

No. 693,505.

Patented Feb. 18, 1902.

J. E. & F. L. ELDER.
THRESHING MACHINE.

(Application filed Jan. 21, 1901.)

(No Model.)

5 Sheets—Sheet 1.

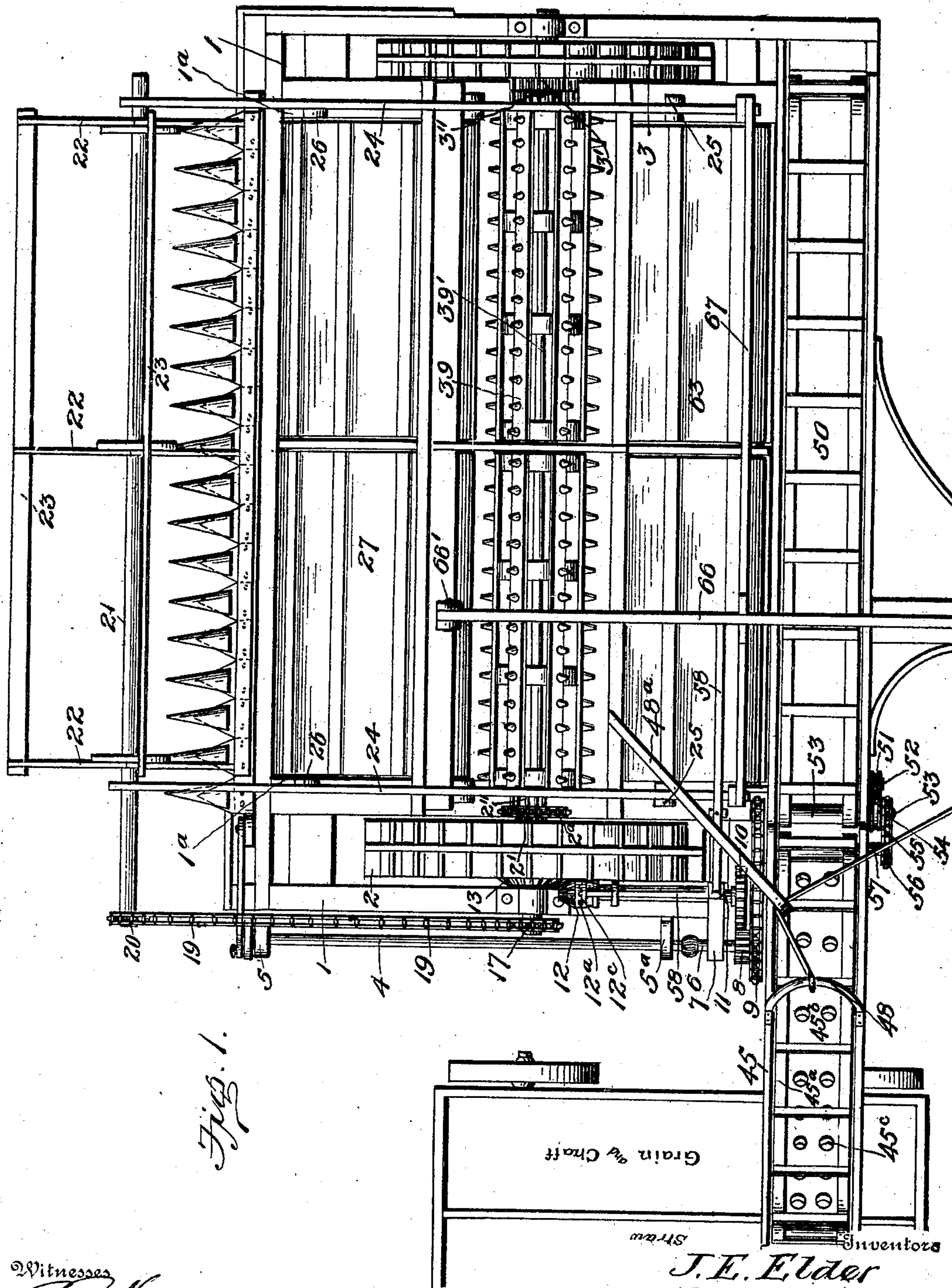


Fig. 1.

