

(No Model.)

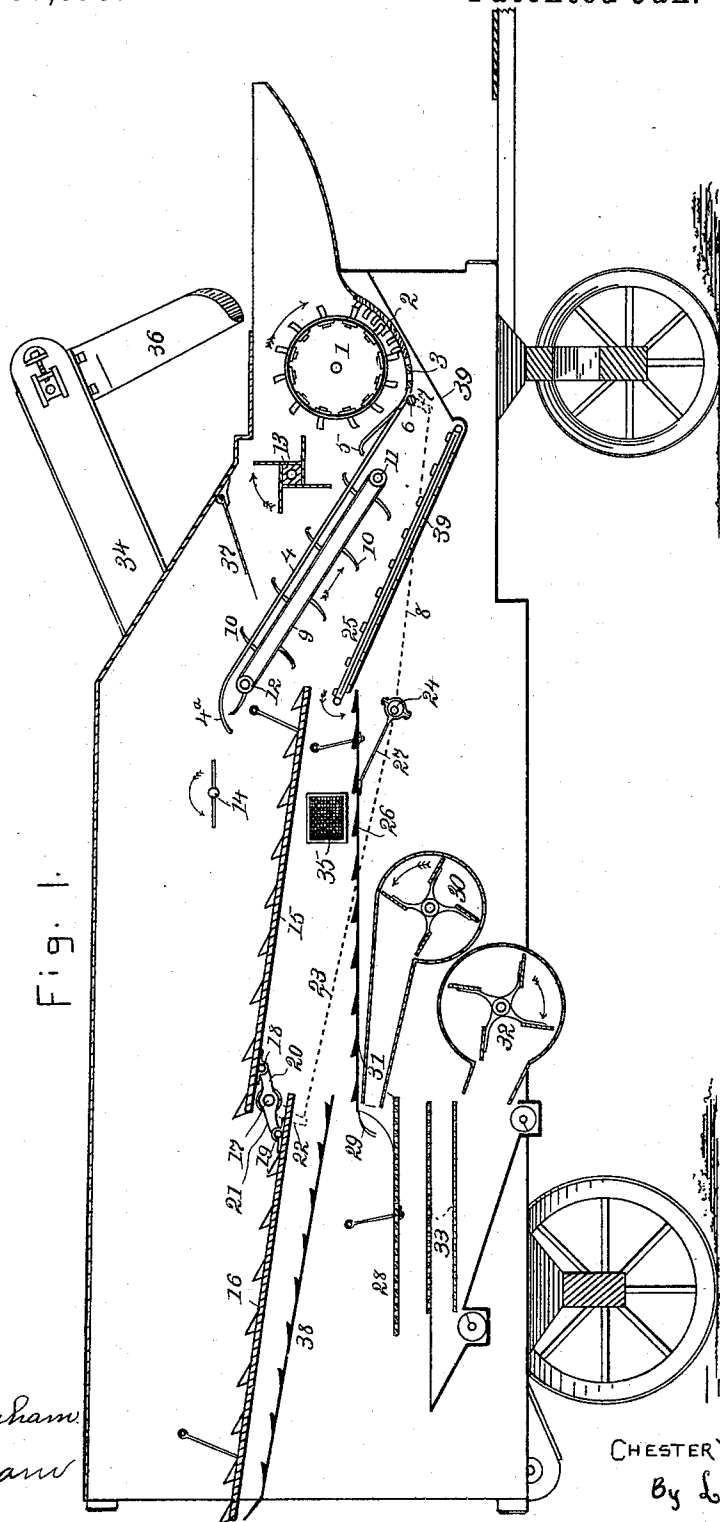
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C. Y. CHATTERTON.
THRESHING MACHINE.

No. 596,573.

Patented Jan. 4, 1898.

Fig. 1.



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(No Model.)

