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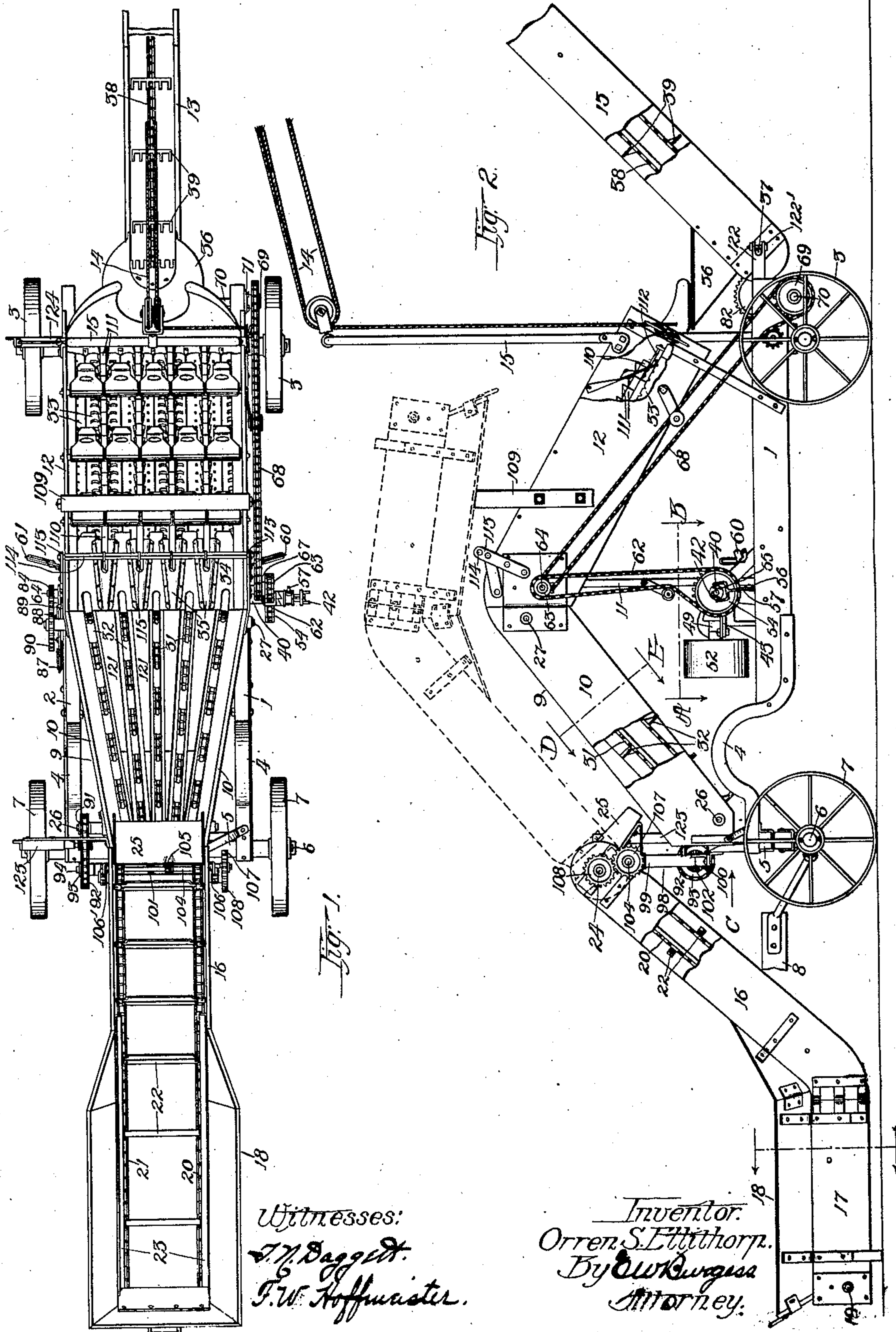
PATENTED JAN. 29, 1907.

O. S. ELLITHORP.

COMBINED PORTABLE ELEVATOR AND CORN HUSKING MECHANISM.

APPLICATION FILED MAR. 12, 1906.

4 SHEETS—SHEET 1.



Witnesses:  
J. H. Daggett.  
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Inventor:  
Orren S. Ellithorp.  
By *Clark Burgess*  
Attorney.

