No. 840,276. PATENTED JAN. 1, 1907.

G. C. WILES.

AUTOMATIC PITCHER AND SELF FEEDER FOR THRESHING MACHINES.

APPLICATION FILED JULY 13, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

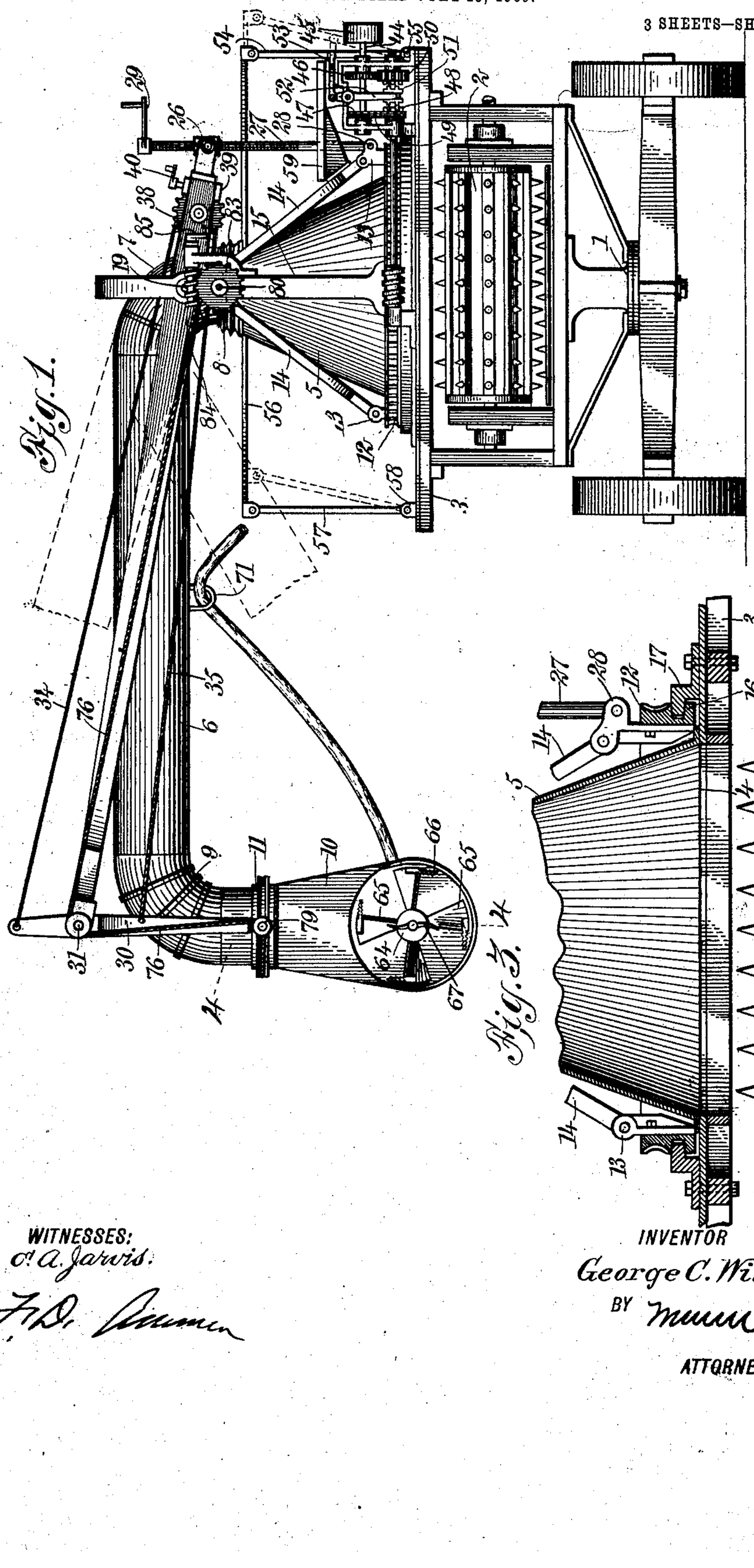

Fig. 3.

