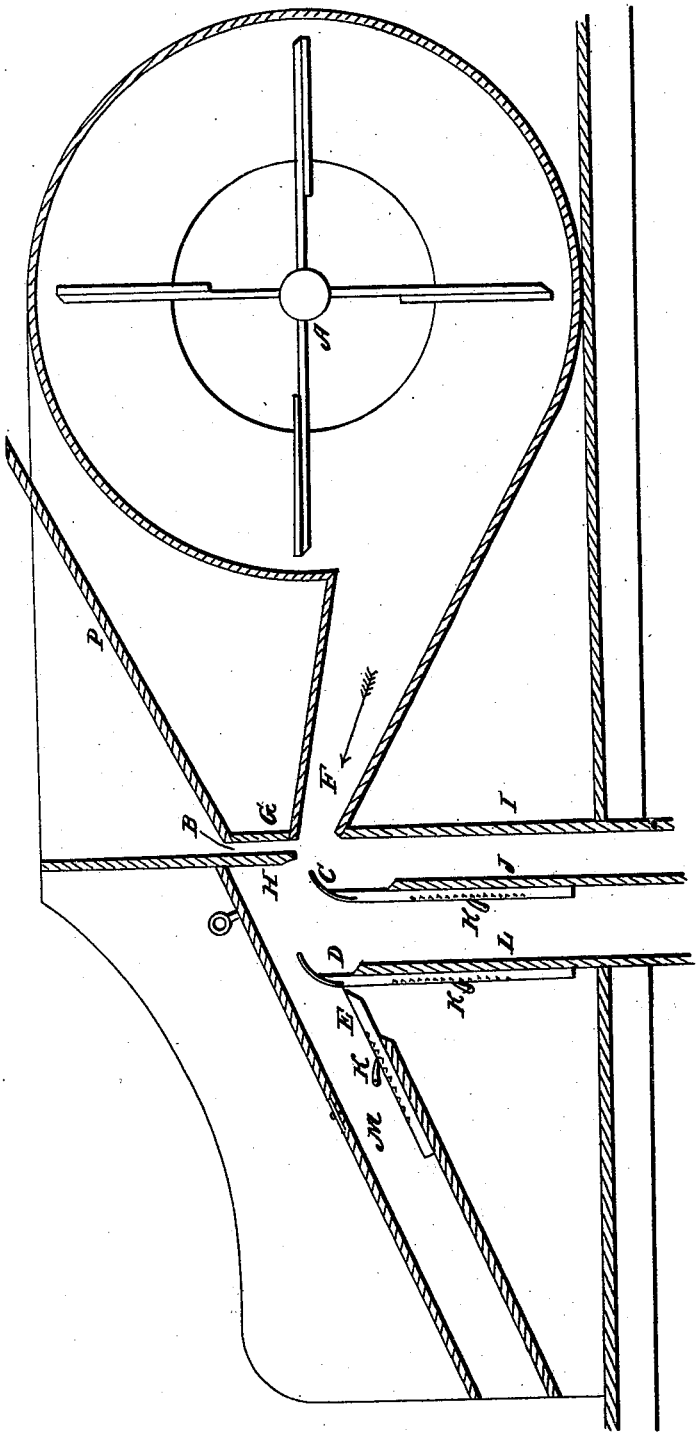
PHILIPS & JACKSON.

Grain Separator.

No. 2,080. Patented May 4, 1841.



UNITED STATES PATENT OFFICE.

DAVID PHILIPS, OF MERCER COUNTY, PENNSYLVANIA, AND ASA JACKSON, OF LOUDOUN COUNTY, VIRGINIA.

FANNING-MILL OR MACHINE FOR WINNOWING GRAIN.

Specification of Letters Patent No. 2,080, dated May 4, 1841.

To all whom it may concern:

Be it known that we, DAVID PHILIPS, of Mercer county, in the State of Pennsylvania, and ASA JACKSON, of the county of Loudoun, in the State of Virginia, have jointly invented and constructed a new and useful Improvement for the Purpose of Separating Wheat from Garlic, Smut, and all other Spurious Matter, which is described in the following manner, reference being had to the drawings of the same, and which make a part of this specification.

Figure 1 is a vertical, longitudinal section.

