

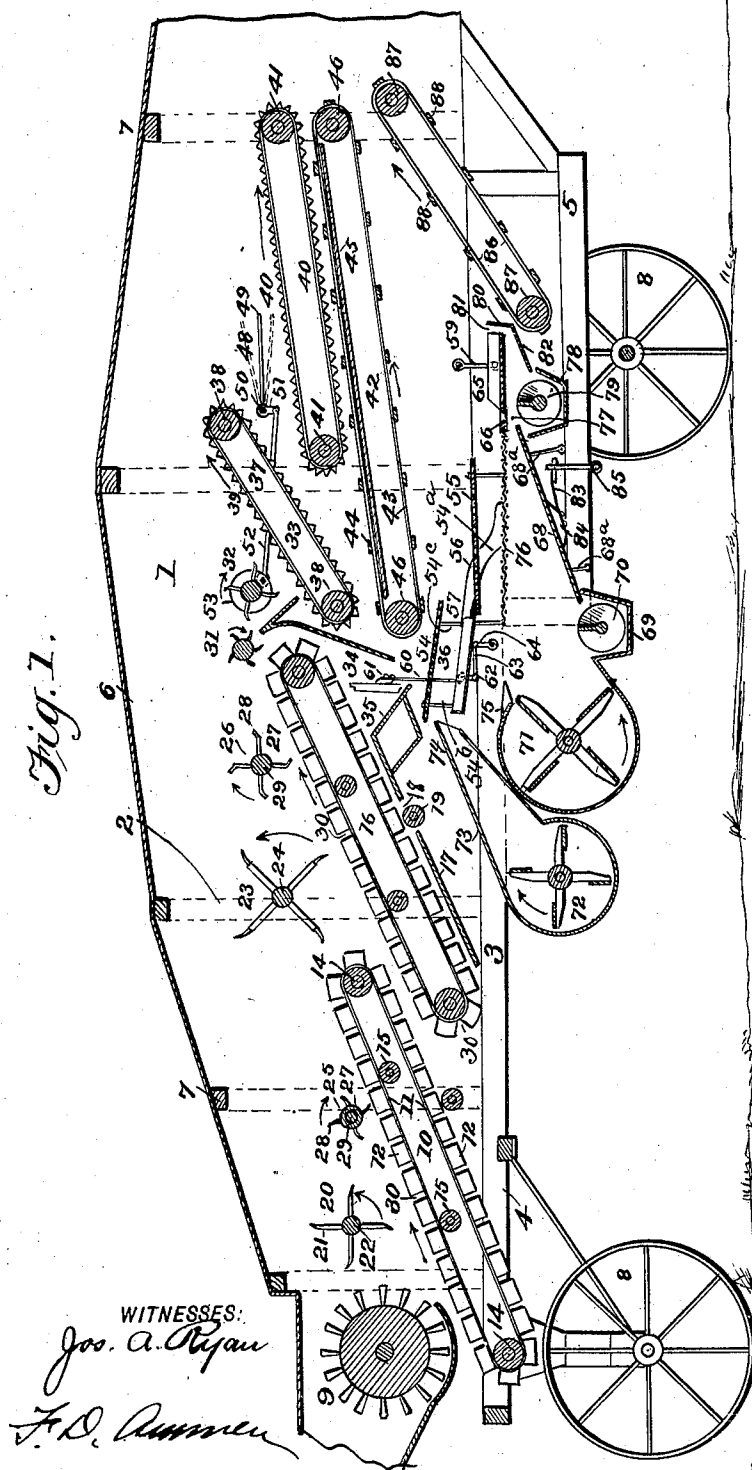
No. 833,700.

PATENTED OCT. 16, 1906.

