

No. 658,095.

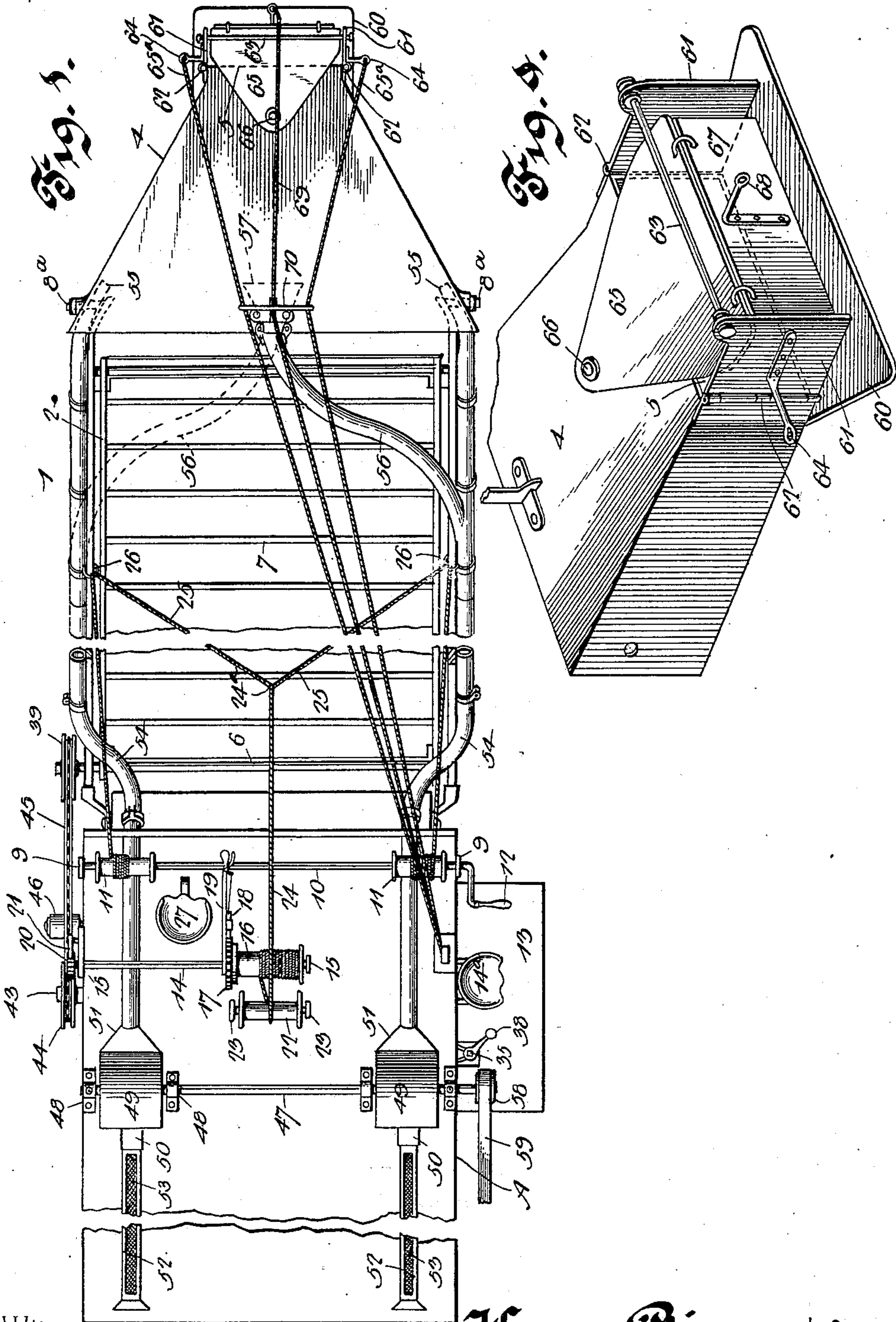
Patented Sept. 18, 1900.

