

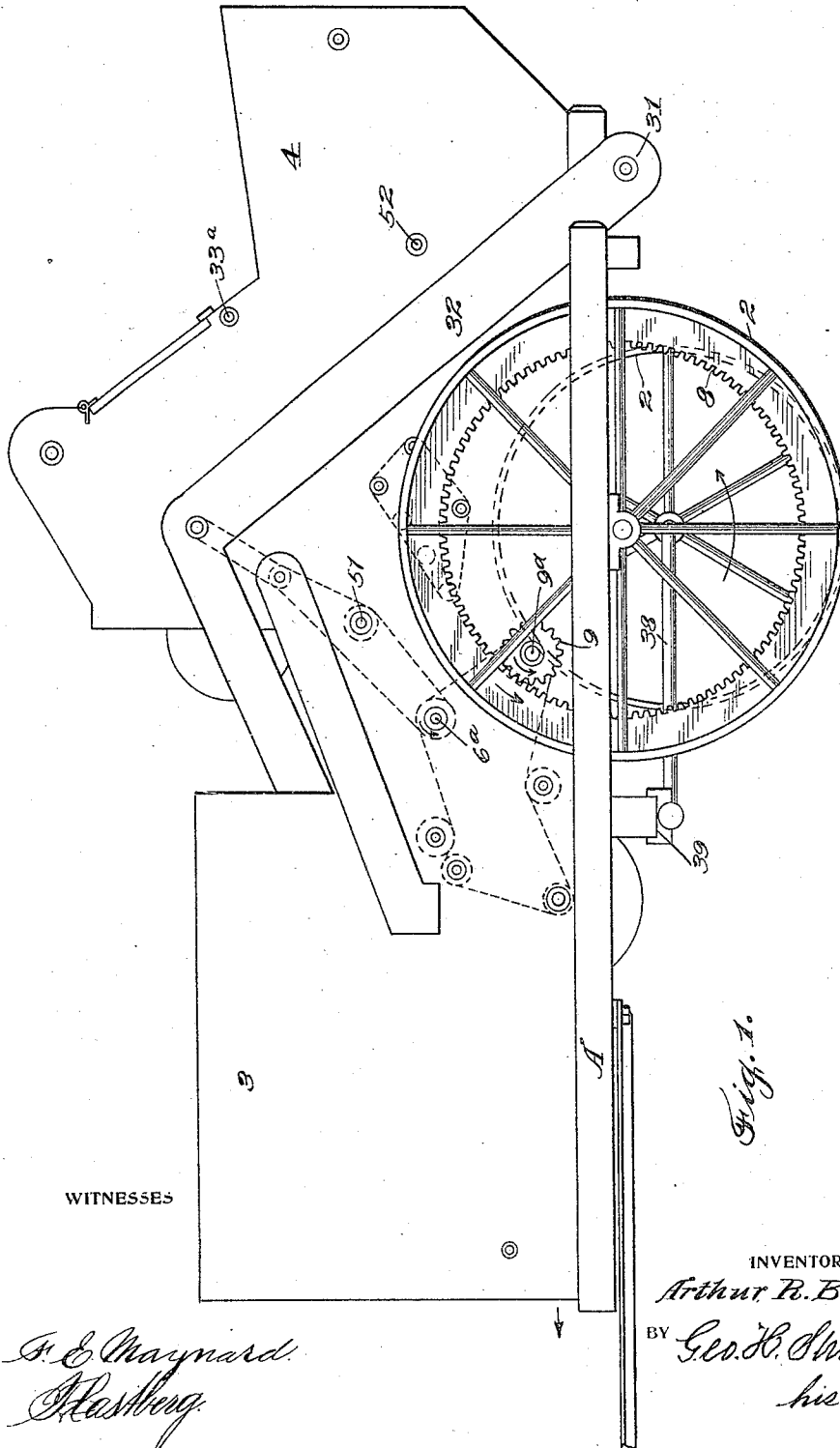
A. R. BLEWETT.
HARVESTER.

APPLICATION FILED FEB. 25, 1909.

Patented June 7, 1910.

4 SHEETS—SHEET 1.

960,799.