D. STILL.
THRESHING MACHINE.
APPLICATION FILED MAY 28, 1904.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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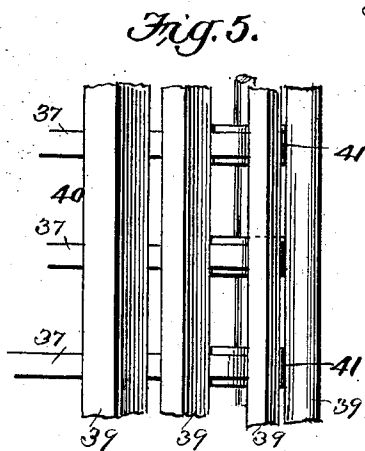
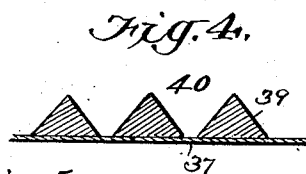
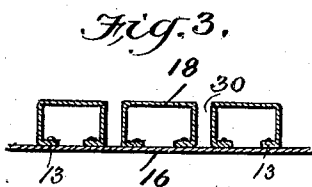
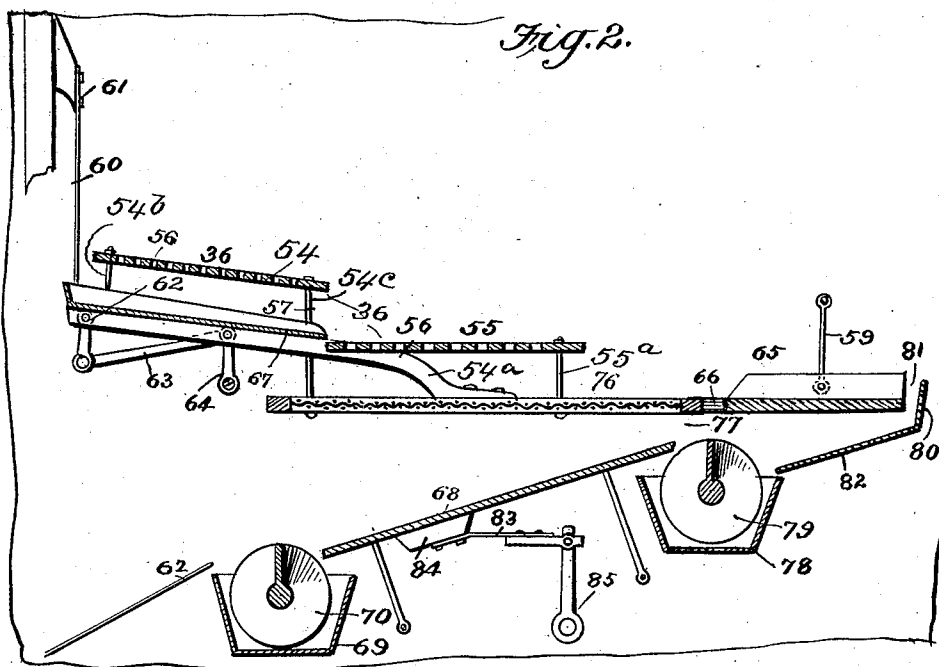
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No. 833,700.

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D. STILL.
THRESHING MACHINE.
APPLICATION FILED MAY 26, 1904.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

DAVID STILL, OF MILTON, OREGON.

THRESHING-MACHINE.

No. 833,700.

Specification of Letters Patent.

Patented Oct. 16, 1906.

Application filed May 26, 1904. Serial No. 209,855.

To all whom it may concern:

Be it known that I, DAVID STILL, a citizen of the United States, and a resident of Milton, in the county of Umatilla and State of Oregon, have invented certain new and useful Improvements in Threshing-Machines, of which the following is a specification.

My invention relates to threshing-machines; and its object is to provide an improvement in machines of this class which shall be efficient in separating the heads of grain from the straw and chaff.

The invention concerns itself especially with the shoe and the manner of handling the threshed grain and subjecting the same to air-currents.

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

The practical embodiment of the invention is represented in 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 longitudinal section through the threshing-machine constructed in accordance with my invention. Fig. 2 is a longitudinal section through the shoe, showing its contiguous parts, this view being upon an enlarged scale. Fig. 3 is a longitudinal section of a portion of the draper constituting a part of my invention. This view is taken at right angles to the transverse bars of the draper. Fig. 4 is a longitudinal section showing a portion of a rattle-rake, upon an enlarged scale, at right angles to the transverse bars of the rake. Fig. 5 is a plan of one end of the rattle-rake referred to.

