W. M. RHODES.

SCREEN SHOE LEVELING MECHANISM FOR HARVESTERS.

APPLICATION FILED NOV. 15, 1913.

1,122,803. Patented Dec. 29, 1914.

3 SHEETS—SHEET 1.

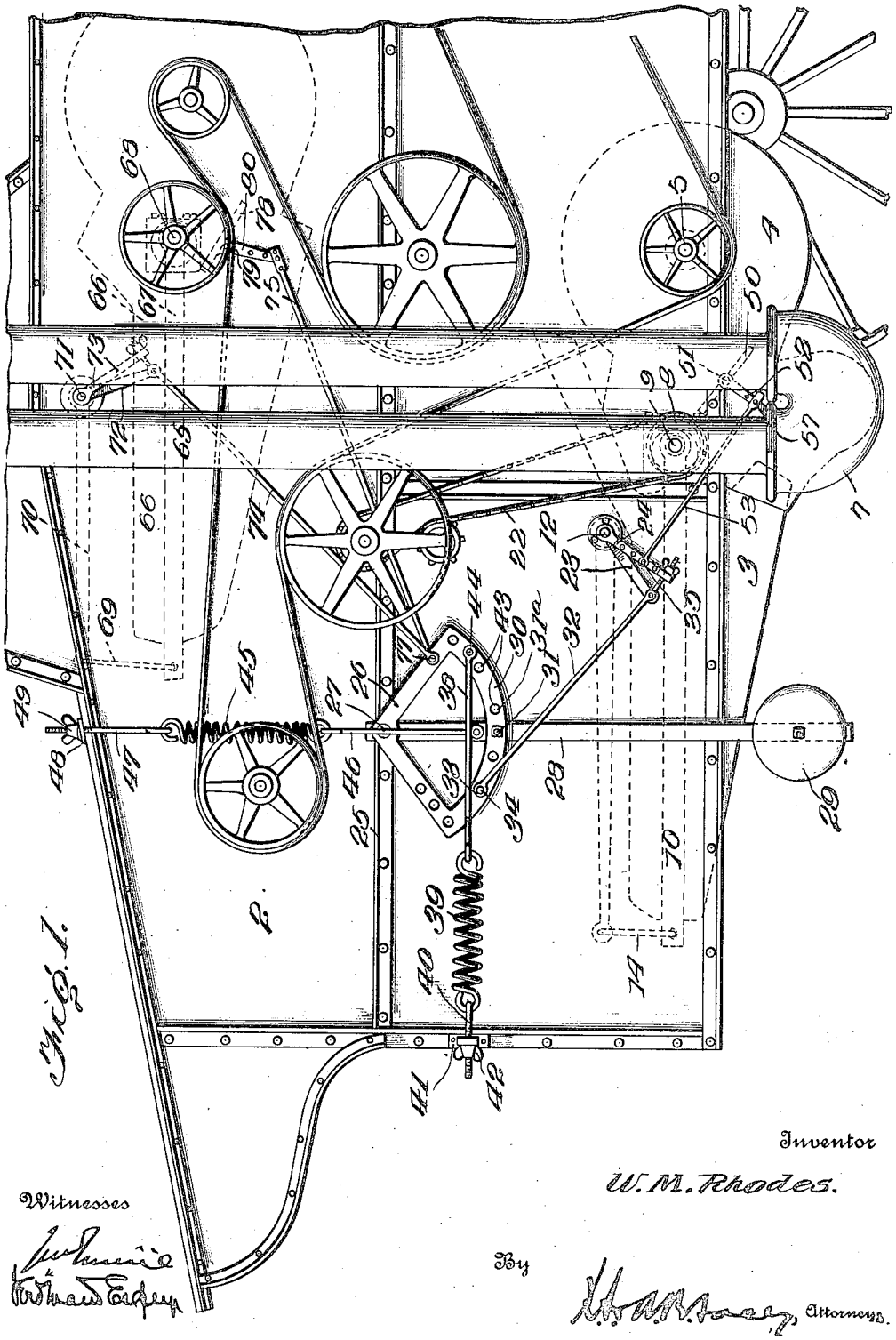


Fig. 1.