WITNESSES

G. E. Maynard.
Witness

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Arthur R. Blewett,
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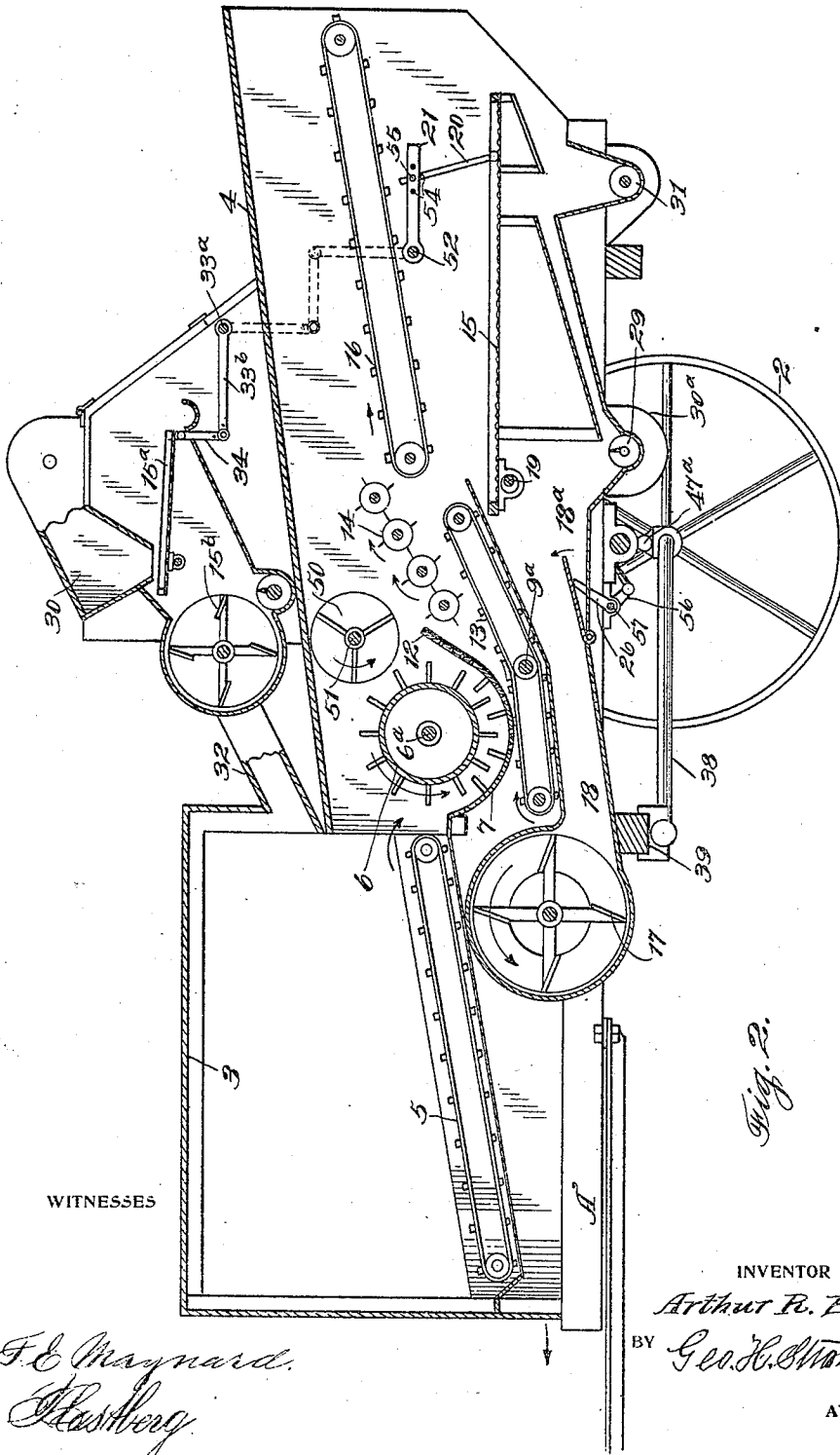
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4 SHEETS—SHEET 2.



