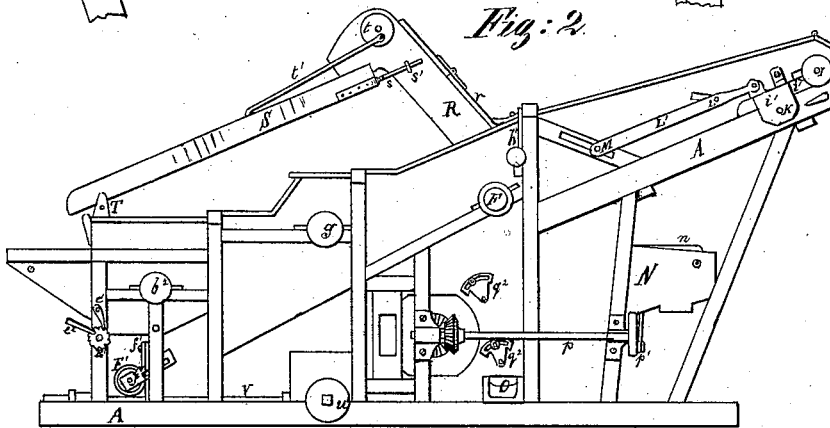
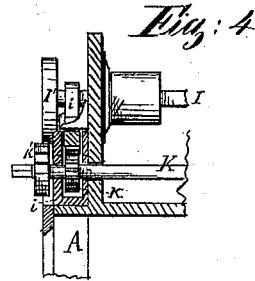
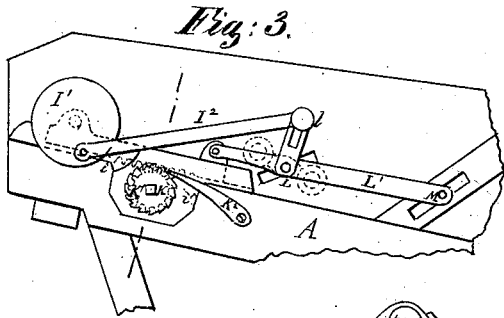
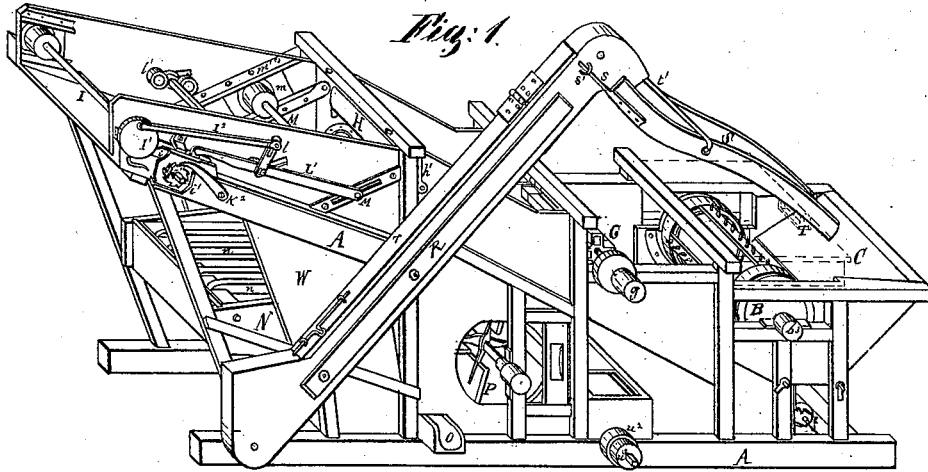


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THRASHING-MACHINES.

No. 194,919.

Patented Sept. 4, 1877.



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Fig: 5.

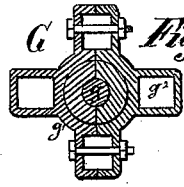


Fig: 6

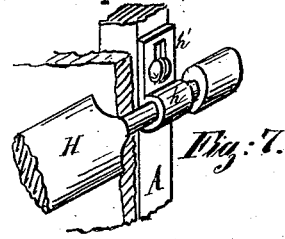


Fig: 7.

