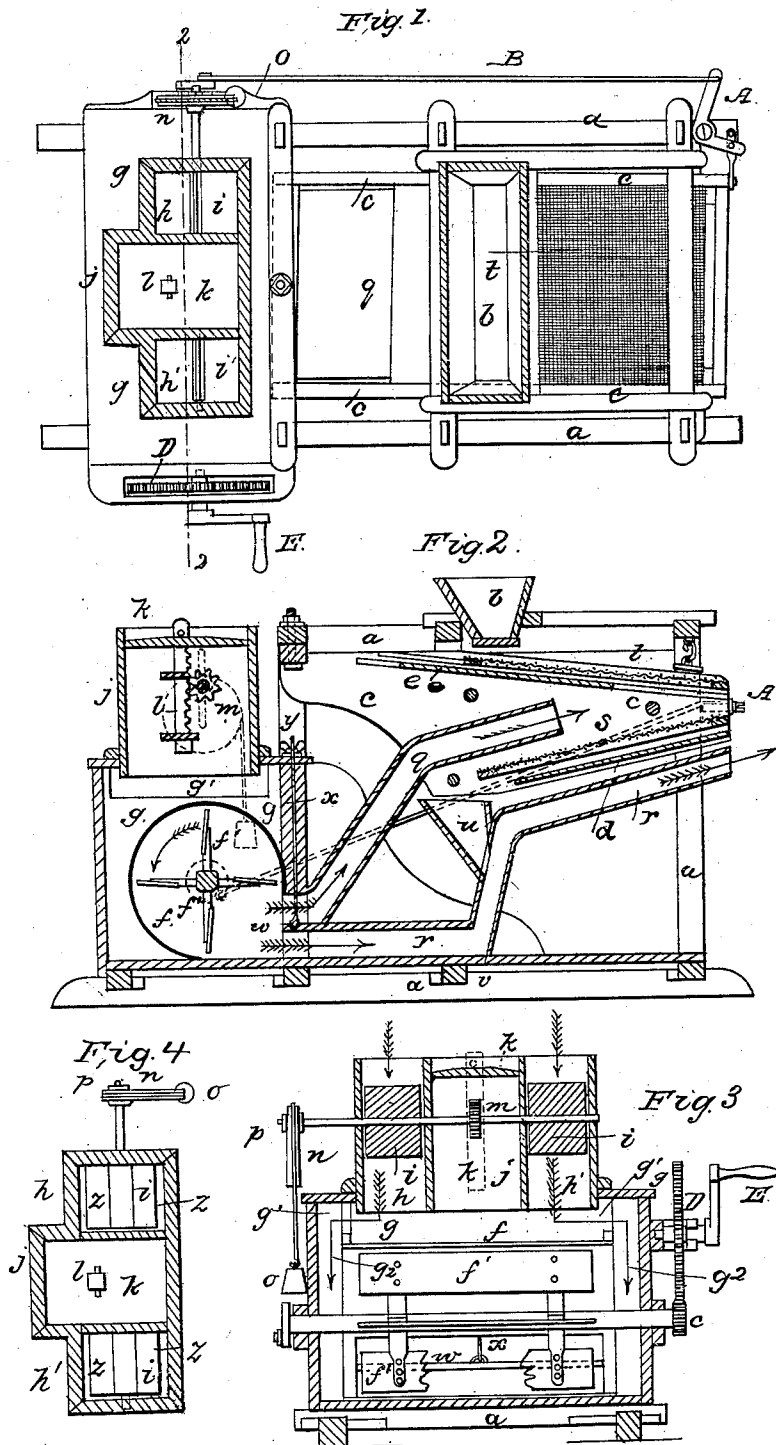


S. CANBY.
Grain Winnower.

No. 9,500.

Patented Dec. 28, 1852.



UNITED STATES PATENT OFFICE.

SAMUEL CANBY, OF ELLICOTTS MILLS, MARYLAND.

WINNOWING-MACHINE.

Specification forming part of Letters Patent No. 9,500, dated December 28, 1852; Reissued November 14, 1854, No. 283.

To all whom it may concern:

Be it known that I, SAMUEL CANBY, of Ellicotts Mills, in the county of Baltimore and State of Maryland, have invented new and useful Improvements in Grain-Win-
5 nowers; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this
10 specification, in which—

Figure 1 is a top view of the machine. Fig. 2 is a central longitudinal section. Fig. 3 is a vertical transverse section taken as denoted by the red line 2, 2, of Fig. 1.
15 Fig. 4 is a top view of the air valve boxes, showing the valves closed.

Where the same letters of reference occur on the above figures, they indicate the same parts. The arrows show the direction of the
20 current of air.

It is well known to those much occupied in the use of winnowing machines, that a large amount of grain is yearly wasted by its accidental discharge along with the lighter
25 refuse whenever the blast is in excess of its ordinary rate—in consequence of its irregularity in the impelling power or otherwise. This frequent, serious, and almost inevitable defect, considering the nature of the
30 motive power usually employed, is effectually remedied in the present improvements, which have for their object the automatic modulation or adjustment of the blast of air to the shoe of the fanning mill, such adjust-
35 ment being desirable as before stated from the fact that with an increased agitation of the shoe, the proportionate increase of blast from the fan is liable to blow away some of the grain along with the chaff and cheat, or
40 in other words, is greater than is necessary for the object for which it is intended. I also place under control of the operator a device which enables him to vary the distribution of the blast, to different portions of
45 the apparatus according to the nature of the grain to be cleaned.