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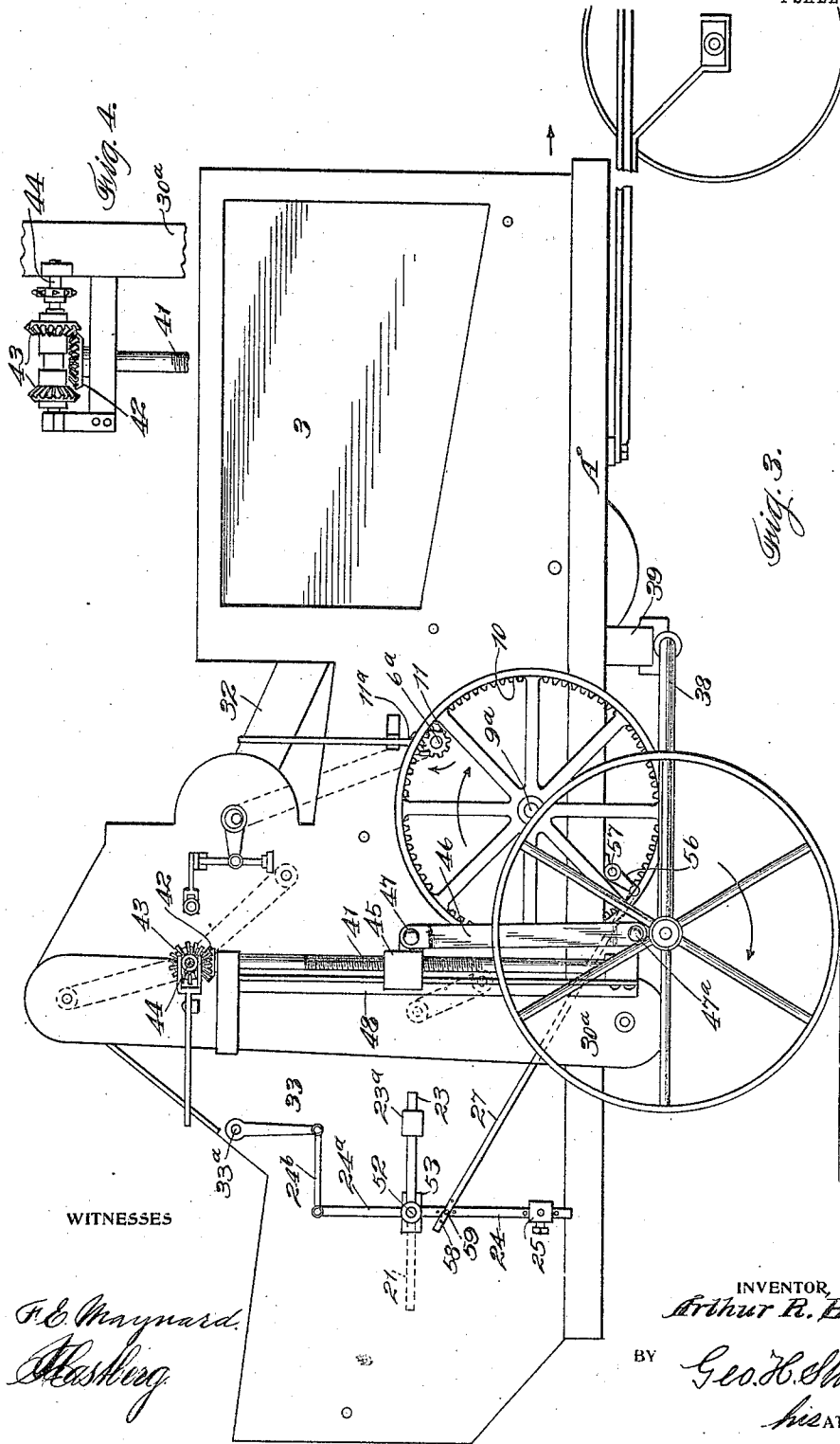
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4 SHEETS—SHEET 3.