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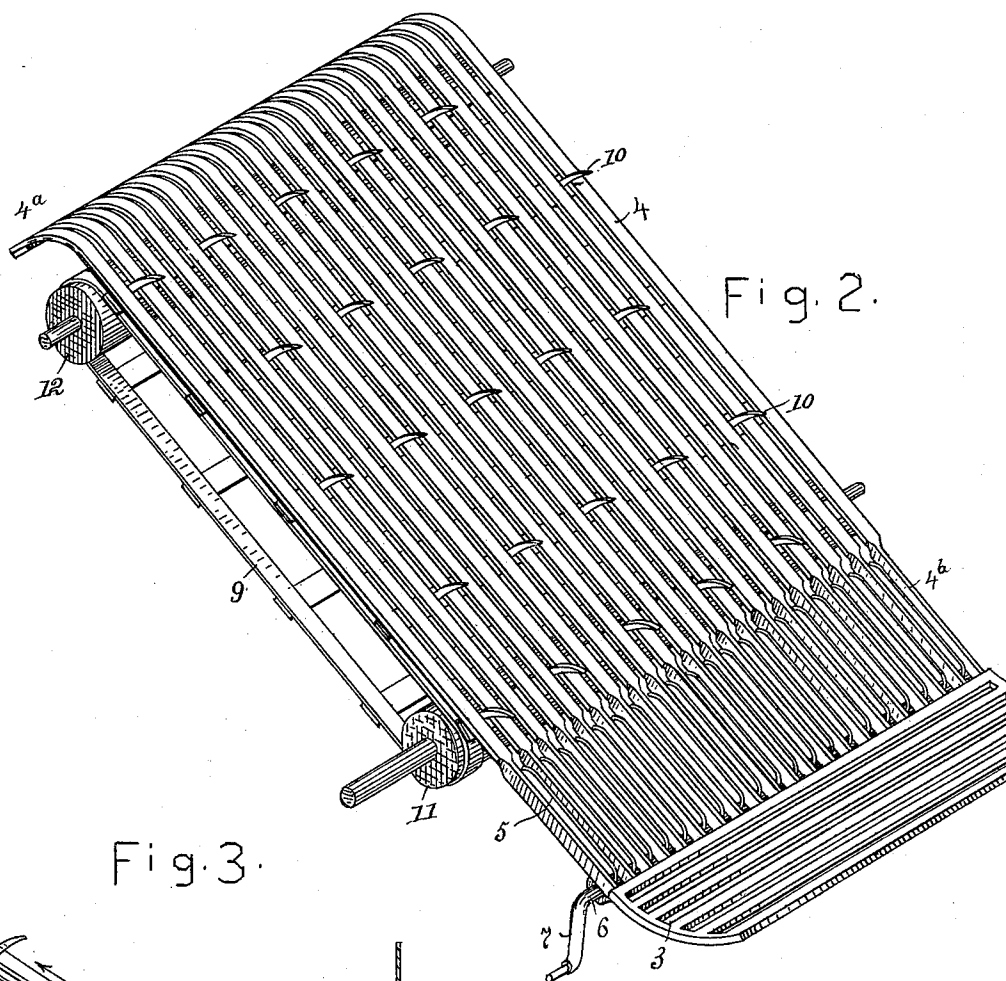
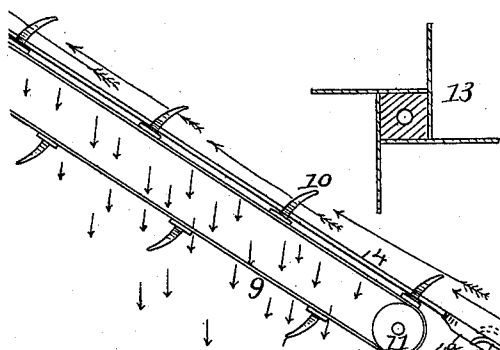


Fig. 2.

