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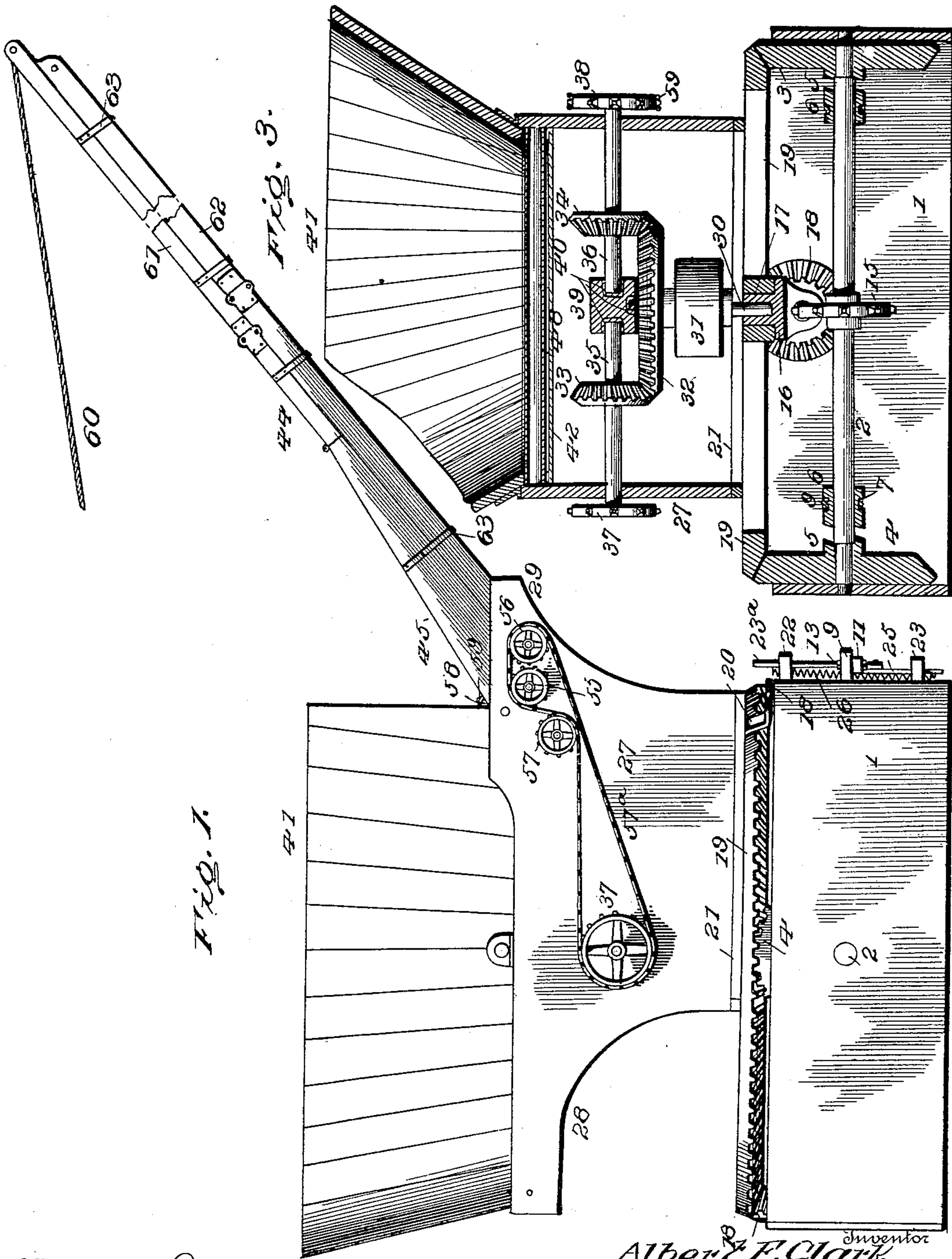
Patented Sept. 12, 1899.

A. F. CLARK.  
STACKER FOR THRESHING MACHINES.

(Application filed May 24, 1898.)

No Model.)

