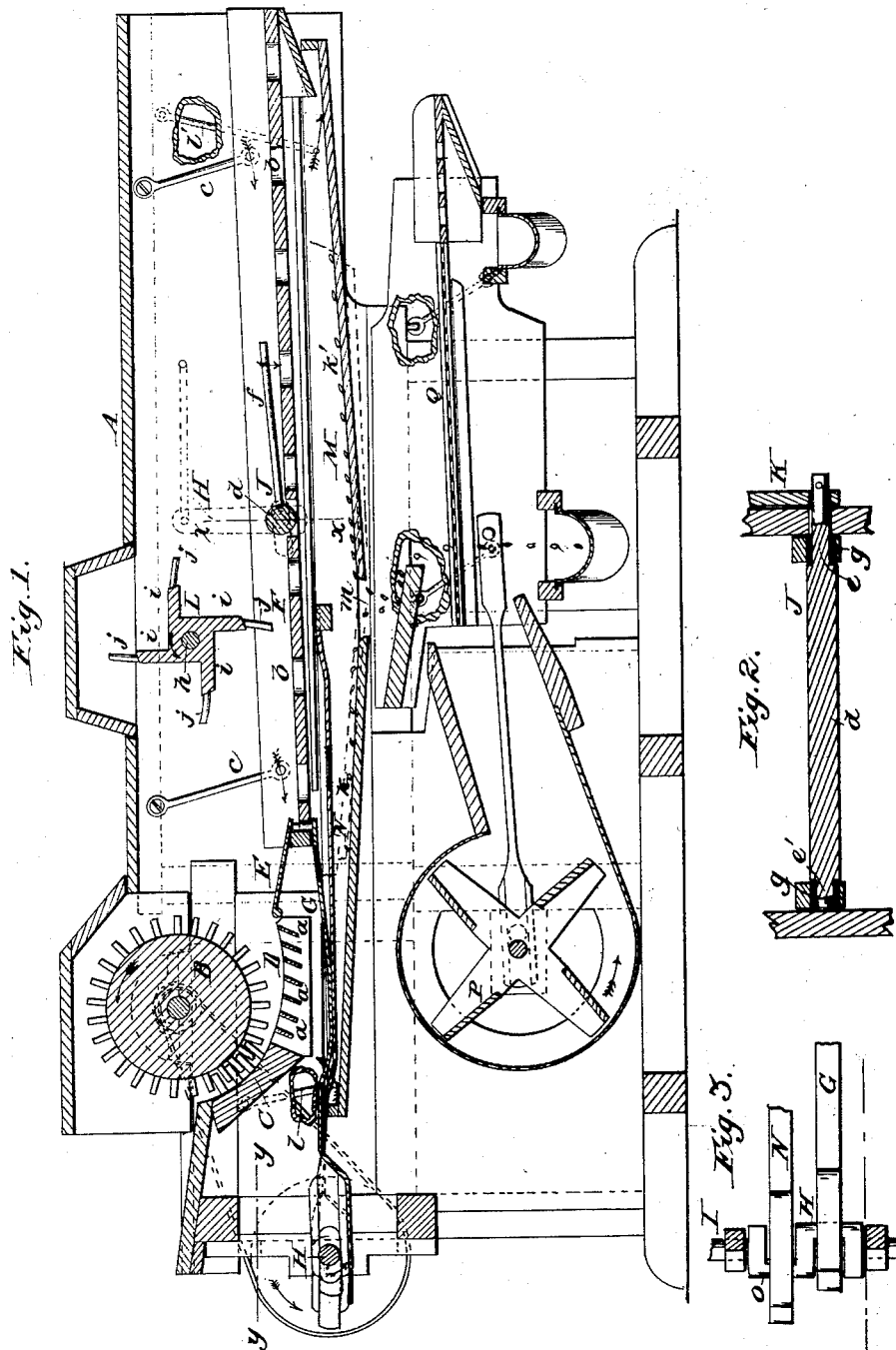


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G. WESTINGHOUSE & L. SMITH.
THRESHING MACHINE.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN THRASHING-MACHINES.

Specification forming part of Letters Patent No. 45,683, dated December 27, 1864.

To all whom it may concern:

Be it known that we, GEORGE WESTINGHOUSE, of Schenectady, in the county of Schenectady and State of New York, and LORENZO SMITH, of Sharon Springs, in the county of Schoharie and State of New York, have invented a new and Improved Thrashing-Machine; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal central section of our invention; Fig. 2, a transverse vertical section of a portion of the same, taken in the line *x x*, Fig. 1; Fig. 3, a horizontal section of a portion of the same, taken in line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates, first, to an improvement in the discharging device of the machine for carrying the straw over the riddle after the former has passed between the thrashing-cylinder and concave. The object of this part of the invention is to cause a thorough separation to be made of the thrashed grain from the straw by regulating the passage of the straw over the riddle so as not to admit of its being discharged too quickly over the latter and before the grain is separated from it, and at the same time insure its passing along sufficiently quick to prevent the thrashing-cylinder becoming clogged or choked.

The invention relates, second, to a novel and improved manner of hanging the grain receptacle or carrier, whereby the same is made to operate more efficiently than hitherto.

The invention relates, third, to an improvement in the construction of a wooden shaker, whereby the journals of the same are protected from wear.

The invention relates, fourth, to the combination and arrangement of the several parts, as herein shown and described, whereby the operation of thrashing the grain from the straw and the separation of the former from the latter is effected in an expeditious and perfect manner.

