
 15 sustaining the carrier or separator and preventing it from dropping too low at that point. This shaft passes under the sides of the frame 1 and has its ends journaled in boxes 21, located outside of the frame, so as to be free
 20 from the falling dirt, and which may have cavities formed therein and be provided with cotton-waste or other material in like manner as boxes 16 and for the same purpose.

The endless-chain carrier or separator is
 25 designated by the numeral 22, and is formed of a series of rods 23, each of the rods being provided at both ends with hooks 24 and eyes 25, so that the hooks of one rod can engage the eyes of the adjacent rod, and thus form
 30 an endless-chain carrier or separator.

As heretofore constructed, the chain carrier or separator in a comparatively short time wears out at the point where the hooks and eyes engage each other, and repairs must
 35 be made at considerable expense and delay or a new carrier substituted in place of the old one. This wear is occasioned by the friction between the hook and the eye, which friction is greatly augmented by the dirt fall-
 40 ing from the potatoes and getting between the hook and the eye and thus causing increased friction, so that in a short time the thickness of the metal where the eyes and the hooks meet is so reduced as to cause the metal to break
 45 readily. With the view of overcoming this disadvantage to a great extent I fold the metal upon itself at the hook, so as to form two thicknesses at that point, side by side, thus giving additional strength, and I then
 50 carry the metal and bend it at right angles to the hook and parallel with the cross-rod at the point where the eye to the hook is formed, so as to give two thicknesses of metal at that point, as illustrated in the drawings. By this
 55 construction I not only afford broader bearing-surfaces and strengthen the hook and eye, but also greatly prolong the life of the carrier or separator, as twice the thickness of metal heretofore obtained is provided. This is of
 60 great importance in endless carriers or separators for potato-diggers.

In order to provide a gradual rising-and-falling motion or vibration to the endless carrier or separator, I make use of a shaft 26, jour-
 65 naled in boxes 27, constructed and applied in manner similar to boxes 16, and secure to that

shaft eccentrics 28, which may be circular in form, as illustrated in Fig. 8, or an oval form, as illustrated in Fig. 9, or other form. The chain carrier or separator passes over these
 70 eccentrics, and as the shaft 26 is rotated the endless carrier or separator has imparted to it a rising-and-falling motion or vibration, which causes the earth to separate from the potatoes and fall through the cavity. These
 75 eccentrics are formed with teeth on their periphery, so that the chain carrier will engage therewith and thus transmit motion to the shaft 26. When the soil is dry and light, the circular eccentric is preferred to be used, 80
 which will impart one upward-and-downward movement or swing to the carrier in each rotation of the eccentric, but when the soil is wet and heavy, and therefore more difficult to separate from the potatoes, the oval eccen- 85
 tric is preferably employed, so as to impart two upward and downward movements to the sieve or apron in each revolution of the eccentric.

At the forward end of the machine is a
 90 crank-axle 29, journaled in suitable boxes attached to the frame. This axle carries the gage-wheels 30, and by turning the axle through the instrumentality of the lever 31, connected thereto, the forward end of the ma- 95
 chine can be raised or lowered to cause the plow 3 to cut deeper or shallower, as desired. The lever 31 is held in its adjustments by a spring-finger 32, engaging a quadrant 33.

The draw-bar is designated by the numeral 100
 34, and at its rear is bolted to the sides of the frame. After leaving the sides of the frame its sides are bent inwardly and forwardly and then upwardly and joined at the top by a neck 35, so as to form a yoke 36, 105
 which will straddle the tongue 37 and allow the latter to have a vertical movement in the yoke, while the sides of the yoke prevent lateral movement of the tongue. The horses will be hitched to the eyebolt 38, secured to 110
 the draw-bar.

