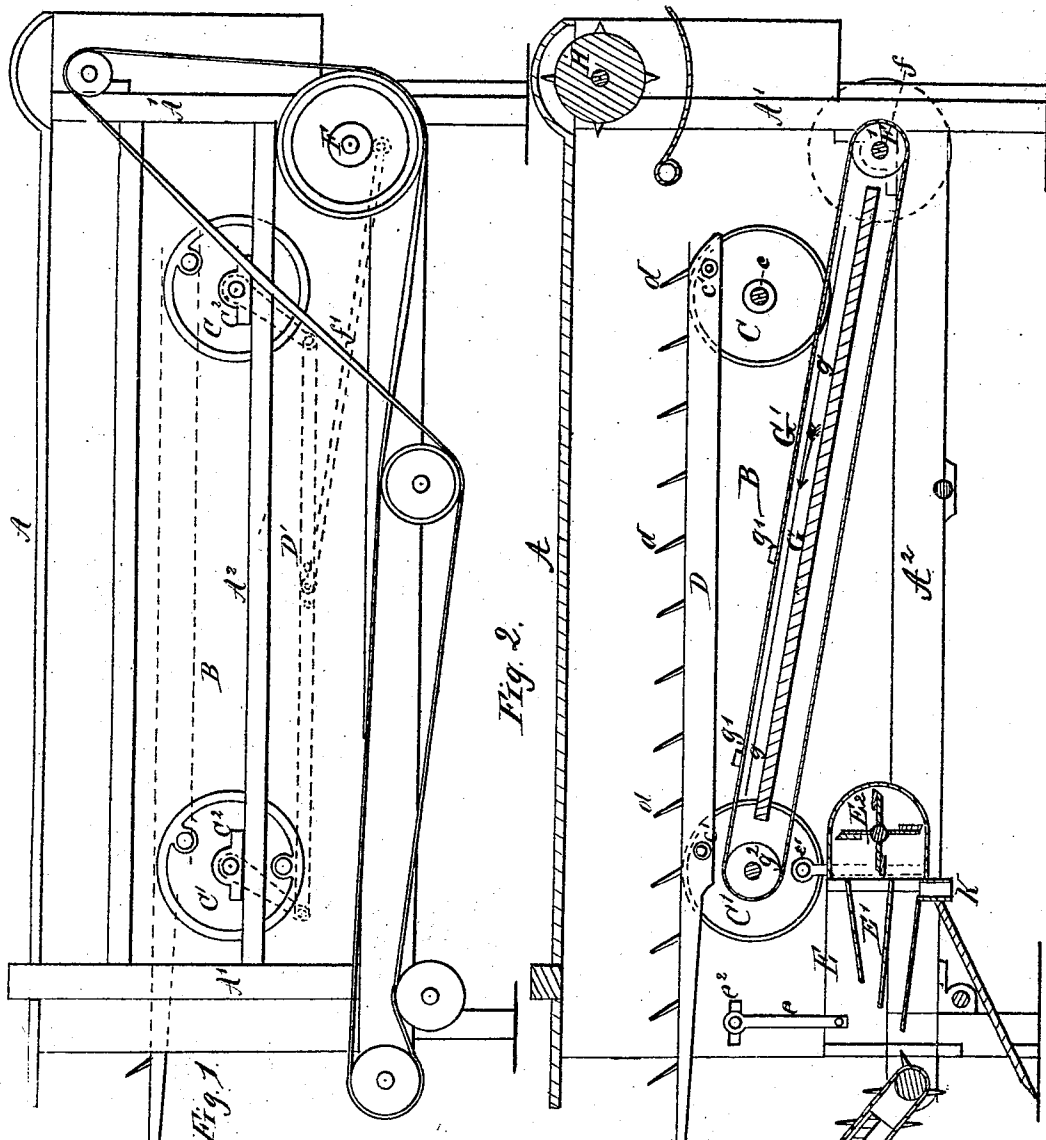


J. KOONS.  
GRAIN SEPARATOR.

No. 184,785.

Patented Nov. 28, 1876.