H. RIES.
STRAW STACKER.

(Application filed May 23, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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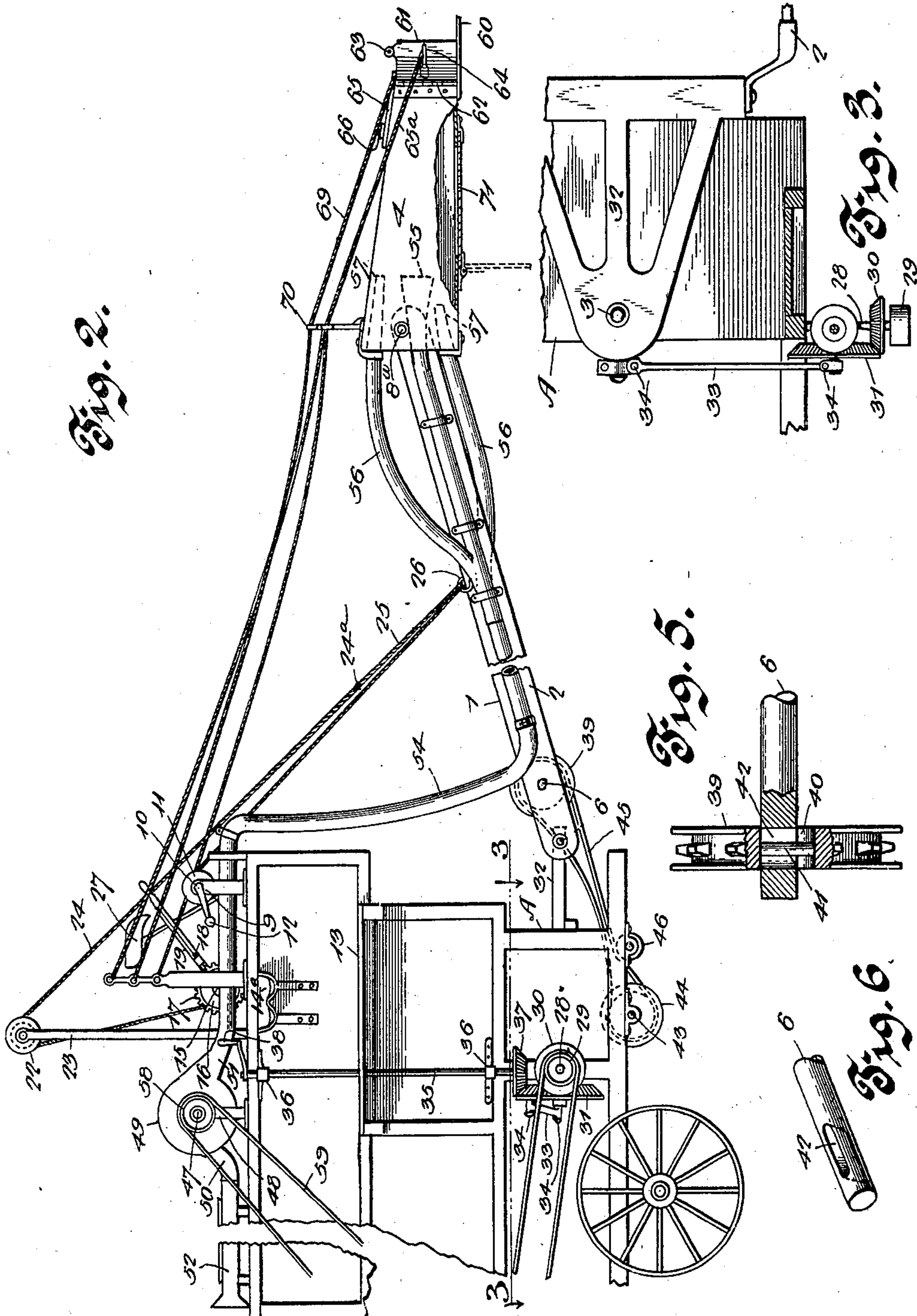
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UNITED STATES PATENT OFFICE.

HENRY RIES, OF BOWLING GREEN, OHIO.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 658,095, dated September 18, 1900.

Application filed May 23, 1900. Serial No. 17,706. (No model.)

To all whom it may concern:

Be it known that I, HENRY RIES, a citizen of the United States, residing at Bowling Green, in the county of Wood and State of Ohio, have invented a new and useful Straw-Stacker, of which the following is a specification.

My invention is an improved straw-stacker for grain-separators and threshing-machines.

One object of my invention is to provide improved means for delivering the straw from the stacker onto the stack pneumatically, whereby the straw will be carried as far as may be required from the hood at the outer end of the stacker and whereby the straw is prevented from choking in the hood.

Another object of my invention is to effect improvements in the hood whereby the latter may be so adjusted as to direct the delivery of the straw onto the stack in any direction required.

Another object of my invention is to effect improvements in the means for swinging the stacker.

Another object of my invention is to effect improvements in the means for conveying power to the endless carrier in the stacker.