3 Sheets—Sheet 1.



Witnesses

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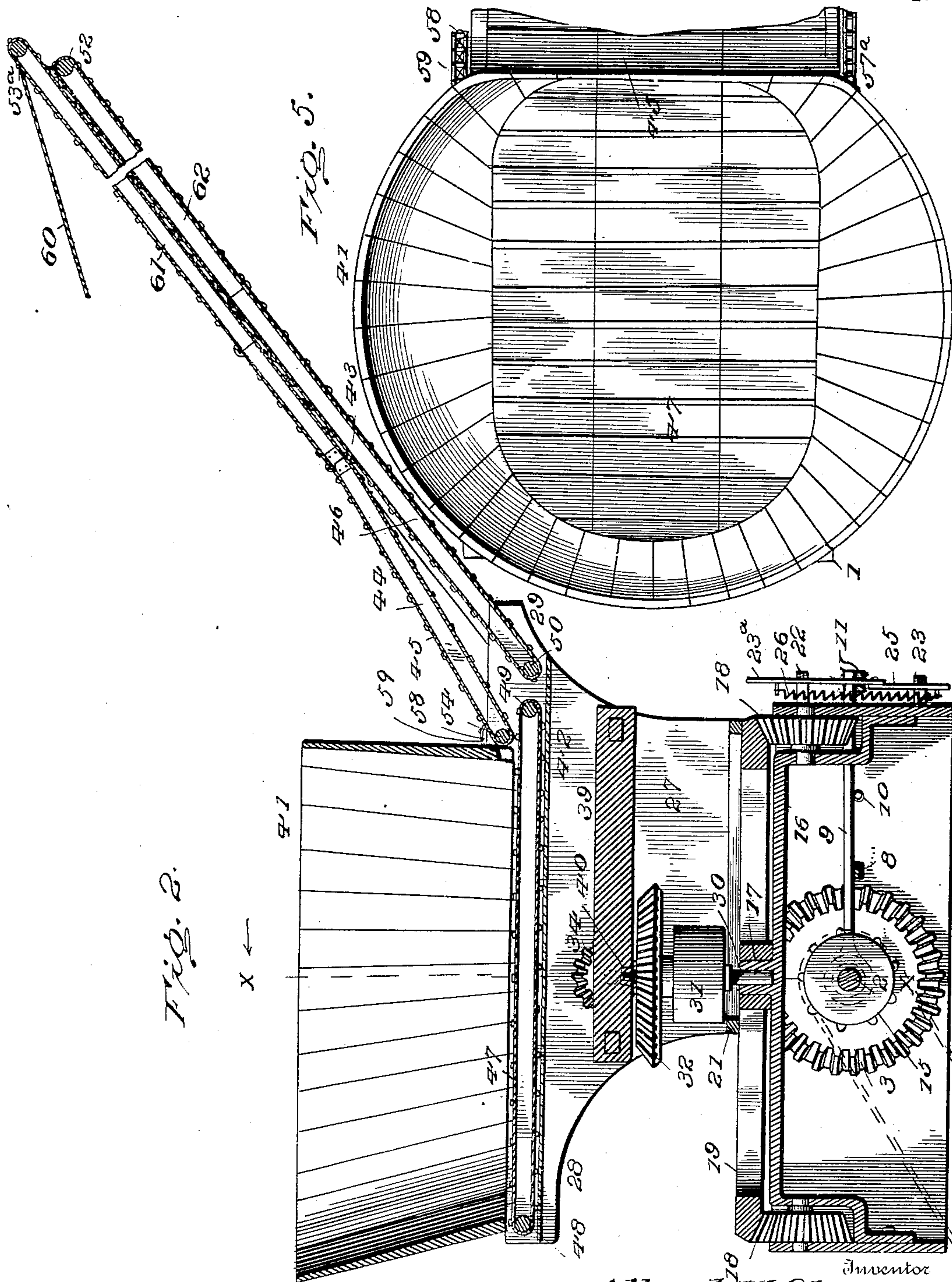