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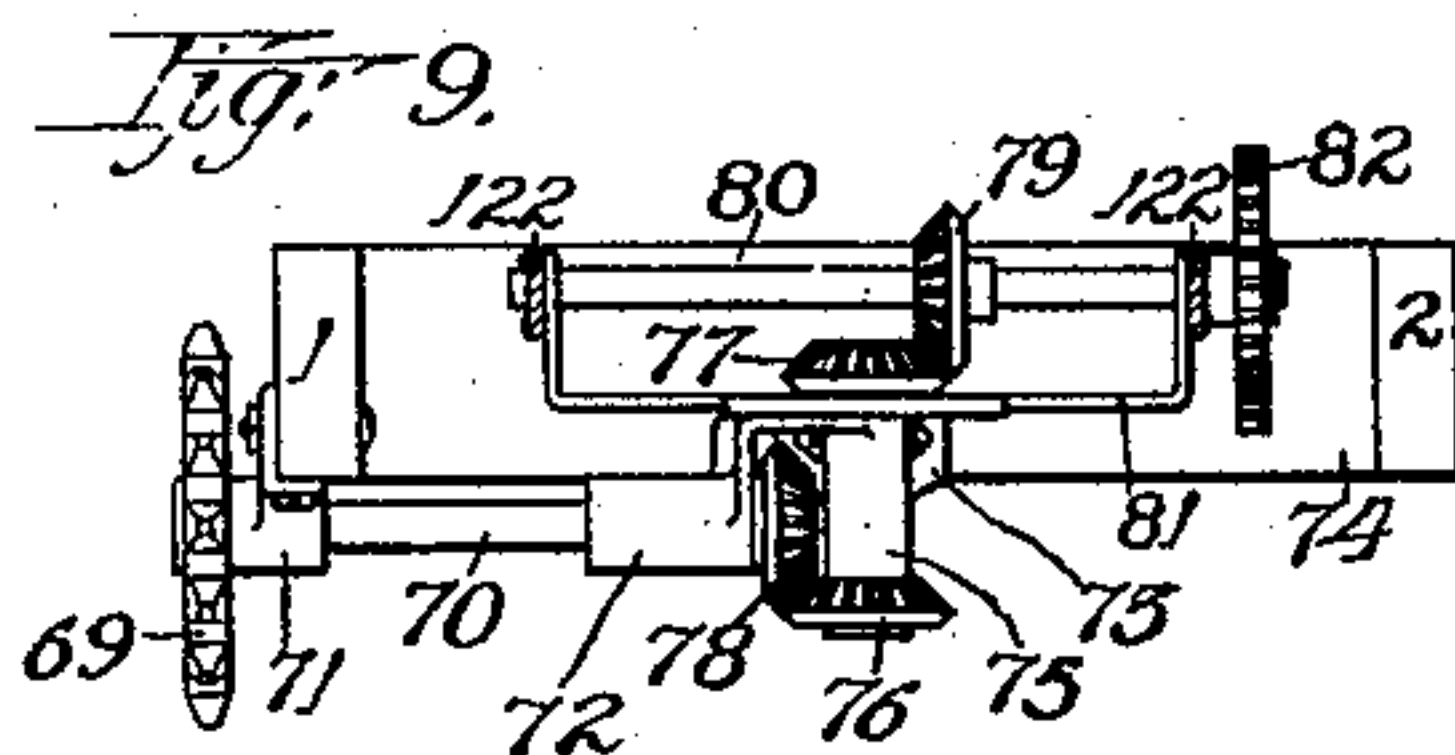
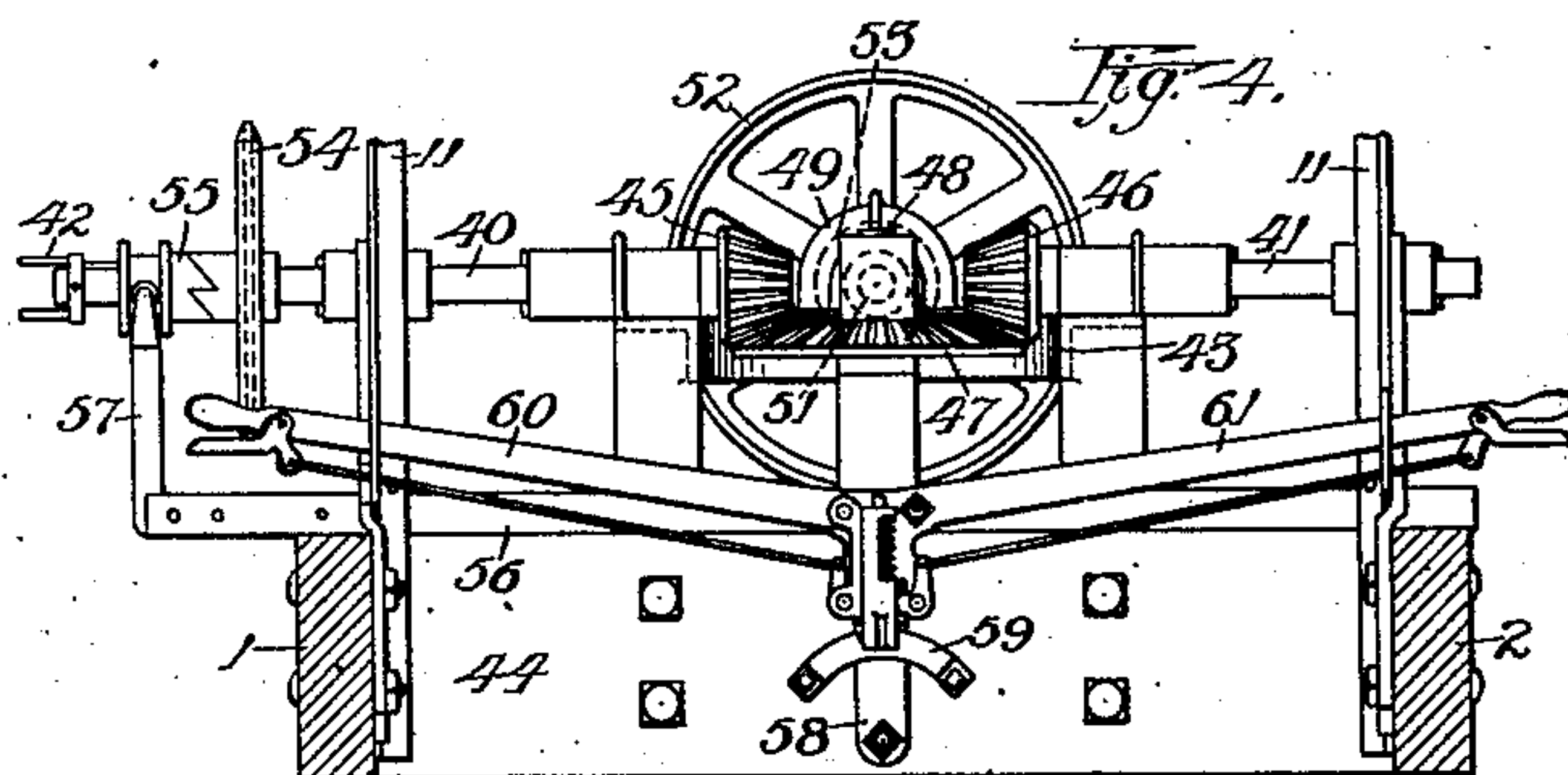
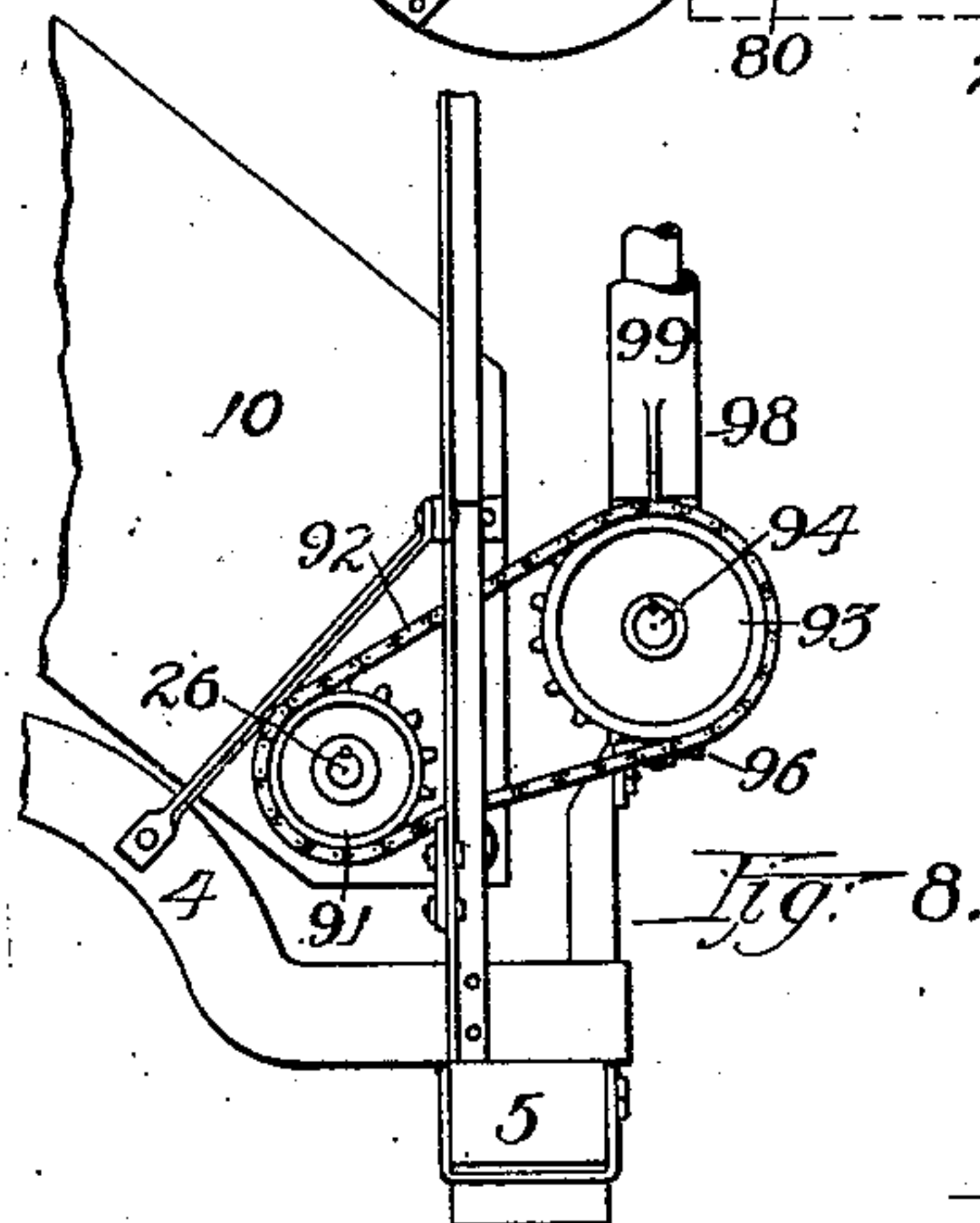
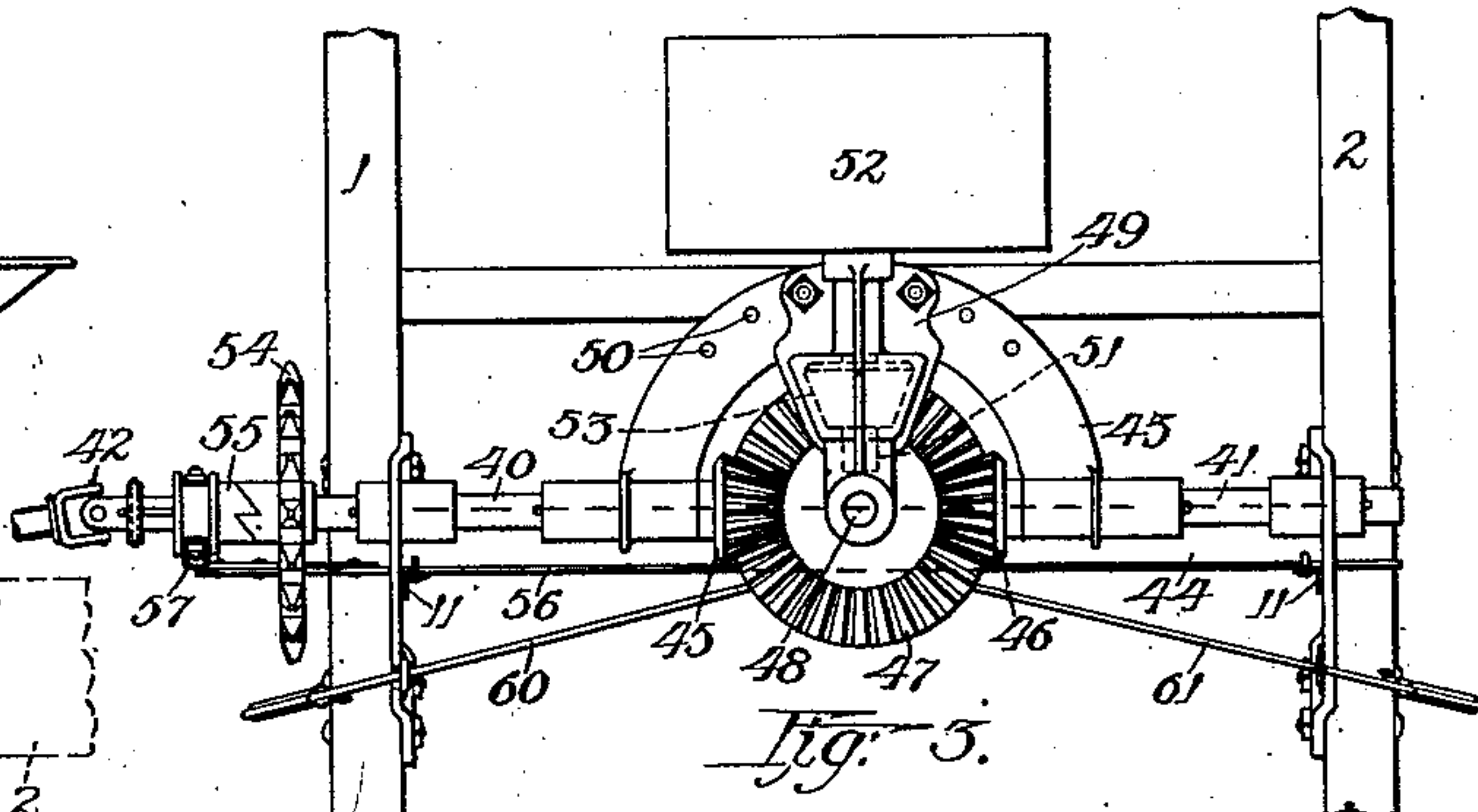