My invention consists in the peculiar construction and combination of devices herein-after fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view of a threshing-machine provided with a stacker constructed in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail plan view of the pivotal connection of the stacker and means for swinging the same. Fig. 4 is a detail perspective view of the hood. Fig. 5 is a detail elevation, partly in section, of one of the sprocket-wheels employed for transmitting power to the endless carrier in the stacker. Fig. 6 is a detail perspective view of the shaft to which said sprocket-wheel is attached.

In the embodiment of my invention the stacker 1 has a swinging frame 2, which is pivotally attached to the casing A of the threshing-machine by a king-bolt, as at 3, Fig. 3. To the outer end of the frame 2 of the stacker is pivotally attached the inner side of the hood 4. The hood is of the form

here shown, the sides thereof converging outwardly to form the contracted discharge-opening 5. The lower end of the frame 2 is pivotally mounted upon the shaft 6 at the lower side of the endless carrier 7, and the pivotal connection between the hood and the upper end of the frame 2 is effected by the bolts 8^a at the upper side of the endless carrier.

I will now describe means for raising and lowering the stacker and for swinging the same laterally, as may be required, when the machine is in operation.

On the deck of the threshing-machine in bearings 9 is mounted a shaft 10, which is provided at its ends with winches 11, and at one end of the said shaft is a hand-crank 12, whereby it may be turned by an operator stationed on a platform 13 on one side of the casing A. Above the platform is a seat 14^a for the operator. A shaft 14 is also disposed on the deck of the casing A parallel with the shaft 10 and is mounted in bearings 15. On said shaft 14 is a winch 16, which is adapted to rotate on the shaft 14 independently of the latter and is provided at one end with a ratchet-wheel 17, which is engaged by a dog 18, carried by a hand-lever 19, which is fulcrumed on said shaft 14. The latter is provided at its outer end with a ratchet-wheel 20, engaged by a pawl 21. A guiding-sheave 22 is also mounted on the deck of the threshing-machine in bearings 23. The hoisting-rope 24 is attached to the winch 16, passes over the guiding-sheave 22, and is divided at 24^a, the branch ropes 25 passing through guide-rings 26 in the sides of the stacker-frame 2 and extending to the winches 11, to which they are attached. A seat 27 is mounted on the deck of the threshing-machine casing at a point convenient to the hand-lever 19. It will be understood that by means of the winches and hoisting-ropes hereinbefore described the stacker-frame may be raised and lowered. The branch ropes 25 are coiled in opposite directions on the winches 11, and hence by turning the shaft 10 by means of the crank 12 one of said branch ropes will be paid out and the other will be coiled upon one of the winches, thereby moving the stacker-frame laterally, and by reversing the rotation of the shaft 10 the stacker may be moved in either direction manually and adjusted as may be required.

The winches 11 and ropes 25 are especially useful in adjusting the stacker to a position which it may be desired to retain when in operation for the formation of a stack, when the object 5 sought is to drop the straw from a fixed point and allow the same by its own gravity to form a conical stack.

I have also devised means for swinging the stacker-frame either by hand or by power for 10 the formation of a rick, which means I will now describe.

A stub-shaft 28 is mounted in suitable bearings on one side of the casing A. Said stub-shaft is provided at its outer end with a power- 15 pulley 29 and a beveled gear-wheel 30, the latter engaging a beveled gear-wheel 31, which is disposed in a vertical plane and at right angles to the casing A and is connected to the inner end of the pivotal section 32 of the 20 swinging stacker by a pitman 33, in which are included flexible joints, as at 34. Power being applied to the shaft 28 by a belt on the pulley 29, it will be understood that rotary motion will be imparted to the gear 31, which 25 through the pitman 33 will impart oscillatory motion to the stacker and cause the latter to swing laterally back and forth from the rear end of the threshing-machine.

In connection with the means just described 30 for swinging the stacker I have devised means for doing the same manually, which I will now describe.

A vertical shaft 35 is mounted in suitable bearings, as at 36, on the side of the casing 35 A and is provided at its lower end with a beveled pinion 37, which may be engaged with the beveled gear-wheel 31, and at the upper end of the said shaft is a hand-crank 38, which 40 may be turned by the operator stationed on the platform 13.

I will now describe means by which power is conveyed to the endless carrier in the stacker-frame, whereby the endless carrier may be operated at all times while the machine 45 is in operation and in whatever position assumed by the stacker.