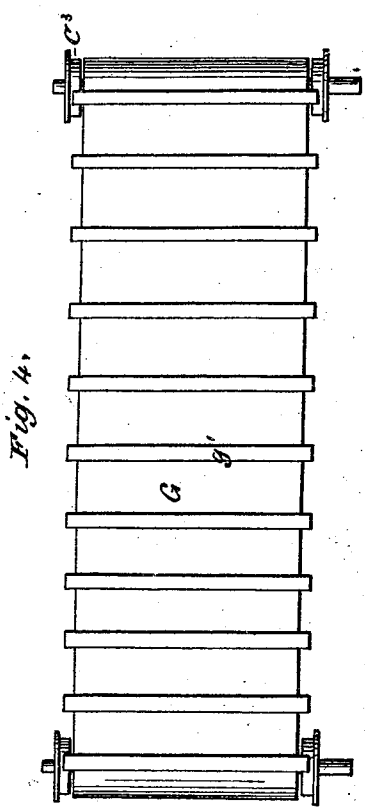
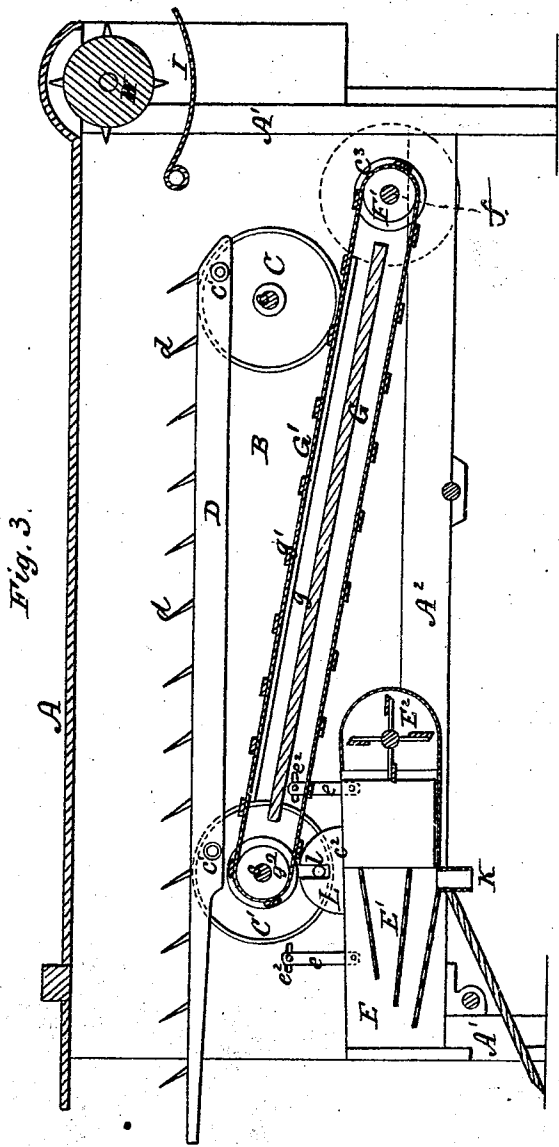
Witnesses.  
Henry Cottle  
L. E. Humphreys.

*Inventor.*  
Joseph Koons  
by W. H. Doubleday *att'y*

J. KOONS.  
GRAIN SEPARATOR.

No. 184,785.

Patented Nov. 28, 1876.



Witnesses:  
W. B. Masson  
E. E. Masson

Inventor.  
Joseph Koons  
by W. B. Doubleday.

# UNITED STATES PATENT OFFICE.

JOSEPH KOONS, OF STILLWATER, MINNESOTA, ASSIGNOR TO SEYMOUR, SABIN & CO., OF SAME PLACE.

## IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 184,785, dated November 28, 1876; application filed December 27, 1875.

*To all whom it may concern:*

Be it known that I, JOSEPH KOONS, of Stillwater, in the county of Washington and State of Minnesota, have invented certain new and useful Improvements in Grain-Separators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of the invention is to simplify the construction of the machine, to increase its efficiency, and at the same time reduce its cost of manufacture; and to this end the invention consists in a novel construction and arrangement of parts, as will be hereinafter fully set forth.

Figure 1 is a side elevation, and Fig. 2 is a vertical longitudinal section. Fig. 3 is a vertical longitudinal section, showing another method of hanging and actuating the sieves of the winnower; and Fig. 4 is a plan view of the carrying-apron, showing its construction and arrangement relative to its driving and supporting mechanism.