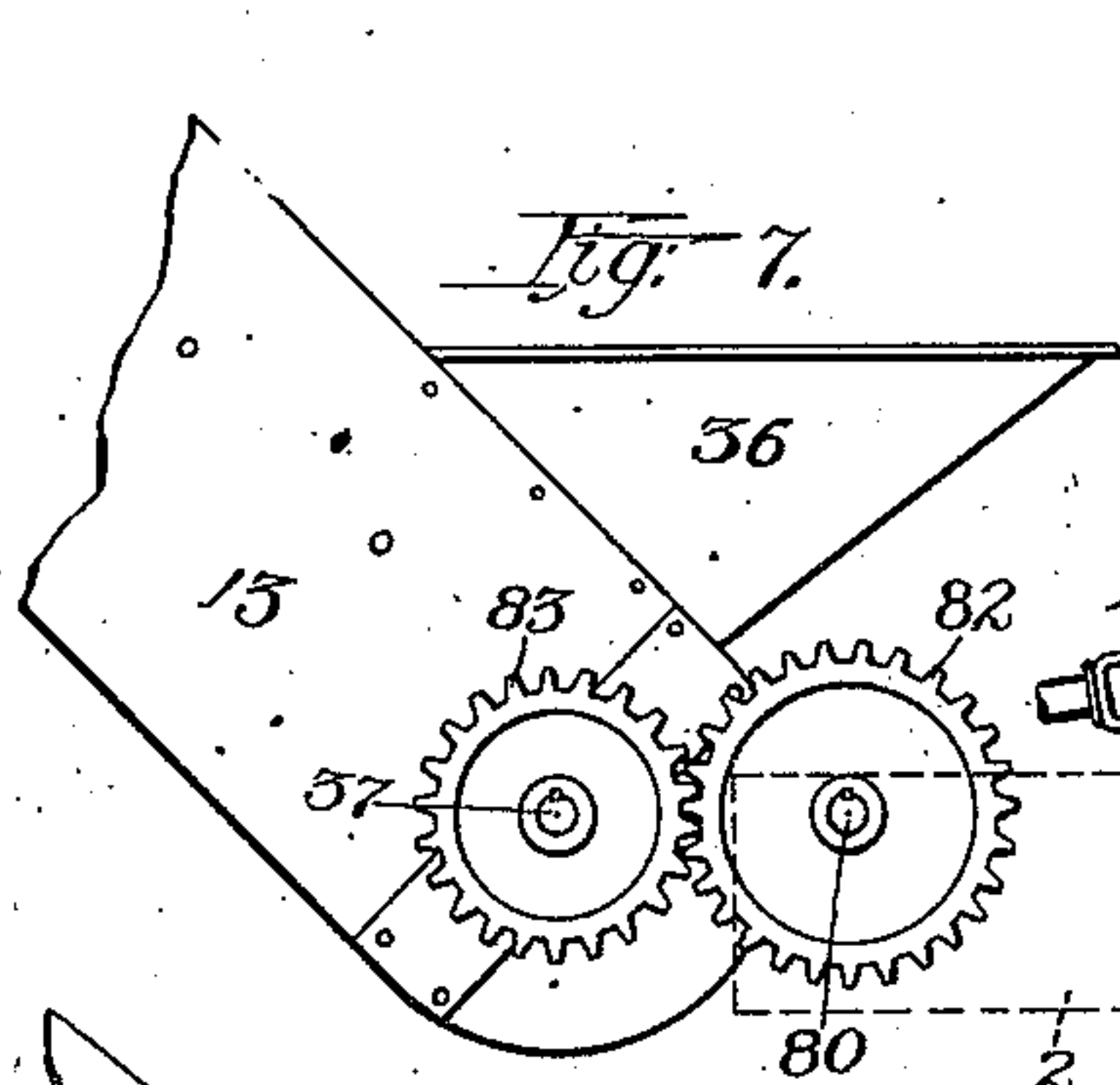
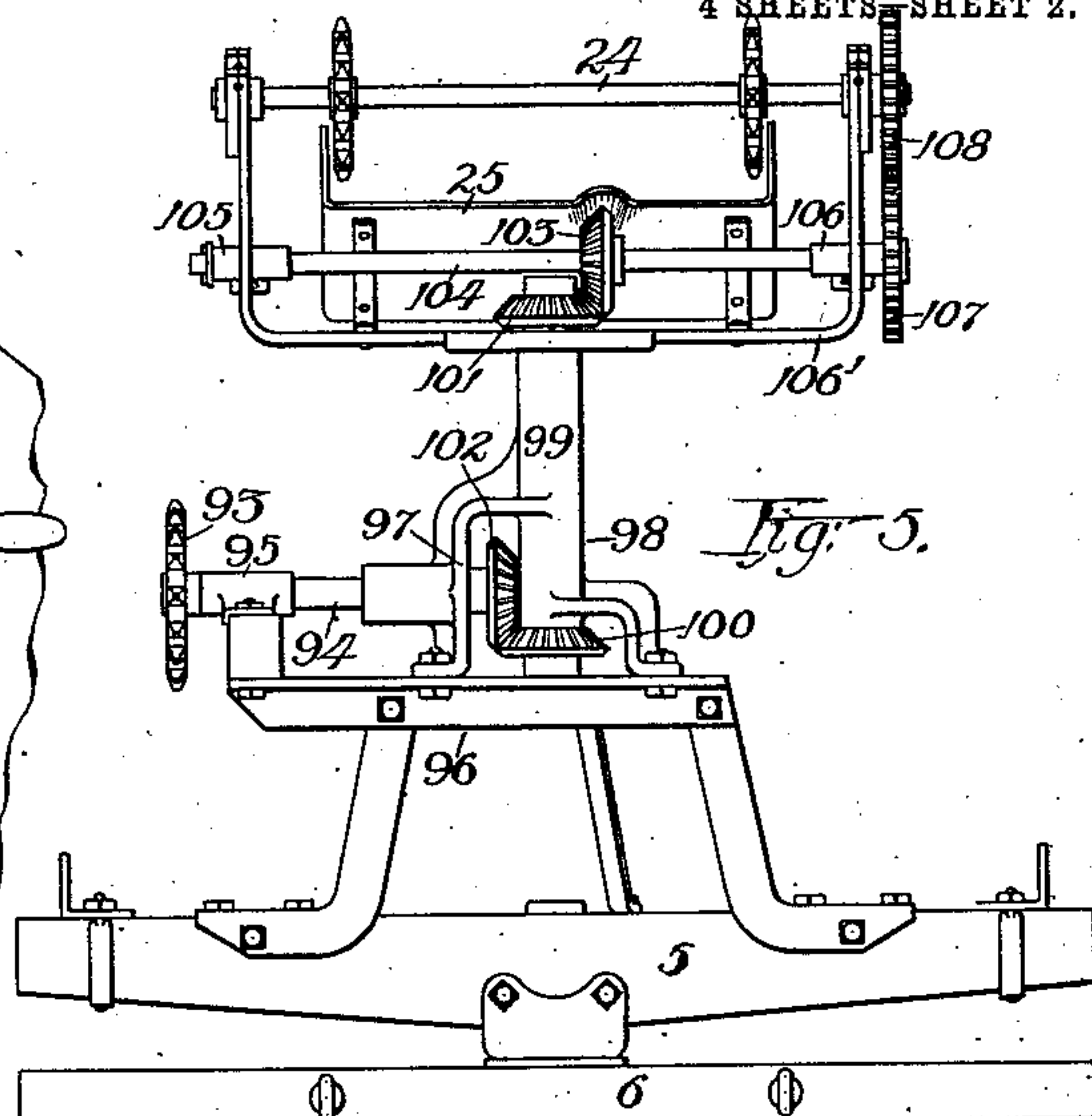
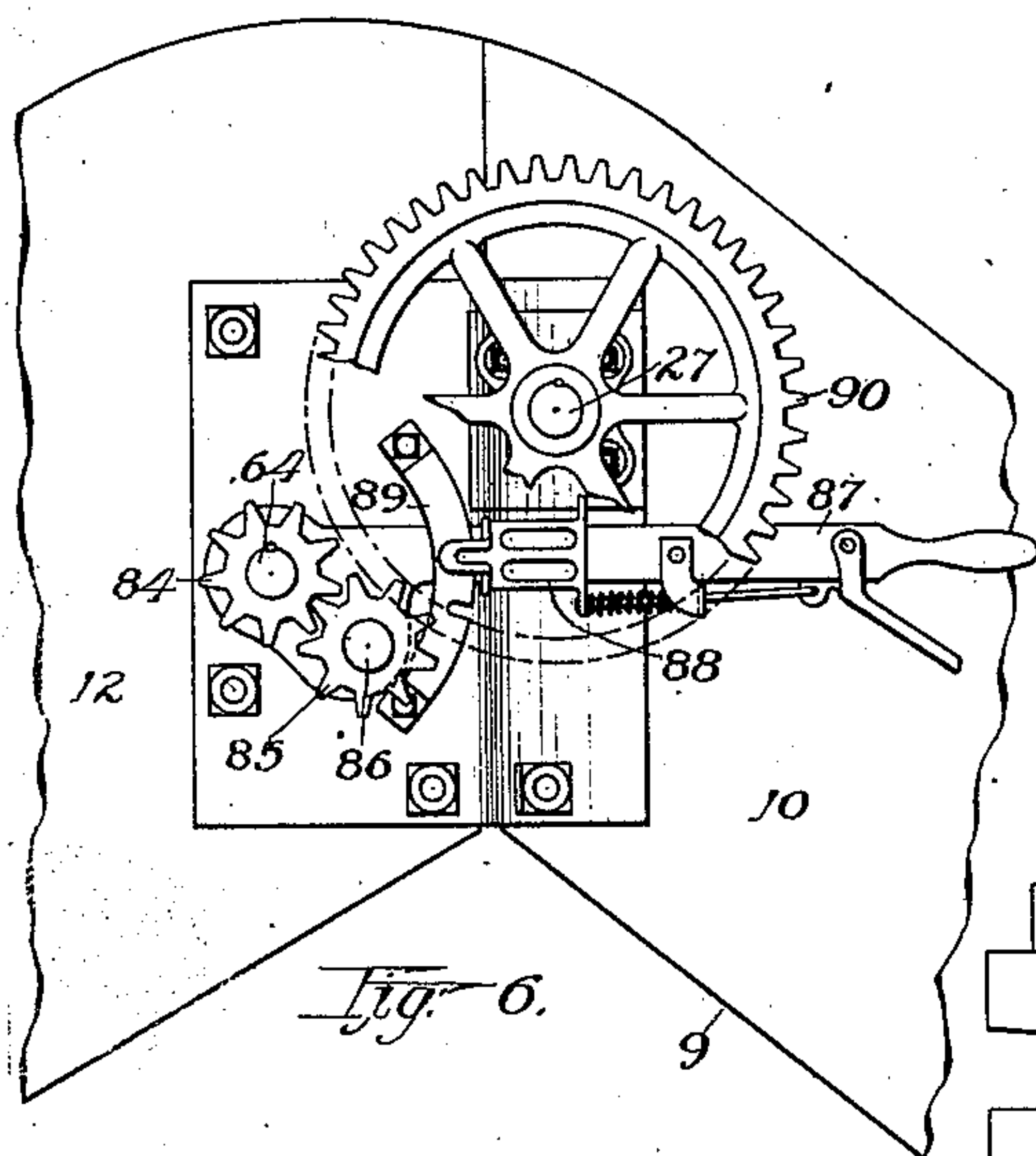
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4 SHEETS—SHEET 2.



