

No. 721,496.

PATENTED FEB. 24, 1903.

C. E. BARTLETT.
BEET HARVESTER.

APPLICATION FILED MAR. 26, 1900.

NO MODEL.

4 SHEETS—SHEET 1.

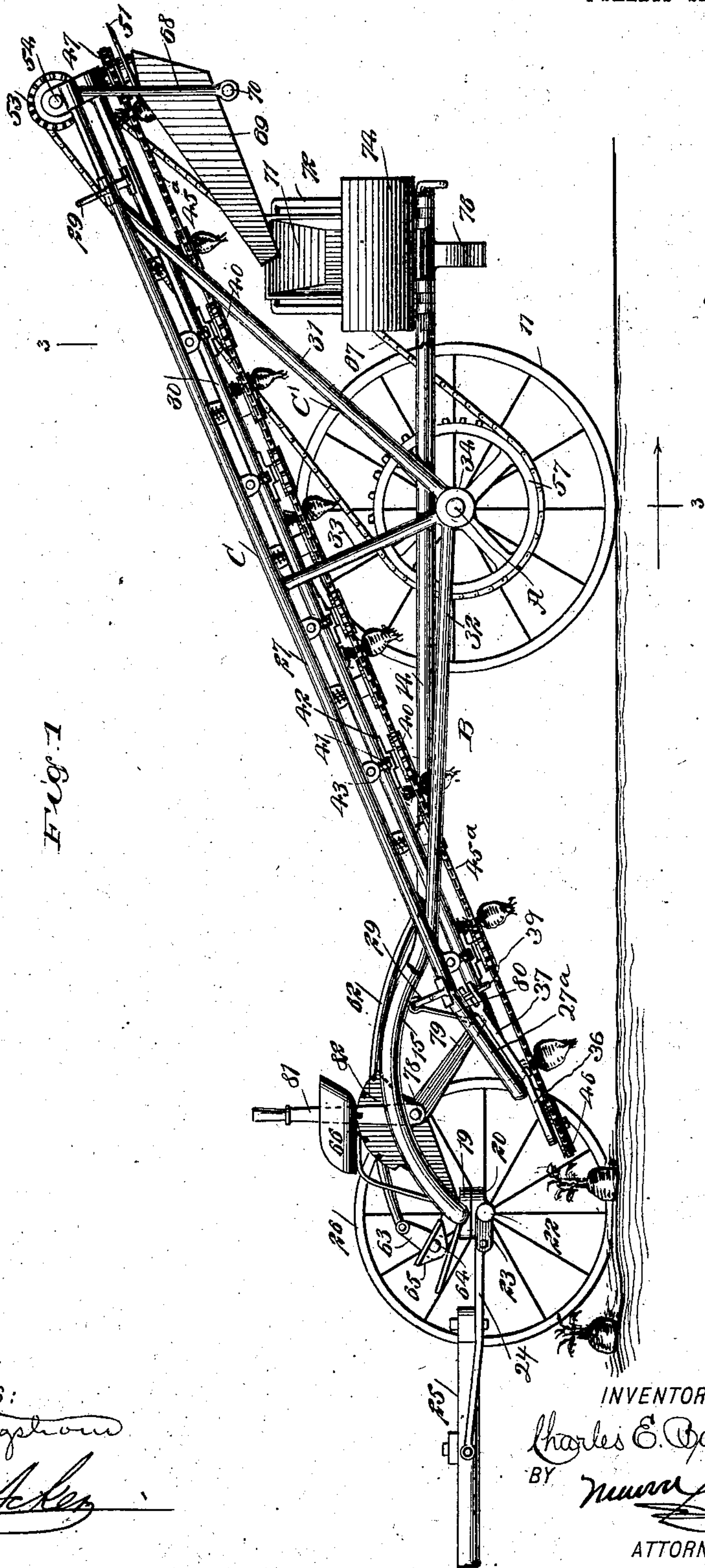


Fig. 1

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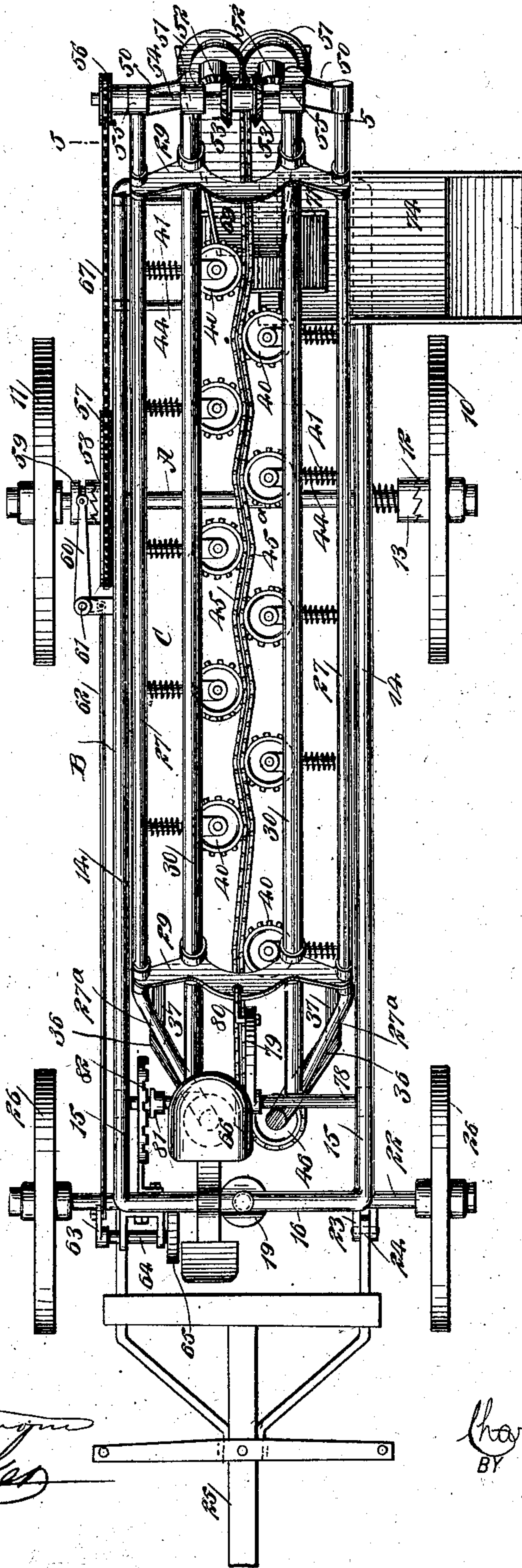
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4 SHEETS—SHEET 2.