Witnesses

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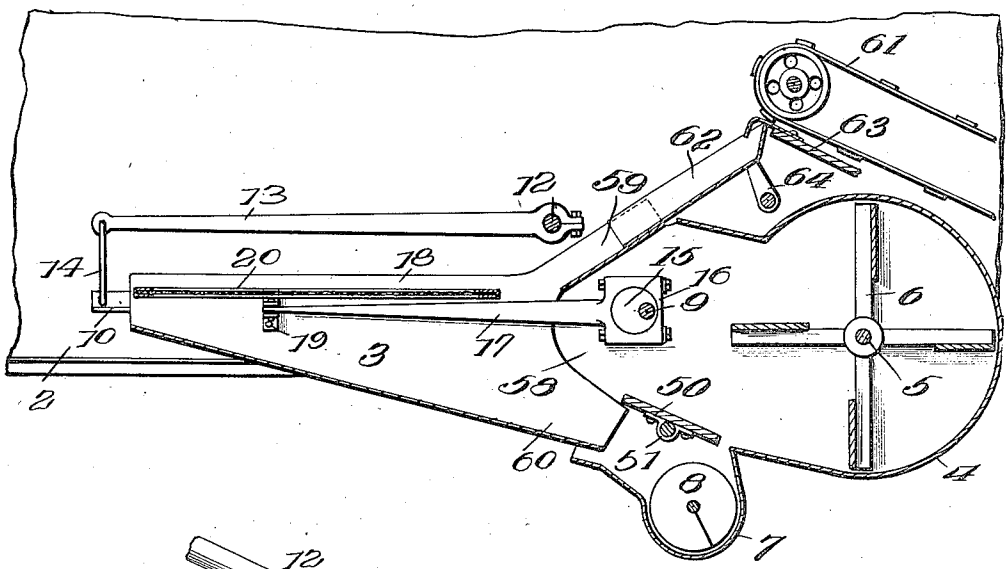


Fig. 2.

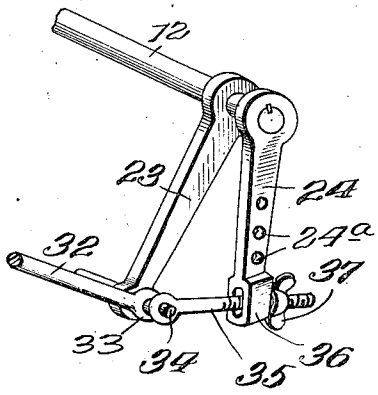


Fig. 6.

Witnesses

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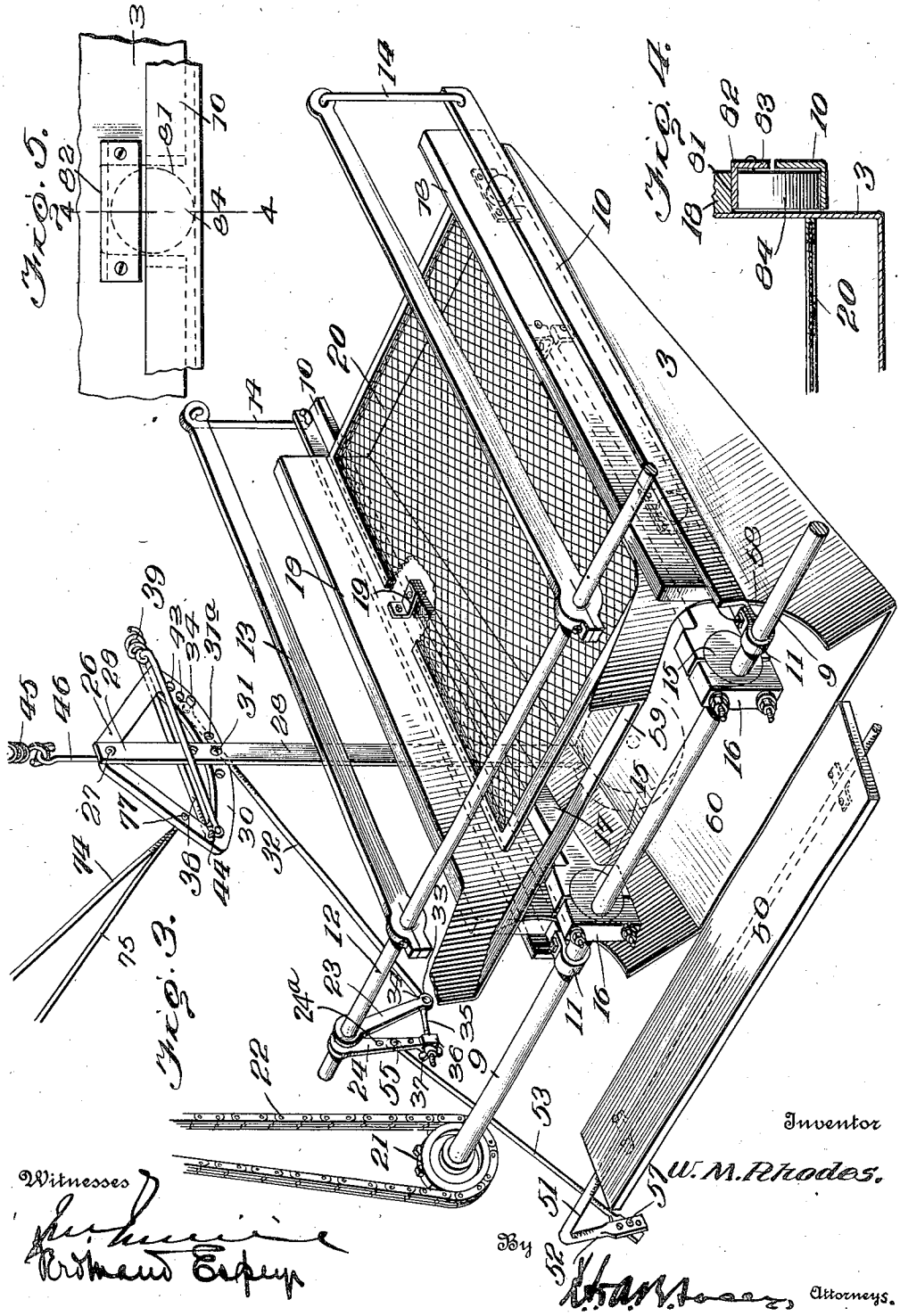