*Witnesses:*

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4 SHEETS-SHEET 3.

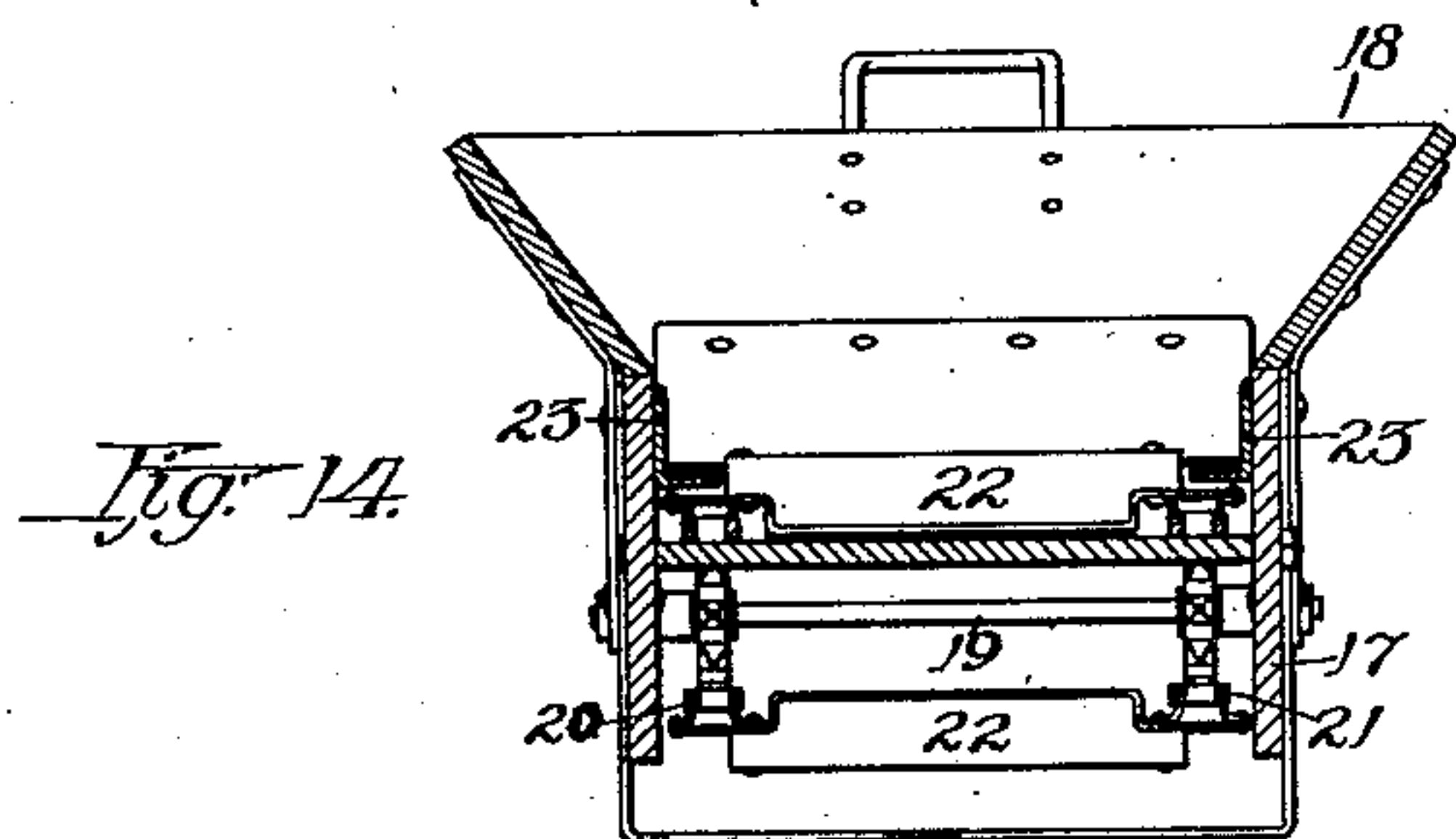


Fig. 14.

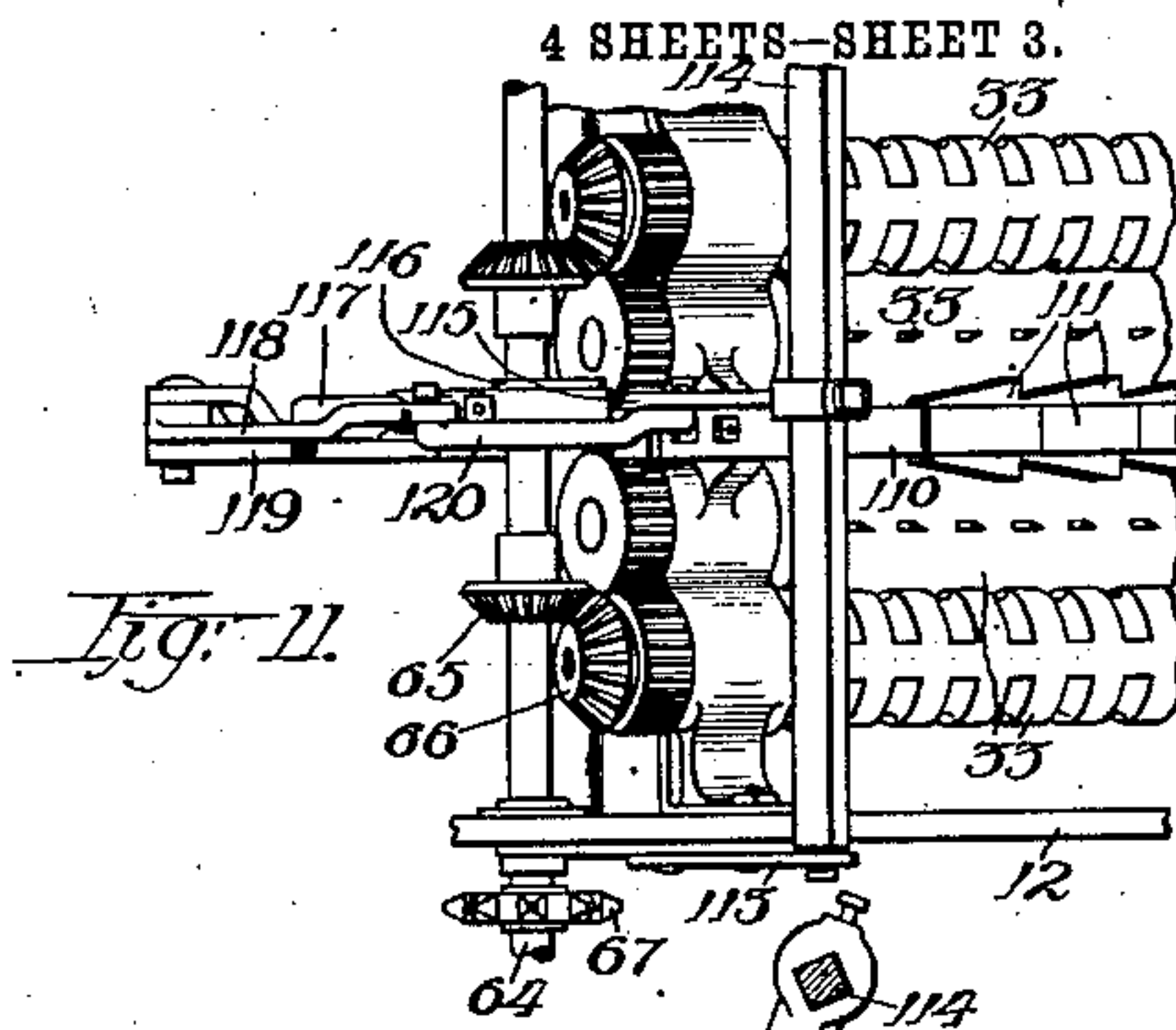


Fig. 11.