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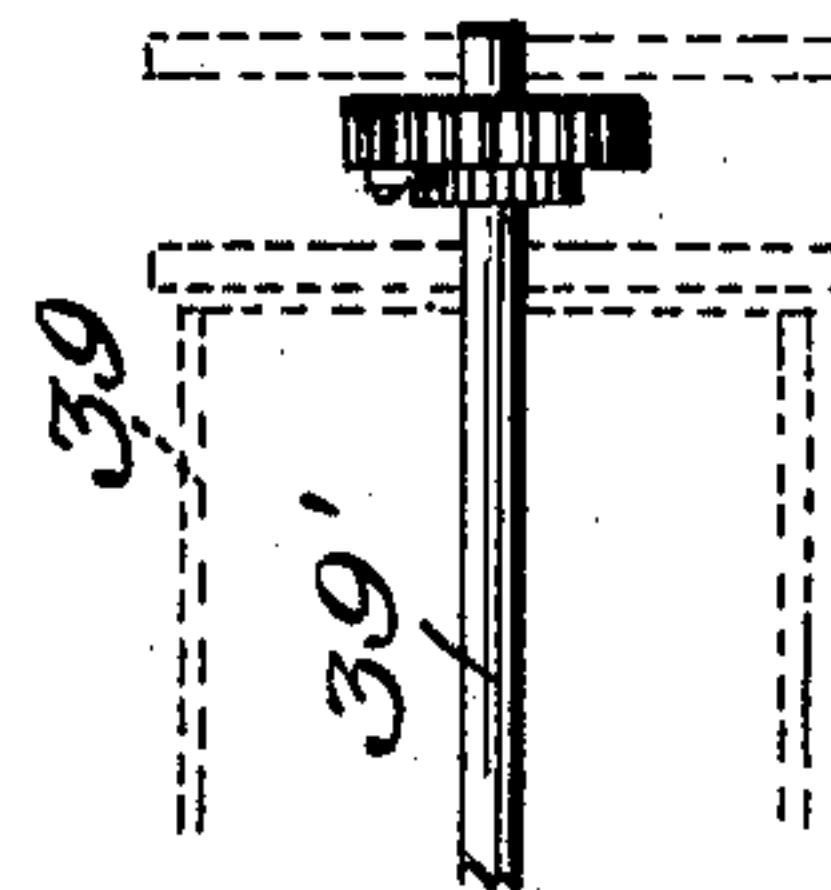
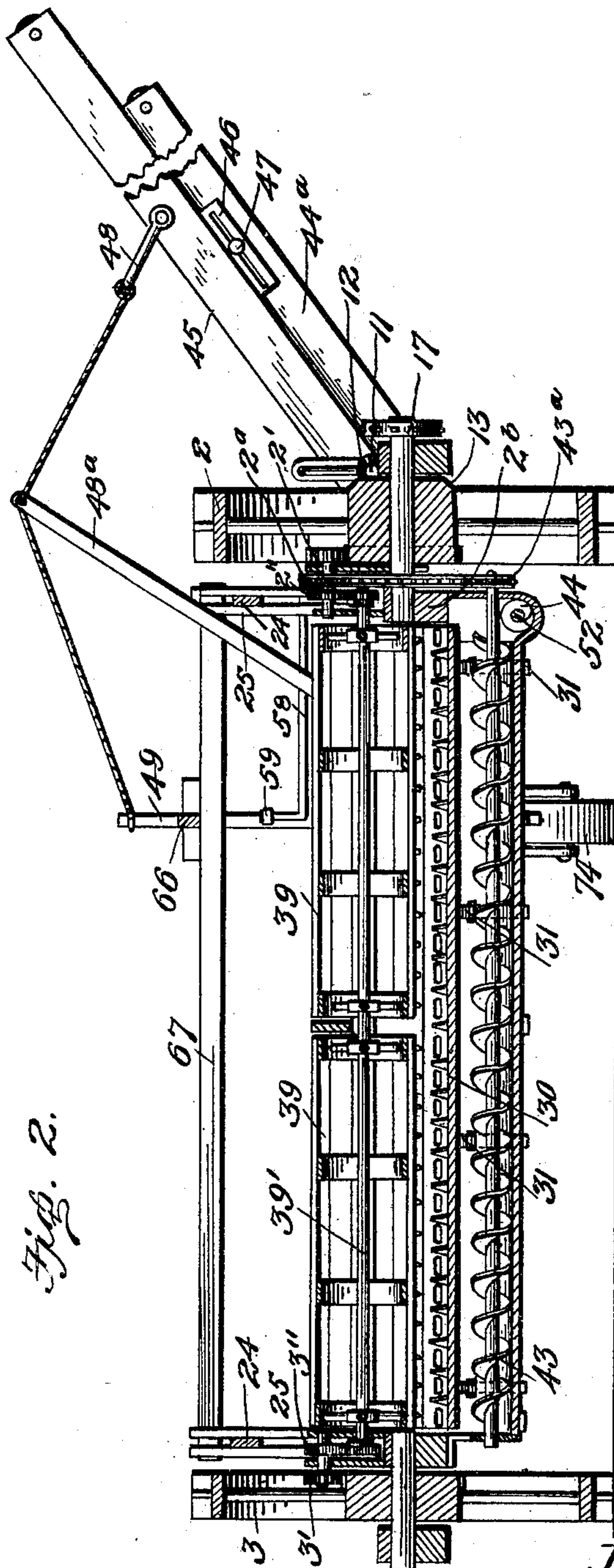
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5 Sheets—Sheet 2.