A. R. BLEWETT.

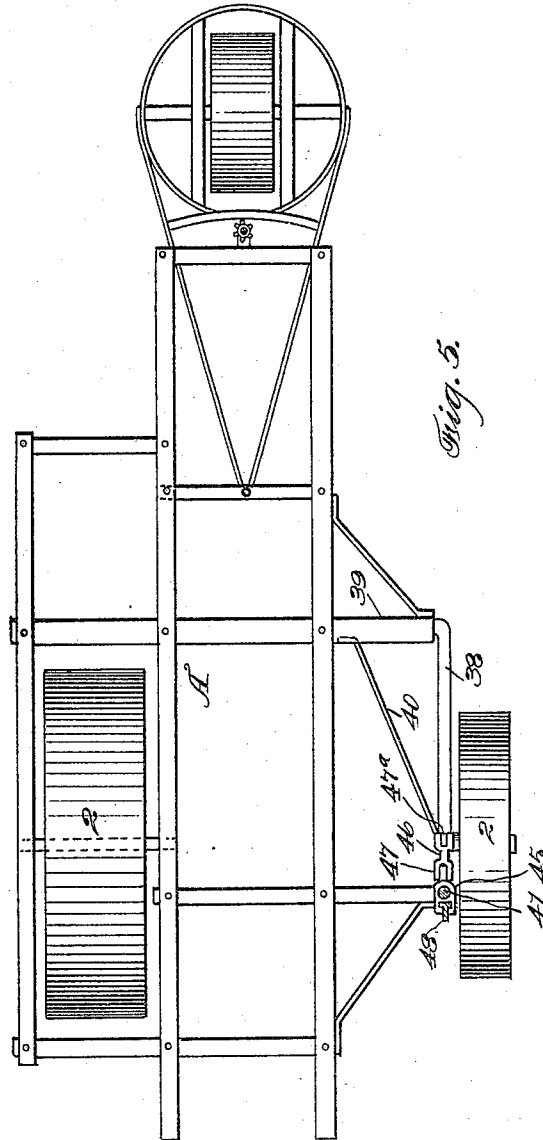
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UNITED STATES PATENT OFFICE.

ARTHUR R. BLEWETT, OF SPOKANE, WASHINGTON.

HARVESTER.

960,799.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed February 25, 1909. Serial No. 479,876.

To all whom it may concern:

Be it known that I, ARTHUR R. BLEWETT, citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented new and useful Improvements in Harvesters, of which the following is a specification.

My invention relates to improvements in harvesters and threshers, and especially to that class known as traveling harvesters, in which the grain is cut, threshed and cleaned ready for delivery.

My invention consists in a novel combination and arrangement of parts necessary to the operation of such machines, and in details of construction hereinafter claimed and which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is an elevation of the left side of the machine. Fig. 2 is a longitudinal section of same. Fig. 3 is an elevation of the right side of the machine. Fig. 4 is a detail of the screw gears. Fig. 5 is a plan or top view showing the vertical adjustment of Fig. 2.

In the ordinary construction of harvesters of this class, the grain is delivered from the cutting apparatus into what is known as a feed-house, and by means of a carrying-belt or belts it is delivered to a threshing cylinder. From the threshing cylinder the grain is carried by a belt of considerable length up to a point where it is delivered to a cleaning shoe; and in the rear of this belt is another belt called a "straw-carrier" which delivers the bulk of the straw to the rear of the machine. The fan which operates in conjunction with the cleaning shoe is situated well to the rear of the threshing cylinder and beneath it, and near the rear end of the grain-carrying belt. In this construction the machine is very long, heavy and unwieldy, and this length and weight are unavoidable in the ordinary construction of the machine.

My invention is designed to eliminate a number of cumbersome parts heretofore used in the construction of combined harvesters, to provide improvements in the operation of all the parts of such a machine, to reduce the friction in the moving parts, to lighten the weight of the harvester and to shorten its length so that it may be operated by less horse or other power than has been heretofore possible, thus making it practicable to use the machine under conditions

where a larger and heavier machine cannot be used, and in general to secure a greater economy in the cost of its construction and operation.

As shown in the present drawings, A is a main frame made up of longitudinal and cross beams, and this frame is mounted upon bearing-wheels 2, and a steering-wheel in front. The bearing-wheels 2 serve also to transmit motion to the mechanism of the harvester, as will hereafter be more fully explained. Upon the frame A is mounted the superstructure consisting of a feed-house 3, and the housing 4, which contains the threshing, separating and cleaning mechanism. Within the feed-house 3 is a belt 5 adapted to revolve in the opposite direction from the wheels 2, upon which the grain and straw are received from the header portion of the harvester. This belt passes over drums or sprockets in the usual manner, and is located at a higher point from the main frame of the machine than in the ordinary construction of such mechanisms.

The threshing cylinder 6 operates in conjunction with the concave 7. This cylinder and concave are also located well above the main frame of the machine, and in a position to receive the unthreshed straw from the belt 5, in a proper manner.

