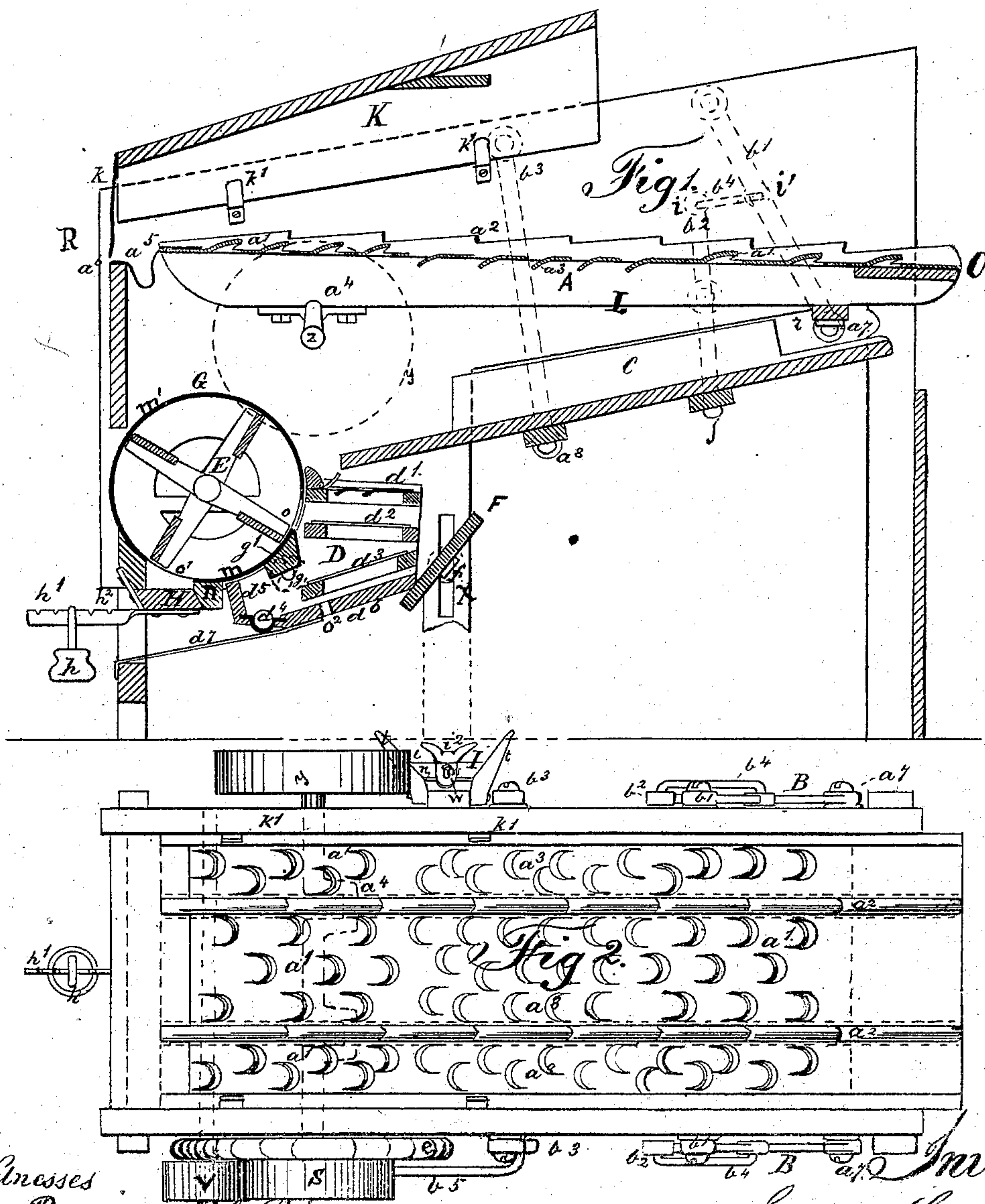


Grain-Separators.

No. 144,211.

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Witnesses

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IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 144,211, dated November 4, 1873; application filed February 1, 1873.

To all whom it may concern:

Be it known that I, SAMUEL LESSIG, Sr., of Reading, in the county of Berks and State of Pennsylvania, 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, that 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 the letters of reference marked thereon, which form a part of this specification.

My invention has for its object to furnish an improved grain, straw, and chaff separating machine; and consists in the combination and arrangement of the parts hereafter fully shown and described, and pointed out in the claim.

In the accompanying drawings, which illustrate my invention and form a part of the specification thereof, Figure 1 is a longitudinal vertical section, and Fig. 2 a plan view with cover removed.

A is the separator, composed of the serrated and perforated surface $a^1 a^1 a^3$ and the carriers a^2 , secured to, and carried and operated by means of, the guides L. The serrations $a^1 a^1$ are arranged to project upward and toward the discharge end of the machine; they are crescent-shaped, and in the vibrations of the separator aid in carrying the straw and chaff. a^3 projects downward and toward the receiving end. a^2 are two notched straw-carriers, attached to the upper side of the separator. In the vibrations of the separator they shake the straw, cause the grain to fall to the surface $a^1 a^3$, and carry and discharge said straw at O. L are two guides, to which are secured, and by means of which are operated, the separating-surface $a^1 a^1 a^3$ and the carriers a^2 . They have their bearings on the cranks a^4 , and on the journals a^7 attached to the cross-piece r , and work in the bearings in the ends of the levers or arms b^1 . y is the driving-pulley, connected by the shaft z with the operating-pulley s . The shaft z has formed on it the cranks a^4 , which are journaled to the guides L. The pulley s is provided with the heavy cast flange or extension e , which serves as a fly or balance wheel to equalize and steady the movements of the various parts of the machine. d^5 is a flexible apron or guard, one end of which is at-