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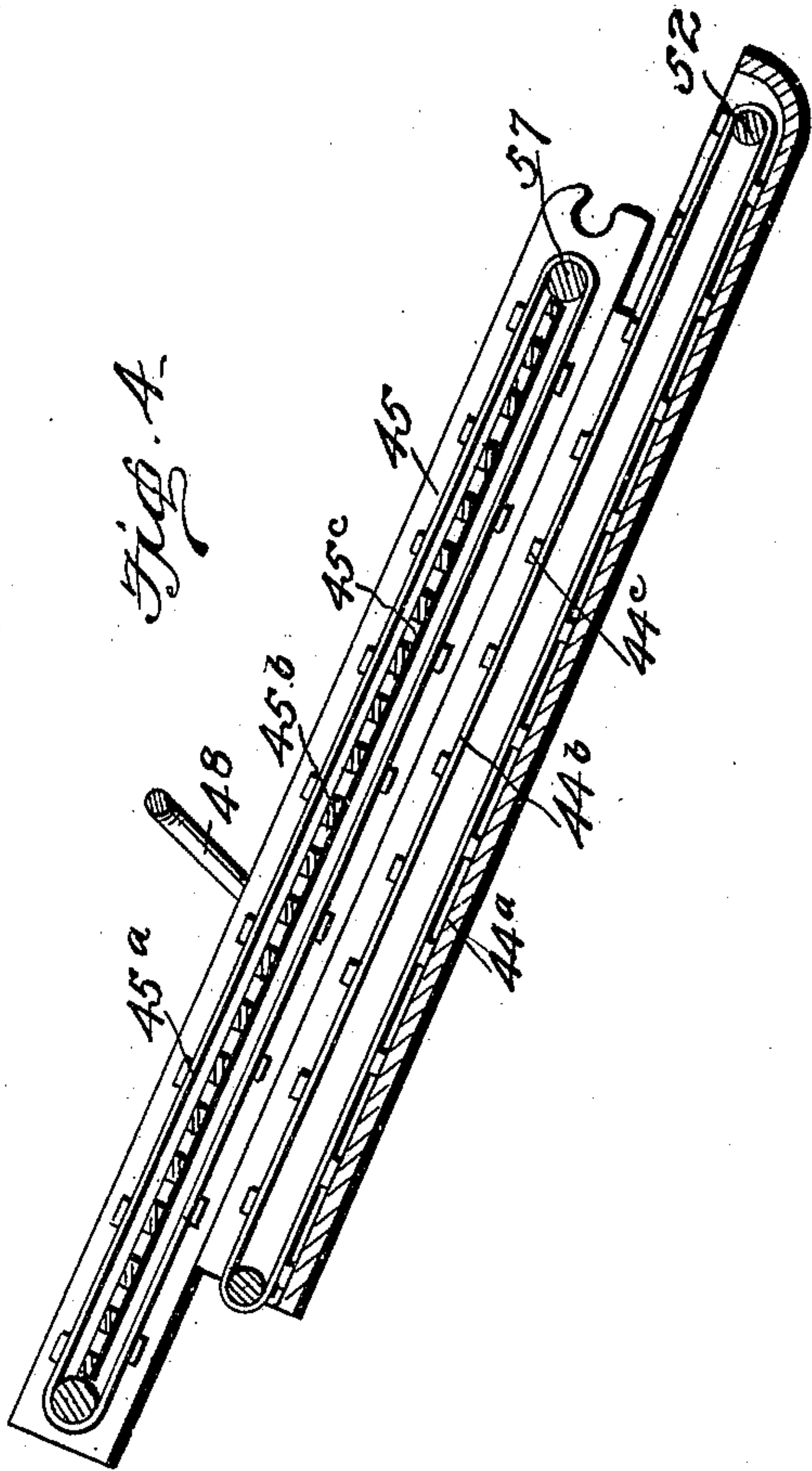
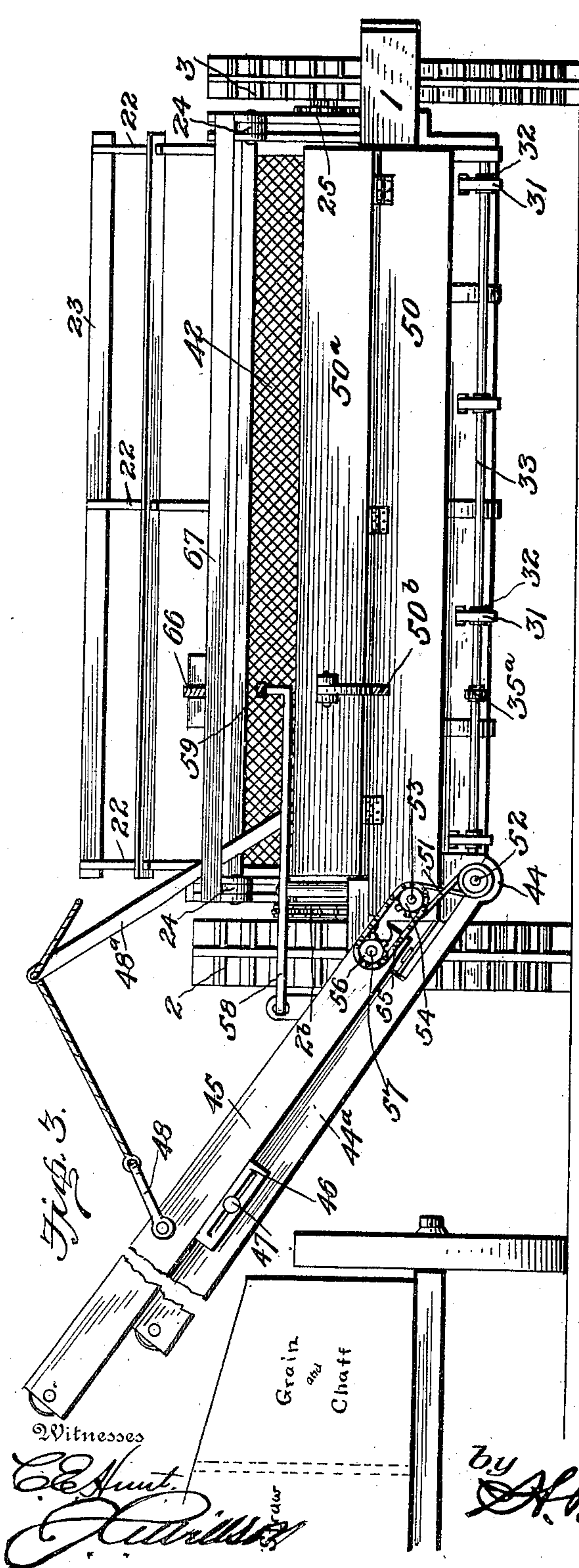
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5 Sheets—Sheet 3.