Fig. 2



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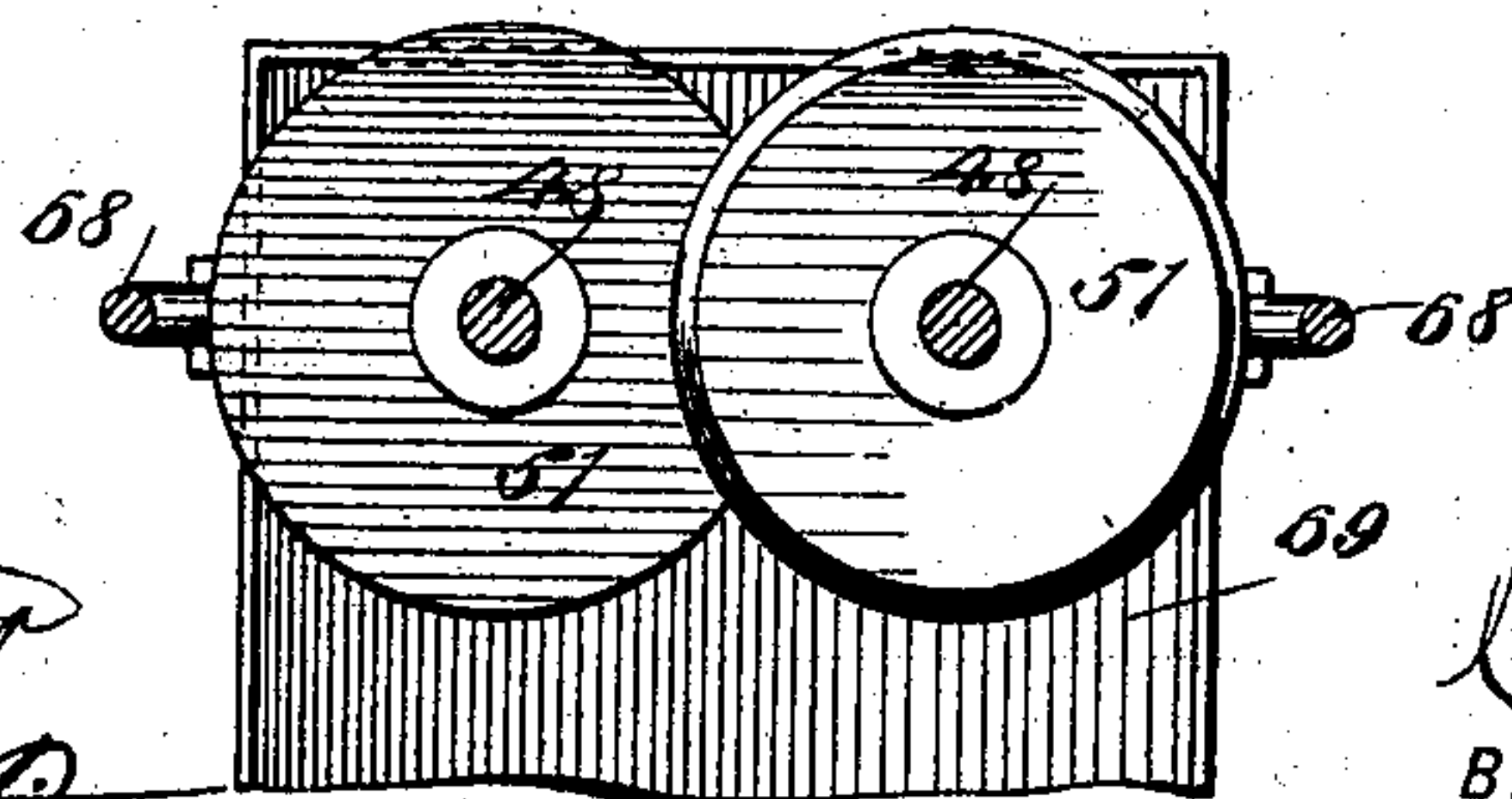
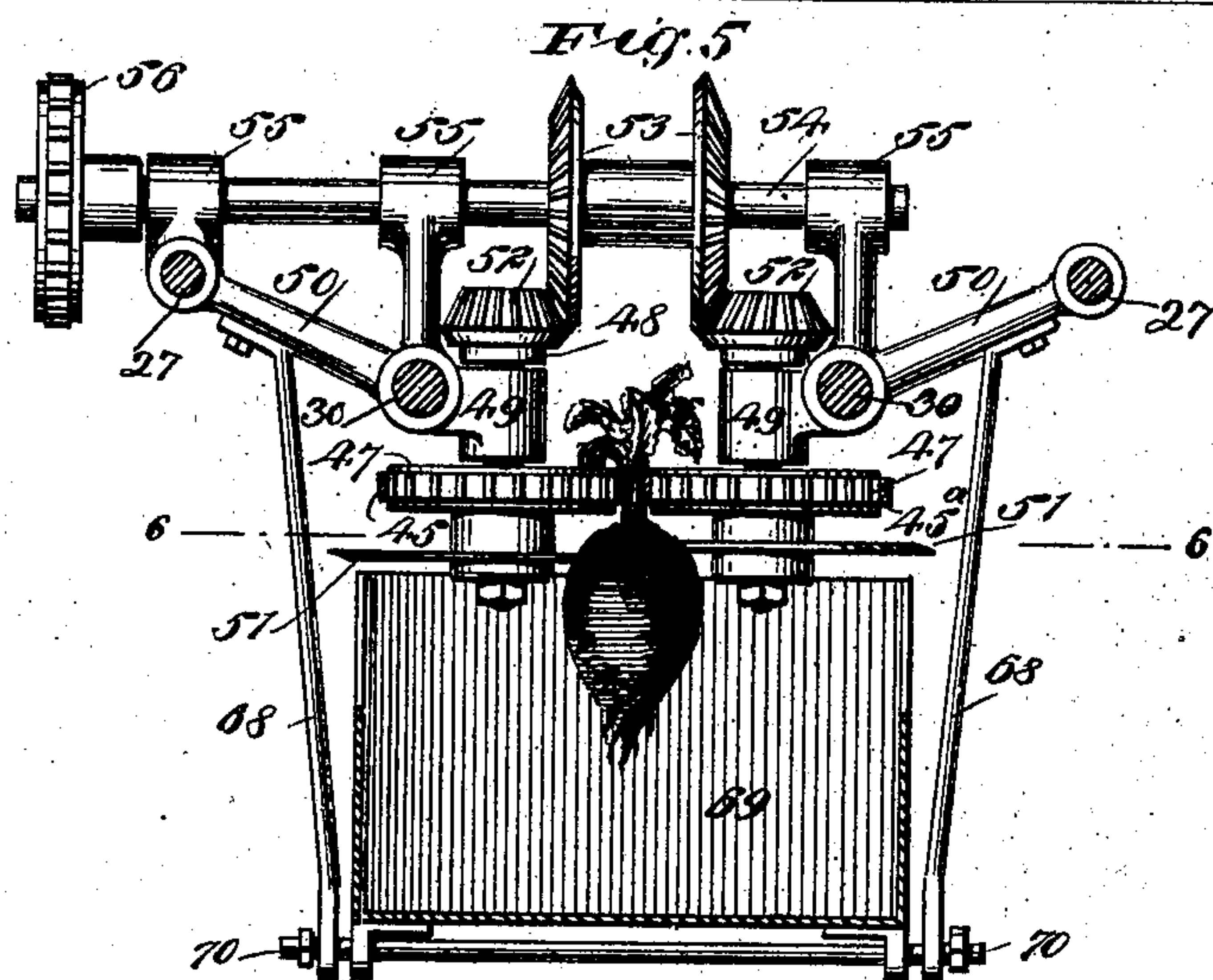