Referring more particularly to the parts, 1 represents the body of the thresher, which may be of common construction, comprising a frame 2, having a sill-frame 3 supporting the same. The sill-frame is preferably formed with an elevated front portion 4 and a depressed rear portion 5, as shown. A suitable roof or cover 6 is supported upon transverse frame members 7. The body of the thresher is mounted upon wheels 8 and adapted to be moved to different points in the usual manner.

At the forward portion of the body there is provided a threshing-cylinder 9 of any common construction, and just beyond this cylinder there is provided a draper 10, the same consisting of the endless belt 11, to the outer

face whereof there are attached a plurality of transverse bars 12, preferably of channel form and inverted and provided with flanges 13, enabling the same to be attached to the belt, as will be readily understood. This draper is disposed in an inclined position, as shown, its lower extremity lying substantially beneath the threshing-cylinder and the belt 11 extending in width from side to side of the body, as will be readily understood. The belt 11 passes over rollers 14, either or both of which may be driven continuously by any suitable means. Guide-rollers 15 are provided for supporting the draper intermediate of the end rollers, as indicated.

Beyond the draper 10 there is provided a second draper 16, which is substantially similar to the draper 10 in construction, but somewhat elevated with respect to the same, as shown, so that material which is advanced by the draper 10 may be received upon the lower extremity of the draper 16. In connection with the draper 16 there is provided a guard-deck 17, the same being inclined, as shown, and disposed adjacent to the lower run of the draper, as indicated. This guard-deck is provided with an opening 18 at the proper point to allow the guide-roller 19 to project above the guard-deck, as indicated.

Just above the draper 10 and adjacent to the threshing-cylinder there is provided a beater 20, the same having a plurality of radially-disposed arms 21 and being driven continuously in the direction indicated by the arrow upon a horizontal axis 22, as will be readily understood. The tips of the arms 21 are preferably curved rearwardly, as indicated. A second beater or beater-comb 23 is provided just beyond the upper extremity of the draper 10, the construction of which beater is substantially similar to that of the beater just described, except that it is preferably of larger dimension. This beater rotates in the same direction as the beater 20 upon its horizontal axis 24.

Adjacent to the upper faces of the drapers 10 and 16, preferably substantially at the point shown, pickers 25 and 26 are arranged, the same comprising bodies 27, having substantially radially disposed arms 28. These pickers are mounted upon horizontal axes 29, disposed transversely above the drapers and are driven continuously in such a manner that the extremities of the arms thereof work the grain in a well-known manner. As stated, the drapers 10 and 16 comprise trans-

verse bars 12, which bars are spaced somewhat apart, so as to form grain-pockets 30, in which the heads of the grain accumulate as the threshed grain progresses upwardly with the upper runs of the drapers, it being understood that the drapers are driven continuously in the direction of the arrows shown.

At the upper extremity of the draper 16 there is provided a picker 31, preferably disposed as shown, and therebeyond a beater 32, preferably disposed as shown. The purpose of this picker and beater is to pass the straw from the draper 16 to the rattle-rake 33, which will be more fully described hereinafter. At the lower extremity of the rattle-rake an apron 34 is arranged, the same being adapted to direct the heads of grain which fall from the inverted pockets of the draper, as will be readily understood, and coöperating with this apron there is a guard-board 35, which is attached at the upper extremity of the aforesaid guard-deck 17, from which arrangement the heads of the grain are directed to the shoe 36.

The rattle-rake referred to above is preferably disposed in an inclined position, as shown, and is constructed of a plurality of belts 37, running over rollers 38, which are driven continuously, and these belts are connected by a plurality of transversely-disposed bars 39, preferably triangular section, as shown, and spaced slightly apart at their bases where they are attached. Beyond the rattle-rake 33 there is arranged a second rattle-rake 40, the same being passed over pulleys 41 similar to the pulleys 38 described in connection with rattle-rake 33. The construction of this rattle-rake 40 is substantially similar to rattle-rake 33, but, as indicated, it is disposed in a less inclined position. Both the rattle-rakes are driven continuously in the direction of the arrows adjacent thereto and adapted to advance the straw toward the rear of the threshing-machine. A drag-rake 42 is provided, the same consisting of an endless carrier or belt 43, carrying transverse bars 44, which pass toward the shoe in the direction of the arrows adjacent to them along an inclined deck 45. This belt 43 runs over rollers or pulleys 46, as shown. The construction of the rattle-rakes is well adapted to facilitate the passing of heads of grain between the bars, while the belts 37 prevent any possibility of straw passing between the bars, as will be readily understood.