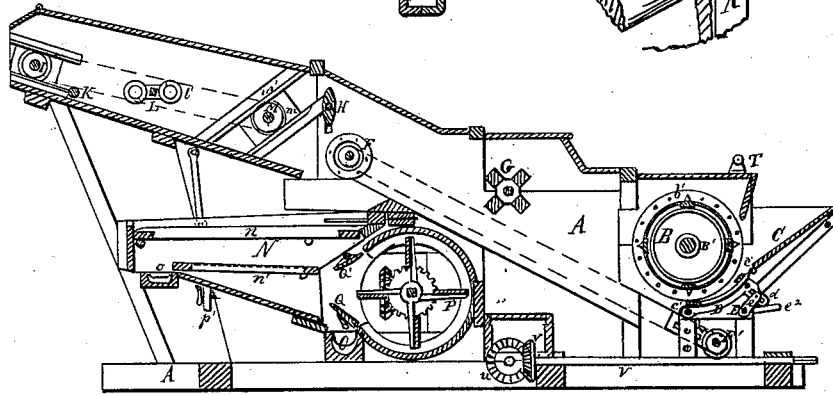


Fig: 8.

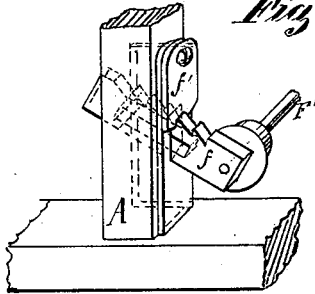


Fig: 9.

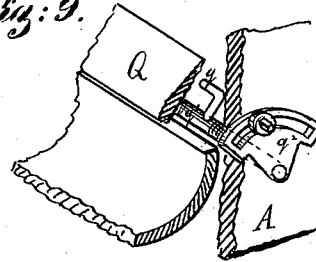
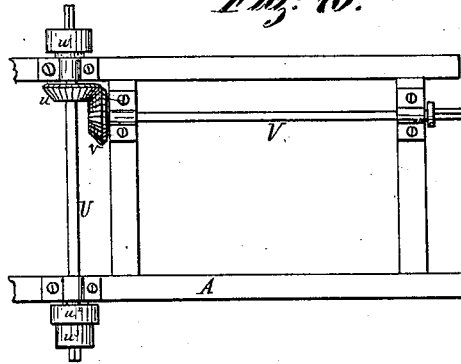


Fig: 10.



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# UNITED STATES PATENT OFFICE.

JOHN KOLLING AND HENRY KOLLING, OF ARLINGTON HEIGHTS, ILL.

## IMPROVEMENT IN THRASHING-MACHINES.

Specification forming part of Letters Patent No. 194,919, dated September 4, 1877; application filed April 20, 1877.

*To all whom it may concern:*

Be it known that we, JOHN KOLLING and HENRY KOLLING, of Arlington Heights, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Thrashing-Machines, of which the following is a clear and exact description, reference being had to the accompanying drawings.

Our invention relates to certain improvements in thrashing-machines, as fully herein-after set forth and claimed.

In the drawings, Figure 1 is a perspective view of the right-hand side of the machine. Fig. 2 is an elevation of the left-hand side. Figs. 3 and 4 are an elevation and section of the rattle-rack mechanism. Fig. 5 is a longitudinal section of the machine. Fig. 6 is a cross-section of the beating-cylinder. Fig. 7 shows the vertical adjustment of the picker. Fig. 8 is the apron-stretching device. Fig. 9 is a perspective view of one of the blast-regulating boards with its adjusting device. Fig. 10 is a plan of the main driving-shafts. Fig. 11 is a cross-section of the machine through the center of the thrashing-cylinder. Figs. 12 and 13 show the inside view and cross-section of the concave adjusting device; and Fig. 14 is a cross-section of the riddle-shoe.

A is the frame and casing, of ordinary construction. B is the thrashing-cylinder, armed with teeth in the usual manner. The ends of said cylinder are provided with circumferential grooves or flanges *b*, and circular plates *b*<sup>1</sup> are secured against the sides of the casing, and extend entirely around the cylinder, the inside edges projecting into said grooves *b*, so that no straw or chaff can work in between said cylinder and casing, thereby obviating any extra friction and delay.

The cylinder B is mounted upon a shaft, B', placed in suitable boxes of the frame, and having driving-pulleys *b*<sup>2</sup> and *b*<sup>3</sup> on its extreme ends.