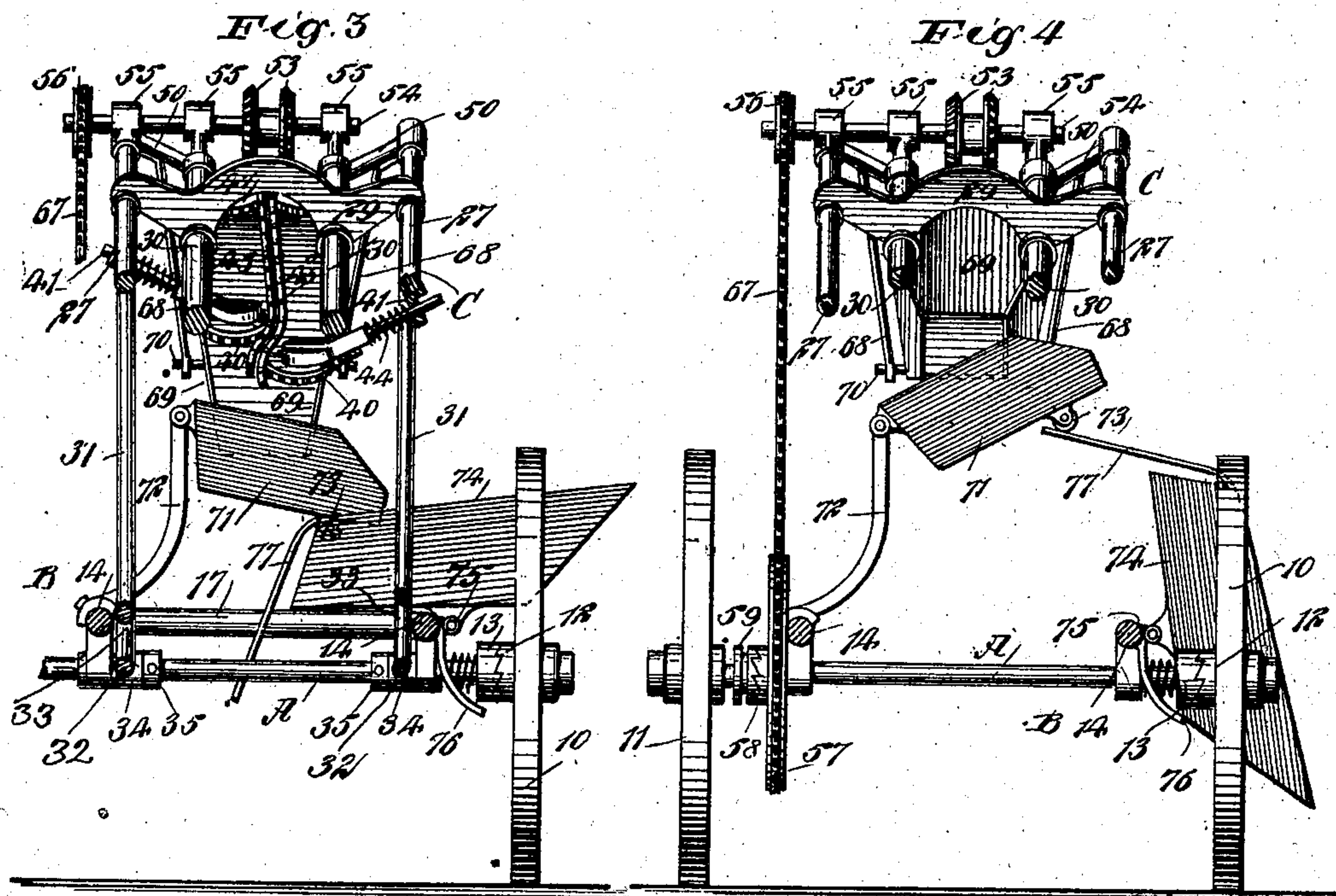
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4 SHEETS—SHEET 3.