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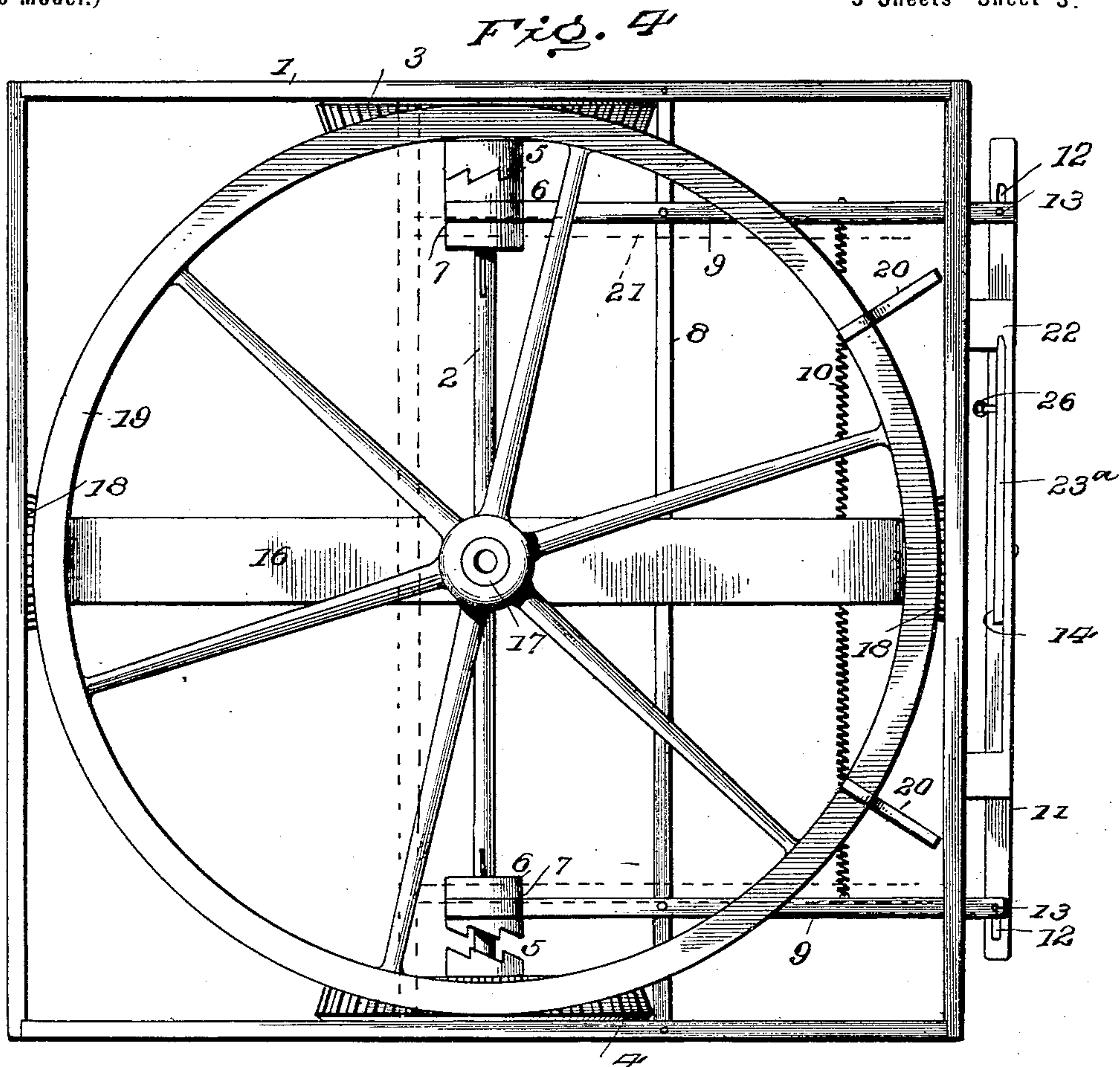
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