Fig. 3.

Fig. 4.

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

WILLIS M. RHODES, OF MOSCOW, IDAHO.

SCREEN-SHOE-LEVELING MECHANISM FOR HARVESTERS.

1,122,803. Specification of Letters Patent. Patented Dec. 29, 1914.

Application filed November 15, 1913. Serial No. 801,846.

To all whom it may concern:

Be it known that I, WILLIS M. RHODES, citizen of the United States, residing at Moscow, in the county of Latah and State of Idaho, have invented certain new and useful Improvements in Screen-Shoe-Leveling Mechanisms for Harvesters, of which the following is a specification.

My invention relates to agricultural machinery and particularly to what are known as combined harvesters. In this form of harvester threshing machinery is combined with reaping machinery.

The primary object of my invention is the provision of means for supporting the screening shoes of threshing machines of this type in an approximately horizontal position at all times, whether the machine is ascending or descending a hill or moving over a level surface.

A further object is to provide in connection with mechanism for holding the screening shoes in a horizontal position, means for properly shifting the wind-boards in consonance with the shifting of the screening shoes relative to the body of the threshing machine.

A further object of the invention is to provide means whereby the level of the screening shoes may be adjusted, and whereby the direction of the wind-boards in relation to the screening shoes may be adjusted.

A further object of the invention is to provide gravity actuated means for automatically holding the wind-boards and screening shoes in a horizontal position at all times.

A further object is to provide means whereby the angular position of the screening shoe and wind-board may be adjusted both with relation to each other and with relation to the machine as a whole, and in this connection to provide means whereby the angular relation of the screening shoe and wind-board may be adjusted within certain limits while the machine is running.

Still another object is to provide springs so arranged as to assist the gravity actuated means in counterbalancing the screening shoe or shoes and changing the angular position of the screening shoe and wind-board.

My invention is illustrated in the accompanying drawings wherein: Figure 1 is a side elevation of the rear end of the threshing machine casing such as is used in connection with reaping mechanism in a combined harvester. Fig. 2 is a fragmentary longitudinal vertical section through the lower shoe, the lower fan casing, the conveyer and the corresponding wind-board. Fig. 3 is a perspective detail view of the lower shoe, the wind-board and the mechanism for controlling the movements of the shoe and wind-board. Fig. 4 is a detail section on the line 4—4 of Fig. 5 showing the means for supporting the shoe from longitudinal movement. Fig. 5 is a fragmentary elevation showing the means for supporting the shoe for reciprocation. Fig. 6 is a perspective detail view of the end of the shoe leveling shaft and allied parts.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

Referring to the drawings and more particularly to Figs. 1 and 3, 2 designates a casing at the rear end of a threshing machine adapted to be used in connection with reaping mechanism in a combined harvester. Disposed within this casing is the lower screen shoe 3 which is illustrated partially in dotted lines in Fig. 1. Disposed rearward of this shoe is the blower casing 4 having therein the shaft 5 carrying the radiating blower fans 6 of any usual construction. Disposed immediately rearward of the casing 4 is the conveyer casing 7 having therein a spiral conveyer 8.