The mechanism for driving the cylinder in the proper direction is as follows: 8 is a large internally toothed gear fixed to and concentric with the left hand bearing-wheel 2. This gear engages with a spur pinion 9 secured to a shaft 9^a, extending transversely through the machine, upon the other end of which is another internally toothed gear 10 which engages with the spur pinion 11 fixed upon the cylinder shaft 6^a. By means of any suitable clutch mechanism, as 11^a, the gear 10 may be thrown into or out of engagement with the pinion 11 on transverse shaft 6^a. And by reason of this combination of internal gears and spur pinions the direction of rotation of the cylinder and intervening gearing is the same as that of the bearing-wheels 2. At the rear of the concave 7 is an upwardly inclined section or extension of similar character, 12. Below the concave and its extension is a short endless grain-carrying belt 13, upon which the threshed grain falling through the concave and its extension is received and delivered to the cleaning shoe 15. The belt 13, adapted to revolve in the opposite direction from the

wheels 2, travels in curved slots or runs, whose rearward ends are higher than their forward ends. The revolving cylinder 6 lifts the straw passing out of the concave, up and over the extension where it is received and delivered by a cylindrical beater 50 to a series of cylindrical pickers 14, adapted to revolve in the opposite direction from the cylinder, and located at the rear of the extension 12, and above the belt 13 so that any grain which may be entangled in the straw when dislodged will fall upon the belt 13. It is evident that for the cylindrical pickers 14, there can be substituted a drag or short belt, or that the hereinafter referred to straw-carrier belt 16, may be extended farther forward, though neither will be so effective as the cylindrical pickers.

The beater 50 is located above the extension 12, and the first of the series of pickers 14, on a shaft 51, adapted to revolve in the same direction as the cylinder. It has a head at each end of the shaft and is divided into three segments by blades fixed to the shaft and extending to the rim of the heads. From the pickers 14, the straw falls upon an open slat-straw-carrying belt 16, which delivers it to the rear of the machine, and any other grain separated from the straw during its passage over the slat-belt 16, also falls upon the cleaning shoe 15, which extends well to the rear of the machine.

The fan-case containing the fan 17 is located beneath the rear end of the feeder-belt 5. This fan is adapted to revolve in the same direction as the bearing-wheels, the gears and the threshing-cylinder previously described, so that the air will be discharged from the lower part of the fan-case through an air-chute 18, which extends closely beneath the grain-carrying belt 13, and opens so as to discharge a blast of air through the cleaning-shoe 15. The lower portion of this fan-case has a hinged extension 18^a, which extension is operated in unison with a leveling device to be hereafter described. The position of the fan and the construction of the air-chute admit of a more even blast and better control of the air supplied to the cleaning shoe than has ever been before attained.

By the above described construction and location of the different parts friction is reduced, a number of parts heretofore used are eliminated, the total weight is lessened, and the length of the machine is shortened by several feet.

Mechanism to automatically level the main cleaning shoe, longitudinally, is as follows: The cleaning shoe 15 is hinged or suspended at its front end, as at 19. Above the said shoe and rearward of its center a shaft 52 set in suitable journal-boxes extends transversely through the separator house. Rigidly affixed to this transverse shaft and

inside of the separator house are two arms 21, projecting backward. Links 20 connect the arms 21 with the rear end of the cleaner shoe 15. A series of holes 54 are made in the links 20, and arms 21, and pins 55 provided so that the length of the links 20, and their distance from the fixed point of the arms 21, may be adjusted to suit conditions. An inverted L-shaped casting is rigidly affixed at its angle to the transverse shaft 52 outside of the separator house. The longer arm 24 of the said casting projects downward and carries at its lower extremity a weight 25. The shorter arm 23 of the said casting projects forward and carries at its forward extremity a counterbalance weight 23^a sufficient to offset the weight of the cleaning-shoe 15. As the machine progresses and its inclination longitudinally varies by reason of such progress over hilly or irregular ground, the weighted arm 24 rigidly fixed to the transverse shaft 52, turning in its journals 53, will always assume the perpendicular, and a movement will be communicated through the medium of the counterbalance weighted arm 23, the transverse shaft 52, the arms 21, and links 20, to the rear end of the cleaning-shoe 15, to effectually level the said shoe longitudinally at all times. This leveling of the shoe insures a proper cleaning action, prevents the grain from becoming massed at any one particular portion of the shoe, averts the danger of clogging, and effects the proper cleaning of the grain.