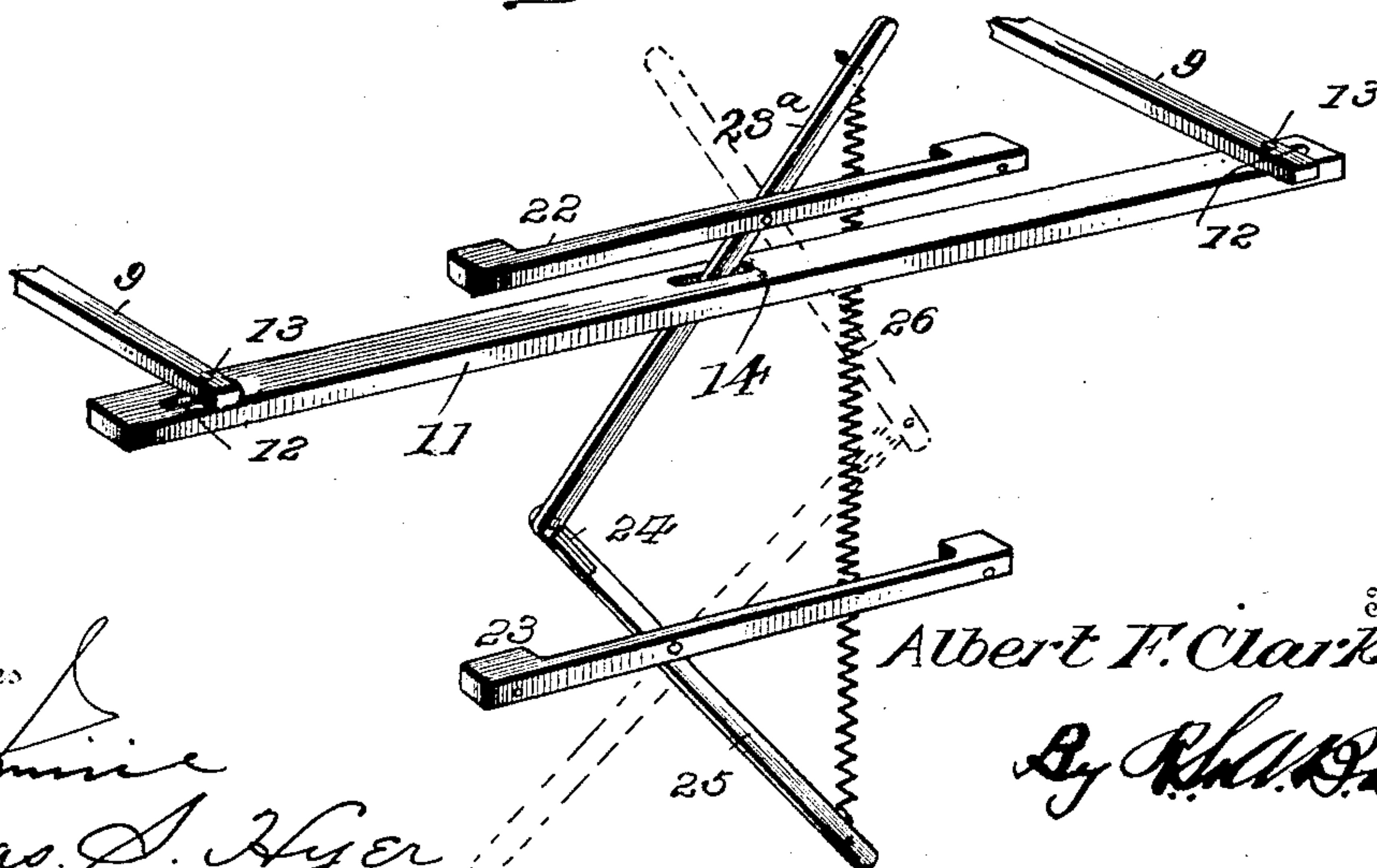
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(No Model.)