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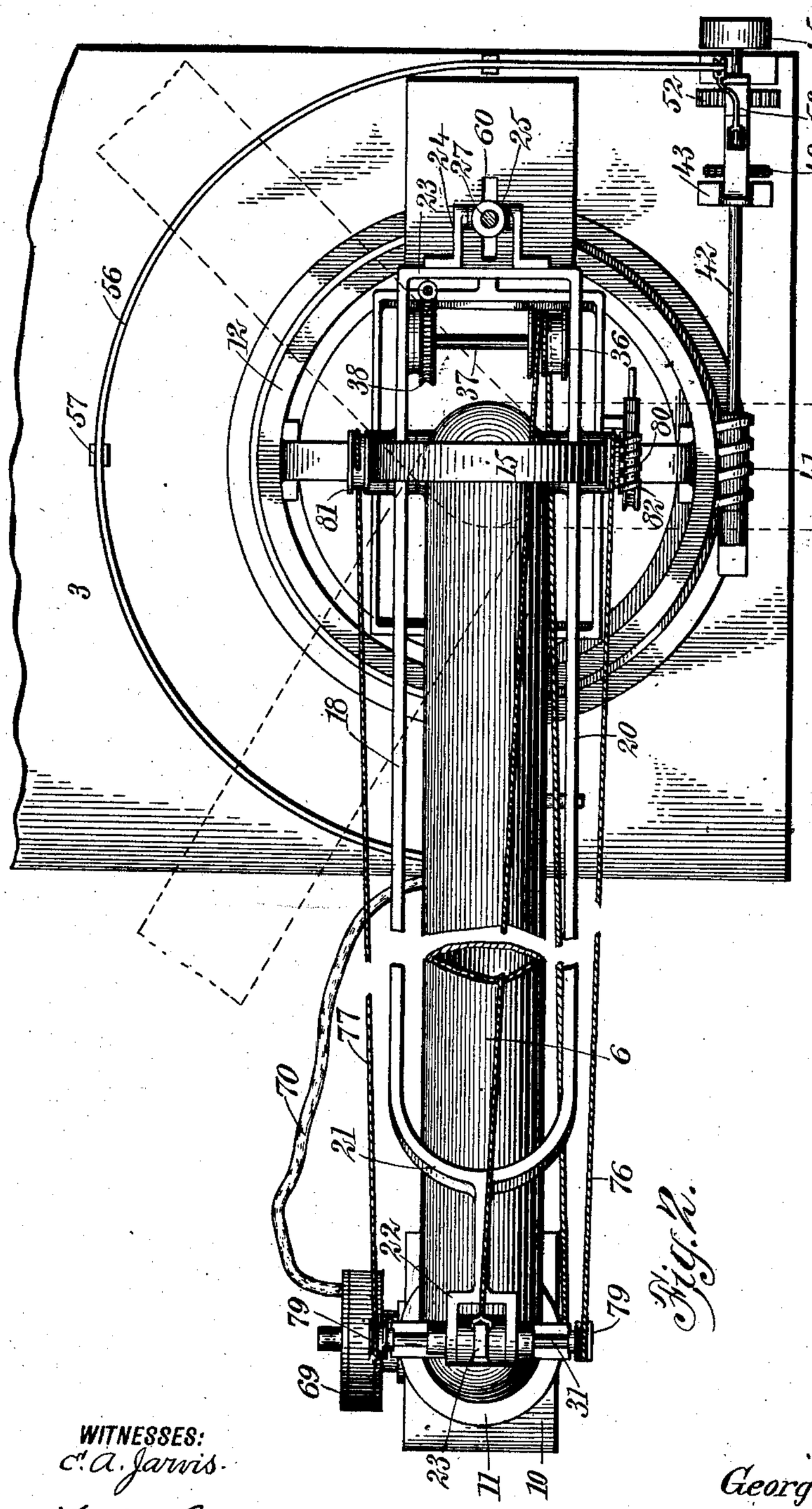

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 4.