The chute C, onto which the grain in the straw is fed, is a loose board, hinged at its bottom edge *c* to the front edge of the concave D, armed with teeth in the usual manner. The rear end of said concave is pivoted upon a fixed rod, *c*'. *d* are slotted legs, pending from under the front end, and forming

part of the concave. E is a shaft, placed in suitable bearings in the frame, and having two cranks, *e*, the end pins of which enter the slots in legs *d*. One end of said shaft E projects through the frame, where it has a ratchet-wheel, E', to be locked by a pawl, *e*<sup>1</sup>, pivoted to the frame, and a hand-lever, *e*<sup>2</sup>. By this arrangement the width of the throat between cylinder and concave can be regulated to suit the different kinds and qualities of grain, and the operator can relieve the cylinder momentarily if by irregular feed it should get choked.

The shafts F and F' carry small pulleys, which have each a projecting flange, and drive an endless apron, placed on an incline, to convey the grain and straw as it comes from the thrashing-cylinder. The shaft F is pivoted in fixed boxes, while the shaft F' rotates in the end of ratchet-bars *f*, being longitudinally slotted. These bars *f* are placed into mortises of the frame-stanchions, being retained therein each by a pin passed through the slot and adjustably secured by a turn-pawl, *f*<sup>1</sup>, pivoted against the stanchion of the frame, and matching with any one of the ratchet-teeth of the bars *f*. This arrangement furnishes a simple and effective device for tightening the apron.

G is the beating-cylinder. It consists of a shaft, *g*, to which are attached two heads, *g*<sup>1</sup>, provided with sockets for the ends of the beater-bars *g*<sup>2</sup>. This beater is to lighten up the straw as it comes from the thrashing-cylinder, to allow the grain to fall out, and as for some kinds of seed its use is not required, our improvement consists in constructing the heads *g*<sup>1</sup> each in two halves, cut through the center line, secured together by bolts, as shown in Fig. 6, so that the beater can be removed from its shaft without taking the latter out of its bearings and off the frame.

The picker H, which is to shake the straw while passing over it, is journaled in boxes *h*, (see Fig. 7,) having a slotted plate, *h*<sup>1</sup>, which, by a single bolt, each passed through the slot of said plate, are secured to the stanchions of the frame in such a manner that they allow a ready vertical adjustment or entire removal, as in thrashing flaxseed, when said picker is not wanted.

The rattle-rack consists of an endless slotted straw-carrier, placed on an incline, and receiving a shaking motion from an oscillating double crank-shaft placed under it. Its object is to separate the grain and tailings from the straw, which latter is carried off and delivered upon the stack, while the former drops through upon the inclined bottom of the casing, whence it slides down and discharges upon the riddle-shoe.

I is a shaft, receiving motion by a pulley on its end. It is journaled in two sliding boxes, *i*, each having an extension rack-bar, which is arranged to have a longitudinal sliding motion in a box, *i'*, bolted upon each side of a machine, in which it is moved forward and backward by means of a pinion, *k*, each hidden inside of said boxes *i*, and which match into the teeth of the rack-bar. Both these pinions *k* are secured upon a common shaft, *K*, pivoted into the frame of the machine, and having a squared end for the attachment of a crank and a ratchet-wheel, *K*<sup>1</sup>, locked by a pawl, *K*<sup>2</sup>, which latter is pivoted to the frame. To one end of the shaft is also secured a crank-plate, *I*<sup>1</sup>, which, by a rod, *I*<sup>2</sup>, is connected to bell-crank *l*, being secured upon the end of shaft *L*, with double cranks *l'*, carrying rollers on their extreme ends, which, while said shaft is oscillated, will alternately strike against and raise the rattle-rack. The ends of shaft *L* are pivoted in about the center of bar *L'*, which is connected at one end to the end of the bar *i*, while its opposite end is coupled to the ends of shaft *M*, journaled in boxes *m*, sliding in guide-bars *m'*, which are secured to the inside walls of the casing in an oblique direction. The casing-walls are mortised to correspond with the sliding motion of shafts *L* and *M*. The shafts *I* and *M* have each two small pulleys, over which the rattle-rack is stretched.

By turning the shaft *K* the shafts *I*, *L*, and *M* are moved forward and backward. The shafts *L* and *M* thereby, in following the oblique direction of the guides *m'*, are brought to a more or less elevated position, so as to suit the different kinds and qualities of grain which may be thrashed with or without the picker *H*—as, for example, in thrashing flax-seed, the picker *H* is removed entirely, and the rattle-rack is brought forward to its most elevated position.