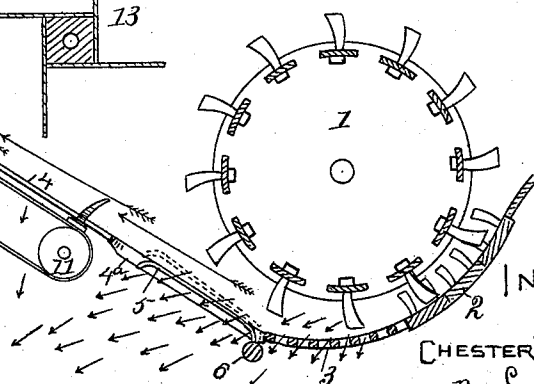
Fig. 3.



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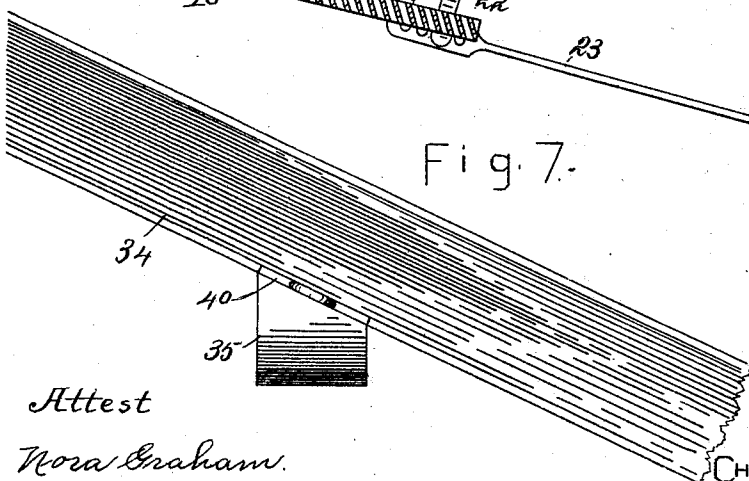
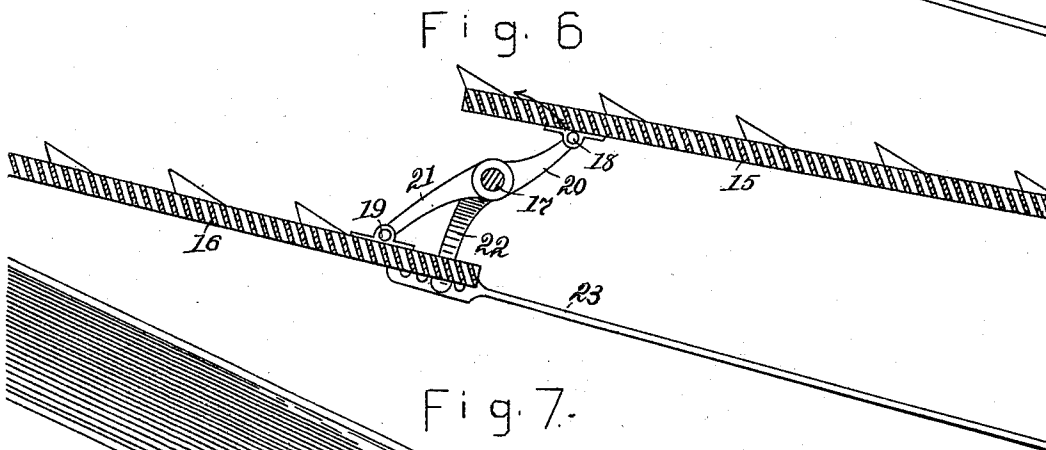
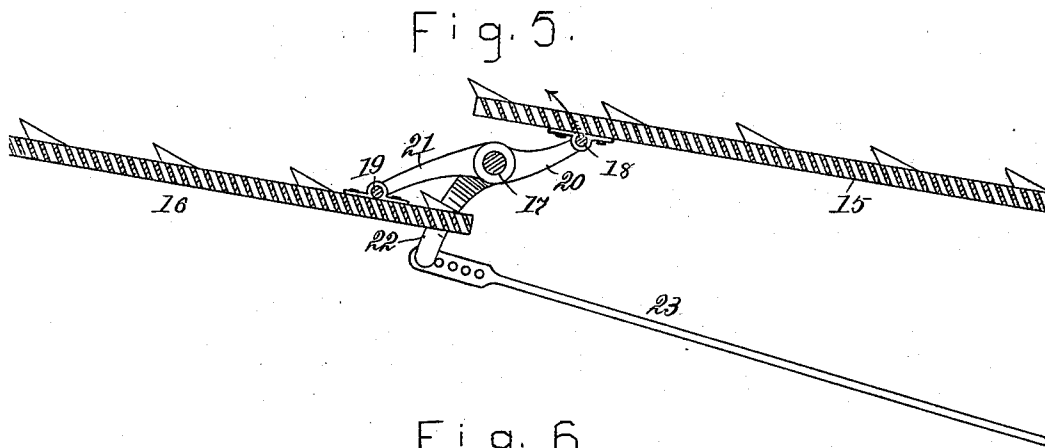
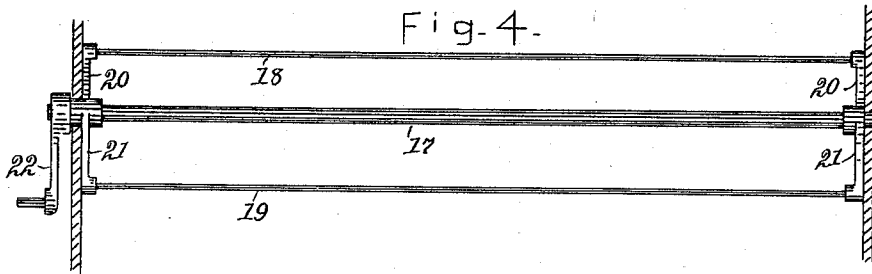
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THRESHING MACHINE.