tached to the frame-work at d^6 , and the other end to the separator A. C is a vibrating chute, carried and held in place by the levers $b^2 b^3$, and is operated by the levers $b^1 b^2$, connected by the links b^4 . It is inclined toward and extends from beneath the discharge end of the separator A, to and so as to deliver the grain into the sieve-box D at its rear or inner end. The levers or arms $b^1 b^2 b^3$ and link b^4 are made in two sets, and arranged correspondingly on opposite sides of the machine. $b^1 b^3$ are journaled at their upper ends, and b^2 at its center, to the frame-work. b^1 is journaled at a^7 to the guides L, and b^2 and b^3 are journaled to the chute C at j and a^8 . The levers b^2 are constructed about three-fourths the length of levers b^1 , and have their upper ends provided with bearings i , and connected by the link b^4 with the levers b^1 at bearings i' , which bearings i' are so placed as to be in a horizontal line with the bearings i on lever b^2 , that a direct action may be secured by levers b^1 on levers b^2 , and so as to have the lower end of lever b^1 about one and a half times or twice as long as the upper end. The levers b^1 are inclined forward of a perpendicular line from their bearings a^7 , so as to give them a power to more readily exert the increased force necessary to operate the chute C in its inclined position. The construction and arrangement of the levers $b^1 b^2$ are such that, when b^1 is drawn forward, b^2 forces the chute up the incline. They also give to said chute a short oscillating movement, which lessens the liability to become broken or worn. The links b^4 , moving freely in the bearings $i i'$, permit the movements of the levers $b^1 b^2$ in the curved lines, which they necessarily describe, and thereby obviate all jarring and opposing action which would result were these levers journaled directly together. The operation of the levers b^1 and b^2 is such that they not only impart an oscillating or vibrating movement to the chute C, but also give thereto a slightly-undulating movement, which greatly facilitates the delivery of the grain to the sieve-box. b^5 is a rod, through which a vibratory movement is communicated to the sieve-box D. It is attached to an extension of one of the arms b^3 , below the bearing a^8 , and connects with the sieve-box by means of any ordinary shoe and shak-

ing-rod. The sieve-box D is appended to the frame by hinges or hooks, so as to admit of free and easy vibration. It is provided with the removable sieves d^1 d^2 and screen d^3 , and with the discharge-trough d^4 . The screen d^3 and the bottom d^6 are inclined, to facilitate the delivery of the grain and screenings to the discharge-trough d^4 and the opening o^2 . G is the blast-fan case, formed in two sections, m m' , which are arranged so as to present the two apertures or throats o o^1 . The section m has one end firmly secured to the rigid bar n , the other to the adjustable bar g' , which may be raised or lowered by means of set-screws in the side of the machine, so that the aperture o can be contracted or enlarged, as may be desired, to diminish or increase the quantity of air admitted to the sieve-box, or to direct the current more directly under the sieve d^1 , as is often found necessary in winnowing grain which is somewhat damp, or directing it more generally into the sieve-box. E is the blast-fan. Its axle is provided with the pulley v , by which it is revolved through the medium of a band connecting with the pulley s . H is a regulating and governing blast-valve, closing the throat o^1 . It is hinged at h^2 , and provided with the notched arm h^1 and weight h . F is an adjustable guard or apron, regulated by bearings and set-nuts f in the posts x . Its object is to turn the air up or down the sieves, so that the chaff can be blown well out into the straw as it falls from the separator, or to the ground before reaching the straw, that it may be cared for separately. K is the cover of the apparatus. It rests on the brackets k' k' , and is provided with the flexible apron k .

In the operation of the machine, motion is received through the medium of a belt from the thrasher passing over the pulley y , which,

by means of shaft z , revolves the cranks a^1 , which again give an oscillating or vibrating motion to the guides L, carriers a^2 , separating-surface a^1 a^1 a^3 , and to the lever b^1 . The levers b^1 , by means of the links b^4 , impart motion to levers b^2 , which connect with and cause the chute C to vibrate. The oscillations of the chute give a swinging motion to the levers b^3 , and these again, by the extension of one of which, oscillate the rod b^5 , and through this rod the sieve-box D. The blast-fan E is revolved by band passing over the pulley v on its shaft, and the pulley s on the shaft z connecting with the pulley y . The intermixed grain, straw, and chaff are received from the thrasher by the separator at R. The vibrating and oscillating motion of the separator disengages the grain and chaff from the straw. The straw is carried by carriers a and discharged at O. The grain and chaff pass through the separator to the chute C, thence to the sieve-box D, where the chaff is blown out and the grain carried to the discharge-trough d^4 , from which it is received by the attendant.

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

The combination of the separator A with the vibrating chute C and the sieve-box D, by means of the two pairs of long jointed levers b^1 b^3 , the pair of short jointed levers b^2 , and connecting-links b^4 b^5 , substantially in the manner and for the purpose herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of January, 1873.

SAMUEL LESSIG, Sr.

Witnesses:

MATTHIAS MENGEL,
DANIEL SPOHN.