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*Fig. 6.*



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# UNITED STATES PATENT OFFICE.

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## STACKER FOR THRESHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 633,074, dated September 12, 1899.

Application filed May 24, 1898. Serial No. 681,627. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT FRANKLIN CLARK, a citizen of the United States, residing at Cherokee, in the county of Cherokee and State of Iowa, have invented certain new and useful Improvements in Stackers for Threshing-Machines; and I do hereby 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.

This invention relates to stackers for threshing-machines; and it consists of the construction and arrangement of parts hereinafter described and claimed.

The object of the invention is to provide means for effectively conveying the straw or other material away from the threshing-machine and stacking it, the position of the stack being automatically controlled and regulated by the stacker itself without interfering with the operation of said threshing-machine or causing a cessation of movement of the parts of the stacker.

In the accompanying drawings, Figure 1 is a side elevation of a stacker embodying the invention. Fig. 2 is a longitudinal vertical section of the improved stacker. Fig. 3 is a transverse vertical section on the line  $x x$  of Fig. 2, looking in the direction of the arrow. Fig. 4 is a top plan view of the turn-table and frame supporting the same. Fig. 5 is a top plan view of the hopper and bottom conveyer therefor and part of the elevator. Fig. 6 is a detailed elevation of a shifting lever and its connections, showing the mode of operation in dotted lines.

Referring to the drawings, wherein similar numerals of reference are employed to indicate corresponding parts in the several views, the numeral 1 designates a frame adapted to be attached to the bed-timbers of the threshing-machine, to which the improved stacker is attached. The frame 1 is composed of side and end beams or timbers of sufficient strength to support the weight of the mechanism resting thereon, and having bearing therein is a shaft 2, on which pinions 3 and 4 run loose and are located adjacent to the opposite ends inside of the said beams of the said frame 1. At the points where the pinions 3 and 4 are mounted on a shaft 2 the latter is reduced in

diameter, and the said pinions have on their inner portions at the center clutch members 5 adapted to be engaged by clutch-sleeves 6, having outer serrated or notched ends and intermediate grooves 7. The said sleeves are feathered on the shaft 2 and rotate with the latter, and when they move into engagement with the clutch members 5 on the pinions 3 and 4 the said pinions are caused to rotate with the shaft. Extending across the frame 1, near the front end, is a fulcrum-bar 8, to which are pivoted opposite levers 9, having their rear ends continuously in engagement with the grooves 7 and beyond the said fulcrum-bar are connected by a spring 10. The outer ends of the levers 9 extend beyond the front termination of the frame and engage the opposite ends of an operating-bar 11. The said opposite ends of the operating-bar 11 are formed with slots 12, and the said outer ends of the levers 9 have pins 13 therein passing through the said slots 12 for the purpose of relieving the said levers when the clutch is thrown out of mesh on one side and the clutch on the opposite side fails to immediately connect, and thereby prevent unnecessary strain or breakage of the lever system set forth. The spring 10, connecting the levers 9, draws the clutch-sleeves in alternative operation into mesh with the clutch members on the pinions 3 and 4 and insures the proper engagement when said clutch-sleeves strike the points of the clutch members on the pinions. The spring 10 is of the retractile type and is normally under tension and tends to move the outer ends of the levers 9 inward and their inner ends outward. As a result of this operation the pins 13 at the outer ends of the levers are, under normal conditions, held against the inner ends of the slots 12, as shown. The slots 12 are of a length to admit of a movement of the bar 11 in either direction, even though the points or terminals of the teeth of the clutch members should come together. When the points of the teeth are in engagement, the pins 13 will move outward in the slots, and the instant the points clear one another the clutch members of the clutch brought into action will engage under the action of the spring 10. In the center of the operating-bar 11 a slot 14 is also formed for a purpose which will be presently described.



On the shaft 2, at the center thereof, a sprocket-wheel 15 is secured and is to be engaged by a chain belt running from the operating mechanism of the thresher and adapted to be controlled by any well-known stopping and starting mechanism commonly used to regulate the rotation of the said shaft.

Extending longitudinally of the frame 1 is a supporting-bar 16, from which rises a step-bearing 17, and at the opposite ends of said supporting-bar are idlers 18. Engaging the pinions 3 and 4 and the idlers 18 is a horizontally-disposed crown-wheel 19, having its hub journaled on the said bearing 17 and at the front provided with opposite pins 20, which are adjustably attached thereto and operate in a manner which will be hereinafter set forth. The said crown-wheel 19 does not completely rotate and acts similar to the fifth-wheel of the running-gear of a vehicle. The teeth of the crown-wheel are continuously in mesh with the teeth of the pinions 3 and 4 and the idlers 18, and resting upon and secured to said crown-wheel is a base-frame 21, comprising transverse and longitudinal bars or beams on which the stacker proper is mounted.