Mechanism to automatically adjust the throat of the air-chute 18, to the varying changes of position of the cleaning-shoe 15, is as follows: A rod 27 on the outside of the separator house connects the weighted arm 24, with an arm 56 rigidly fixed to a shaft 57 extending transversely through the machine and set in suitable journal-boxes on the frame A, to the rear of the air-chute 18. A series of holes 58 are made in the rod 27, and arm 24, and pin 59 provided, whereby the length of the rod 27, and its distance from the fixed point of the arm 24 may be adjusted to suit conditions. Inside of the housing, arms 26 rigidly fixed at one end to the transverse shaft 57, connect with the rearward end of the hinged air-chute extension 18^a. It will thus be seen that the swinging of the weighted arm 24, will communicate a movement through the medium of the rod 27, the arm 56, the transverse shaft 57, and arms 26 to the air-chute extension 18^a so that the throat of the air-chute will be automatically raised or lowered to meet the automatic leveling of the cleaning-shoe 15.

In all such machines it is usual to carry a supplemental or final cleaner which is here mounted directly on top of the separator, and is provided with the ordinary cleaning-shoe 15^a and fan 15^b. The grain from the cleaning shoe 15 is delivered into an auger-

box 29, in the ordinary manner, and from this point is carried up by an elevator 30^a, and delivered into a hopper 30 from which it passes to the cleaning-shoe 15^a of the supplemental cleaner. The partially cleaned grain, unthreshed heads and such portions as pass over the main cleaning-shoe 15, are delivered into an auger-box 31, in the ordinary manner, and are thence carried up by an elevator 32, and again delivered to the threshing cylinder to be rethreshed.

Mechanism to automatically level the cleaning shoe of the supplemental cleaner, longitudinally, is as follows: On the outside of the housing is an upward extension 24^a of the weighted arm 24. A link 24^b, connects the said extension 24^a, with a downwardly extending arm 33, rigidly fixed to a shaft 33^a extending transversely through the separator and set in journals located on the side of the housing. Within the housing, forwardly extending arms 33^b rigidly fixed to the transverse shaft 33^a, are connected by upwardly extending links 34, with the rear end of the supplemental cleaning-shoe 15^a which is hinged at its front end. These links and arms are provided with holes and pins to admit of adjustments to suit conditions. It will thus be seen that the swinging of the weighted arm 24 will communicate a movement through the medium of the extension 24^a, the link 24^b, the arm 33, the transverse shaft 33^a, the arms 33^b, and links 34, to the cleaning shoe 15^a, so that the main cleaning shoe 15, and the supplemental cleaning shoe 15^a may be automatically leveled longitudinally in unison.

In order to level the entire machine transversely when traveling over ground of such character as makes it necessary, I employ the following construction: The right-hand bearing wheel 2 is mounted upon a stout crank 38. The shaft of this crank extends transversely and is strongly journaled upon some transverse timber of the frame, as at 39, so that it may turn in its journal-boxes and allow the crank end carrying the said wheel to be raised or lowered. The crank 38 is stiffened by means of a brace 40, to prevent springing or bending by side thrust against the said wheel. In order to raise or depress this wheel, I employ a vertically journaled screw 41 having means at its upper end for turning it. Said means may be conveniently in the form of the beveled gear 42, and other beveled gears 43, upon a horizontal shaft 44, provided with suitable clutch mechanism by means of which either one of the gears 43 may be thrown into mesh with the gear 42, and the movement of the screw 41 reversed. 45 is a nut fitting the screw 41, and adapted to move up or down thereon. This nut is connected to the crank arm, upon which the said bearing-wheel 2 is mounted, by means of a strong

forked link 46; the upper ends of the fork being pivoted to opposite sides of the nut, as shown at 47, and the lower ends being correspondingly pivoted to an attachment or box on the crank-arm which carries the said bearing-wheel 2, as shown at 47^a, so that by turning the screw 41 as previously described, the nut 45 will be raised or depressed and through it the bearing of the said bearing-wheel 2 will be correspondingly raised or depressed. It is apparent that for the screw 41, and nut 45, there can be substituted a rack and pinion for the purpose of raising or lowering the said wheel.