The shaft 6, which operates the endless carrier, is provided at one end with a sprocket-wheel 39. The central opening 40 in said 50 sprocket-wheel, and through which the shaft 6 extends, is of greater diameter than the said shaft, and transversely disposed in the said opening is a pivot-pin 41, which operates loosely in an elongated opening 42, with which 55 the said shaft is provided. The said openings 40 42 and said pin 41 constitute a universal-joint connection between the shaft and the sprocket-wheel, whereby the latter is adapted to turn angularly on the said shaft 60 while rotating in unison therewith. The power-shaft 43 of the threshing-machine is at its outer end identical in construction with the outer end of the shaft 6, and the sprocket-wheel 44 on said power-shaft is identical in 65 construction with sprocket-wheel 39 and is connected thereto by an endless sprocket-chain 45, the lower lead of the latter passing

over an idle sheave 46. By means of the sprocket-wheels 44 39 and endless sprocket-chain 45 a flexible connection is established 70 between the power-shaft of the threshing-machine and the counter-shaft 6, which operates the endless carrier in the stacker, the said flexible connection compensating for the lateral movement of the stacker and enabling 75 the latter to be swung to either side with reference to the threshing-machine without disconnecting the endless carrier in the stacker from the power-shaft of the threshing-machine. The weight of the sprocket-chain is 80 sufficient to keep the links thereof in operative engagement with the sprockets of the wheels 39 44 to all adjustments of the straw-carrier.

A leading object of my invention is the 85 provision of means for carrying away the dust created during the operation of the machine and which is oftentimes so dense as to greatly incommode the persons employed in the operation of the machine and under some 90 circumstances, as where the machine is being used in a barn or other building, renders the successful operation thereof impossible. A shaft 47 is mounted in bearings 48 on the deck of the threshing-machine and is pro- 95 vided with blast-fans, which operate in fan-casings 49. The latter are closed to the exterior air excepting at the air-intakes 50 on one side thereof and outlets 51 on the opposite sides thereof. Exhaust-pipes 52 are dis- 100 posed longitudinally on the deck of the threshing-machine and are attached to the air-intakes 50 of the fan-casings, the said exhaust-pipes being provided with perforations or with openings covered with foraminous ma- 105 terial, as at 53, which, while admitting of the passage of dust and other minute particles, together with the air, into the said exhaust-pipes, prevents straws and the like material from being sucked into them by the exhaust- 110 currents created by the blast-fans. Blast-pipes 54, which are flexible, are attached to the outlets 51 of the fan-casings and lead to the sides of the hood. The said blast-pipes are provided with discharge-nozzles, as at 55, 115 which are disposed in opposite sides of the hood. Each of the said pipes 54 is provided with a branch-pipe 56. Said branch-pipes extend, respectively, to the inner portion of the hood, and their discharge-nozzles 57 are 120 disposed, respectively, above and below the endless carrier in the stacker-frame. Hence the straw which is delivered by the endless carrier into the hood is blown through the latter by the currents of air discharged from 125 the pipes 54 56, the strength of these currents being such that the straw may be blown a considerable distance from the hood before descending onto the stack, and hence during the operation of the machine a stack may be 130 formed without the necessity of employing a man thereon with a fork to dispose of the straw appropriately as the same falls upon the stack. It will be understood that the

blast-fans which create the blasts of air hereinbefore referred to act exhaustively in the exhaust-pipes 52, and hence the dust which arises from the machine is sucked into said exhaust-pipes, carried through the pipes 54 56, and discharged pneumatically from the hood, together with the straw. The fan-shaft 47 may be rotated by any suitable means. I have herein shown the same as provided with a power-pulley 58, driven by an endless belt 59 from a counter-shaft, (not shown,) with which, as is usual in this class of machines, the threshing-machine may be provided.

I will now describe my improved means whereby the straw may be pneumatically delivered from the hood at any required angle with relation to the hood and at any required velocity.