Extending transversely across the casing 2 is the shaft 9 and pivotally mounted upon this shaft are the parallel angle iron supports 10. These supports are angular in cross section and at their front ends each angle iron is formed with an eye 11 loosely embracing the shaft 9 as illustrated clearly in Fig. 3. The shoe 3 is slightly narrower than the space between these supporting members 10 and is provided with rollers resting upon these supporting members as upon rails. The particular mounting of these rollers will be later stated. Extending across the casing 2 and mounted in suitable bearings therein is a rock shaft 12, and extending from this rock shaft and rigidly mounted thereon are the supporting arms 13. These arms extend rearward parallel to the sides of the shoe above the angle irons 10 and are linked at their extremities to the extremities of the angle irons by means of links 14. It will be obvious now that when

the rock shaft 12 is rocked in one direction, the rear ends of the arms will be lifted, thus lifting the rear end of the shoe, and that when the rock shaft is turned in the other direction the supporting members 10 will be moved downward and the shoe will be permitted to move downward with them.

The shoe is reciprocated by means of eccentrics 15 mounted upon the shaft 9 inward of the eyes 11, these eccentrics engaging with heads 16 formed upon the forward ends of eccentric rods 17 which extend rearward and are attached to the inner faces of the sides 18 of the shoe 3 by means of clips 19. These eccentric rods 17 are preferably made of wood so as to allow a certain resilience in the eccentric rods. A screen 20 is supported between these side members 19 of the shoe in any suitable or usual manner. The shaft 9 is continuously rotated by any suitable means as for instance by the sprocket wheel 21 and the sprocket chain 22, and it will be seen that upon a constant rotation being given to this shaft 9, the shoe 3 will be reciprocated by the eccentrics 15.

The rock shaft 12 extends out through the side of the casing 2 and mounted loosely on this rock shaft is a radius rod 23 and keyed to the rock shaft is an arm 24 as shown clearly in Fig. 6. Pivotally supported in any suitable manner upon one of the supporting bars 25 of the side of the casing 2 is the triangular yoke 26. This is pivotally supported upon a bolt or like member 27. Pivotally mounted upon this bolt or like member 27 is the pendulum rod 28 which at its lower end has attached to it a weight 29. This pendulum rod is bolted to the arcuate web 30 connecting the arms of the triangular member 26, this bolt being designated 31. A connecting rod 32 is formed with an eye 33 at one end through which a bolt 34 passes connecting the rod 32 to the arcuate web 30. The other end of the rod 32 is formed with an eye as illustrated in Fig. 6 through which passes the bolt or pin 34. This bolt or pin passes through the free end of the radius rod 23 and also through the eye of an eye-bolt 35. The screw threaded end of this eye-bolt passes through an elongated eye 36 formed on the lower end of the arm 24. A wing nut 37 engages this screw threaded end of the eye-bolt 35 and bears against the end of the eye 36. The arm 24 is provided with a plurality of perforations 24ª for a purpose to be later stated.

To the forward end of the triangular or segmental yoke 26 is pivotally attached a connecting clevis 38 which extends rearward and is connected to a coiled spring 39 which in turn is connected to an adjusting eye-bolt 40. This eye-bolt passes through a bracket 41 and is provided with a wing nut 42 whereby tension upon the spring may be increased or decreased. The web 30 is provided with a plurality of holes 43 within which the pin 44, engaging the connecting clevis 38 with the web 30, may be inserted.

Depending immediately above the pendulum and in line therewith is a coil spring 45 slightly less in strength than the spring 39. The lower end of this spring is connected by means of a link 46 to the pendulum rod 28 by a bolt disposed immediately above the bolt 31. The upper end of the spring is connected to an adjusting bolt 47 which passes up through a bracket 48 and is provided with a wing nut 49 whereby the tension of the spring 45 may be adjusted.

It will be obvious that under normal circumstances, as for instance where the machine is moving over level ground, the pendulum will hang vertically. The weight of the shoe 3 will tend to cause a depression of the rear ends of the supporting arms 13 and a rotation of the shaft 12, and this rotation of the shaft 12 will be resisted not only by the weight of the pendulum but by the action of the spring 39, this spring 39 and the weight 29 in this position of the parts counterbalancing the weight of the shoe. When, however, the machine moves over an upwardly inclined surface, as in moving up hill, gravity will cause the weight 29 and pendulum rod 28 to shift toward the rear end of the machine, that is, toward the left in Fig. 1. This will cause a pull to be exerted upon the rod 32 turning the rock shaft 12 in a direction to lift the rear end of the shoe and hold the shoe level. It will also be obvious that the greater the inclination of the hill, the greater will be the rearward movement of the pendulum 29 and that under all circumstances therefore the pendulum will automatically hold the shoe horizontal. When the machine is traveling down hill, the same effect will occur, except that the pendulum then will move toward the forward end of the machine, that is, toward the right in Fig. 1 which will push upon the rod 32, turning the shaft 12 in a reverse direction so as to tip the rear end of the shoe and thus hold it in a horizontal position.