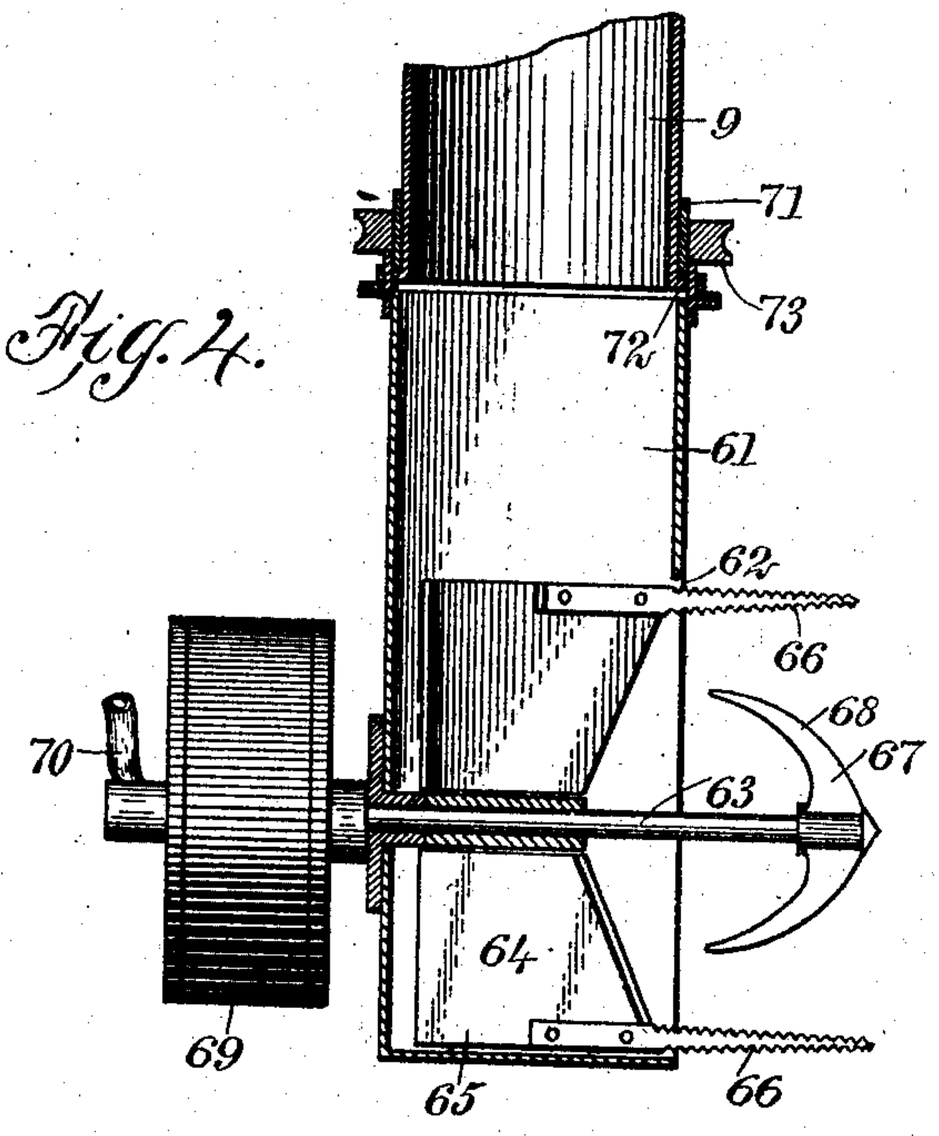
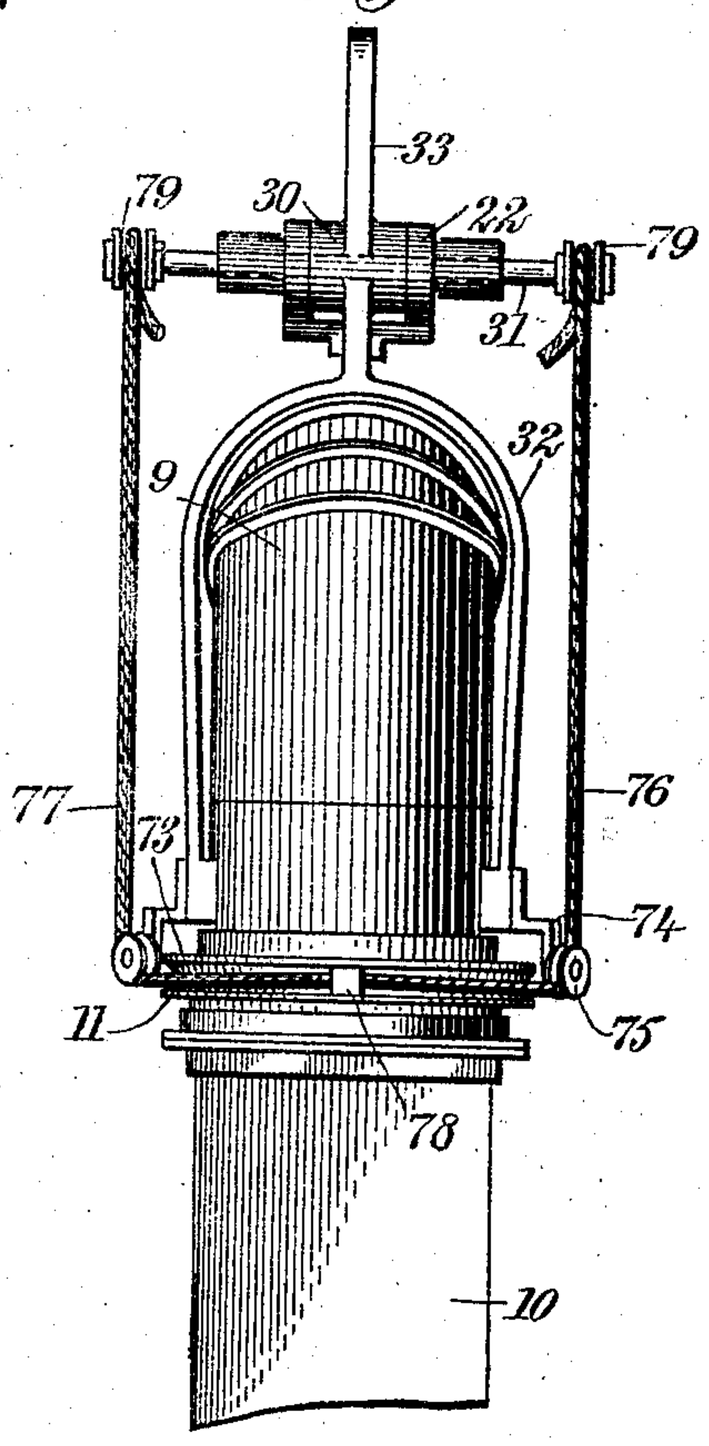