The hood is provided on the lower side of the discharge-opening 5 thereof with a horizontally-extending plate 60, which aligns with the lower side of the hood. Deflecting-plates 61 are hinged to the vertical sides of the opening 5, as at 62, and are adapted to swing laterally on said plate 60 and are connected together by a rod 63, whereby said plates are adapted to move in unison and preserve their parallel relative arrangement under all conditions, connections between the rod 63 and the said deflecting-plates 61 being flexible, as required, to admit of the movement of said plates on said rod. The plates 61 are provided with arms 64, to which are attached operating-cords 65^a, by means of which the said plates may be swung in any required position. On the top of the hood is pivotally attached a plate 65, as at 66, the front side of the said plate projecting beyond the discharge-opening 5 and being disposed between the hinged plates 61, and thereby when the latter plates are turned the plate 65 is turned with them, as will be understood. A discharge-gate or valve-plate 67 is disposed on the plate 60 and between the hinged plates 61 and the upper side of said valve-plate is hinged or otherwise flexibly attached to the outer side of the pivoted plate 65, as shown in detail in Fig. 4. The said gate-plate 67 serves to regulate the discharge of material from the hood and the strength of the pneumatic currents and enables the discharge-opening 5 to be uncovered to any required extent. An arm 68 is attached to the gate-plate 67 and projects from the front side thereof, and to the said arm is attached an operating-cord 69. The said operating-cord 69, together with the cords 65^a, passes through a guide 70, which is disposed on the hood, and the said cords are belayed at a point convenient to the operator stationed on the platform 13. A trap-door 71 is disposed in the lower side of the hood 4, and when the valve-plate 67 is closed said trap-door 71 may be opened, thereby causing the straw to drop vertically from the hood. It will be understood that by means of the cords 65 the plates 61, 65, and 67 may be so adjusted on the hood as to

direct the discharge of the straw therefrom in any direction required.

Having thus described my invention, I claim—

1. The combination with a grain separator and thresher, of a stacker and a discharge-hood, flexible tubes leading to the discharge-hood, above and below the stacker, blast-fans discharging through said tubes, and air-intake pipes for said blast-fans, disposed on the exterior of the casing of the thresher and separator, substantially as described.

2. In combination with a stacker and a discharge-hood, flexible tubes leading to the discharge-hood, above and below the stacker, and means to create blasts of air and direct the same through the said flexible tubes into the discharge-hood, above and below the stacker, substantially as described.

3. In combination with a grain thresher and separator, the swinging stacker comprising the swinging frame 2, and the inner pivotal section 32, the latter forming the support for the former, a gear-wheel 31, a pitman connecting said gear-wheel to the inner end of the said stacker-section 32, said pitman having flexible joints, and a power-shaft having a gear engaging the said gear-wheel 31, substantially as described.

4. In combination with a grain thresher and separator, the swinging stacker, comprising the swinging frame 2, and the inner pivotal section 32, the latter forming the support for the former, a gear-wheel 31, a pitman connecting said gear-wheel to the inner end of the said stacker-section 32, said pitman having flexible joints, a power-shaft having a gear engaging the said gear-wheel 31, a shaft having a hand-crank, and a pinion on said shaft adapted to engage the said gear-wheel 31, substantially as described.

5. The combination with a swinging stacker of a discharge-hood, and blast-fans having blast-pipes leading from the casings thereof to the sides of said hood and discharging therein, the said blast-pipes having branches discharged within said hood, above and below the straw-carrier, substantially as described.

6. The combination of a supporting-frame, a swinging stacker-frame mounted thereon and adapted also for vertical movement, the winches 11, 16 and hoisting-ropes engaged by guides with which said stacker-frame is provided, the said hoisting-ropes being attached to the said winches, substantially as described.

7. In a stacker of the class described, the hood having the discharge-opening, the extended plate below said opening, the plates 61 hinged to the vertical sides of said openings, the pivoted plate 65 disposed above said opening, the gate-plate 67 connected to said plate 65, connections between the plates 61, whereby they are caused to move in unison, and means substantially as set forth to adjust said plates 61, substantially as described.

8. In a stacker of the class described, the hood having the discharge-opening, and the

plate or valve thereon, the said hood having an opening in its lower side and a closure for said opening, substantially as described.

9. The combination with a machine-frame, 5 and a swinging stacker-frame having an endless carrier, of coacting shafts to transmit power from the machine-frame to said endless carrier, sprocket-wheels flexibly jointed on said coacting shafts, and an endless sprocket- 10 chain connecting said sprocket-wheel, substantially as described.

10. A grain separator and thresher having a stacker and a discharge-hood, in combination with blast-fans having their drums or 15 casings mounted on the machine-casing and

provided with perforated air and duct intake pipes disposed longitudinally of the machine-casing, and discharge-pipes leading from said fan casings or drums to said hood, whereby the dust arising from the machine is collected 20 by said perforated air-intake pipes and discharged pneumatically, together with the straw, from the discharge-hood of the stacker.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 25 the presence of two witnesses.

HENRY RIES.

Witnesses:

EDWARD VELER,
J. M. HOFFO.