It will be seen that upon a rearward movement of the pendulum and of the yoke 26, the spring 39 will contract, and as it contracts its tension will be decreased, while when the yoke 26 is moved toward the forward end of the machine, the tension of the spring 39 will increase. It is in order to provide means for assisting the action of the spring 39 in one case and resisting the action of the spring 39 in the other case that I have provided the spring 45. Normally this spring exerts no stress upon the pendulum 28 and neither assists nor resists the movement of the pendulum. When the pendulum moves toward the rear end of the machine, however, as when the machine is

moving up a hill, spring 39 as it contracts will lose somewhat of its tension but at this time the connecting rod 46 will move past the center 27 of the yoke 26 and the spring 45 will commence to exert a tension so that when the pendulum moves rearward, both the spring 39 and the spring 45 will act to counterbalance the weight of the shoe and both of these springs together with the pendulum will assist in holding the shoe in a horizontal position. Now when the machine is moving down hill and the pendulum moves toward the right in Fig. 1, the spring 39 will be expanded and will constantly increase in tension so as to resist more and more the movement of the yoke 26 toward the front of the machine. This increased resistance of the spring 39, however, will be compensated for by the spring 45 which as the connecting rod 46 moves toward the right past the center 27, will commence to exert its tension to move the yoke 26 toward the right, thus exerting its tension against the spring 39. The tension of these springs 39 and 45 may, of course, be adjusted at any time and to any degree by means of the wing nuts 42 and 49.

It is, of course, necessary to provide a wind-board for deflecting the air coming from the blower casing 4 up through the screen 20. Such a wind-board is illustrated in Figs. 2 and 3 and designated 50. This wind-board is mounted upon a rock shaft 51 having a crank arm 52 as shown clearly in Fig. 3.

It is obvious that this wind-board must be held in certain relation to the screen at all times, and that if the machine is moving up hill and the shoe is held horizontally, that is, canted with relation to a plane passing longitudinally through the machine, the wind-board must also be turned to hold it in constant relation to the shoe, and it is also obvious that the same result must be accomplished when the machine is moving down hill and the shoe is held in a horizontal position. To this end I connect the crank arm 52 of the shaft 51 by means of a connecting rod or link 53 to the arm 24, the extremity of the rod 53 being formed with an eye through which passes a bolt or pin 55 engaging any one of the perforations 24^a in the arm 24. The crank arm 52 is also formed with a plurality of perforations 56, through any one of which a pin 57 passes, this pin holding the link 53 to the crank arm.

It will be obvious that by adjusting the pins 55 and 57 at one or the other end of the connecting rod 53 in one or the other of the several perforations 24^a or 56, the angle of the wind-board with relation to the sieve or screen 20 may be adjusted. It will also be obvious that when the screening shoe is moved with relation to the machine by the pendulum 29 and the springs 39 and 45, the wind-board will turn and that this wind-board will always bear its proper relation to the screen whether the machine be going up hill, down hill or be moving over level ground. By adjusting the pin 34 in any one of the perforations in the arcuate web 30, the angle of the shoe may be adjusted and that this adjustment may also be accomplished by adjusting the pin 44 in any one of the perforations 43.

The whole system of levers and the system of shoe adjustment may be changed by shifting the several points of engagement between the rod 38 and the segment or yoke 26 and between the rod 32 and the segment or yoke. This provides for a permanent adjustment of the parts to suit varying conditions. The tension of the springs 39 and 45 may be regulated by means of the wing nuts 42 and 49 and further than this, while the machine is running an adjustment of the shoe 3 and of the wind-board may be secured by adjusting the wing nut 37. As before stated, this permits the adjustment to be secured even while the machine is running. More than this, the action of spring 45 may be adjusted so as to secure a perfect balance of the pendulum and a perfect balance of the shoe by connecting the lower end of the rod 46 to one side or the other of the arcuate portion 30 of the yoke 26 as by connecting the rod 46 in either one of the holes 31^a to one side or the other of the center.