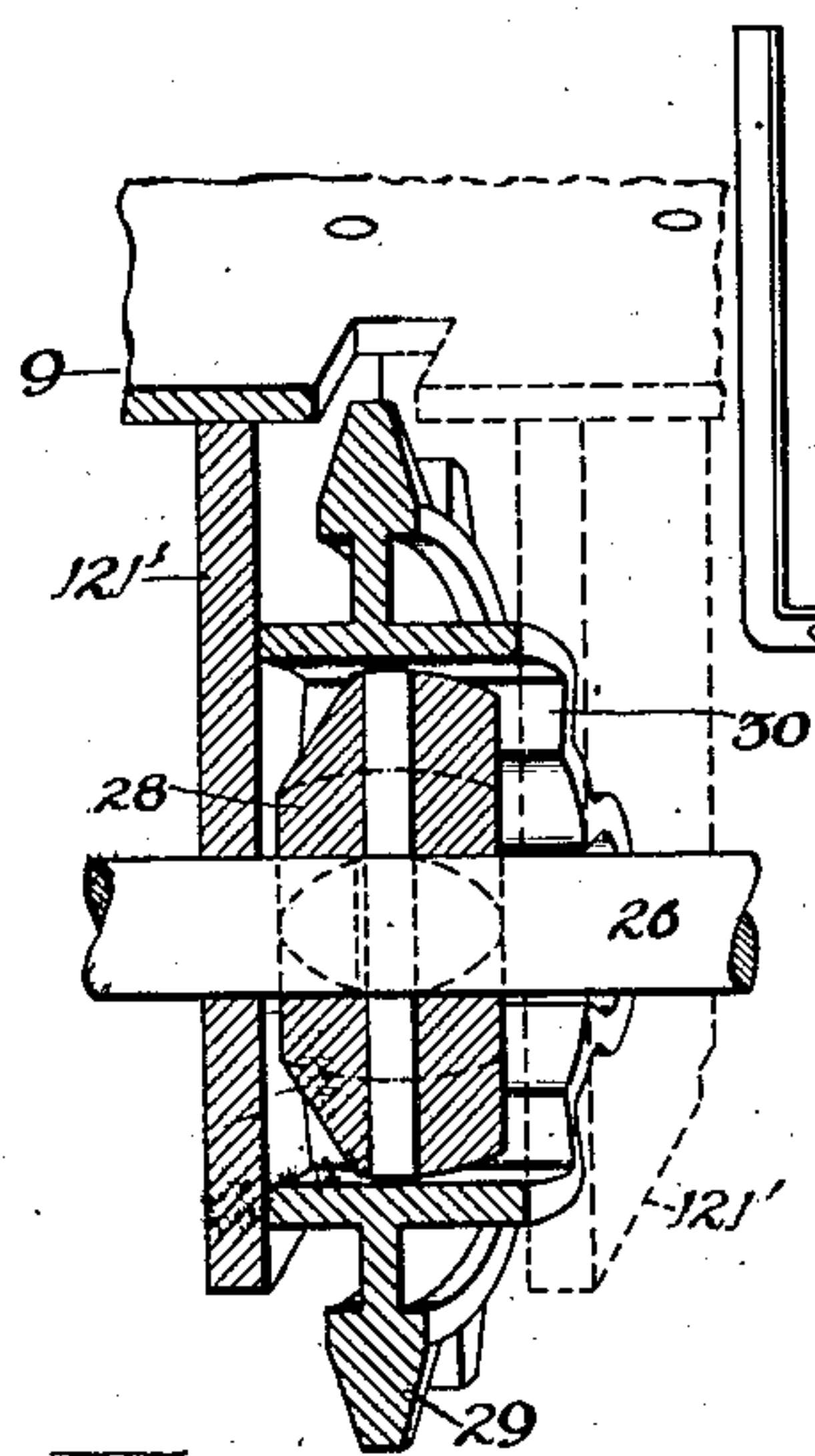


Fig. 15.

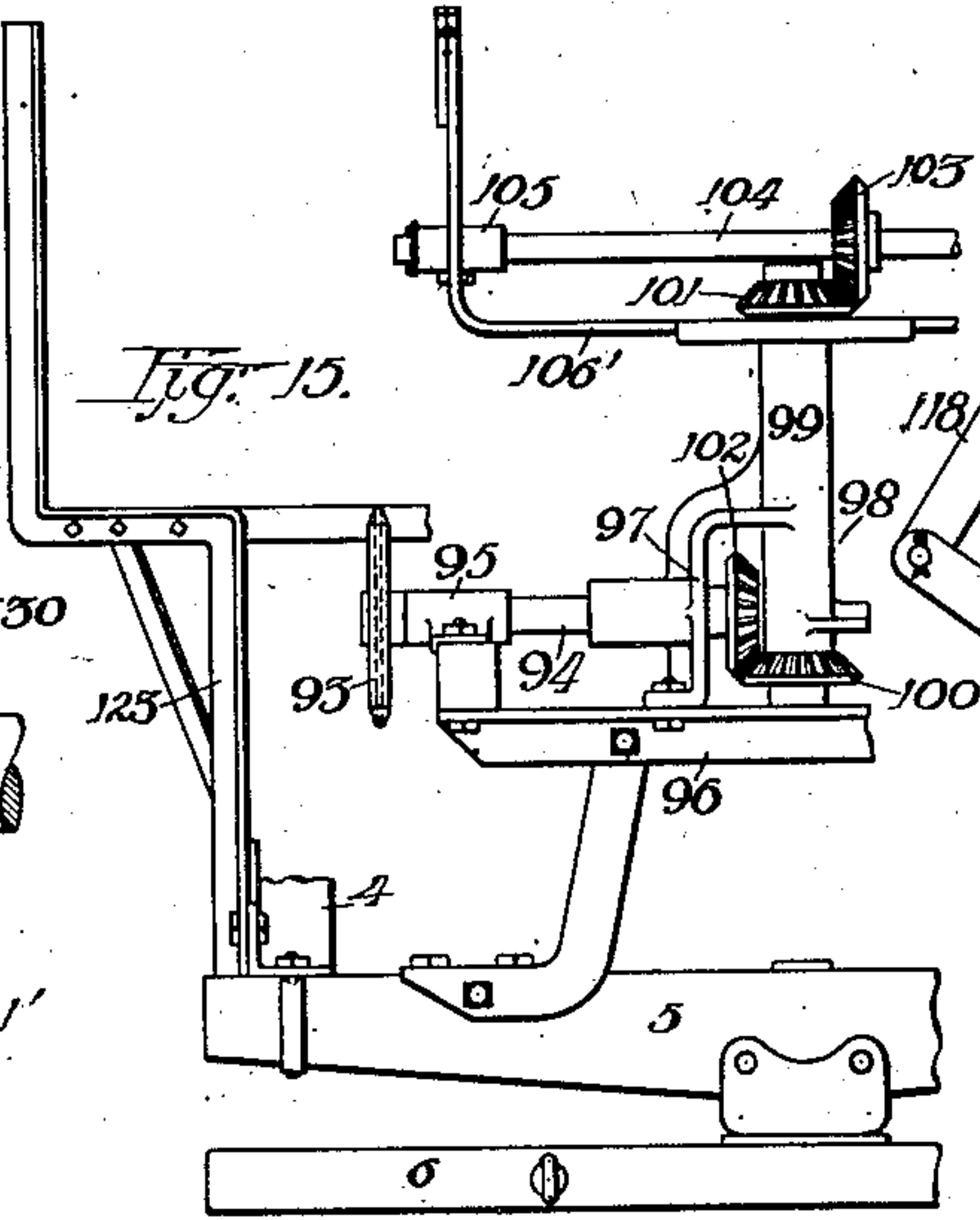


Fig. 15.

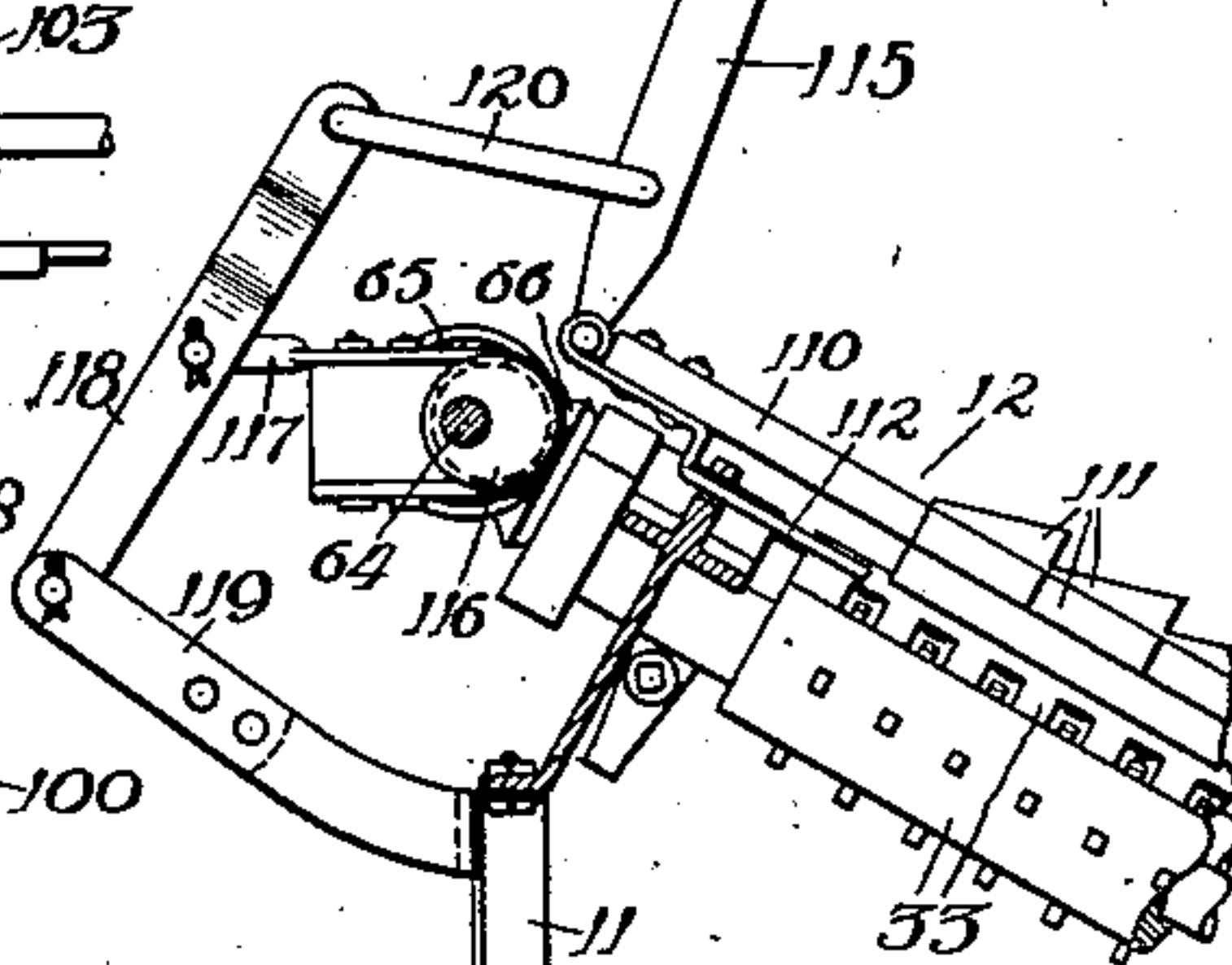


Fig. 12.