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Fig. 6

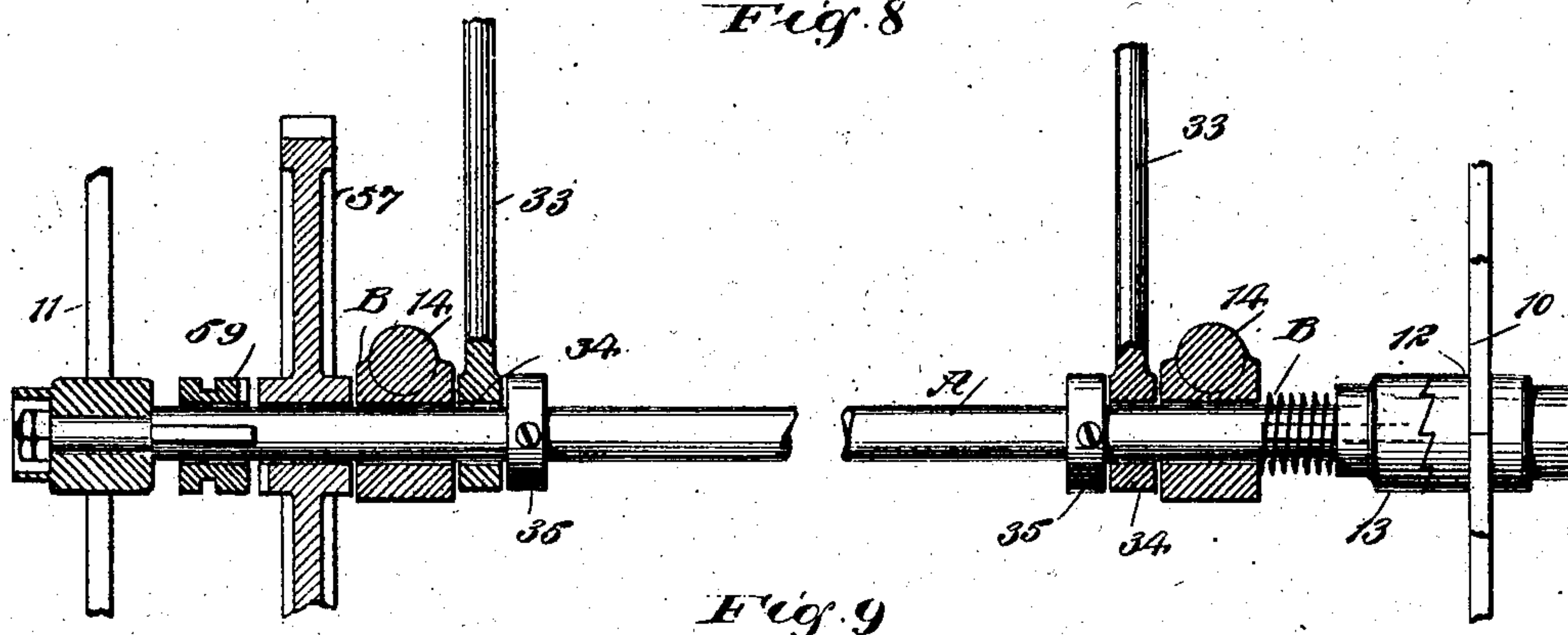