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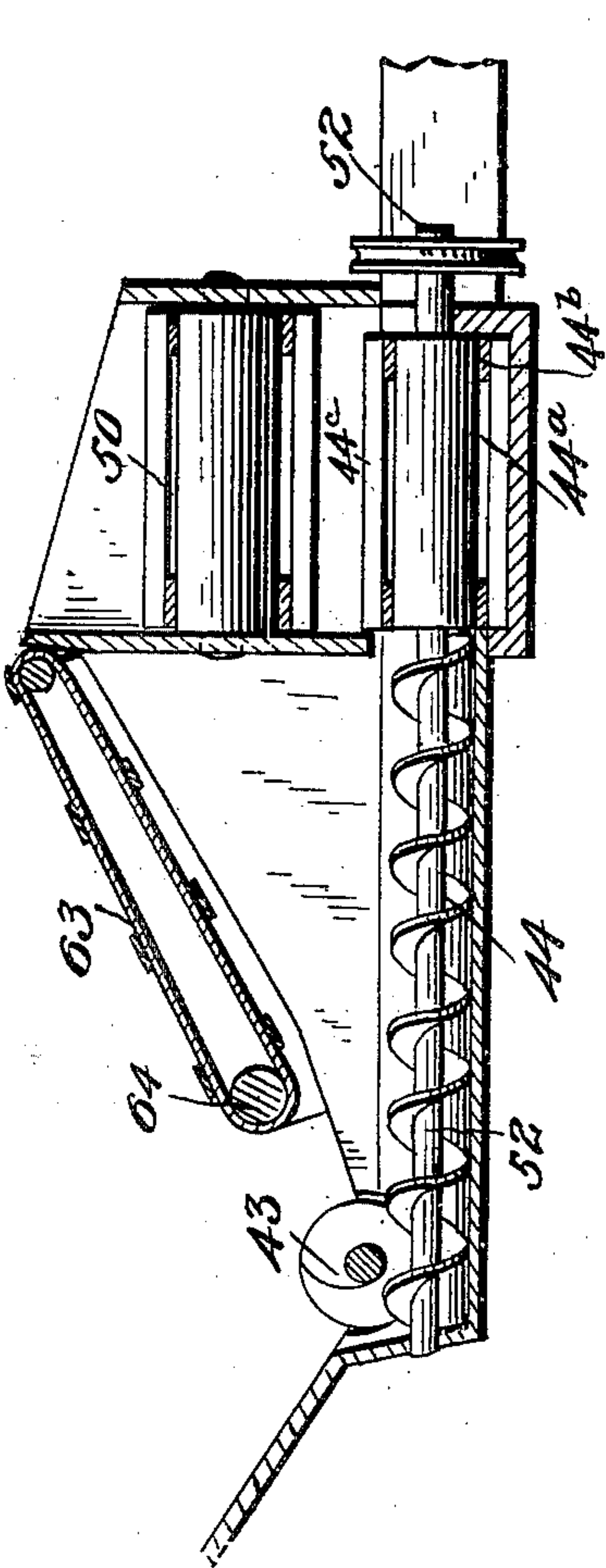


Fig. 6.