Fig. 5.



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GEORGE C. WILES, OF HUTCHINSON, KANSAS.

AUTOMATIC PITCHER AND SELF-FEEDER FOR THRESHING-MACHINES.

No. 840,276. Specification of Letters Patent. Patented Jan. 1, 1907.

Application filed July 13, 1905. Serial No. 269,485.

To all whom it may concern:

Be it known that I, GEORGE C. WILES, a citizen of the United States, and a resident of Hutchinson, in the county of Reno and State of Kansas, have invented a new and Improved Automatic Pitcher and Self-Feeder for Threshing-Machines, of which the following is a full, clear, and exact description.

This invention relates to threshing-machines, and concerns itself especially with the construction of mechanism for feeding the unthreshed grain to the cylinder.

The object of the invention is to produce feeding mechanism which will enable a quantity of grain lying within a given radius to be fed quickly and automatically to the machine.

The invention consists in the construction and combination of parts to be more fully described hereinafter, and definitely set forth 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 views.

Figure 1 is a front elevation showing my apparatus applied to a threshing-cylinder. Fig. 2 is a plan. In this view certain parts are represented in cross-section. Fig. 3 is a vertical central section taken through my feeding apparatus near the point of delivery to the threshing-cylinder. In this view parts of the apparatus are represented as broken away, together with the body of the threshing-cylinder. Fig. 4 is a section taken substantially upon the line 4 4 of Fig. 1 upon a slightly enlarged scale and illustrating the construction of the suction-head through which the grain passes into the feeding device; and Fig. 5 is a front elevation of the feeding apparatus at a joint disposed above the feeding-head, a portion of the apparatus below said joint being represented as broken away.

Referring more particularly to the parts, 1 represents the forward truck of the threshing-machine, upon which is mounted a threshing-cylinder 2 of any common form. In applying my invention above this cylinder I provide a platform 3, the same having an enlarged central opening 4, as indicated most clearly in Fig. 3. Over this opening 4 I place a delivery mouth or spout 5, which is of substantially conical form, as indicated. To the upper extremity of this spout 5 there is attached a feeder-tube 6, the said tube having a flexible joint or elbow 7 at its point of connection with the spout, and this joint connects through a suitable connection 8 to this spout. To the outer extremity of the feeder-tube 6 another flexible joint or elbow 9 is attached, to the lower extremity of which a suction-head 10 is attached through a swivel connection 11.