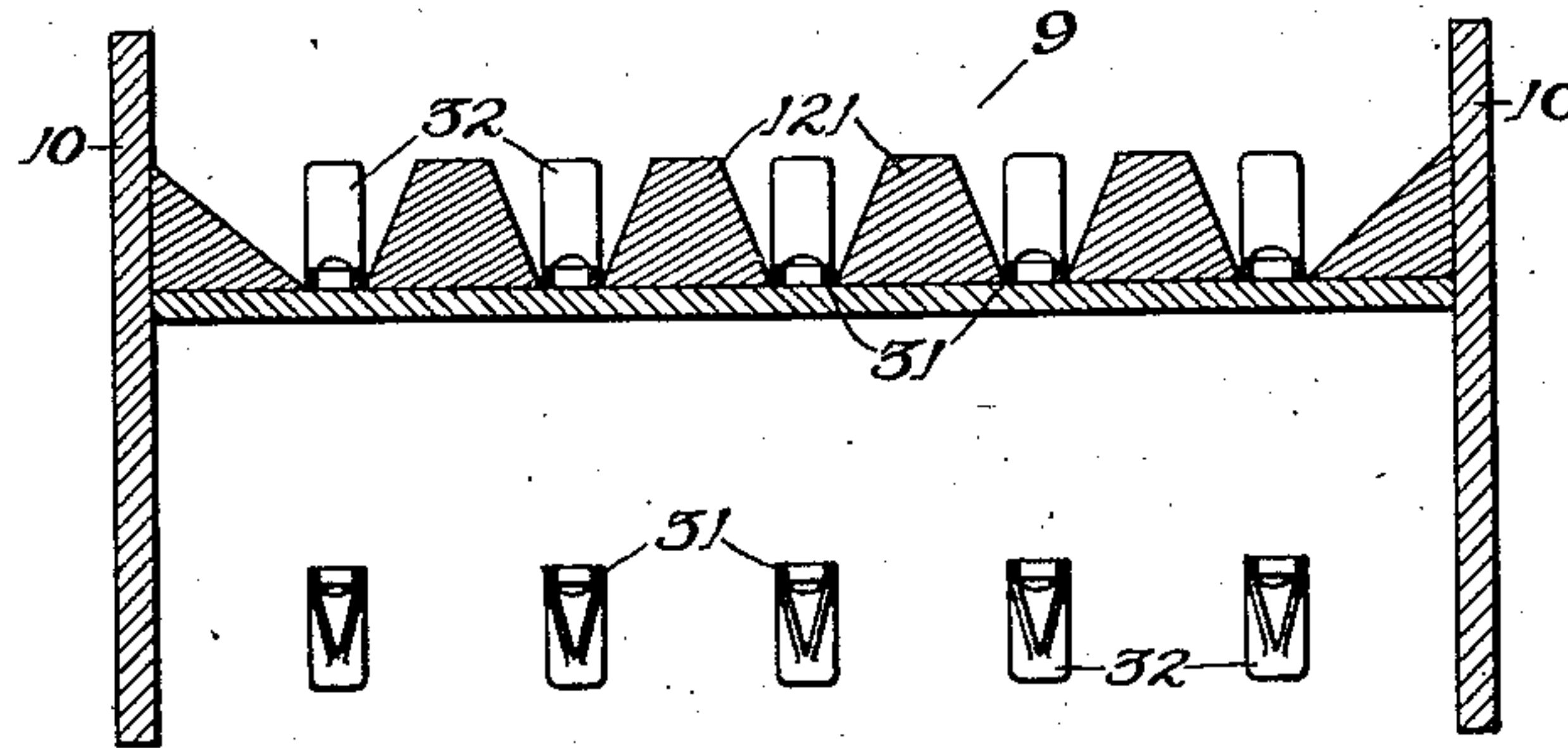


Fig. 10.

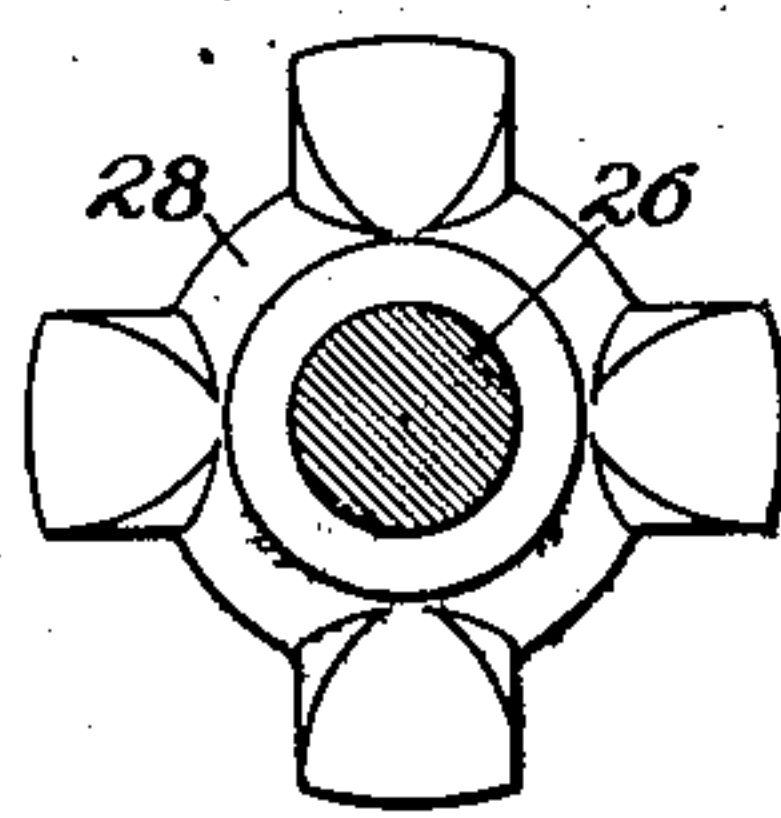


Fig. 16.

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4 SHEETS—SHEET 4.

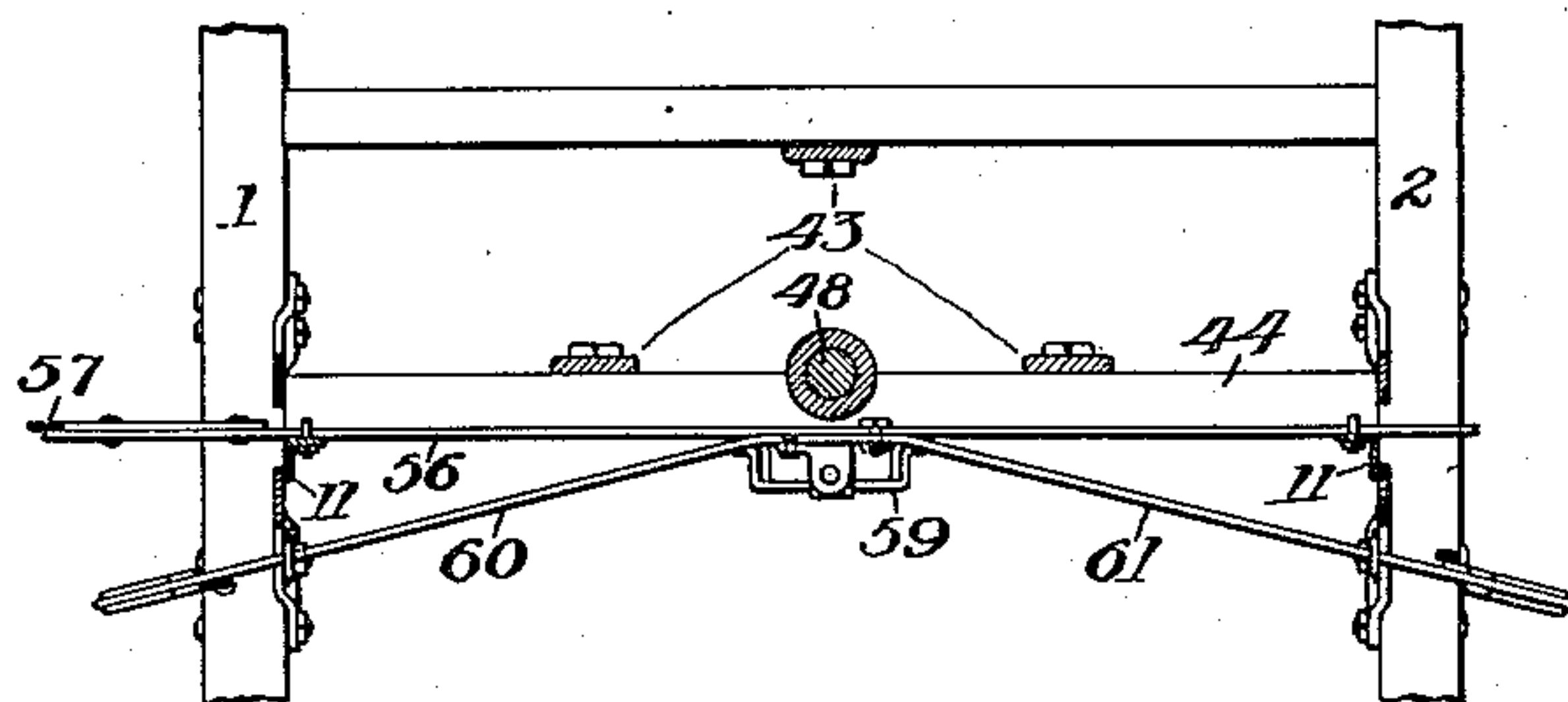


Fig. 17.