While I do not wish to be limited to any particular form of shoe, I have shown a shoe, the rear end of which is cut away at 58 to accommodate the eccentrics 15 and the heads of the eccentric rods. This shoe extends upward and rearward as at 59 to form a receiving chute and downward and rearward as at 60 to form a discharge chute, discharging into the casing 7 of the spiral conveyer 8. An apron or band conveyer 61 carries the grain rearward and discharges it upon a supplementary chute 62 which has loosely sliding and rocking engagement with the chute extension 59, as illustrated clearly in Fig. 2. A platform 63 extends beneath the conveyer 61 and over the upper end of the chute 62 so as to prevent the material from escaping before its discharge into the chute 62. A pivoted link 64 to which the upper end of the chute 62 is pivoted permits the chute 62 to conform to all the movements of the shoe 3.

I have illustrated in Fig. 1 a threshing machine in which the material after it passes through the screen 20 is carried upward through the elevator casing 65 and eventually delivered into a recleaning shoe 66 illustrated in dotted lines in Fig. 1. This recleaning shoe has exactly the same form as that previously described and is operated in the same manner. It is supported upon

angle bars 67 which at their forward ends are mounted upon the recleaner fan shaft 68, these arms extending rearward of the shoe and being connected by links 69 to arms 70 mounted upon a rock shaft 71. From this rock shaft 71 extends a radius arm 72 which is loosely mounted upon the shaft and an arm 73 which is keyed upon the shaft. This arm 73 has exactly the same construction as the arm 24. A link 74 passes downward from the radius rod to the forward arm of the yoke 26 to which it is pivoted at 77. The wind-board 78 which is used in conjunction with the shoe 66 is mounted upon a rock shaft 79 having projecting therefrom the crank 80 which is perforated at a plurality of points and is pivotally connected to a link or connecting rod 75 which extends downward and rearward and is pivoted at 77 to the yoke 26.

When the machine is moving up hill and the yoke moves rearward under the action of the pendulum, the rear end of the shoe 66 will be raised and the angle of the wind-board will be changed to correspond. When the machine is moving down hill, the rear end of the shoe will be correspondingly lowered and the angle of the wind-board correspondingly changed. The shoe will be reciprocated along the angle bars 67 by means of eccentrics mounted upon the shaft 68, these eccentrics engaging the heads of eccentric rods in precisely the same manner as previously described for the shoe 3.

It is to be particularly pointed out that my system of suspending and balancing the screen and operating the screen by means of eccentrics, secures a very perfect action of the screen under all circumstances of operation, and whether the machine is traveling up hill, down hill or on a level. The screens in this type of harvester are usually supported at their forward ends by suspension cranks by which an oscillating or jigging motion is given to the screens, and variations in inclination of the machine causes variations in relations of the cranks to the screens so that the motion of the screen changes with changes in the inclination of the machine as a whole to such a degree that the screen will not work properly, and in many circumstances the chaff will be thrown rearward and the grain forward instead of the reverse occurring. With my improved screen suspension and operating mechanism, the motion of the screen shoe and the relation of the eccentrics to the shoe is the same at all times without regard to the inclination of the machine.

Inasmuch as my invention relates entirely to means for securing horizontality of the screen shoes under all circumstances of operation and has nothing to do with either the details of construction of the threshing machine or the system of beaters, raddle racks and blowers used therein, I have only illustrated sufficient of the general construction of the machine to indicate the general operation thereof.

While I do not wish to be limited to any specific manner for mounting the reciprocating shoe 3 upon the supporting bars 10, I preferably form a recess 81 in the side wall 18 of the shoe, and mount in this recess a lining plate 82 having a lip 83 extending down parallel to the vertical flange of the angle iron 10 and dispose in this recess the roller 84. This is a very simple and cheap form of mounting and permits the shoe to reciprocate with the least possible friction.

I have tried this invention in practical use and find that it is entirely effective in its operation and makes practical the use of a combined harvester in a country which is extremely hilly and where ordinarily a combined harvester could not be used. While I have illustrated many details of construction, I do not wish to be limited thereto as it is obvious that many changes might be made without departing from the spirit of the invention.

What I claim is:

1. In a harvesting machine, the combination with a pivoted screen, of gravity actuated means for constantly and automatically urging said pivoted screen into predetermined relation to a vertical plane, and resiliently acting means resisting the movement of the gravity actuated means.

2. In a harvesting machine, a pivoted screen supporting member, a reciprocating screen slidingly mounted upon said member, means for reciprocating said screen longitudinally upon said supporting member, and gravity actuated means constantly urging said pivoted supporting member into predetermined relation to a vertical plane.