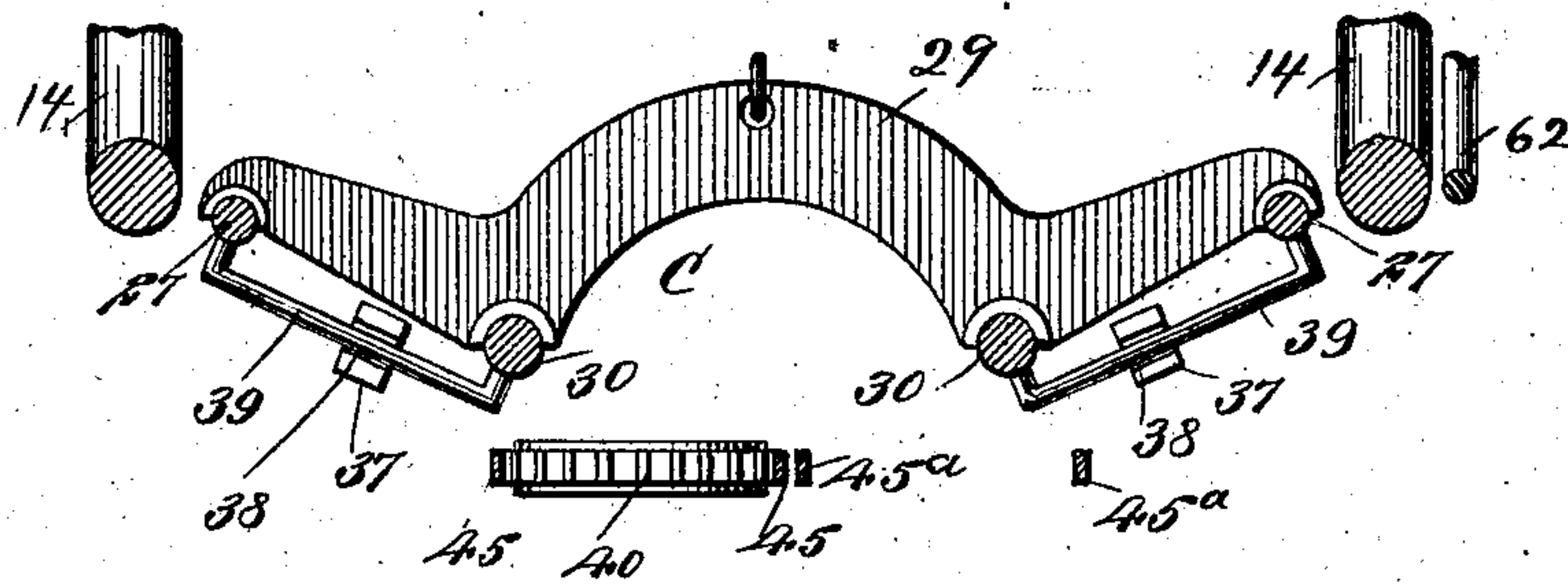
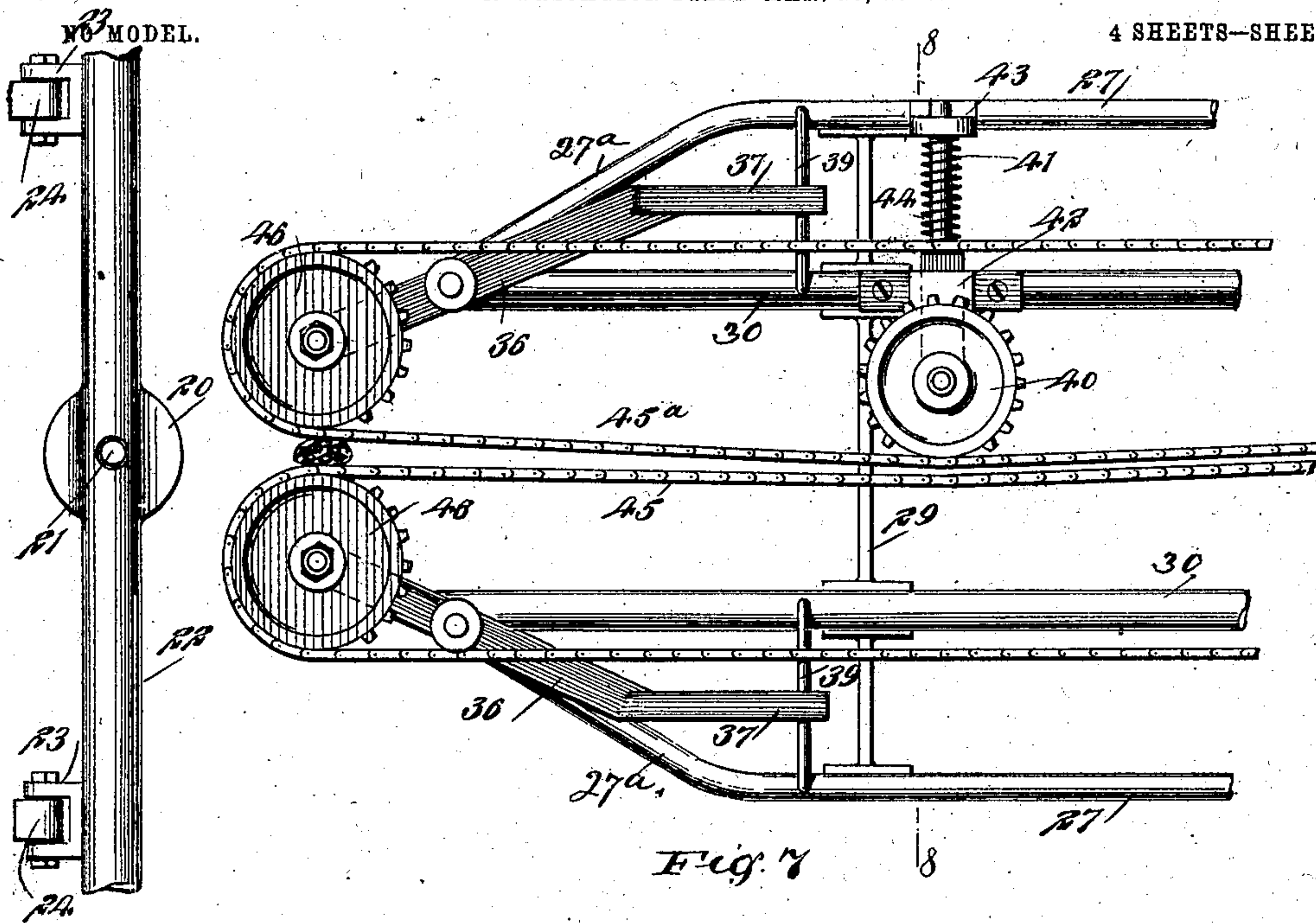
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