A shuffle-frame 48 is provided consisting of arms 49, mounted upon a rock-shaft 50, which rock-shaft is adapted to be continuously rocked through the medium of an arm 51 and a pitman 52, said pitman being actuated by an eccentric 53 on the shaft of the beater 32, as indicated. This shuffle-frame is disposed in such a position as to receive the straw which passes from the rattle-rake 33.

The shoe 36 referred to above is supported in the position shown in the lower portion of the body of the thresher. It comprises two riddles or screens 54 55, preferably formed of wood and provided with perforations 56. The riddle 54 is arranged at a higher level than the riddle 55 and is somewhat inclined, as shown, while the riddle 55 is substantially horizontal. By this arrangement an opening 57 is formed between the adjacent edges of the riddles 54 and 55, through which the grain falls upon the forward extremity of a riddle 76, arranged below the riddle 55 and of greater length. This riddle 76 is mounted upon links 59, connected with its rear portion, and is connected by bars 54^a to a pan 67, arranged beneath the riddle 54, the said bars being extended the full width of the pan 67. The riddle 54 is connected by rods 54^b to the pan 67 and by rods 54^c to the riddle 76, while the riddle 55 is supported at one end by the bars 54^a and at the opposite end is connected by rods 55^a to the riddle 76. The forward extremity of the pan 67 is supported upon a pair of oppositely-disposed resilient wooden members 60, the said members being preferably secured to the frame of the thresher-body. These wooden members 60 are preferably constructed of hickory or similar wood and are intended to support the riddle-frame yieldingly, they being attached to the forward ends of the arms 54^a by means of pins 62, the said pins also affording means for attaching rockers 63, the rockers being actuated continuously by means of eccentric-rods 64. The screen portion proper of the riddle 76 stops short of the rear end thereof, a tailboard 65 forming the rear end of the riddle and being spaced apart from the screen portion proper, whereby to leave the space 66, through which the unthreshed heads may pass. The grain and chaff passing onto the riddle 55 moves downwardly therealong and delivers into the pan 67 and onto the riddle 55, a portion thereof passing between the adjacent ends of the riddles. From the pan 67 and the riddle 55 the unthreshed grain passes onto the screen portion of the riddle 76, being gradually moved to the rear end thereof and passing through an opening 66, the chaff being passed over the rear end of the tailboard 65 and onto an endless belt 86, to be hereinafter described. The heads remaining in the chaff being heavier than the chaff drop downward through an opening 81 between the tailboard and a tail-guard 80, to be hereinafter described.

A blast of air is driven through the shoe by means of a main fan 71 and an auxiliary fan 72, which may be of common construction. The housing 73 of the auxiliary fan comprises a nozzle 74, which delivers the blast at the upper portion of the shoe and just beneath the riddle 54 and above the pan. The housing of the main fan 71 comprises an over-

hang 75, which assists in directing the current of air from the fan 71 toward the main portion of the shoe and substantially beneath the pan. Beneath the riddle 55 there is provided a horizontal screen 76, preferably of wire, through which the principal portion of the blast from the main fan passes.

Beyond the lower or rear portion of the shoe an opening 77 is left between the tail-board and the grain-board, through which the principal portion of the unthreshed heads passes into a trough 78, from which the same is ejected by means of a common screw conveyor 79. In conjunction with the tail-board 65 at the lower extremity of the shoe there is provided a tail-guard 80, which projects up above the tailboard, leaving an opening 81 therebeneath to allow unthreshed heads to flow through upon the inclined bottom 82 of the guard.

In order to facilitate the passage of the grain down the grain-board 68, a shaker 83 is provided, which consists of a resilient bar, the outer extremity whereof is attached at 84 to the under side of the grain-board. This bar 83 is continuously shaken by means of an eccentric-rod 85. Links 68^a support the grain-board, as shown.

Arrangement is made for disposing of the chaff which may pass over the tail-guard 80. To this end the chaff-rake is provided, consisting of an endless belt or canvas 86, which passes over rollers 87 in the direction indicated by the arrow. The outer face of this belt is provided with slats or transverse bars 88, which catch the chaff and advance the same.