I provide means for supporting the feeder-tube 6 and its attached parts in any desired position. To this end on the platform 3 I provide a rotatable worm-wheel 12, to which is attached at suitable points brackets 13, and these brackets have attached thereto braces 14 or diagonals, which are attached rigidly to a frame 15. This frame 15 has substantially the form of an inverted U, the lower extremities of its legs being supported on the worm-wheel 12, as will be readily understood. This worm-wheel 12 is of course of annular form, as indicated. It is formed below with an annular groove 16, into which cleats 17 project, as shown, the same being attached to the upper face of the platform and affording means for securely holding the worm-wheel in position. Near the upper portion of the frame 15 an arm 18 is pivotally attached upon a shaft 19. This arm 18 comprises substantially parallel bars 20, disposed on opposite sides of the feeding-tube 6 and extending longitudinally thereof, as indicated. By means of an integral yoke 21 these bars 20 unite and terminate in a fork or head 22, which is disposed substantially above the suction-head 10, as indicated most clearly in Fig. 1. The bars 20, which compose the arm 18, extend rearwardly beyond the shaft 19 and are connected by an integral tail-bar 23. To this tail-bar a bracket 24 attaches, the same carrying a nut 25. This nut 25 is suitably mounted in the bracket upon a horizontal pin 26. To one of the brackets 13, referred to above, an adjusting-screw 27 is attached by a pivot connection 28, and this adjusting-screw passes through the nut 26 and is provided above with a crank 29. From this arrangement it should be understood that when the crank 29 is rotated the angular position of the arm 18 in a vertical plane may be readily adjusted.

From the head or fork 22 the suction-head 10 is supported. For this purpose a hanger 30 is provided, which is pivotally attached at 31 to the fork, as shown. The lower extremity of this hanger is formed into a yoke 32, as indicated most clearly in Fig. 5, the

arms of the said yoke being attached rigidly below to the lower extremity of the elbow 9. This hanger 30 is formed above with an upwardly-projecting arm 33, which is rigid therewith. Arrangement is made for holding this hanger 30 in any position desired, so as to maintain the suction-head 10 more or less extended with respect to the arm 18. For this purpose controlling cables or cords 34 and 35 are provided, and these are wrapped upon a drum 36, carried on a horizontal shaft 37, mounted between the arms 20 near the tail-bar 23. Near one extremity the shaft 37 is provided with a wheel 38, and a worm 39 coöperates with the same, said worm having a crank 40 for rotating it in a well-known manner. The cords 34 and 35 are wrapped in opposite directions upon the drum 36 and preferably constitute extensions or ends of the same cord. From this arrangement when the drum 36 is rotated one of the cords will be paid out while the other is taken up. In this way the angular position of the hanger 30 upon its pivot-pin 31 may be adjusted as desired.