A is the top of the machine; A<sup>1</sup>, posts, and A<sup>2</sup> a girt; but as the frame, the cylinder H, and concave I may be of any usual or approved construction, they need not be specifically described. B is the side or casing at both sides of the machine. C C<sup>1</sup> are disks or circular metallic plates, arranged in apertures cut for their reception in each side of the casing B, and mounted upon shafts *c*, which are supported upon or in bearings C<sup>2</sup>, secured to the frame, or formed partially or wholly in the frame. D represents a carrying and separating platform, consisting of a series of parallel bars provided with fingers *d*. These bars are attached to the upper portion of each of the disks C C<sup>1</sup>, as indicated at *c*<sup>1</sup> *c*<sup>1</sup>, Fig. 2, by means of rods or wrist-pins, which can turn in the bars. D' (see Fig. 1) are connecting-rods or links attached to disks C C<sup>1</sup> outside of the frame. F is a crank-wheel mounted on a shaft, *f*, and connected with either link D', or one of the disks, by means of a

pitman, *f*'. E E<sup>1</sup> E<sup>2</sup> represent, respectively, the side, riddles, and fan of a winnower. The riddles or sieves and their inclosing case or sides, are supported at the rear or discharging end upon the pendulum-links or pivoted arms *e*, and at the front or receiving end upon the disks C<sup>1</sup>, as indicated at *c*<sup>1</sup>. The upper end of each link *e* may be mounted in a horizontal slot, *c*<sup>2</sup>. (See Figs. 2 and 3.) K is the discharging-spout of the shoe of the winnower. As any of the improved kinds of winnowers which are adapted for the purpose may be employed, no more detailed description of its various parts need be given. G is a grain-table. G' is a raddle-belt or carrier, traversing the upper surface of grain-table G. The raddle-belt is operated by means of a driving-pulley, F', or shaft *f*, at each side of the machine, and supporting or tension pulleys *g*<sup>2</sup>, as is customary in this class of machine.

The grain is fed in at and between the thrashing-cylinder H and the concave I, from whence the mingled mass of grain and straw is discharged upon the separator and carrier D, where it is thoroughly agitated, the grain falling between the bars upon either the grain-table G and raddle-belt G', or the winnower. As the raddle-belt traverses the grain-table, (in the direction indicated by the arrow in Fig. 2,) it collects the grain and delivers it to the sieves, as will be readily understood.

In Fig. 3 I have shown another construction of devices for actuating the sieves or riddles of the winnower, in which L is a segmental brace or carrier, attached to the upper edge of each side of the rear part—that is, the shaking part, in which the sieves are supported. *l* is a slot in segment L, and *c*<sup>2</sup> is a pin projecting from the face of circular head C<sup>1</sup>, and entering the slot *l*, both ends of the shaker being mounted upon vibrating links *e*. As the head C<sup>1</sup> oscillates upon its shaft *c*, the required shaking motion is imparted to the sieves; and, by moving pin *c*<sup>2</sup> farther from or nearer to the shaft *c*, the extent of the shake or throw of the sieves may be varied. Although the shoe of the winnower is actuated by the heads C<sup>1</sup>, yet the rising and fall-

ing movement of said shoe is regulated by the position of the links *e* independently of the oscillating motion of the heads, so that these two motions—that is, the length of the reciprocation and the amount of the rise and fall, or “toss,” as it is sometimes called—may be adjusted or determined independently of each other.

C<sup>3</sup>, in Fig. 3, are flanged pulleys secured to a driving-shaft at the lower end of the carrying belt or apron, or raddle-belt G', to operate said belt, the upper end of the belt being supported by means of flanged pulleys C<sup>2</sup>, mounted loosely upon shaft *c*, or upon a shaft provided for the purpose; or, when preferred, the belt may be driven from a shaft at the upper end, as convenience or economy of construction may indicate. The slats *g*<sup>1</sup> on belt or apron G' project beyond the edge of the apron, and traverse a rib, *g*, (see Figs. 3 and 4,) affixed to the side of the machine, thus supporting the central portion of said apron. When preferred, rollers extending the entire width of the belt may be employed instead of the pulleys C<sup>2</sup>. It will, of course, be understood that there is to be a segment-carrier, L, and pin *c*<sup>2</sup> at each side of the winnower.

From an examination of the drawing it will be seen that the separating and carrying platform, the winnower, and the raddle-belt are all operated from the single shaft *f*.

What I claim is—

1. The combination, with the shoe of the winnower, of the segment or carrier L, the circular head C<sup>1</sup>, and pin *c*<sup>2</sup>, substantially as set forth.

2. The combination of the separating table or platform D, the disks C<sup>1</sup>, and the shoe of the winnower, provided with the arcs or braces L, substantially as set forth.

3. The combination of the circular heads C<sup>1</sup>, their shaft *c*, the raddle-belt G', supported at its upper end upon loose pulleys C<sup>2</sup> on shaft *c*<sup>1</sup>, the separating-platform D, and the winnower, these parts being constructed and arranged substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOSEPH KOONS.

Witnesses:

D. M. SABIN,  
FRANK CHASE.