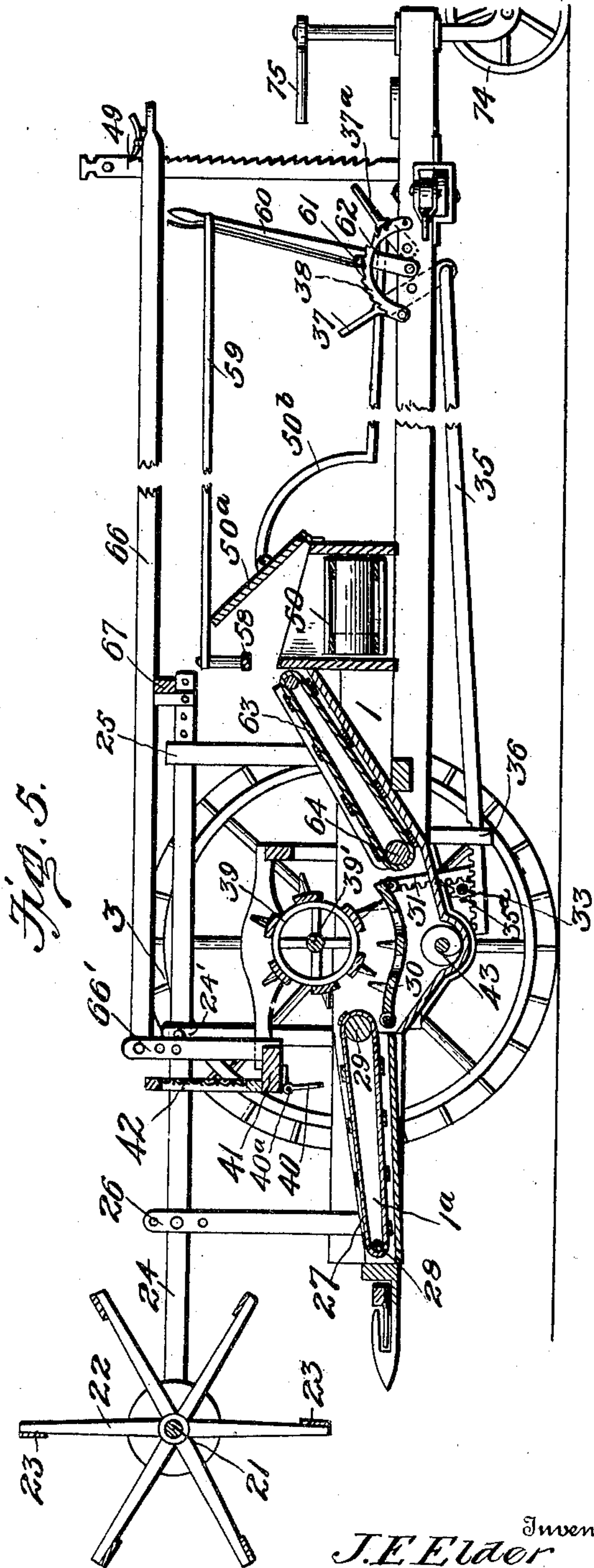


Fig. 5.

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Fig. 7.