CHARLES EDWIN BARTLETT, OF WAYNE, NEBRASKA.

BET-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 721,496, dated February 24, 1903.

Application filed March 26, 1900. Serial No. 10,193. (No model.)

To all whom it may concern:

Be it known that I, CHARLES EDWIN BARTLETT, a citizen of the United States, and a resident of Wayne, in the county of Wayne and State of Nebraska, have invented a new and Improved Beet-Harvester, of which the following is a full, clear, and exact description.

The purpose of the invention is to construct a harvester especially adapted for automatically removing beets from the ground and to provide a means whereby the beets will be gradually withdrawn from the soil and conducted to the rear of the machine by suitable conveyers engaging with the tops of the beets.

Another purpose of the invention is to provide cutters by which when the beets reach the rear portion of the machine the tops will be severed from the bodies of the beets, which latter will fall into suitable receptacles placed to receive them, the final receptacle being capable of an automatic dumping action.

Another purpose of the invention is to construct a machine of the character above set forth in a very light and simple and yet durable and economic manner.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improved machine, a portion of the frame being broken away and the wheels removed at that side from which the view is taken. Fig. 2 is a plan view of the machine. Fig. 3 is a transverse vertical section taken practically on the line 3 3 of Fig. 1, the dumping-receptacle being in position to receive the beets. Fig. 4 is a section similar to Fig. 3, parts, however, being omitted and the dumping-receptacle being shown in its dumping position. Fig. 5 is a transverse vertical section taken practically on the line 5 5 of Fig. 2. Fig. 6 is a horizontal section taken substantially on the line 6 6 of Fig. 5. Fig. 7 is an enlarged bottom plan view of the forward portion of the machine with parts broken away. Fig. 8 is a section taken substantially on the line 8 8 of Fig. 7; and Fig. 9 is a vertical sectional

view through the frame of the machine, taken at the rear axle.

The rear axle A is provided with two supporting-wheels 10 and 11, loosely mounted thereon. The left-hand supporting-wheel 10 is provided with a clutch-surface 12, adapted for engagement with a spring-controlled clutch 13, mounted to turn with the axle. As shown in Fig. 9, the teeth of the clutch are so formed that when the machine is drawn ahead the wheels 10 will act to turn the axle A, but when the machine is backed the teeth of the clutch-surface on the wheel 10 will simply slip past the teeth on the clutch 13 on the axle.

The main frame B of the machine consists of two side bars 14, which are pivotally mounted on the rear axle A and extend beyond the rear axle, as well as in front thereof. The forward ends 15 of the side bars 14 are preferably curved upward or arched, as shown in Fig. 1, and the side bars are connected at the front by a cross-bar 16, a similar bar 17 serving to connect the side bars of the main frame at the rear.

The front cross-bar of the main frame B is provided with a disk 19, which engages with a second disk 20, being pivotally connected therewith by a pin 21. The lower disk 20 is secured to the forward axle 22, and this axle is provided with clips 23, which receive the couplings 24 of a pole 25. The forward axle has suitable supporting-wheels 26, mounted to turn loosely. Thus it will be observed that the two disks 19 and 20 serve as a fifth-wheel for the forward portion of the machine.

In addition to the main frame B a carrying or conveyer frame C is employed, which extends mainly above the main frame; but the front portion of the auxiliary or conveyer frame is adapted to pass down through the forward portion of the main frame and reach a point near the ground, so that the auxiliary or conveyer frame will have an upward and rearward inclination. (Shown best in Fig. 1.) This auxiliary or conveyer frame C consists of side bars 27, supported by trusses C', and the forward ends 27^a of the side bars 27 are carried inward in direction of each other, as shown in Fig. 2, being secured at their forward ends to the forward extremities of parallel intermediate bars 30, which latter bars

are below the plane of the outer bars 27 of the frame C, so that in cross-section the auxiliary frame is more or less dished or inclined from its sides toward its center, as is illustrated in Figs. 3 and 4.