It will be evident that the arrangement of the fan 71 to deliver a blast of air over the grain-conveyor and along the longitudinal surface of the grain-board provides a more efficient cleaning means than in the ordinary construction of machine. The chaff is blown away from the grain-board and not against it, and it is for this reason more easily removed. It will be noticed that both the fans 71 and 72 deliver their blasts upwardly through the screens and through the opening between them. This arrangement prevents choking of the screens by the chaff.

In the operation of this threshing-machine it should be understood that the grain passed upwardly with the drapers allows the heads thereof to pass through and to deposit in the pockets 30, which pockets of course advance the grain and eventually deliver the same at the apron 34, whence the grain passes to the upper riddle 54 of the shoe. At this point the heads of the grain are subjected to a blast from the fan 72, which blast passes above the pan 67 and below the riddle 54. The blast will find its way through the perforations of the riddle and also through the space 57 at the lower end of this riddle, at which point a portion of the grain will flow to a second rid-

dle or pan. Although the principal portion of the heads will be separated from the straw before the same reaches the apron, if any heads should be carried over to the rattle-rakes their construction advantageously facilitates the separation of these heads, which will then flow through to the drag-rake and be returned thereby to the upper extremity of the shoe. The shuffle-frame 48 assists in this operation, coöperating with the rattle-rakes as the grain passes from one to the other. As indicated by the arrows, the fans 71 and 72 are preferably rotated in opposite directions.

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

1. In a threshing-machine, the combination of the shoe comprising an upwardly-inclined riddle, a depressed riddle disposed therebeyond, and adapted to receive grain from the inclined riddle, a screen disposed below the depressed riddle, an inclined pan below the inclined riddle and adapted to deliver grain upon the screen, an inclined grain-board below the screen, means for conveying grain at the foot of the grain-board, and means for forcing a blast of air over the grain-conveying means and substantially parallel with the upper surface of the grain-board.

2. In a threshing-machine, the combination of the shoe comprising an upwardly-inclined riddle, a depressed riddle disposed therebeyond, and adapted to receive grain from the inclined riddle, a screen disposed below the depressed riddle, an inclined pan below the inclined riddle and adapted to deliver grain upon the screen, an inclined grain-board below the screen, means for conveying grain at the foot of the grain-board, means for forcing a blast of air upward through the inclined riddle, and means for forcing a blast of air over the grain-conveying means and along the longitudinal surface of the grain-board.

3. In a threshing-machine, the combination of the shoe comprising an upwardly-inclined riddle, a depressed riddle disposed therebeyond, and adapted to receive grain from the inclined riddle, a screen disposed below the depressed riddle, an inclined pan below the inclined riddle and adapted to deliver grain upon the screen, an inclined grain-board below the screen, means for conveying grain at the foot of the grain-board, means for conveying chaff at the head of the grain-board, means for forcing a blast of air upward through the riddles, and means for forcing a blast of air over the grain-conveyor and along the upper surface of the grain-board.

4. In a threshing-machine, the combination of the shoe comprising an upwardly-inclined riddle, a depressed riddle disposed therebeyond, and adapted to receive grain from the inclined riddle, a screen disposed be-

low the depressed riddle, an inclined pan below the inclined riddle and adapted to deliver grain upon the screen, an inclined grain-board below the screen, means for conveying
5 grain at the foot of the grain-board, means for conveying chaff at the head of the grain-board, a tailboard beyond the chaff-conveying means, and means for forcing a blast of
10 air over the grain-conveyer and along the upper surface of the grain-board in the direction of the tailboard.

5. In a threshing-machine, the combination of the shoe comprising an upwardly-inclined riddle, a depressed riddle disposed
15 therebeyond and adapted to receive grain from the inclined riddle, a screen disposed be-

low the depressed riddle, an inclined pan below the inclined riddle and adapted to deliver grain upon the screen, an inclined grain-board below the screen, means for conveying
20 grain at the foot of the grain-board, means for conveying chaff at the head of the grain-board, a tailboard beyond the chaff-conveying means, a straw-conveyer beyond the tailboard, and means for forcing a blast of air
25 along the tailboard in the direction of the straw-conveyer.

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Witnesses:

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