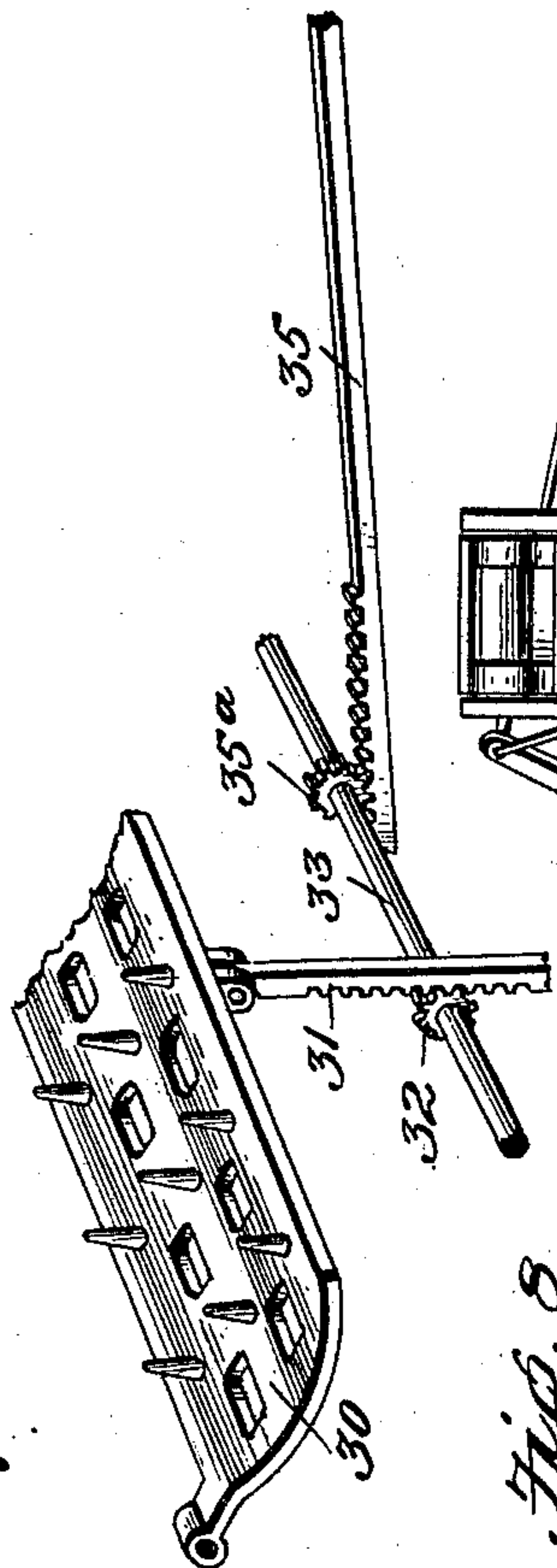
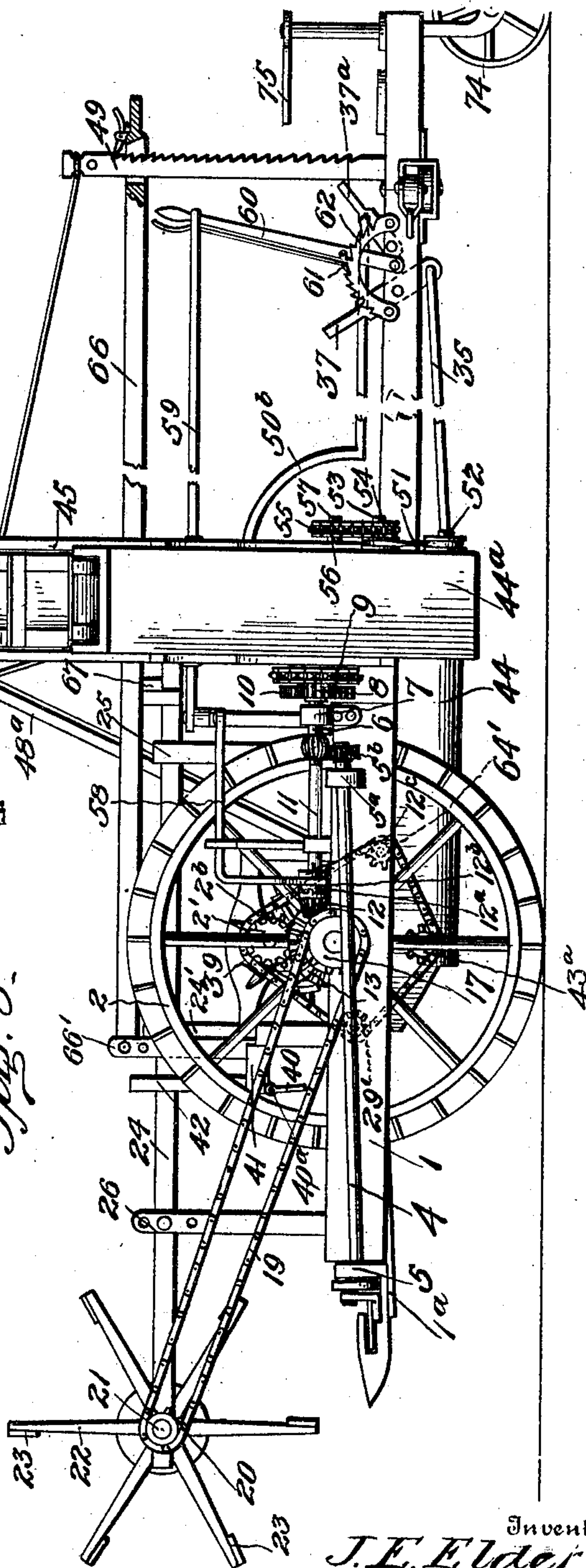


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES E. ELDER AND FRED L. ELDER, OF DAYTON, WASHINGTON.

THRESHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 693,505, dated February 18, 1902.

Application filed January 21, 1901. Serial No. 44,210. (No model.)

To all whom it may concern:

Be it known that we, JAMES E. ELDER and FRED L. ELDER, citizens of the United States, residing at Dayton, in the county of Columbia and State of Washington, have invented certain new and useful Improvements in Threshing-Machines; and we 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.

Our invention has relation to combined headers and threshers for use in the harvest-field; and the invention consists in the construction and novel combination of the parts of the machine, as hereinafter fully described and claimed.

The invention relates to that class of headers and separators or threshers that are propelled over the field of standing grain to be harvested by any desired number of horses hitched to the rear side of the machine, so that when propelled forward the grain will be headed or cut and the heads conveyed to an attendant wagon having two compartments, one for the straw and one for the grain and chaff, and drawn along with the machine.

In the annexed drawings, forming a part of this specification, Figure 1 is a top plan view of the header and thresher, parts being broken away. Fig. 2 is a vertical transverse sectional view on the line of the axles through the cylinder, concave, and conveyer looking toward the rear of the machine. Fig. 3 is a rear elevation, the tongue of the machine being removed from the frame. Fig. 4 is a vertical sectional view of the double conveyer for the straw and grain. Fig. 5 is a vertical longitudinal sectional view showing the concave, the cylinder and elevating-belts, the reel, and adjusting-lever. Fig. 6 is a fragmentary sectional view of the short spiral grain-conveyer and intermediate parts. Fig. 7 is a fragmentary view of the concave and means for raising and lowering the same. Fig. 8 is a side elevation of the header and thresher. Fig. 9 is a detail view of one of the ends of the cylinder-shaft, illustrating the pawl-and-ratchet connection of said shaft with the driving mechanism.