The truss structure C' at the sides of the auxiliary or conveyer frame C consists of rearwardly and upwardly extending bars 31, upwardly and forwardly extending bars 32, and upwardly-extending intermediate bars 33, which bars are all connected at their upper ends with the outer side bars 27 of the auxiliary frame and connected at their inner ends with hubs 34, the said hubs being loosely mounted on the rear axle A, so that the auxiliary or conveyer frame, as well as the main frame, is mounted to turn on the rear axle. Suitable collars 35, placed on the rear axle, as shown in Fig. 9, hold the auxiliary or conveyer frame in position. Bridge-bars 29 extend from one side of the auxiliary or conveyer frame to the other, and these bridge-bars are located near the ends of the auxiliary frame, receiving all of the bars 27 and 30, and the bridge-bars are preferably arched in an upward direction over the space between the intermediate bars 30 of the said frame.

Arms 36 are pivotally attached to the forward end of the auxiliary or conveyer frame, one arm being at each side of the center longitudinal space in the frame, and the arms extend forwardly beyond the forward extremity of the auxiliary frame. These arms 36 are provided with a rear extension 37 at an angle to the body of the arms, as shown in Fig. 7, and these extensions 37 are provided with slots 38, adapted to receive cross-bars 39, extending from the intermediate body-bars of the auxiliary frame to the outer body-bars, as shown in Fig. 8, and in this manner the arms 36 have guided movement on the bars 39. In the normal position of the arms 36 their forward ends extend, as stated, beyond the forward end of the auxiliary frame in direction of each other. Series of sprocket-wheels 40 are located in the space between the intermediate body-bars 30 of the auxiliary or conveyer frame. A series of these sprocket-wheels is adjacent to each intermediate body-bar 30, as shown best in Fig. 2. The sprocket-wheels of opposing series are alternately arranged, so that the sprocket-wheels at one side of the conveyer-frame are opposite the space between adjoining sprocket-wheels at the other side of the frame. These sprocket-wheels are mounted to turn on bars or carriers 41, and these bars or carriers are mounted to slide in bearings 43 and 42, formed, respectively, on the under faces of the body-bars 27 and 30 of the conveyer-frame, as shown best in Fig. 7. Springs 44 are coiled around the bars or carriers 41 between their bearings, which springs serve to force the forward ends of the carriers in direction of the center of the space at the central portion of the conveyer-frame.

Two endless chain belts 45 and 45^a are employed in connection with the conveyer-frame. These belts are conveyer-belts, and their inner stretches engage with the sprocket-wheels 40, the inner stretch of the belt 45 engaging with the sprocket-wheels 40 at the right-hand side of the frame and the inner stretch of the belt 45^a engaging with the sprocket-wheels 40 at the left-hand side of the frame, and by such engagement the inner stretches of the two belts are held quite close together and are rendered more or less serpentine in their travel from one end of the conveyer-frame to the other. These conveyer-belts 45 and 45^a pass over sprocket-wheels 46, carried by the forward ends of the arms 36, and the tension of the belts serves to draw these sprocket-wheels 46 quite close together. The conveyer-belts 45 and 45^a pass over sprocket-wheels 47 at the rear portion of the conveyer-frame C, and these sprocket-wheels 47 are secured on vertical shafts 48, held to turn in suitable bearings 49, connected with the inner or intermediate body-bars 30 of the conveyer-frame, and at this point the inner and outer body-bars of the conveyer-frame are connected by braces 50, as shown in Fig. 5. The beet-tops are received in the space between the inner stretches of the chains 45 and 45^a, and as the machine advances the said chains carry the beets by their tops to the rear portion of the machine. When the machine is in operation, the forward end of the conveyer-frame is carried quite close to the ground or sufficiently close to permit the conveyer-chains to grasp the beet-tops between them. When the beets, with their tops attached, reach the rear portion of the machine, the tops and adjacent portion of the body are separated from the main body by cutters 51. These cutters are preferably in the form of disks, as shown in Figs. 5 and 6, and when the tops and upper portions of the beets are cut away these parts are carried by the conveyer to the rear end of the machine and dropped to the ground, while the beet-roots are conducted to a receptacle to be hereinafter described. The cutters and conveyers insure all of the beets being uniformly cut at their top portions. The cutters 51 are usually secured to the lower ends of the vertical shafts 48, and these shafts carry bevel-pinions 52 at their upper ends, engaged by bevel-gears 53, secured upon a drive-shaft 54, mounted in bearings 55, formed upon the upper surface of the rear portion of the conveyer-frame, as is also shown in Fig. 5. The drive-shaft 54 is provided at one end with a sprocket-wheel 56, adapted to be connected by a chain or belt 67 with a larger sprocket-wheel 57, loosely mounted at the right-hand end portion of the rear axle A. This sprocket-wheel 57 is provided with a clutch-surface 58, adapted to be engaged by a clutch 59, held to slide upon and to turn with the rear axle A, as shown in Fig. 2. A shifting lever 60 is provided for the clutch 59. This shifting lever is shown

as of angular construction and is pivoted at 61 on a projection from the frame, and said lever is connected by a rod 62 with a crank-arm 63, secured on a shaft 64, journaled at the forward end of the main frame B and provided with an arm 65, whereby the shaft 64 may be operated by the foot of the driver and the driving-shaft 54 be thrown into or out of gear with the axle A, as occasion may demand. The driver's seat 66 is located quite near to the shaft 64 and is supported by the main frame B.