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Patented Jan. 4, 1898.



Attest

Nora Graham.

Ana C. Graham.

INVENTOR

CHESTER Y. CHATTERTON,

By L. P. Graham
Atty.

UNITED STATES PATENT OFFICE.

CHESTER Y. CHATTERTON, OF SPRINGFIELD, ILLINOIS.

THRESHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 596,573, dated January 4, 1898.

Application filed January 16, 1896. Serial No. 575,667. (No model.)

To all whom it may concern:

Be it known that I, CHESTER Y. CHATTERTON, of Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Threshing-Machines, of which the following is a specification.

This invention is designed to increase the separating capacity of threshing-machines. It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a vertical section lengthwise of a threshing-machine embodying my improvements. Fig. 2 is a perspective representation of some of the novel features. Fig. 3 is a section through the threshing-cylinder and the separating mechanism most nearly connected therewith. Fig. 4 is a detail of the rocking frame used to impart motion to the straw tables or racks. Figs. 5 and 6 are sections through said frame and tables, illustrating capabilities in the adjustment of the rocking frame and the effect thereof on the tables. Fig. 7 is a side elevation of a fragment of a tailings-elevator constructed in accordance with my invention.

In building a thresher embodying my improvements a frame and casing of any preferred form are supplied with an ordinary cylinder, as 1. A concave 2 is fitted in the frame in a manner to coact with the cylinder; but instead of being placed under the cylinder in the usual manner it is set so far in front of the cylinder that a tangent drawn backward from its rear termination will incline downward. Immediately in the rear of the concave is placed an open grating 3, the bars of which preferably extend crosswise of the machine, and from the rear of such grating a longitudinally-slotted stationary table is made to extend obliquely upward and backward. This table is preferably composed of a set of bars 4, the rear portions of which are comparatively wide and the intervening spaces narrow, while the front ends for a definite distance are narrowed, as shown at 4^b in Fig. 2, and the spaces proportionately widened. In the widened spaces are placed a set of lift-rods 5, one in each space, and the rear ends of such rods are connected with a

rock-shaft 6, which has a crank-arm 7 or other suitable means for imparting rocking motion. A rod 8 may connect the crank-arm of the rock-shaft with an eccentric on shaft 24, or similar connections may be made with any available shaft or other moving part of the thresher.