Witnesses:

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F. W. Hoffmeister.

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# UNITED STATES PATENT OFFICE.

ORREN S. ELLITHORP, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

## COMBINED PORTABLE ELEVATOR AND CORN-HUSKING MECHANISM.

No. 842,775.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed March 12, 1906. Serial No. 305,495.

*To all whom it may concern:*

Be it known that I, ORREN S. ELLITHORP, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Combined Portable Elevator and Corn-Husking Mechanism, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to combined portable elevators and corn-husking mechanism designed to receive unhusked ears of corn in a suitable receiving-hopper, the bottom of which comprises an endless carrier operative longitudinally thereof and upward along an inclined elevator-chute having its delivery end in a plane above the hopper in a manner to convey the ears upward and deliver them to the lower end of an upwardly-inclined carrier mechanism operative in outwardly-diverging planes in a manner to separate the ears and convey them in a series of diverging files to a series of pairs of husking-rollers, each pair of said rollers having their operative faces at their receiving ends substantially in line with the delivery end of one of the diverging conveyers, said rollers being mounted in a suitable frame and inclined downward in a manner to conduct the husked ears to the receiving end of an elevating-conveyer operative to deliver the corn into any suitable receptacle, the whole mechanism being mounted upon a suitable truck and adapted to be folded into compact form, whereby it may be conveniently transported from place to place, the objects of this invention being to provide a mechanism that may be transported from place to place and operative to receive, husk, and elevate corn and deposit in any suitable receptacle. These objects are attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a top plan view of the machine, with a portion of the delivery-elevator and chute broken away. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is a plan view of a portion of the supporting-frame and power-transmitting means along line A B of Fig. 2. Fig. 4 is a sectional elevation of Fig. 3, designed to illustrate the operation of the clutch-shipping mechanism connected therewith. Fig. 5 is a detail of the power-

transmitting means mounted upon the front 55  
bolster of the transporting-truck, as seen in the direction of the arrow C in Fig. 2. Fig. 6 is a detail of the gear and gear-shipping mechanism between the driving mechanism of the husking-rollers and the ear-conveying 60  
carriers. Fig. 7 is a detail of a part of the power-transmitting means connected with the receiving end of the husked-corn elevator. Fig. 8 is a detail of the power-transmitting means at the receiving end of the ear- 65  
conveyer operative to deliver the ears to the husking-rollers. Fig. 9 is a detail of the power-transmitting means connected with the receiving end of the husked-ear conveyer. Fig. 10 is a cross-section of the ear-conveyer 70  
and elevator along line D E of Fig. 2. Fig. 11 is a detail of a part of the husking mechanism at its receiving end. Fig. 12 is a sectional side elevation of Fig. 11; and Fig. 13 is a sectional detail of one of the driving- 75  
sprockets and adjacent parts forming a portion of the conveyer, connected with the receiving end of the husking mechanism. Fig. 14 is a cross-section of the receiving-hopper and endless carrier mounted therein. Fig. 80  
15 is a front elevation of a part of the machine, showing the manner of mounting its forward end upon the transporting-truck. Fig. 16 is a detail of one of the drivers for the sprocket-wheels, as shown in Fig. 13; and 85  
Fig. 17 is a sectional plan view of a part of the gear-shipping mechanism.

Like reference-numerals designate the same parts throughout the several views.

Referring to the drawings, 1 and 2 represent supporting-frame members having their rear ends mounted upon a suitable axle having carrying-wheels 3, journaled thereon, and arched members 4, connecting their forward ends with a bolster 5, pivotally mounted upon 95  
an axle 6, having carrying-wheels 7 journaled thereon, and 8 represents a draft-tongue suitably connected with said axle.

Mounted upon the frame members at their forward ends is the lower end of an elevator- 100  
frame 9, having side members 10 that extend upward, rearward, and outward and have their upper ends secured to vertically-arranged frame members 11. Connected with the upper end of the elevator-frame 9 is the 105  
upper end of a downwardly and rearwardly extending frame 12, having its rear end connected with and supported by the rear ends



of the frame members 1 and 2. Pivotally connected with the rear ends of the frame members 1 and 2 is the lower end of an elevator-chute 13, that is adjustable about its pivotal connection in a manner to cause its delivery end to be adjusted from a lower to a higher plane, and 14 represents a hoisting mechanism mounted upon a vertically-arranged frame 15, secured to the frame 12 and the frame members 1 and 2 and operative in a well-known manner to adjustably support the delivery end of the elevator-chute 13.

Pivotally mounted above the lower end of the elevator-frame 9 is the upper end of an elevator-frame 16, that extends downward and forward to substantially the horizontal plane that the carrying-wheels rest upon and then horizontally forward and having its horizontal portion 17 provided with outwardly-diverging side and end portions forming a receiving-hopper 18. The elevator-frame 16 may be swung about its pivotal axis in a manner represented by dotted lines in Fig. 2 for transportation purposes.

Journalled at the forward end of the horizontal portion 17 of the elevator-frame 16 is a shaft 19, and operatively connected therewith is an endless carrier comprising sprocket-chains 20 and 21, connected by means of bars 22, that rest upon the bottom of the receiving-hopper and operate to move the ears thereupon, the operative ply of the chains being prevented from rising by means of suitable guards 23, secured to the horizontal portions 17 and overhanging the chains, the opposite end of the endless carrier being operatively connected with a shaft 24, journalled in the upper end of the elevator-frame 16. The endless carrier when in operation delivers the unhusked ears into a conducting-chute 25, mounted upon the fixed frame members of the machine and adapted to deliver the ears to the elevator 9.

Journalled at the lower end of the elevator-frame 9 is a shaft 26, and at the upper end thereof is journalled a shaft 27. Secured to these shafts are toothed wheels 28, having the outer ends of their teeth formed concentric with the axis of the wheels both circumferentially and longitudinally thereof, and 29 are sprocket-wheels having recesses 30, adapted to loosely receive the teeth of the wheels 28 in a manner to allow a relatively oscillatory movement between the wheels and sprockets. Sprocket-chains 31, having carrying-teeth 32 at intervals thereon, operatively engage with the sprocket-wheels.

The elevator 9 is wider at its delivery end than at its receiving end, and the carrier-chains operate in laterally-diverging upwardly-inclined planes for the purpose of separating the ears and conveying them in separate files to the husking-rollers 33, that are operatively arranged in the frame 12. The ears are received by a downwardly-in-

clined plate 34, having angularly-arranged V-shaped members 35, secured thereto and forming with the plate a series of trough-like conductors with flaring mouth portions adapted to conduct the several files of ears to separate pairs of husking-rollers in the series. The husked ears are delivered from the husking mechanism to a receiving-hopper 36, secured to the lower end of the elevator-chute 13, having a shaft 37 journalled at its lower end, which operatively engages with a carrier-chain 38, provided with suitable flights 39, adapted to convey the ears to any suitable receptacle.

Motion is transmitted to the operative mechanism in the following manner: Mounted upon the main frame intermediate its ends are two cross-shafts 40 and 41, the shaft 40 having its outer end adapted to engage with any source of power by means of a universal coupling 42, the inner ends of the two shafts being journalled in a semicircular bracket 43, secured to a transverse frame member 44, and 45 and 46 are bevel-pinions secured to the shafts intermediate the bearings and meshing with a bevel-gear 47, secured to a vertical shaft 48, journalled in a portion of the semicircular bracket 43. Secured to bracket 43 and adapted to be adjusted concentrically therewith is a journal-support 49, pivotally mounted upon the axis of the bevel-gear 47 and secured to the bracket by means of bolts passing through any of a series of concentric openings 50 in the bracket. Journalled in the support 49 is a radially-disposed shaft 51, having a driving-pulley 52, secured to its outer end and a driving-pinion 53 to its inner end and engaging with the bevel-gear 47. The driving-pulley may be connected with any source of power by means of a driving-belt, and by adjusting the shaft 51 and its support about the axis of the gear-wheel 47 the driving power may be received from different directions within the limits of adjustment of the support upon the semicircular bracket.

Loosely mounted upon the cross-shaft 40 is a sprocket-wheel 54, having one end of its hub portion provided with clutch-teeth adapted to engage with a clutch member 55, splined upon the shaft in a manner to slide thereon, and 56 is a bar mounted upon the fixed frame and movable transversely thereof and provided with an upwardly-extending forked arm 57, embracing the clutch member 55 between suitable collars thereon in a manner to cause the clutch member to partake of the movements of the bar.

Pivotally mounted upon a transverse frame member is a vertically-disposed lever 58, carrying a spring-pressed detent operatively engaging with a sector-rack 59 and having its upper end pivotally connected with the bar 56 in a manner to communicate motion thereto when said lever is caused to



vibrate about its pivotal axis, and 60 and 61 are oppositely-disposed hand-operated levers forming part of the vertical lever and transversely arranged relative to the machine in a manner to be convenient to the hand of the operator at either side thereof and provided with a common form of thumb-lever and link connection operatively engaging with the detent in a well-known way, the levers being operative to cause engagement or disengagement of the clutch members.

