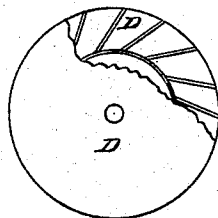
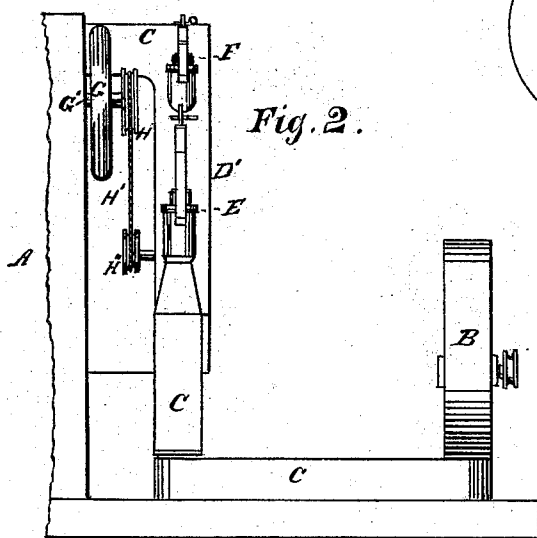
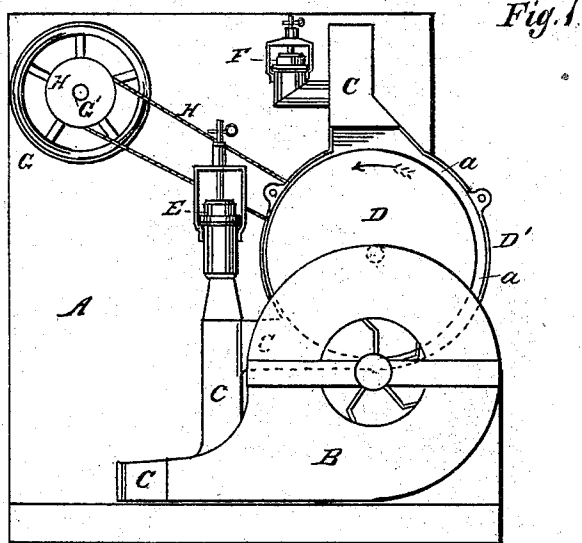


J. J. WEST.
GRAIN-SEPARATOR.

No. 178,037.

Patented May 30, 1876.



Witnesses:
N. C. Girdley
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Inventor:
John J. West.

UNITED STATES PATENT OFFICE.

JOHN J. WEST, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **178,037**, dated May 30, 1876; application filed December 13, 1875.

To all whom it may concern:

Be it known that I, JOHN J. WEST, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Separators, of which improvements the following is a full, clear, and exact description, which will enable others skilled in the art to which my invention appertains to make and use the said improvements, reference being had to the accompanying drawing, forming a part hereof, and in which—

Figure 1 is a side elevation of the parts embodying my invention; Fig. 2, a front elevation of the same; and Fig. 3, an elevation of the wind-wheel, detached, and representing one side as broken partly away in order to show more fully the construction of the wheel.

Like letters of reference indicate like parts.

The object of my invention is to produce a more perfect cleaning and separation of grain, and to render the motion of the movable parts of a separator more even and regular than heretofore. For the purpose of accomplishing these results my invention consists, first, of a balanced air-escape valve, arranged and operating in such a manner as to equalize the blast; secondly, of an air-wheel arranged for actuation by the air-current produced by a blower, in order that the movable parts of the separator may be set in-action by means of the air-wheel; thirdly, in the employment of a fly-wheel, substantially in the manner hereinafter described, for the purpose of also steadying the motion of the movable parts of the separator; and, fourthly, of an air-escape valve arranged between the separator and the air-wheel, for the purpose of thereby regulating the amount of air that shall pass from the air-wheel into the separator.

In the drawing, A represents the body of a grain-separator suitably arranged for cleaning and separating grain, and B is an ordinary blower, such as is usually employed to produce a blast of air.