In order to stiffen this apparatus and steady the nut 45, in its movements, I employ a vertical T-shaped bar 48 which stands parallel with the screw. The nut 45 has a correspondingly T-shaped slot made in one side of it, into which the head of the T-shaped bar 48 fits, and the nut 45 will thus slide up and down on this guide and be properly steadied. Any tilting of the machine, when traveling upon a side-hill or otherwise, may be corrected by either raising or lowering the said bearing-wheel 2, as here described. It is to be noted that by this construction the main wheel will always stand perpendicular and be raised or depressed in a substantially vertical line.

While I have shown what I consider the most desirable form and means of constructing my machine, it is evident that changes and variations may be made in its different parts, and therefore I reserve the right to make such changes and alterations in the same as will come within the scope of my invention.

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

1. An improved traveling harvester having in combination a threshing cylinder, a concave operating in conjunction with said cylinder, a cleaning shoe having its front end contiguous to the rear end of the concave, an air chute located beneath the concave having its rear end open to discharge through the screen shoe and its front end connected with the fan case, mechanism by which the rear end of the screen shoe is raised and depressed to level it in unison with the longitudinal tilting of the machine, said air chute having a portion which controls the air discharge, and mechanism between said controlling portion of the chute and the shoe leveling mechanism whereby the air discharge is controlled in unison with the leveling of the shoe.

2. In a traveling harvester, the combination of a threshing cylinder, a concave for the cylinder, means for feeding material to the cylinder, a cleaning screen shoe having its front end pivotally mounted and arranged contiguous to the concave, a fan case

having an air chute extension with a portion which controls the air discharge and means for leveling the screen shoe and at the same time regulating the discharge of air in unison with the longitudinal tilting of the machine.

3. In a traveling harvester, the combination of a cylinder and concave, a pivotally mounted cleaning shoe, a fan case having an air-chute extension, means by which the shoe is raised and depressed to level it in unison with the longitudinal tilting of the machine, and connections between the shoe and the air chute for controlling the air discharge in response to the leveling of said shoe.

4. The combination in a traveling harvester, its threshing cylinder and concave, of an air blast fan, an air chute extending from the fan case beneath the concave and having a hinged gate extension, a cleaning screen shoe through which the air blast is directed, a leveling device connected with the screen, and a connection between said leveling device and the gate for operating the latter in unison with the leveling of the screen shoe.

5. The combination in a traveling harvester, of a threshing cylinder, and a cleaning screen upon which the threshed grain is delivered, mechanism by which the rear of the screen is raised and depressed to level it in unison with the longitudinal tilting of the machine, an air blast device, a chute through which air is discharged through the screen, said chute having a controlling gate extension, and connections between the gate and the screen-leveling mechanism, whereby the air discharge is controlled.

6. The combination in a traveling harvester, its threshing cylinder and concave, of an air blast fan, a cleaning screen having its front suspended contiguous to the threshing concave, a closed air chute leading from the fan case beneath the concave, and discharging beneath the screen, said case having a flat top extending above and beyond the front edge of the screen, the bottom of

the air chute having a hinged portion forming a gate, mechanism for leveling the cleaning screen and operating the gate to control the air discharge in unison with the longitudinal tilting of the machine.

7. The combination in a traveling harvester, its threshing cylinder and cleaning screen, of a gravity operated mechanism whereby the rear of the screen is raised and depressed to level it in unison with the longitudinal tilting of the machine, and a transverse leveling mechanism, said mechanism including a transversely journaled shaft having a crank arm with a wheel journaled at one end, a vertically journaled screw with a traveling nut thereon, a link connecting the nut with the crank arm, and means to rotate the screw in either direction.

8. The combination in a traveling harvester, of a transversely leveling mechanism, said mechanism including a transversely journaled shaft having a crank arm and a bearing-wheel journaled on said arm, a vertical turnable screw upon the main frame, a guided vertically movable nut upon the screw, a link connecting the nut with the crank arm, and a diagonal brace extending inwardly from the crank arm.

9. The combination in a traveling harvester, its threshing cylinder and main cleaning screen, and a supplemental cleaner, of a gravity operated mechanism, connections between said mechanism and the main, and with the supplemental screen whereby said screens are maintained substantially level in unison with the longitudinal tilting of the machine, means for producing a blast of air through the cleaning screen, and means for controlling the discharge of air in unison with the leveling of said screen.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ARTHUR R. BLEWETT.

Witnesses:

W. S. GILBERT,
A. C. RHODINE.