Referring to the accompanying drawings,

1 designates the supporting-frame, which is supported on short axles upon which the riding and driving wheels 2 3 of the machine are secured, said wheels being provided with the usual peripheral traction-teeth for engaging the ground. The forward side of the machine is provided with the usual finger-bar and finger-guards, which are rigidly connected to a hinged frame 1^a, which will presently be described, in which reciprocates the cutter-bar, provided with the usual knives, and is connected by a pitman-rod with the forwardly-projecting crank-rod 4, supported in laterally-projecting bearings 5 5^a near the front and rear ends of the supporting-frame. Near its rear end the crank-rod 4 is provided with a gear 5^b, which connects the front end of a short rod or shaft 6 with the rear end of the crank-rod 4, said short rod or shaft 6 being supported in a bearing-arm 7, the shaft being provided near its rear end with a spur gear-wheel 8, which meshes with a spur gear-wheel 10, mounted at the rear end of a forwardly-projecting shaft 11, having a bevel-pinion 12 at its front end in engagement with a bevel-gear 13 on the outer end of the hub of the riding-wheel 2. Upon the extreme rear end of the shaft 11 is fixed a sprocket-wheel 9, the purpose of which will be hereinafter described. Upon the outer end of the axle of the riding and driving wheel 2 is fixed a sprocket-wheel 17, from which a sprocket-chain 19 connects with a sprocket-wheel 20 on the corresponding end of the reel-shaft 21, which latter shaft is provided with reel-arms 22, having at their outer ends horizontally-disposed reel-blades 23 for bearing the standing grain inwardly against the finger-guards and cutting-knives.

The reel-supporting arms 24 are pivoted about midway their length in the upper ends of the bifurcated standards 24¹, rigidly connected to the supporting-frame, and are guided at their rear ends in the slotted standards 25. The opposite or forward ends of the reel-arms are adjustably connected to a standard 26, connected with the hinged frame 1^a, carrying the cutter-bar and its connections, whereby when the reel-arms are actuated to raise or lower the reel the cutter-bar will be simultaneously moved therewith.

The movable frame 1^a is hinged to a transversely-disposed shaft 29, rotatably mounted

in the supporting-frame 1 and forming the rear bearing-rolls around which travels a short endless carrier 27, the other bearing-roll 28 of which is of slightly less diameter and is mounted in the forward end of the hinged frame 1^a immediately in the rear of the cutting mechanism.

The rear bearing-roll 29 of the endless carrier is located immediately over the front or hinged end of the toothed and slotted concave 30, which is provided with hinged and downwardly-depending toothed rack-bars 31, which engage pinions 32 on a transverse shaft 33, supported in bearings in the frame of the machine, motion being imparted to said shaft by means of a toothed shifting bar 35, meshing with a pinion 35^a, fixed on said shaft and being supported near its front end in a guide-hanger 36 and pivotally connected at its rear end with a short hand-lever 37, which may be operated to bring the slotted concave 30 into proper adjustments with relation to the toothed cylinder 39, supported in suitable bearings immediately above it.

40 denotes a grain-fender consisting of depending sections of light sheet metal mounted on a transverse rod 40^a, supported by the transverse bar 41. The fender 40 rides upon the grain that is passing to the thresher-cylinder and prevents any waste of the same. A screen 42 is fixed immediately above the endless carrier 27, causing the loosened grain to strike against it and fall upon the endless carrier 27 to be conveyed thereby to the toothed and slotted concave 30 and a considerable quantity of it dropped or passed downwardly through said slotted concave to the transverse conveyer 43, from which it is delivered to the longitudinal conveyer 44 and delivered to the grain and chaff elevator 44^a, immediately beneath and adjustably connected with the straw-elevator 45 by a longitudinally-slotted plate 46, fixed to said straw-elevator 45, the grain and chaff elevator 45 being provided with a securing-bolt 47, working through said slotted plate 46 and permitting the adjustment of the said elevators. A bail 48 is connected with the straw-elevator 45 and is supported by a guide-arm 48^a and is loosely connected, by means of a cable, with a suitable standard 49, the elevators being hinged at their lower ends to the frame of the machine, so that the proper elevations or inclinations may be given to the grain and chaff elevator and the straw-elevator in order that the grain and chaff may be delivered to its appropriate receptacle and the threshed straw to its appropriate receptacle in the attendant wagon that travels in the harvest-field with the header and thresher. The horizontal portion 50 of the straw-conveyer is supported at the rear side of the machine and is driven from the gear 13 on the riding-wheel 2 through the shaft 11, sprocket-wheel 9, and its connecting-gearing, a cross-belt 51 connecting the pulley on shaft 52 with a pulley on the shaft 53, immediately in front

of the sprocket-wheel 54 on the shaft 53. A sprocket-chain 55 connects the sprocket-wheel 54 with the sprocket-wheel 56 on the shaft 57, so that motion is imparted to both the straw-carrier and the grain and chaff elevator as the machine is propelled forward. The bevel-gear 12 is provided on its rear face with teeth 12^a, which are engaged with the teeth 12^b of a keyed clutch 12^c, which is engaged by a bell-crank lever 58, connected at its rear end with the front end of a shifting rod 59, connected with an operating-lever 60, having a spring-pressed detent 61 adapted to be engaged with and disengaged from an arc-rack 62, secured to the frame of the machine. From the rear end of the concave 30 the straw is conveyed by an endless elevator 63 to a horizontal conveyer 50 and thence to the elevator 45, from which it is discharged into the attendant wagon.