C is an air-flue, by means of which the air-blast is conducted into the separator. D is an air-wheel, having suitable bearings, and inclosed in a box or case, D', forming a part of the flue C; or, in other words, the flue C

communicates with the case D' in such a manner that the air-current, before entering the separator, will strike the vanes of the wheel D, and cause it to be rotated. The arrangement of the wheel D and its case with relation to each other and the flue C is clearly represented in Figs. 1 and 2, one side of the case being represented in Fig. 1 as removed, in order to show the wheel.

The flue C is provided with an air-escape opening or port, upon which is seated an escape-valve, E. This valve may be spring-loaded or balanced by a weight, or other suitable means that will exert a pressure upon the valve per square inch of its area equal to the desired pressure of the air per square inch in the flue, so that when the velocity of the fan increases the volume of the air within the flue, thereby increasing the pressure therein above the limit required; the valve will lift and allow the escape of the excess of air through the escape-opening, and thereby produce a uniform pressure of the volume of air against the wheel, or at the exit end of the flue or place of exit of the air in the separator. F is also an air-valve, and is arranged between the separator and the case D'. This valve may be also balanced by means of a weight or spring, or held in any desired position by means of a pin or nut and screw, so as to thereby control the pressure of air in the upper part of the flue C. G is a fly-wheel mounted on the driving-shaft G', by means of which shaft motion is communicated to the moving parts of the separator. H is a pulley mounted on the shaft G', and H' is a driving-belt passing over this pulley and over a pulley, H'', on the shaft or spindle of the wheel D. The wheels G and D may, however, be connected with each other by means of a chain, or by gear-wheels or otherwise, so that the former wheel may be driven by the latter.

When the blower B is set in motion an air-current is driven through the flue C, and enters the separator. This current sets the wheel D in motion, when such a wheel is employed, and the rotation of the wheel D sets in motion the mechanism for actuating the moving parts of the separator. It will be perceived, therefore, that the same air-current which produces an air-blast in the separator

also drives the mechanism hereinabove referred to. I deem it preferable, but not absolutely essential, to leave a larger space between the wheel D and one side of its case than at the other side, as shown at *a*, in order that the air may not be too much impeded in its course toward the separator. The valve E may be employed independently of the wheel D; for whether this wheel be employed or not, the valve will perform the function of rendering the current even and uniform, whether the current first actuates the wheel or passes into the separator without the resistance offered by the wheel. When the wheel D is not employed the valve E may be arranged on the body of the separator, instead of on the flue C, as shown, and the blower may communicate with the separator without the intervention of the flue. When the wheel D is employed the valve E, by regulating the force of the current, also regulates the action of the wheel.

I do not limit myself to the location of the escape-valve E upon the flue, as described, as the same may be located at any point between the air-inlet of the fan or blower and the point where the volume of air is to perform its work, and produce a uniform blast or pressure of the air. It is also obvious that the fly-wheel G, when employed in connection with the mechanism which sets the moving parts of the separator in action, will also regulate the motion of this mechanism, and render it even and uniform. The fly-wheel, by operating in connection with the wheel D in the manner described, will also regulate the motion of the latter wheel, and consequently render more even the force of the blast which enters the separator. When the wheel D is

employed it may be necessary to employ a stronger current of air to drive it than would be desirable to have enter the body of the separator. The valve E may then be made to control the force of the current which enters the chamber or box D'; and if this current, after acting on the wheel D, should be too great, the valve F may be made to diminish the force of the current before it enters the body of the separator.

My improvements will be found to be particularly useful in connection with motive powers having uneven velocity, such as horse-powers, for example.

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

1. In combination with a separator and blower, the air-escape valve E, arranged between the air-inlet of the blower and the place of exit of the air in the separator, substantially as and for the purpose specified.

2. The combination of an air-wheel with the flue which conducts the air-current from the blower into the separator, substantially as and for the purposes specified.

3. In combination with a separator and blower, the air-wheel D, flue C, and valve F, all arranged for operation together, substantially as and for the purposes specified.

4. In combination, the fly-wheel G, shaft G', air-wheel D, connected with the wheel G, the blower, and the separator, substantially as and for the purposes specified.

JOHN J. WEST.

Witnesses:

F. A. HERRING,
F. F. WARNER.