The numeral 39 designates a bow which straddles the forward portion of the frame 1 and is bolted to the sides thereof, and at its upper end sustains the rear end of the tongue 115
 37, which is secured thereto, and the numeral 40 designates braces which connect the upright portion of the bow and the tongue, so as to brace and strengthen the said parts. A lever 41, fulcrumed to the rear of the tongue, 120
 has its short end connected by a chain 42 to a cross-bar 43, which unites the opposite sides of the draw-bar 34. By means of this lever and its flexible connection to the cross-bar 43 the forward portion of the machine, to- 125
 gether with the gage-wheels 30, can be lifted entirely free of the ground, so as to facilitate the turning of the machine at the end of the row. The lever 41 will be held to its adjust- 130
 ment by a spring-finger 44, engaging a quadrant 45, secured to the rear of the tongue. By releasing the lever 41, so as to slacken the

chain 42, the draw-bar and forward portion of the machine will be allowed to assume their normal positions and allow the lever 31 to be operated, so as to regulate the depth to which the plow 3 shall cut by adjustment of the crank-axle carrying the gage-wheel.

To prevent the main drive-wheels from slipping upon the ground and to prevent disadvantageous jolting of the machine, I provide the periphery of each wheel with T-shaped projections 46, the head or cross portion of the projection extending transversely across the periphery and the straight or stem portion extending longitudinally of the periphery. The head or cross portion prevents the wheels from slipping and the straight or stem portion prevents the jolting motion which would exist if they were not used between the transverse portions or heads.

The operation of the machine is apparent from the foregoing description and therefore need not be further enlarged upon or recapitulated.

I have illustrated and described with particularity the preferred construction and arrangement of the several parts, but it is apparent that changes may be made therein without departing from the essential features of the invention.

The numeral 47 designates a seat supported by a bow 48, extending up from the sides of the machine.

The journal-boxes for the ends of the shafts 14 and 19, which carry the pulley-wheels 15 and 20, and the shaft 26, which carries the eccentrics 28, are provided with an aperture 49 for the purpose of introducing a suitable lubricant into the journal-boxes. These apertures may be closed by any desired form of cap or plug for the purpose of excluding dust and dirt.

Having described my invention and set forth its merits, what I claim is—

1. In a potato-digger, the combination with the main drive-wheels, the frame, and the endless carrier or separator, of the cog-wheels connected with the main drive-wheels, the shaft for sustaining a portion of the carrier or separator and provided with pinions engaging said cog-wheels, and journal-boxes for said shafts, said boxes being formed with cavities in their outer and inner faces to receive a suitable fibrous material to exclude dust and sand from the journal-boxes where

said shaft passes through the boxes, substantially as and for the purposes described.

2. In a potato-digger, the combination with the frame, the end sprocket-wheels, and the endless carrier receiving motion from said sprocket-wheels, of the shaft extending transversely of the frame and located between the middle portion and front end of the frame and provided with sprocket-eccentrics engaged by the endless carrier and having rotary motion imparted thereto by said carrier, and the removable journal-boxes for the ends of said shaft located outside of the frame of the machine to be free from falling dirt, and removable to permit one form of eccentric to be substituted for another, substantially as and for the purposes described.

3. In a potato-digger, the combination with the frame, of an endless carrier or separator formed of a series of transverse rods, each having a hook and eye at its opposite ends, said hooks and eyes being formed of folded portions of the metal to form a double thickness at the hook and at the eye, the folded eye portion extending parallel with the transverse rod, substantially as and for the purposes described.

4. In a potato-digger, the combination with the frame and the tongue, of the draw-bar 34 secured at its rear to the sides of the frame and curved inwardly to bring its sides adjacent to the tongue, then extended forwardly along opposite sides of the tongue, then bent upwardly to a point above the tongue and connected by a cross-piece or neck, substantially as and for the purposes described.

5. In a potato-digger, the combination with the frame, gage-wheels and tongue, of the draw-bar secured at its ends to the sides of the frame and then curved inwardly and extended forwardly along the tongue and then bent upwardly and connected by a cross-piece, and the lever fulcrumed at the rear portion of the tongue and connected by a chain with a part of the draw-bar to lift the frame and gage-wheels free of the ground, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

PETER BROWN.

Witnesses:

E. A. THOMPSON,
FRED WILLIAMS.