The conveyer 44 carries the threshed grain and chaff to the elevator 44^a, which elevates it to the wagon. The grain and chaff elevator 44^a is provided with an endless carrier 44^b, mounted on suitable bearing-rollers at opposite ends of the elevator-frame and provided with transverse slats 44^c, which rake the grain up the solid bottom of the elevator, dumping it into the attendant wagon, which is provided with separate bins for the reception of grain and chaff and for straw. The straw-elevator is also provided with a slatted conveyer, which in this instance carries the straw upon its upper side, and is provided with a floor 45^b, arranged as shown in Fig. 4 of the drawings and having discharge-openings 45^c, through which the grain and chaff drop into the grain and chaff conveyer beneath.

The inner periphery of the hubs of the driving and riding wheels 2 and 3 are provided with spur-gear teeth, which drive pinions 2' and 3', mounted upon short shafts journaled in standards supported by the main frame. Upon these shafts are fixed spur gear-wheels 2'' and 3'', which in turn mesh with spur-pinions loosely mounted upon the ends of the toothed cylinder-shaft 39', said spur-pinions having pivoted to their inner sides pawls which are adapted to engage ratchet-pinions fixed upon the cylinder-shaft 39', causing said cylinder-shaft and cylinder to rotate when the machine is moving in a forward direction and preventing the same from rotating in an opposite direction if the direction of the machine is reversed, the teeth of said cylinder coacting with the teeth of the concave 30 to thresh the grain from the heads cast upon said concave. Upon the shaft of the pinion 2' is also fixed a sprocket-wheel 2^a, around which is geared an endless sprocket-chain 2^b, which passes around the sprocket-wheel 43^a, fixed upon the projecting end of the shaft of the spiral conveyer 43, imparting motion to the same. The sprocket-chain 2^b also engages sprocket-pinions 29' and 64', fixed, respectively, upon the extended ends of the shafts 29 and 64 of the endless conveyers 27 and 63,

thus causing said conveyer to travel in the proper directions to carry the heads to and from the threshing mechanism.

66 is a lever having its forward end adjustably pivoted in the upper end of a standard 66', fixed on the transverse bar 41, said lever extending rearwardly over a transverse cross-bar 67, connecting the rear ends of the reel-arms 24, and said lever having its rear end slotted and provided with a spring-pawl for engaging ratchet-teeth formed upon the standard 49 and being provided on its extreme end with a handle or grip, whereby the operator may raise and lower said lever 66, thereby actuating said reel-arms 24 to raise and lower the reel and cutting mechanism to suit grain of different growths.

A caster-wheel 74 is mounted at the rear part of the frame and is provided at the upper end of its standard with a steering or guiding lever 75, with which the driver, who is mounted on a platform at this part of the machine, may steer or guide the machine, while at the same time he can conveniently guide the team, as he preferably stands astride the steering-lever and can operate it by swaying his body to move it in the direction desired. The standard 49 also serves as a convenient point for attaching the reins, so that they need not be dropped when it becomes necessary for the driver to use his hands for other purposes. Where it is desired to leave the straw upon the field, the carrier 50, having the rearwardly-inclined top, is closed by a hinged lid 50^a, connected by a curved rod 50^b with a hand-lever 37^a. The lid 50^a is shown open in Fig. 5 of the drawings, so that the straw will be carried up and be deposited in the appropriate receptacle in the wagon as it moves along with the header and thresher.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a threshing-machine, the combination with the frame a transverse bar thereon, and a fender mounted below said bar, of an end-

less carrier, the toothed and slotted concave, the transverse conveyer, the longitudinal conveyer, the grain and chaff elevator, and the straw-elevator, substantially as specified. 50

2. In a threshing-machine, the combination with the frame, the transverse and longitudinal conveyers, of a grain and chaff elevator, a straw-elevator adjustably connected with the grain and chaff elevator, and means secured to the straw-elevator whereby to give the grain and chaff elevator and the straw-elevator the proper elevations and inclinations, substantially as specified. 55

3. In a threshing-machine, the combination with the supporting-frame, a front endless carrier, a toothed threshing-cylinder in the rear of said front endless carrier, an adjustable toothed and slotted concave beneath said threshing-cylinder, of a transversely-disposed grain-conveyer beneath said concave, an upwardly-inclined carrier in rear of said concave, an endless horizontal carrier connected with the rear of said supporting-frame and means for operating the same, and an inclined straw and grain separating carrier coacting with said horizontal carrier and adjustably connected to a support rising from the main frame of the machine, substantially as specified. 60 65 70 75

4. In a threshing-machine, the combination with the main frame, a front endless carrier, a toothed threshing-cylinder, in the rear of said endless carrier, and an adjustable toothed slotted concave hinged beneath said toothed threshing-cylinder, of an upwardly-inclined carrier in rear of said concave and a transversely-disposed grain-conveyer beneath said concave, substantially as specified. 80

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses. 85

JAMES E. ELDER.
FRED L. ELDER.

Witnesses:

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