At the front of the frame 1 upper and lower guides 22 and 23 are secured and have their inner portions cut away. Pivotaly connected to the guide 22 is a shifting lever 23<sup>a</sup>, the upper end of which projects through the slot 14 in the operating-bar 11, and the lower end below the pivotal point is attached to the slotted end 24 of a connecting-lever 25, which is fulcrumed on the lower guide 23 and has its lower end also attached to the shifting lever 23<sup>a</sup> by a spring 26. The point of engagement of the upper end of the spring 26 with the lever 23<sup>a</sup> is above the pivotal point of the latter, and the end of said lever which projects above the operating-bar 11 is to be alternately engaged by the pins 20 on the crown-wheel 19. When the pin on the right, for instance, strikes the projecting end of the shifting lever 23<sup>a</sup>, it forces it past the center over toward the left before the clutch-sleeve 6 on the right is operated. This is owing to the arrangement of the slot 14 and of the slots 12 in the ends of the operating-bar 11. A slight movement farther to the left will throw out or disengage the clutch-sleeve 6 on the left from the pinion 3, and this movement is automatically accelerated by the spring 26, which pulls the lever 23<sup>a</sup> and the connecting-lever 25 into the position shown in dotted lines in Fig. 6 and causes the shaft 2 to actuate the pinion 4 to operate the crown-wheel in the opposite direction and move the pin 20 on the left into engagement with the projecting end of said shifting lever and in a similar manner disconnect the clutch-sleeve 6 from the clutch member of pinion 4 and throw the other clutch-sleeve into connection with the pinion 3 to reverse the movement of the said crown-wheel, and thus continue the operation indefinitely. When it is desired to have the

stacker deposit at any one point, shaft 2 is not continuously rotated, as will be understood, and by means of all these operations one or more stacks may be formed, as desired.

Resting on the frame 21, which is attached and moves with the crown-wheel 19, is a lower inclosing frame 27 of the stacker proper, which is located in the main at the front under part of the device and covers the mechanism which is mounted therein, the said inclosing frame 27 at the rear upper portion being provided with an extension 28 and also a slight forward outer extension 29 at the front.

In the step-bearing 17 the lower end of a short vertical shaft 30 is mounted, and on said shaft is keyed a band-pulley 31 and a horizontal beveled gear 32. The band-pulley 31 is engaged by a suitable band or belt from the mechanism on the separator and rotates the gear 32. The said gear 32 is engaged at opposite sides by smaller beveled vertical gears 33 and 34, which are keyed on horizontal counter-shafts 35 and 36, each of which extends outwardly on the opposite sides of the inclosing frame 27 and have thereon exterior of said frame opposite sprockets 37 and 38. Extending longitudinally of the inclosing frame 27 is a bar 39, which has three boxes thereon to receive the ends of the shafts 30 35 36 and form suitable supports for the same.

On the upper portion of the inclosing frame 27 and resting on the extension 28 is a hopper or receiver 41, which is in the main round and flaring except at the front end, where it has rounded corners connected by a straight wall running transversely across the front of the said hopper. By forming the said hopper or receiver rounded at the rear and throughout the greater portion thereof it is always in the same position at the end of the separator—that is, the same diameter remains constant irrespective of the adjustment. Immediately below the hopper 41 a floor 42 is constructed and extends from the inner rear end of the extension 28 to a point slightly in advance of the front termination of the hopper.

The stacker or elevator 43 is connected with the front or outer end of the frame 27 in any of the usual ways, so as to be moved up or down at its outer end to conform to the height of the stack, and is supported at its outer end by a rope or cable 60, attached at its outer end to the stacker and running back and connected with a windlass (not shown) applied to either the frame of the thresher or a part projecting from the stacker-frame, as commonly practiced in this class of machines. The stacker is composed of upper and lower parts 61 and 62, held together by strips 63 in such a manner as to admit of the stacker folding when not in use. The upper and lower parts of the stacker are formed of sections hinged together in the ordinary way, so as to admit of the parts folding readily when required. Each part has an elevator-belt or