*N* is the riddle-shoe, having an inclined bottom toward the front of the machine, where it is open. It is hung at the front or inner end upon a pivot in the usual way, and at the rear it is suspended by two hangers, which allow to it a shaking motion. Said riddle-shoe *N* on its top has a grating, *n*, composed of a series of bars placed longitudinally and parallel to each other, and below this is the screen *n'*. Any straws delivered with the grain and chaff will be retained by the grating, and will be blown over the shoe without first dropping upon the screen, where a stronger blast would be required for removing them.

The chaff, dust, and other refuse are separated by the sifter, and by means of the fan-blast are discharged over the end of the shoe, while the clean grain only will slide down in the bottom of the shoe into a trough, *O*, delivering the same at both sides of the machine. The tailings and unthrashed heads will collect in the trough *o*, thence discharging into the elevator.

The fan *P* is arranged in the usual manner. It is driven by a belt at one side of the machine, while to the opposite end of its shaft is secured a bevel-gear, matching with a similar gear-wheel on shaft *p*, journaled longitudinally to the side of the machine, and having a crank, *p'*, at its ends, which, by means of a connecting-rod, is coupled to the bottom of the shoe *N*, for transmitting a shaking motion to said shoe.

The blast of the fan *P* is regulated and directed by two wing-boards, *Q* and *Q'*. The lower one, *Q*, is hinged to the lower end of the opening in the fan-casing, its outward end resting upon two arms, *q*, secured to a shaft, *q*<sup>1</sup>, and adjusted by a quadrant, *q*<sup>2</sup>, fixed to the end of the shaft, and adjustably secured against the outside of the frame or casing *A* by means of a leg-screw in the said frame, all arranged as shown in Fig. 9. The upper wing-board *Q'* is pivoted into the frame *A*, one of its end pivots having a quadrant, *q*<sup>2</sup>, and being adjustably secured similar to board *Q*.

The elevator *R*, into which the unthrashed heads are discharged, hoists and spouts the same under the thrashing-cylinder again, is constructed in the usual manner, with the exception that the lid *r* is hinged on its top end, so as to open upward, thereby saving the hinges, which, where the lid is arranged to open to the side, are frequently broken.

The spout *S* is suspended to the head of the elevator by having two projecting side studs, *s*, inserted into staples *s'* of the elevator-head. Its lower end rests upon a roller, *T*, pivoted to the top of the machine. A shaking motion is transmitted to said spout from a crank, *t*, secured to the end of the top elevator-shaft, and connected to the side of the spout by a rod, *t'*.

The main driving-shafts *U* and *V* are placed in suitable bearings in the frame of the machine, and right-angularly to each other, being geared together by miter-wheels *u v*. The extreme ends of these shafts, extending beyond the bearings, are squared for coupling the tumbling-shaft, so that power may be attached to either side or to the front of the machine. The pulleys *w*<sup>1</sup> and *w*<sup>2</sup> are for driving the thrashing-cylinder, while pulley *w*<sup>3</sup> is for driving the balance of the machinery.

The door *W*, which opens the side of the frame at the riddle-shoe, is made to slide longitudinally in the said frame, which we prefer to hanging it with hinges.

All the pulleys arranged for carrying the apron and rattle-rack, as well as the beating-cylinder and picker, we intend to have guard-

ed against the admission of straw or chaff, in a similar manner, as shown and described for the thrashing-cylinder.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a thrashing-machine, the combination of the thrashing-cylinder B, provided with grooves at its ends, with guard-plates *b*, extending entirely around said cylinder, and projecting into the grooves in the cylinder, substantially as described and shown.

2. The rattle-rack shafts I and M and the shaker-shaft L, all arranged in sliding boxes in frame A, and connected so as to be simultaneously adjustable in an oblique direction, substantially as and for the purpose described and shown.

3. The rattle-rack shaking-shaft L, journaled in adjustable bearing-bars L', and oscillated from the rattle-rack shaft by arm *l* and connecting-rod I<sup>2</sup>, substantially as described and shown.

4. The rattle-rack shaft I, journaled in the boxes *i*, adjustable in boxes *i'*, in combination with the shaft M, journaled in boxes *m*, which slide in oblique guides *m'*, the bearings of the shafts I and M being coupled by a bar, L, all constructed and arranged substantially as described and shown.

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