Arrangement is made for rotating the worm-wheel 12 in either direction. For this purpose a main worm 41 is provided carried rigidly upon a horizontal shaft 42. Near one edge of the platform 3 the shaft 42 is rotatably mounted in a suitable bracket 43. In the upper part of this bracket 43 a driving-shaft 44 is mounted, the same carrying a rigid driving-pulley 45 over which a belt may pass. The shaft 44 carries rigidly a gear-wheel 46 and a sprocket-wheel 47. Opposite the sprocket-wheel 47 there is a sprocket-wheel 48, which is loosely carried upon the portion of the shaft 42 which passes through the bracket. A chain 49 connects these sprocket-wheels, as indicated. Also upon the shaft 42 there is loosely mounted a gear-wheel 50, which meshes with the aforesaid gear-wheel 46. Between the sprocket-wheel 48 and the gear-wheel a sliding collar 51 is arranged upon the shaft 42, and the opposite sides of this collar are formed so that it constitutes a clutch member. The adjacent faces of the sprocket-wheel 48 and the gear-wheel 50 are correspondingly formed, so that if the collar 51 is in engagement with either of these parts a clutch will be formed. The collar 51, it should be understood, is keyed or feathered to the shaft, so that when it rotates it drives the shaft. From this arrangement it should be apparent that if the shaft 44 is rotated in a given direction and the collar 51 is in clutch with the sprocket-wheel 48 the shaft 42 will then be driven in the same direction as the shaft 44; but if, on the other hand, the collar 51 is in clutch with the gear-wheel 50 the direction of rotation transmitted to the shaft 42 will be opposite to that of the shaft 44. The collar 51 is engaged by a shifting yoke 52, which has an upwardly-extended arm attached to a link 53. This link 53 is attached at its extremity to a lever 54, which is pivotally mounted at 55 on a bracket on the upper side of the platform 3. This lever 54 constitutes a stanchion for supporting a rail 56 of substantially semicircular form disposed about the axis of the opening 4 as a center. At suitable points this rail 56 is supported upon stanchions 57, which are pivoted to the rail and pivoted to brackets 58 on the platform, as indicated. The stanchions 57 are pivoted so that they are adapted to move in planes parallel with the plane in which the lever 54 moves. This arrangement is adopted so as to enable the clutch-yoke 52 to be operated whatever be the position of the operator's platform 59. This platform 59 is attached, as indicated, to the diagonal braces 14 and is formed with a slot 60, through which the adjusting-screw 27 passes. Evidently on account of the rotation of the frame 15 and the worm-wheel 12 unless such a provision as this were made the lever 54 would be out of reach of the operator standing upon the platform in many of the possible positions for the feeder-tube and the arm 18.

Referring especially to Fig. 4, the construction of the suction-head 10 will now be described together with the manner of attaching it to the elbow 9. This head comprises a casing 61, which preferably enlarges below and is provided on its forward face with a circular opening 62. The side faces of the casing are preferably flat, as shown. Preferably on the axis of the opening 62 a horizontal shaft 63 is rotatably mounted in the casing 61, and this shaft carries a fan 64, the blades 65 whereof are inclined, as indicated, in such a manner that when the fan rotates air will be drawn in through the opening 62 and forced upwardly through the casing 61 and through the feed-tube 6. The outer edges of the blades 65 are provided with serrated fingers 66, which project through the opening 62 near the edges thereof, as indicated. The shaft 63 is preferably extended considerably beyond the fan 64, so as to project through the opening 62, and its extremity is provided with a crab 67 having oppositely-projecting arms 68, which are preferably curved slightly, as shown in Fig. 1. These arms preferably project inwardly at their extremities in the direction of the fan. At the rear of the casing 61 a turbine-engine 69 is mounted, the same being driven through a hose 70. This turbine-engine may be driven either by air or steam. The hose 70 leading thereto is preferably supported upon the under side of the feeder-tube 6, as indicated at 71, its inner end extending to a point near the platform 3, where the supply of operating fluid will be received.

To the upper extremity of the casing 61 a ring 71 is rigidly attached, which ring is dis-

posed about the lower extremity of the elbow 9 and supported upon a flange 72 at the lower extremity of the said elbow. The ring 71 carries rigidly an annular pulley 73, and arrangement is made for rotating this pulley 73 so as to rotate the casing 61 into any desired position upon its vertical axis. For this purpose the lower extremities of the arms of the hanger 30 have brackets 74 attached, which carry guide-pulleys 75. Around these guide-pulleys pass controlling cables or cords 76 and 77, which attach at their outer extremities to an ear 78, formed on the pulley 73, as indicated most clearly in Fig. 5. From the pulleys 75 the cords 76 and 77 pass upwardly and over guide-pulleys 79, which are carried loosely upon the pivot-pin 31, referred to above, which pivot-pin is extended at its extremities for this purpose. At a suitable point on the frame 15 a transverse shaft 80 is provided, the extremities whereof project beyond the sides of the frame and carry drums 81 and 82, disposed, respectively, on opposite sides of the frame. Upon these drums the cords 77 and 76 respectively wrap, the same being wound in opposite directions, as indicated most clearly in Fig. 2. The shaft 80 carries rigidly a worm-wheel 83, with which coöperates a worm 84, the same having a crank 85 for rotating it in a common manner. From this arrangement it should be evident that the crank 85 affords means for rotating the suction-head 10 into any position desired, it being understood that as the shaft 80 rotates one of the cords 76 or 77 will be taken up, while the other will be paid out.