Under bars 4, to the rear of rods 5, a roller 11 is extended across the thresher, and roller 12 is placed at a point in front of and below the rear terminations 4^a of the bars. Belts or chains, as 9, extend around the rollers, and they are equipped with cross-bars carrying fingers 10, which fingers extend upward from the upper run of the belts through the spaces between the bars. A beater 13 is placed above the bars 4 back of the cylinder, and another beater 14 is placed back of the rear termination of the bars. A swinging flap or apron, as 37, is so suspended in the rear of beater 13 that it may swing freely backward, but be held from forward swing beyond a certain point.

A shaker-table 15 is swung in the thresher in position to receive straw, &c., from the elevating-fingers 10, and back of that is a similar table 16, adapted to receive the discharge from table 15. Between the rear end of table 15 and the front end of table 16 a shaft 17 is extended through the thresher. Just inside the thresher-casing arms 20 and 21 are extended from shaft 17 in opposite directions, and shafts 18 and 19 are secured in arms 20 and 21, respectively. The rear end of table 15 is carried on shaft 18, and the front end of table 16 is swung from shaft 19. The arms carrying table 15 are somewhat shorter than those supporting table 16, for a purpose to be hereinafter explained. On one end of shaft 17, outside the thresher-casing, is an arm 22, by means of which the frame is rocked and the tables given reciprocating motion. This arm may be connected by means of rod 23 with an eccentric on shaft 24 and provision is made in the rod whereby the distance between the arm and the eccentric may be shortened or lengthened and the travel of the rocking frame and tables be correspondingly changed. In this particular instance the rod is supplied with a set of holes each adapted to fit over the crank-pin of the arm and each at a greater or less dis-

tance from the eccentric than any of the others; but any desired means may be employed to produce the described effect. The front end of table 15 and the rear end of table 16 are supported by swinging links in any suitable manner.

An endless-belt carrier 25 is placed in the position indicated in Fig. 1 of the drawings. From the discharge end of carrier 25 a shake-pan 26 extends rearward and connects with chaffer 28. The shake-pan is higher than the chaffer. Between the two there is a clear space, and teeth 29 preferably extend downward and backward from the rear end of the shake-pan. Swinging links sustain the shake-pan and chaffer, and motion may be imparted to them by a rod 27, connecting with an eccentric on shaft 24. A fan 30 is located under shake-pan 26, and it discharges through outlet 31, which terminates in the space between the shake-pan and the chaffer. The shake-pan has rearwardly-inclined teeth or corrugations, and the tendency of its action is to carry its contents rearward. Its bottom is imperforate.

Below the chaffer are placed the customary riddles 33, and these are subjected to a blast from the customary fan 32. A shake-pan 38 is placed under table 16, and an imperforate bottom extends under carrier 25, grating 3, and concave 2. The machine is supplied with the customary tailings-elevator 34, which has the ordinary discharge-spout 36 in front of the cylinder, and in addition to that is in this instance supplied with an intermediate chute 35, that communicates with the interior of the threshers above shake-pan 26. The chute has a sliding valve, (shown at 40 in Fig. 7,) which valve forms part of the bottom of the elevator when closed.

The different movable parts of the machine are supplied with pulleys, driving-belts, &c., in a manner obvious to persons skilled in threshing. As these well-understood mechanical features form no part of my invention and as they may be varied to meet different requirements, they are not set forth in the drawings.