To enable others to make and use my invention I will proceed to fully describe it.
a, is a framework of wood.

50 The hopper b, shaking shoe c, conducting board d do not differ materially from those ordinarily in use.

e, is an adjustable conducting shelf just beneath the riddle t, by means of which the
55 grain when light and dry is delivered from

the riddle onto the screen, near the rear end thereof, to prevent the grain being carried off with the light matter, and when the grain is damp or otherwise heavy so as to require a greater amount of winnowing action, it is
80 delivered on the screen s near the front end thereof. This is done by drawing the board e in or out.

The shoe c is hung to the frame in the usual manner at front and rear, and vi-
65 brated through means of the bell crank A and rod B, united to the crank end of the fan shaft.

The fan drum or case f is inclosed in a chest g somewhat larger than itself. This
70 chest serves as a channel to conduct the air to the fan f' from the valve boxes h h' mounted upon said chest, and furnished with two butterfly valves i i'. These valves are operated automatically by the following
75 mechanism. Situated between the two boxes h h' is another somewhat larger j, and like them open below to the chest g. Occupying the entire horizontal area of this box, with the exception of sufficient room around
80 it for easy play up and down, is a piston k, whose rod l has a rack down one side, into which gears a pinion m whose shaft is identical with that of the butterfly valves i i'. This shaft at one end extends without side
85 the box h, and bears on its extremity a pulley n on which is a cord and weight o. This pulley is so arranged by slot in its side that it can be set to any desired eccentricity, and secured thereto by nut and screw p, so as to
90 increase at pleasure the effective leverage of the weight. In either end of the chest g, above the drum or fan case f, there is an opening g' which communicates through end
95 chambers g² with the open ends of the fan case.

The action of this mechanism is as follows. The action of the weight o on the eccentric pulley n is such as to hold the valves i i' open, but when the fan shall have been re-
100 volved with a rapidity that shall cause a partial vacuum in the chest g, it is evident that the piston k will be forced down in its box j a distance depending on the relative
105 forces derived from the suction of the fan, and pressure of the atmosphere upon the piston k on the one hand—and the resisting efforts of the weight on the other, which it will be observed increase as the weight is
110 lifted, so that should the speed of the fan

decrease, the tendency of the weight is to cause the piston to ascend. Now it is evident that the action of the piston will govern the action of the butterfly valves $i i'$ in opening and closing the area of the valve boxes $h h'$ and consequently regulate the admission of the air to the chest g and by proper arrangement of the eccentric pulley n that is, rendering it more or less eccentric, the butterfly valves may easily be made more or less sensitive—for instance they may be arranged to begin to close when the fan has attained any particular degree of velocity, or they may remain unaffected until a very rapid blast is generated, or the graduations in the action of the valves may be variable according to the nature of the material to be operated upon and the experience of the operator.

From the fan case f two spouts q, r , proceed, q leading up between the screen s and riddle t of the shoe, so as to direct the blast centrally between the two, and the spout r taking a lower course and discharging below the shoe. The object of the spout q is to direct the blast from the fan so as to carry off the main bulk of the light matter chaff, and cheat, from the descending grain, at the front of the shoe. The grain descending from the lower edge of the screen into the hopper u passes into the spout r and escapes through the aperture v in the floor, and in this, its descent through the escaping blast of the spout r the said blast carries up all the lighter particles and discharges them at the forward extremity of the spout.

In order to adjust the relative force of blast in either spout there is a flap valve w hinged at the joining line of the spouts and fan case, and operated by a rod x having at its upper end a thumb screw y resting on the frame.

The board d serves to conduct the screenings to a suitable receiver.

One end of the fan shaft has a pinion C, on it, into which matches a cog wheel D,

mounted at the side of the chest g , and furnished with a crank E, whereby motion is given to the fan.

It should have been stated that the valves $i i'$ are drawn to a horizontal position (as shown in Fig. 4) when the velocity of the fan is too great, thereby creating a vacuum in the air chest sufficient to cause the said valves $i i'$ to close by atmospheric pressure. If the valves $i i'$ (in a horizontal position) were of the same horizontal area as the boxes $h h'$ it is evident the supply of air to the fan, would be cut off, and the fan cease to do its duty, but in order to keep up a supply of air in proportion to the accelerated velocity of the fan, the valves are made of less area than the boxes, so as to leave openings $z z$ on either side of their axes (see Fig. 4) through which sufficient air is drawn to supply the fan, until its velocity shall decrease, when by the assistance of the eccentric pulley n , and weight o the valves will be caused again to open, (as shown in Fig. 1) in the same proportion as the speed of the fan decreases, and thus afford a greater amount of air to the fan, which is required as its rotary motion decreases.

Having described my improvements in grain winnowers, what I claim as my invention and desire to secure by Letters Patent, is—

The combination of the piston k rack rod l pinion m valves $i i'$ and eccentric pulley n in connection with a conducting chest g and blower f' for the automatic graduation or government of the blast through the spouts $q r$ of a winnowing machine, arranged and operating in the manner and for the purpose set forth.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

SAML. CANBY.

Witnesses:

WM. P. ELLIOT,
LUND WASHINGTON.