3. In a harvesting machine, a screen supporting member pivoted at one end, a gravity actuated pendulum operatively connected to the free end of the screen supporting member to constantly urge it into a predetermined relation to a vertical plane, and a reciprocating screen slidingly mounted upon the pivoted supporting member for movement longitudinally therealong.

4. In a harvesting machine, a supporting member, pivotally supported at one end, a pendulum, operative connections between the pendulum and the free end of the supporting member whereby the latter shall be urged into predetermined relation to a vertical plane, a screen slidingly mounted upon the supporting member for reciprocation longitudinally thereon, and means disposed rearward of the supporting member for reciprocating said screen.

5. In a harvesting machine, a pivoted supporting member, a screen mounted thereon for independent reciprocation, a wind-board coacting with the screen and mounted for rotative movement around a longitudinal axis, gravity actuated means operatively connected to the supporting member and the wind-board and constantly urging the supporting member into predetermined relation to a vertical plane and the wind-board into predetermined angular relation to the screen, and means for reciprocating the screen.

6. In a harvesting machine, a supporting member pivotally mounted at one end, a screen shoe supported thereon, a gravity actuated pendulum operatively connected to the supporting member to raise or lower it as the pendulum swings in one direction or the other, and a spring operatively connected to the pendulum for counterbalancing the weight of the supporting member and the screen shoe.

7. In a harvesting machine, a supporting member pivotally mounted at one end, a screen shoe supported thereon, a gravity actuated pendulum operatively connected to the supporting member to raise or lower it as the pendulum swings in one direction or the other, a spring operatively connected to the pendulum for counterbalancing the weight of the supporting member and the screen shoe, and means for adjusting the tension of said spring.

8. In a harvesting machine, a rock shaft, arms extending outward from the rock shaft, supporting members pivoted each at one end and each operatively connected at its other end to said arms, a screen shoe carried by said supporting members, and gravity actuated means operatively connected to said rock shaft and acting to counterbalance the supporting members and the shoe.

9. In a harvesting machine, a shaft, supporting members loosely mounted upon the shaft at one end, a rock shaft, arms extending from the rock shaft and operatively connected at their ends to the supporting members, a shoe mounted upon said supporting members, a pendulum, an arm extending from the rock shaft, and a link connecting said arm to said pendulum.

10. In a harvesting machine, a constantly rotating shaft, supporting members loosely mounted each at one end upon said shaft for movement in a vertical plane, a rock shaft, arms mounted thereon and extending parallel to the supporting members and operatively connected at their ends to the supporting members, a reciprocatable shoe mounted upon the supporting members, means mounted on the first named shaft for reciprocating said shoe, and gravity actuated means operatively connected to the second named shaft counterbalancing the weight of the supporting members and shoe.

11. In a harvesting machine, a pivotally supported screen shoe, a pendulum, a yoke mounted upon the pendulum, the pivotal center of the pendulum and of the yoke being coincident, operative connections between the yoke and the screen shoe, and a contractile spring operatively connected to the yoke acting to counterbalance the weight of the screen shoe.

12. In a harvesting machine, a pivotally supported screen shoe, a pendulum, a yoke mounted upon the pendulum, the pivotal center of the pendulum and of the yoke being coincident, operative connections between the yoke and the screen shoe, a contractile spring operatively connected to the yoke acting to counterbalance the weight of the screen shoe, and a contractile spring disposed above the pendulum operatively connected to the latter and normally extending in line with the pendulum and adapted to assist a movement of the yoke against the force of the first named spring or assist in a movement of the yoke in the direction of contraction of said first named spring.

13. In a harvesting machine, a pivotally supported shoe, a pendulum, a triangular yoke attached to the pendulum and rotating about the same center, operative connections between said yoke and the shoe, a contractile spring operatively connected to the yoke to move it in a direction to raise the free end of the shoe, and an auxiliary contractile spring supported normally in line with the pendulum and connected at its free end to the pendulum below the pivotal point of the yoke.

14. In a harvesting machine, a shoe pivotally supported at one end, a pendulum, a triangular yoke moving with the pendulum about the same axis of rotation, operative connections between the yoke and the shoe to cause coincident movement of the yoke and shoe, a contractile spring connected to the yoke to urge it in a direction to raise the free end of the shoe, and a contractile spring supported in a vertical position above the pendulum and normally in line therewith, said spring being connected to the pendulum below its pivotal point, said spring being less in strength than the first named spring.