conveyer constructed in the ordinary manner, and these conveyers 45 and 46 flare at their lower ends, as shown at 44, so as to receive between them the straw from the conveyer 5 47. Over the floor 42 a conveyer 27 has operation and also consists of belts with slats thereon and travels over the rear roller 48 and a front roller 49, said floor 42 extending from one of these rollers to the other. The 10 lower conveyer 46 engages a lower roller 50 and moves upwardly through the elevator-frame 43 and returns over an upper idler-roller 52. The upper conveyer moves also upwardly through the elevator-frame and 15 back over the idler-roller 53<sup>a</sup>. The conveyer 47 receives the straw, chaff, or refuse deposited in the hopper 41 and carries it forward between the upper and lower conveyers 45 and 46, which hold and deliver it over the 20 upper end of the elevator-frame, a portion of the upper end of the frame being extended to provide a shield. By this means it will be seen that the straw, chaff, or other material is prevented from being blown out of the elevator or from falling back thereinto with the 25 material advantage which will be evident to those skilled in the art. The upper conveyer 45 at its lower end moves over a lower roller 54 and serves as a protector at the entrance 30 of the elevator, and the said upper conveyer stands at an angle over the lower conveyer to prevent choking at this point and to facilitate the disposition of the conveyed material. On the roller 49 a sprocket-wheel 55 is keyed 35 and is located exteriorly of the frame 27. The roller 50 has a sprocket-wheel 56 on the outer portion thereof, and adjacent the sprocket-wheels 55 and 56 is an idler-sprocket 57. Running from the sprocket-wheel 37 on 40 the shaft 35 is a chain belt 57<sup>a</sup>, which travels under or engages the idler-sprocket 57 and over the sprockets 55 and 56, the purpose of the idler-sprocket 57 being to provide more chain belt engaging surface around the 45 sprocket-wheel 55. On the other side of the stacker a sprocket 58 is secured to the end of the roller 54 and has a chain belt 59 running therefrom to the sprocket 38 on the outer end of the shaft 36 for operating the conveyer 45. 50 The spring 26 moves in the cut-away portion of the guides 22 23 when the shifting lever 23<sup>a</sup> is operated, and is thereby held out of engagement with the adjacent movable parts to prevent interference with the proper op- 55 eration of the several devices. By making the shaft 2 smaller at the points where the pinions 3 and 4 engage the same the said pinions are prevented from being dragged inward on the shaft when the clutch-sleeves 6 60 are disconnected therefrom.

The construction of the several parts as set forth will present many advantages from time to time aside from those already enumerated, and the attachment as an entirety will prove

to be a valuable accessory and addition to a 65 threshing-machine.

While the device has been described as a stacker for attachment to a threshing-machine, it will be understood that it may be used for other purposes when found applica- 70 ble, and to accommodate various applications changes in the form, proportions, dimensions, and details of construction can be resorted to without departing from the nature or spirit of the invention or sacrificing any of the ad- 75 vantages thereof.

Having thus described the invention, what is claimed as new is—

1. The combination of an upper rotatable frame supporting a hopper, an elevator and 80 conveyers, a lower frame, a shaft mounted in the lower frame, pinions on opposite portions of said shaft provided with clutch members, other clutch members adjustably mounted on said shaft, means for operating the latter 85 clutch members, and a crown-wheel at the upper part of said lower frame and forming a turn-table for the upper frame and also carrying part of the means for operating the clutch members movable on said shaft. 90

2. The combination with an upper rotatable frame supporting a hopper, an elevator and conveyers, of a lower frame, a shaft therein, a sprocket-wheel mounted on said shaft, pinions loosely mounted on the outer portions 95 of said shaft, clutches on the shaft to engage the said pinions, levers engaging said clutches, a spring connecting said levers, an operating-bar to which the outer ends of said levers are movably attached, a shifting lever projecting 100 upwardly through said operating-bar, and a crown-wheel engaging said pinions and having pins thereon to operate the shifting lever, said crown-wheel being interposed between the two frames. 105

3. The combination of an upper frame supporting a hopper, an elevator and conveyers, a lower supporting-frame, a shaft in the latter, pinions loosely mounted on the outer portions of the shafts, clutches adjustably 110 engaging the shaft, a crown-wheel resting on and engaging said pinions, a step-bearing rising from the lower frame, a vertical shaft engaging said bearing, a band-wheel and horizontal beveled gear on the vertical shaft, 115 counter-shafts carrying vertically-disposed beveled gears meshing with said horizontal beveled gear, sprocket-wheels on the outer ends of said counter-shafts, sprocket-wheels connected to the rollers of the conveyers, and 120 connections between the sprocket-wheels on the counter-shafts and those on the rollers.

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

ALBERT FRANKLIN CLARK.

Witnesses:

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I. C. GRAHAM.