A represents a case or box in which the working parts of the machine are placed.

B is a thrashing-cylinder, which is placed in the upper part of the case or box and may be constructed in the usual or any proper way, and C is a toothed concave, which is placed underneath the cylinder B, the teeth of the cylinder working between the teeth of the concave, or the concave may be placed above the cylinder, as it sometimes is.

D represents a screen, which is slightly concave and adjoins the toothed concave C. This screen is composed of a series of parallel flat metal bars, *a*, fitted transversely in the case A, and edgewise with a slightly-inclined position, as shown clearly in Fig. 1, the upper edges of the bars *a* inclining toward the discharge end of the machine. E is an apron which covers the space between the screen D and the riddle F. The riddle F is of wood, and is perforated with holes *b*, of suitable size and at a proper distance apart, said riddle being suspended within the case A by four rods, *c*, two at each side near its ends, and having a slightly-inclined position from a horizontal plane, its outer end being rather more elevated than its inner end. This riddle has a reciprocating motion imparted to it by means of a connecting-rod, G, and a crank, H, on a shaft, I, at the front end of the case A.

J is a shaker composed of a shaft, *d*, the journals *e e'* of which are fitted in the sides of the riddle F, the shaft *d* being provided with teeth *f*. One of the journals *e* of the shaft *d* projects through the side of the case A and is fitted in the lower end of an arm, K, the upper end of which is pivoted to the case. This arm causes, as the riddle F works, a rocking motion to be given the shaft *d*, and the teeth *f* to rise and fall to act upon the straw. This shaker, however, so far as its operation is concerned, is the same as usual. The journals *e e'* of the shaft *d* are covered with metal, tubes *g* being fitted on them. This metal covering prevents the journals *e e'* from being worn, a contingency which occurs in a short time with a wooden shaft, and the latter are more desirable than metal ones, being lighter and more easily made and repaired than metal ones, the

only objection hitherto existing against them being the wear of the journals, which my invention fully obviates.

In the upper part of the case A, directly over the riddle F, there is placed a rotary feeder, L, which is composed of a shaft, *h*, having blades or wings *i* projecting tangentially from it with pins *j* in their edges. This feeder rotates in the direction indicated by the arrow, and it serves to feed the straw along over the riddle F at a certain requisite speed, preventing it from moving too fast or too slow, insuring all the loose grain being separated from the straw, and at the same time preventing the thrashing-cylinder becoming choked or clogged by a sluggish movement of the straw, and it also serves to a certain extent as a shaker to separate the loose grain from the straw.

The grain is thrashed between the cylinder B and concave C, and the principal part of the loose grain passes through the screen D, a small portion only passing with the straw upon the riddle F. The screen D is well calculated to effect this result, as the narrow edges of the bar *a* of the screen do not afford much chance for the grain to pass over them. In consequence of a small portion of the loose grain passing with the straw on the riddle F the grain will be thoroughly separated from the straw before the latter is discharged from the end of the riddle.

We would remark that we do not confine ourselves to the precise construction of the feeder L, as herein described, for that may be varied in different ways and the same end obtained—for instance, a toothed cylinder may be used, but the first described we think would be equal, if not preferable, to any other mode of construction; neither do we wish it understood that we confine ourselves to the use of the feeder L exclusively when the concave C is placed beneath the cylinder B, but it may also be used with advantage when the concave C is placed above the cylinder B.

Directly below the riddle F there is a grain-receptacle or grain-carrier, M, constructed with a double inclined bottom *k k'*. (See Fig. 1.) This receptacle or carrier receives the grain from the screen D and riddle F, and it is suspended within the case A by rods *l l'*, two at each side, the rods *l l'* being near the front and the others *l l'* being near the rear or

discharge end of the machine. The rods *l l'* are not parallel with each other, but have nearly or quite opposite positions relatively with each other, as shown clearly in Fig. 1. The receptacle or carrier has a discharge opening or space, *m*, at its center, and a reciprocating movement is communicated to it by means of a rod, N, from a crank, O, on shaft I, the crank O having an opposite position to the crank H, so that the riddle F and receptacle or carrier M will move simultaneously in opposite directions. In consequence of having the rods *l l'* placed in opposition relatively with each other a very important result is obtained, for each inclined part *k k'* of the carrier-bottom is made as it moves toward the center of the case A to have an upward movement to throw the grain toward the discharge opening or space *m*, while said parts during their opposite movement descend and have no tendency to throw the grain backward. This will be fully understood by referring to the rods *l l'* in Fig. 1, the arrow 1 showing the discharging movement of the bottom *k* and the arrow 2 showing the backward or non-discharging movement of bottom *k'*, the latter movement of *k'* being of course simultaneous with the discharging movement of *k*.

The case A below the carrier M contains a blast-fan, P, and a screen, Q, placed in a shoe, R, which, being arranged in the ordinary way, do not require a special description.

We claim as new and desire to secure by Letters Patent—

1. The rotary feeder L, in combination with the riddle F and shaker J, arranged and operating substantially as and for the purpose set forth.

2. The grain-receptacle or grain-carrier M, hung or suspended, as shown and described, in combination with the riddle F, thrashing-cylinder B, concave C, and screen D, all constructed and arranged to operate in the manner as and for the purpose specified.

3. Encompassing the wooden shaft *d* of the shaker J with metal bands or ferrules *g*, as and for the purpose set forth.

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