The mode of operation of the machine will now be described.

The threshing-cylinder 2 will be driven continuously in the usual manner. The grain to be fed to the threshing-cylinder will be stacked in the vicinity of the threshing-cylinder and within the radius of operation of the feed-tube 6. By means of the power which would be transmitted by a belt to the pulley 45 the shaft 42 will be controlled through the clutch-yoke 52, enabling the frame 15 and the parts carried thereby to be rotated into any position desired. In this way the angular position of the feed-tube 6 in a horizontal plane will be accurately regulated. By operating the crank 29 the arm 18 will be raised or lowered so as to bring the suction-head 10 into the vicinity of the supply of grain. By rotating the crank 40 the position of the hanger 30 will be controlled as desired, so as to adjust the suction-head 10 out or inwardly with reference to the arm. By reason of these three possible movements the position of the suction-head may be very nicely controlled. In addition to this the cables 76 and 77, controlled as they are by means of the crank 85, afford means for rotating the suction-head into any position desired upon its vertical axis. In this way the opening 62 to the fan would be turned about so as to face the stack of grain. The fingers 66 operating upon the grain would loosen the same, and the suction produced by the movement of the fan 64 would draw this grain into the feed-tube and drive the same toward the threshing-cylinder. The crab 67 operates to assist in loosening up the stack of grain in advance of the opening 62 and facilitates the feeding of the grain through the opening.

From this arrangement it will be understood that the feed-tube 6 and suction-head 10 may reach all of the grain stacked within its radius of operation. Furthermore, in all of the possible positions of the feed-tube the rail 56 will be within easy reach of the operator standing upon the platform 59. In this way the operator will always have complete control over the rotation of the feed-tube upon its vertical axis.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. Feeding mechanism for a thresher, comprising in combination, a pneumatic feeder-tube, a suction-head at the extremity thereof and carrying a fan, a motor at said suction-head for driving said fan, means for controlling the position of said feeder-tube, and a hose leading to said engine and supported on said tube.

2. Feeding mechanism for a thresher, comprising in combination, a platform having an opening disposed above the thresher-cylinder, a spout disposed over said opening, a feed-tube having a swivel connection with said spout, a wheel surrounding said spout and supported on said platform, a frame supported on said wheel, an arm carried by said frame and supporting the outer extremity of said tube, means for adjusting said arm, means for rotating said wheel, and a fan at the outer extremity of said feed-tube.

3. Feeding mechanism for a thresher, comprising in combination, a feed-tube adapted to deliver to the thresher-cylinder, means for rotating said feed-tube upon a vertical axis, an operator's platform rotatable upon said axis with said tube, mechanism for controlling said tube, a rail near said platform, and a connection from said rail to said mechanism for operating the same.

4. Feeding mechanism for a thresher comprising, in combination, a fixed platform, a feed-tube supported on said platform, means for rotating said feed-tube upon a vertical axis, an operator's platform rotating with said tube, a rail having pivoted stanchions supported on said fixed platform, and mechanism for controlling said tube mounted on said fixed platform and actuated by said rail.

5. Feeding mechanism for a thresher comprising in combination, a feed-tube, a casing carried thereby having an opening in the wall

thereof, and a fan rotatably mounted within said casing and having fingers projecting through said opening and adapted to engage the supply of grain.

6. Feeding mechanism for a thresher, comprising in combination, a feed-tube adapted to deliver to the thresher-cylinder, a casing carried at the extremity thereof and having an opening in its wall, a fan mounted within said casing and adapted to produce a suction through said opening, and members projecting from said fan and adapted to engage the grain-supply.

7. Feeding mechanism for a thresher, comprising in combination, a feed-tube, a delivery-spout, a flexible connection between said tube and said delivery-spout, a suction-head at the outer extremity of said tube, a flexible connection between said suction-head and said tube, a frame, means for rotatably supporting said frame, an arm carried by said frame, means for adjusting said frame, a hanger pivotally attached to the outer extremity of said arm and supporting said suction-head, cables leading from said hanger and affording means for adjusting the position thereof, a swivel connection between said suction-head and said tube, means for rotating said suction-head, and means for generating an air-current in said tube.

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

GEORGE C. WILES.

Witnesses:

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ALBERT H. BRIGGS,
J. U. BROWN.