In operating the machine grain is supplied to the cylinder and concave and is threshed in the customary manner. The peculiar location of the concave causes the cylinder to give the threshed grain a downward impulse, which tends to carry it through the straw and the interstices of the grating. The effect of this action is to cause the immediate separation of a large per cent. of the grain, as the long straw cannot pass the grating or the bars. The fingers 5 are moved up and down with sufficient rapidity to prevent the straw from clogging immediately behind the cylinder, and the belts 9 are driven with sufficient speed to carry the straw up the slotted table in a rather thin layer. The action of the rods 5 and of the fingers 10 tends to agitate the straw and thereby separate the threshed

grain remaining in the straw after the separating action of the cylinder hereinbefore described, so that when the straw leaves the slotted table it is in ordinary cases substantially free of grain. To insure complete separation in all cases, the straw is passed from bars 4 to the transversely-slotted table or rack 15 and from there to table 16. These tables preferably contain a number of thin metal strips set obliquely and extended across the frames; but it is only essential to the general idea of the invention that they be perforated in some manner to permit free passage of grain. When the straw is long and unbroken, the rock-frame may be set somewhat as shown in Fig. 6, in which case the throw of the tables is in a backward direction and the travel of the straw is hastened. In other cases the rock-frame may be set as shown in Fig. 5, the motion of the tables being thereby made more nearly vertical and the straw being longer subjected to the jarring action of the tables. The arms 21 are made longer than arms 20 in order that the straw may travel faster as it nears the discharge end of the threshers—or, in other words, that acceleration may correspond to separation—so that the cleaner the straw becomes the faster it is made to travel. The grain and chaff separated from the straw by action of the cylinder, the beater-rods, and the drag-fingers fall onto carrier 25 and are deposited on shake-pan 26. Here they are joined by siftings from tables 15 and 16 and the entire accumulation passes over the tail end of the pan and onto the chaffer in a continual stream. As the grain, chaff, &c., fall from the pan to the chaffer they are spread out somewhat by the inclined teeth 29, and in this condition they are subjected to the action of the blast from fan 30. This relieves the grain of a considerable portion of the chaff and short straw and the residue passes, with the grain, to the riddles, where it receives customary treatment.

With different kinds of grain and under different conditions the importance of rethreshing the tailings varies. For instance, tailings from wheat generally need rethreshing, while tailings from oats seldom do. To provide for both circumstances, chute 35 connects the tailings-elevator with the interior of the threshers, and the slide-valve 40 may either permit the tailings to be discharged onto grain-pan 26 or may act as a part of the bottom of the elevator.

It is the function of beater 13 to prevent the grain and straw from being thrown past the longitudinally-slotted table and to force the straw in contact with such table. The flap 37 helps to keep the straw in contact with the table after it passes the beater 13, and beater 14 tends to direct the straw to table 15.

A threshers built in the manner specified would embody all the different features of my invention arranged as I prefer to use them; but it is obvious that many of the de-

tails have utility separately, or at least in other combinations than those set forth. The claims are relied on to make this point clear.

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

10 1. In a threshing-machine, the combination of a cylinder, a concave under the front of the cylinder, an open grating in the rear of the concave and under the central portion of the cylinder, a set of forcibly-vibrating rods in the rear of the grating and in part under the rear of the cylinder, and a carrier immediately in the rear of the rods.

15 2. In a threshing-machine, the combination of a cylinder, a concave under the front of

the cylinder, an open grating under the central portion of the cylinder, a longitudinally-slotted table extending obliquely upward and backward from under the rear of the cylinder, a transverse rock-shaft at the forward end of the table having rods extended rearward in the slots, and an endless belt in the rear of the rods having fingers extending upward through the slots of the table from the upper run of the belt. 20 25

In testimony whereof I sign my name in the presence of two subscribing witnesses.

CHESTER Y. CHATTERTON.

Attest:

E. S. McDONALD,
L. P. GRAHAM.