15. In a harvesting machine, a shoe pivotally supported at one end, a pendulum, a triangular yoke moving with the pendulum about the same axis of rotation, operative connections between the yoke and the shoe to cause coincident movement of the yoke and shoe, a contractile spring connected to the yoke to urge it in a direction to raise the free end of the shoe, a contractile spring supported in a vertical position above the pendulum and normally in line therewith, said spring being connected to the pendulum below its pivotal point, said spring being less in strength than the first named spring,

means for adjustably tensioning the first named spring, and means for adjustably tensioning the second named spring.

16. In a harvesting machine, a rock shaft, a shoe pivotally supported at one end and being operatively supported by the rock shaft, the weight of the shoe acting to rotate the rock shaft in one direction, a pendulum, a radially disposed arm on the rock shaft, a connecting rod operatively connected to said rod at one end and at the other operatively connected to the pendulum and means for increasing or decreasing the distance between the end of the rod and the coacting end of the pendulum.

17. In a harvesting machine, a rock shaft, a shoe pivotally supported at one end and the other end being operatively supported by the rock shaft, the weight of the shoe acting to rotate the rock shaft in one direction, a pendulum, a triangular yoke mounted upon the pendulum, a radius rod loosely mounted on the rock shaft, a connecting rod extending between said radius rod and the yoke, a radial arm extending outward from the rock shaft, and a pivoted rod mounted upon the end of the connecting rod and extending through said arm and operatively connected thereto.

18. In a harvesting machine, a rock shaft, a screen shoe pivotally supported at one end, the other end being operatively supported on the rocking shaft, the weight of said shoe acting to turn the rock shaft in one direction, a pendulum, an arm on the rock shaft, operative connections between the pendulum and said arm, and means for decreasing or increasing the distance between the extremity of the arm and the said pendulum.

19. In a harvesting machine, a rock shaft, a screen shoe connected to the rock shaft and acting to rotate it in one direction, means operatively connected to the rock shaft and yieldingly resisting said rotation, and a pendulum operatively connected to said rock shaft to cause its rotation.

20. In a harvesting machine, a rock shaft, a screen shoe operatively connected to the rock shaft and the weight of said shoe acting to turn the rock shaft in one direction, a pendulum operatively connected to said rock shaft, and means operatively connected to said pendulum and acting to counterbalance the weight of the shoe.

21. In a harvesting machine, a rock shaft, a shoe operatively connected to said rock shaft and acting to rotate the rock shaft in one direction, a radial arm on the rock shaft, a pendulum, a yoke mounted upon the pendulum, a connecting rod disposed between the yoke and the arm of the rock shaft, a contractile spring connected to said yoke and acting to counterbalance the weight of the shoe, a rotatably mounted wind-board coacting with the screen shoe, an arm extending from the pivotal axis of the wind-board, and operative connections between the wind-board arm and the arm on the rock shaft whereby the wind-board may be turned in correspondence with the angular movement of the shoe.

22. In a harvesting machine, a constantly rotating shaft, a rock shaft supported above the first named shaft, parallel supporting members loosely mounted at their rear ends upon the first named shaft, arms mounted upon the second named shaft and extending out parallel to the supporting members, links connecting the ends of the supporting members to the ends of the said arms, a screen shoe slidingly mounted upon the supporting members, eccentrics mounted upon the first named shaft, eccentric rods coacting with said eccentrics and engaging the screen shoe, and gravity actuated means for counterbalancing the weight of the supporting members and the screen shoe and acting to urge said screen shoe at all times into predetermined relation to a vertical plane.

23. In a harvesting machine, a shaft, parallel screen supporting members forming tracks and pivoted each at one end upon said shaft, a screen shoe slidingly mounted upon said tracks, eccentrics mounted on the shaft behind said shoe, eccentric-rods engaging said eccentrics and engaging at their extremities with the shoe, and means for balancing said supporting members.

24. In a harvesting machine, a transverse shaft, parallel supporting bars extending outward from said shaft and pivotally connected thereto, a screen shoe slidingly mounted upon said bars, eccentrics on the shaft, eccentric rods mounted on said eccentrics and connected to the screen shoe, and means for yieldingly supporting the ends of the said supporting bars.

25. In a harvesting machine of the character described, a screen shoe, a supporting member for the screen shoe pivotally supported at one end, eccentrics having their axes coincident with the axis of the said supporting member, eccentric rods connecting the shoe to the eccentrics, and means for yieldingly supporting the other end of the said supporting member.

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

WILLIS M. RHODES. [L. S.]

Witnesses:

J. D. YOAKLEY,

FREDERIC B. WRIGHT.