Hangers 68 are secured to and are pendent from the rear portion of the conveyer-frame, and a chute 69 is pivotally supported in said hangers by a suitable pivot-rod 70 or its equivalent. The chute 69 extends downward and forward and receives the roots or body portions of the beets when the tops have been severed therefrom. The forward and lower end of the chute 69 rests upon a second chute 71. This latter chute is placed transversely of the machine and below the conveyer-frame, having a hinged connection with standards 72, located, preferably, at the right-hand side of the main frame B, and also preferably the chute 71 is provided with a friction-roller 73 at the bottom portion near its free end, as illustrated in Fig. 4.

A receptacle 74 is adapted to receive the beets from the second chute 71. This receptacle has a hinged connection 75 with the main frame at the left-hand side of the machine, and when the receptacle 74 has received a certain quantity of beets it will overbalance and will drop down to a substantially vertical position (shown in Fig. 4) outside of the main frame, being limited in its downward movement by an arm 76 or its equivalent. When the receptacle 74 is in its dumping position, a curved arm 77, attached to the inner end of the said receptacle is still engaged by the roller 73 of the second chute 71, and such contact between these two parts serves to hold the delivery end of the second chute in the upper position, (shown in Fig. 4,) so that this chute can continue to receive and hold beets until the weight of the material will force the inner end of the receptacle 74 downward, whereupon the chute 71 will discharge its load into the said receptacle.

The forward end of the conveyer-frame is raised and lowered in the following manner: A rock-shaft 78 is journaled in suitable bearings on the main frame, and this rock-shaft is provided with a crank-arm 79, which is connected by a link 80 or its equivalent with the central or arched portion of the forward cross-bar 29 of the said conveyer-frame. The rock-shaft 78 is operated through the medium of a lever 81, located adjacent to the driver's seat, which lever is adapted for engagement with a rack 82, carried by the main frame.

The speed of the conveyer-belts should be such that the beets will travel back a trifle faster than the machine moves forward.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. A beet-harvester provided with means for grasping the beet-tops and carrying the beets rearwardly, in combination with cutters for severing the beets from their tops, substantially as described.

2. A beet-harvester, provided with conveyer-belts held to travel in close relation to each other and arranged to receive the beet-tops between them and convey the beets rearwardly, in combination with cutters for severing the beets from their tops while they are held by the said belts, substantially as described.

3. In a beet-harvester, a conveyer-frame, guide-wheels located at the forward end of the said frame, mounted to revolve and capable of movement to and from each other, belts passed over the said guide-wheels, guides for the said belts at the opposite end portion of the frame, and intermediate tension-controlled guides engaging with the belts at opposite sides, the intermediate guides being alternately arranged, for the purpose set forth.

4. In a beet-harvester, a frame, sprocket-wheels carried at the forward portion of the frame, the supports for the sprocket-wheels being pivoted, conveyer-belts passed over the said sprocket-wheels and over other sprockets at the rear portion of the frame, and intermediate sprocket-wheels, tension controlled and alternately arranged, engaging with opposite sides of the inner stretches of the said belts, as described.

5. In a beet-harvester, a conveyer, clamping-belts carried by the conveyer and adapted to receive between them the tops of beets, guides for said belts, a means for moving the belts, and cutters located adjacent to the delivery end of the belts and below said belts, as set forth.

6. In a beet-harvester, the combination with a supporting-frame, of wheels at each end of the frame, the wheels at the forward end of the frame being mounted on movable supports, and endless conveyer-belts traveling around said wheels and adapted to receive the beet-tops between them and convey the beets rearwardly, substantially as described.

7. In a beet-harvester, the combination with a supporting-frame, and sprocket-wheels at the rear end of the frame, of pivoted arms at the forward end of the frame, sprocket-wheels mounted in the free ends of the arms, and conveyer-belts passing around said sprocket-wheels, substantially as described.

8. In a beet-harvester, the combination with a supporting-frame, and sprocket-wheels at the rear of the frame, of pivoted arms at the forward end of the frame, said arms being provided at their rear ends with extensions having slots to receive guide-bars on the frame, sprocket-wheels mounted in the forward ends of the arms, and conveyer-belts

passing around said sprocket-wheels, substantially as described.

9. In a beet-harvester, the combination with a supporting-frame, and endless conveyer-belts mounted in the frame to travel in close relation to each other, of yielding carriers mounted in the frame intermediate of the ends thereof, and wheels mounted in the said carriers and engaging the endless conveyer-belts, substantially as described.

10. In a beet-harvester, the combination with a supporting-frame, and endless conveyer-belts mounted in the frame to travel in

close relation to each other, of spring-pressed and sliding carriers mounted to slide transversely in the frame intermediate of the ends thereof, and wheels mounted on the inner ends of the carriers and engaging the endless conveyer-belts, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES EDWIN BARTLETT.

Witnesses:

JOHN E. P. FOLSOM,

JAMES W. BARTLETT.