A sprocket-chain 62 connects the sprocket-wheel 54 with a sprocket-wheel 63, secured to one end of a shaft 64, journaled at the upper end of the frame 12 and operative to transmit motion to the husking-rollers by means of gear members 65 and 66, as shown in Fig. 11. Secured to the shaft 64 adjacent the sprocket-wheel 63, is a sprocket-wheel 67, and 68 is a sprocket-chain connecting it with a sprocket-wheel 69, secured to one end of a short shaft 70, journaled at one end in a bearing 71, secured to the frame member 1, and at its opposite end in a bearing 72, forming a part of a casting 73, secured to a transverse frame member 74. A vertically-arranged bearing 75 forms a part of casting 73, and journaled therein is a short shaft having pinions 76 and 77, secured to opposite ends thereof, and secured to the inner end of shaft 70 is a pinion 78, meshing with pinion 76. Pinion 77 meshes with a pinion 79, secured to a transverse shaft 80, having its ends journaled in bearings carried by a bracket 81, pivotally mounted upon the casting 73, and secured to one end of the shaft 80 is a gear-wheel 82, adapted to mesh with a gear-wheel 83, secured to the shaft 37 and adapted to communicate motion to the endless carrier mounted in the elevator-chute 13, which may be swung from side to side, the bracket 81 turning about the axis of the vertical shaft mounted in the casting 73. Upon the opposite end of shaft 64 is secured a pinion 84, meshing with an intermediate pinion 85, journaled upon a stud 86, secured to a hand-lever 87, that is pivotally mounted upon the shaft 64 and provided with a spring-pressed detent 88, adapted to engage with a toothed sector 89 and a common form of thumb-lever and link connection operatively connected with the spring-pressed detent.

90 is a gear-wheel secured to the end of shaft 27 and adapted to engage with the intermediate pinion 85 when the hand-lever 87 is moved in one direction and to be disengaged therefrom when moved in an opposite direction.

Upon a projecting end of shaft 26, journaled at the lower end of the elevator-frame 9, is secured a sprocket-wheel 91, and 92 is a sprocket-chain operatively connecting it with a sprocket-wheel 93, secured to the outer end of a transverse shaft 94, that is journaled in a bearing 95, secured to a base-

frame 96, mounted upon the front bolster of the transporting-truck, and the inner end of said shaft is journaled in a transverse bearing 97, forming part of a gear-frame 98, secured to the base-frame 96 and having a vertically-arranged tubular portion 99, in which is journaled a shaft having pinions 100 and 101, secured to opposite ends thereof, the pinion 100 meshing with a pinion 102, secured to the inner end of shaft 94, and pinion 101 meshing with a pinion 103, secured to a transverse shaft 104, journaled in bearings 105 and 106, carried by a U-shaped bracket 106', pivotally mounted upon the upper end of the vertical member of the gear-frame 98 in a manner permitting the bracket to swing from side to side, and 107 is a gear-wheel secured to one end of shaft 104 and adapted to mesh with a gear-wheel 108, secured to shaft 24 and operative therewith to communicate motion to the endless carrier mounted in the elevator-frames 16 and 17, the upper end of frame 16 being adapted to swing about the axis of shaft 24, as shown by dotted lines, and to have the hopper sides 18 rest upon the fixed support 109, having its legs secured to the sides of the frame 12. Mounted above the husking-rollers and arranged parallel therewith are a series of reciprocating bars 110, provided with laterally-extending ear-forwarders 111, having substantially pyramidal form with their bases toward the delivery end of the husking-rollers, the bars being provided with guiding-slides 112, secured at opposite ends thereof and adapted to slide through openings provided therefor in the end members of the husking-roller frame. Secured to the upper ends of the side members of the frame 12 are triangular brackets 113, and mounted at the upper ends thereof is a rock-shaft 114, and depending therefrom are a series of levers 115, having their lower ends pivotally connected with the reciprocating bars 110. Motion is transmitted to the rock-shaft by means of an eccentric 116, secured to the shaft 64, and a pitman 117, having one end engaging with the eccentric and its opposite end pivotally connected with a vibrating lever 118, having one end pivotally connected with a fixed part 119 of the machine, and its opposite end connected to one of the depending levers 115 by means of the link 120, as shown in Fig. 12.

Between the chains 31, operative to deliver the ears to the husking-rollers, are placed bars 121, having beveled edges and arranged in a manner to form V-shaped conduits for the reception of the ears, as shown in Fig. 10, and the sprocket-wheels are held from lateral movement by means of the side walls 121' of the openings through the bottom boards of the elevator-frame, as shown in Fig. 13. The bearings in which the shaft 37 at the lower end of the ear-conveyer 13 is journaled are embraced by the forked ends



of fixed members 122, and 122' represents retaining-bolts (one being shown) passing through the fork members. Secured to the vertical frame members upon one side of the machine are brackets 123 and 124, adapted to receive and support the ear-elevator 13, which may be easily detached and removed from operative position to a position upon the brackets when the machine is to be arranged for transporting. When the machine is arranged for operation, the unhusked ears of corn are dumped from the wagon into the receiving-hopper and the endless carrier elevates and delivers them to the supplemental carrier, having means for arranging the ears in separate files and delivering them to the inclined husking-rollers, from which they are delivered to the ear-elevator, which conveys them to any receiving-receptacle or storage-bin.

The elevator-frame may be swung toward either side of the machine, it being connected with the bracket 106'—that is, free to turn about its vertical pivot—the feature of construction, as described, being particularly available when the unhusked ears are dumped from the rear end of a wagon-box, and, as is frequently the case, the box is elevated at its forward end by outside means, it being necessary to place the wagon in a predetermined position relative to the elevator mechanism.

With my improved construction the receiving-hopper may be swung toward one side and the wagon placed in position for dumping its load, when the receiving-hopper may be swung into position in rear thereof to receive the load. In a similar manner the elevator-chute 13 may be swung from side to side for the purpose of directing the delivery end thereof to any part of the storage-receptacle.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An elevator and corn-husker comprising, in combination, a series of pairs of husking-rollers mounted in a downwardly-inclined frame, said frame having end members in which said rollers are journaled, an upwardly-inclined elevator adapted to deliver unhusked ears to the upper ends of said husking-rollers, ear-forwarding bars longitudinally arranged relative to said rollers and slidably connected with the end members of the roller-supporting frame, a transverse shaft adapted to transmit motion to the husking-rollers, a rock-shaft mounted in bearings secured to the side members of the roller-supporting frame, depending levers secured to said rock-shaft and pivotally connected with said ear-forwarding bars, and means connected with said transverse shaft operative to transmit motion to said rock-shaft.

2. An elevator and corn-husker comprising,

in combination, a series of pairs of husking-rollers mounted in a downwardly-inclined frame, said frame having end members in which said rollers are journaled, an upwardly-inclined elevator adapted to deliver unhusked ears to the upper ends of said husking-rollers, ear-forwarding bars longitudinally arranged relative to said rollers and slidably connected with the end members of the roller-supporting frame, a rock-shaft mounted in bearings secured to side members of the roller-supporting frame, depending levers secured to said rock-shaft and pivotally connected with said ear-forwarding bars, a vertically-arranged lever having its lower end pivotally connected with a fixed part of the machine and its upper end connected with one of said depending levers, a transverse shaft adapted to transmit motion to said husking-rollers, an eccentric secured to said transverse shaft, and a pitman connection between said eccentric and said vertically-arranged lever.

3. An elevator and corn-husker comprising, in combination, a horizontally-arranged frame, frames having their lower ends secured to opposite ends of said horizontal frame and inclined upward and inward and connected together intermediate the ends of said horizontal frame, husking-rollers journaled in one of said inclined frames, and ear-conveying means mounted in the other, a transverse shaft journaled near the junction of said inclined frames and operative to transmit motion to said husking-rollers and said ear-conveying means, a transverse shaft mounted upon said horizontal frame intermediate its ends and adapted to receive power from a suitable source, and motion-transmitting means connecting said transverse shafts.

4. An elevator and corn-husker comprising, in combination, a horizontally-arranged frame, frames having their lower ends secured to opposite ends of said horizontal frame and inclined upward and inward and connected together intermediate the ends of said horizontal frame, husking-rollers journaled in one of said inclined frames, and ear-conveying means mounted in the other, a transverse shaft journaled near the junction of said inclined frames and operative to transmit motion to said husking-rollers and said ear-conveying means, a transverse shaft mounted upon said horizontal frame intermediate its ends, a longitudinally-arranged shaft having gear connections with said last-named transverse shaft, and a driving-pulley secured thereto, and means for changing the angular relation between the longitudinal shaft and the transverse shaft connected therewith, and motion-transmitting means connecting said transverse shafts.

5. An elevator and corn-husker comprising, in combination, a horizontally-arranged



frame, frames having their lower ends secured to opposite ends of said horizontal frame and inclined upward and inward and connected together intermediate the ends of  
5 said horizontal frame, husking-rollers journaled in one of said inclined frames, and ear-conveying means mounted in the other, a transverse shaft journaled near the junction of said inclined frame and operative to transmit motion to said husking-rollers and said  
10 ear-conveying means, a transverse shaft mounted upon said horizontal frame intermediate its ends and means for giving motion thereto, motion-transmitting means connecting said transverse shafts, said means com-

prising a clutch mechanism mounted upon said second-named transverse shaft, and means for operating said clutch mechanism, said means comprising a transversely-arranged lever adapted to rock about a pivot  
20 intermediate its end and connected with said clutch mechanism whereby the clutch mechanism may be adjusted from either side of the machine.

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

ORREN S. ELLITHORP.

Witnesses:

THOMAS B. REED,  
OSCAR A. ANDERSON.