This improvement consists in the arrangement of a fan (A) so as to give a current of air sufficiently strong to carry every thing, the specific gravity of which is less than that of pure wheat, beyond it. This fan (A) may be constructed in the same manner as that commonly used to separate wheat from the chaff, and may be varied in its dimensions to suit circumstances, but must, in all cases, be made to give a current of air sufficiently strong to move the wheat from a perpendicular line to an angle of about forty five degrees. To effect this the wings of the fan must be made to describe a circle of about three feet, and revolve about four hundred times per minute; and may be propelled by a belt and drum of suitable size, attached to other machinery—or by cogs or teeth—or by a crank, as may best suit the situation and other circumstances connected with it. The current of air may be conducted through a flue (F) made of plank, air tight, and may be about a foot deep where it leaves the circle of the fan, and contracted to about four inches at the mouth, or point where the wheat passes through. The bottom of the flue should in all cases leave the circle described by the wings, at a tangent, and may be horizontal, or elevated to any point above not exceeding an angle of about thirty degrees. In most cases a width of eighteen inches wing will be sufficient to clean wheat for four run of burs; and may be enlarged when required. When this fan is used in mills, the wheat is made to pass from a revolving screen, in a broad, regular stream down an inclined plane, (P) the entire width of the fan, and boxed up at the sides to prevent the wheat from running over; at the lower end of which, the wheat falls through a perpendicular aperture (B) formed by placing two plates of metal, or wood, about a quarter of an inch apart, the inside plate (G) being fastened to the upper side of the flue, and the lower end of the inclined plane, so as not to project beyond either, as it would impede the air in the one case, and the regular descent of the grain in the other. The outside plate (H) must be sufficiently broad to extend some six inches above the lower end of the inclined plane, so as to prevent the grain from flying over it—the lower edge being in a line with the upper side of the flue. This plate may be made to move on pivots placed in the center of each end, so that the aperture may be enlarged or contracted at pleasure. Immediately under the mouth of the flue there is a plank (I) set in a perpendicular position, reaching from the mill flour, or bottom of the fan, to the lower side of the flue, and forms the back of the aperture through which the clean wheat descends after it passes through the current of air. About four inches from this there is another board or plate (J) placed parallel to it, which forms the other side of the aperture, and is also a partition between the clean wheat and the tailings, and extends from the floor to within about three inches of the current of air. On, and near the top of this board, there is another board or plate (C) which we denominate a regulator, the top of which is reduced to a thin edge, and may be faced with a strip of tin, or sheet iron, projecting above the wood, and curved a little forward in the direction of the wheat as it passes through the current of air.

The regulator is made to slide up and down the side of the board to which it is attached, at pleasure, and may be made fast at any point by means of hand or catches (K) or by a screw passing through an aperture in the center of the regulator, into the other board or plate. About six inches from this partition, there is placed another partition (L) and regulator (D) parallel to the first, and made like it in every respect. At the distance of about six inches from this, there may be a third regulator, but in most cases this will not be necessary, as very little matter passing over the second regulator will be worth preserving, and may therefore be allowed to pass off through the flue (M) extended, out of the mill. As the end of the bottom of the flue extended, must not come in contact with the regulator, and thereby

prevent it from sliding up or down, the space between may be closed by a slide (E) so as to prevent any matter falling through the opening, instead of passing out through the flue.

As soon as the wheat enters the current of air, the falling mass diverges from a perpendicular line, at a greater or less angle, according to its specific gravity—pure wheat diverging at an angle of about thirty, and garlic, and all light matter at an angle of sixty degrees, and upward,—the regulator (*c*) being so adjusted as to catch all the pure wheat, and at the same time to let all the light, or impure matter pass over it. The second regulator (D) must be so adjusted, as to catch all the light wheat that may pass over the first, and at the same time to let the extraneous matter pass over it, and be carried by the current of air, out of the mill. The wheat, having thus been separated from the impure matter, may be conducted, by means of spouts, to a garner near the burs, and the tailings may be spouted to any part of the mill at pleasure. The flue should be gently curved at the point immediately over the regulators, and extended in a downward direction until it passes through the side of the mill house, as, in this way the dust and all light matter will press to the upper part of the curve, and thus pass over the top of the regulators.

The tailings, or light wheat may be separated from the mass of other matter, by means of a screen so constructed, as that the meshes of the first portion of it shall be of such size, as to let only the small grains through; and the meshes of the other portion of such size as to let the larger grains through, with a partition underneath, to keep the different qualities separate. The tailings may in this way be made measurably clean; the heavier portion of which may then be run through the fan, as in the first instance, when the regulators will separate it from the small remains of impure matter. The lighter portion may also be run through the fan, as the other, by applying a less force of air.

The advantages of this improvement consist in the cheapness and durability of the apparatus, and in the facility with which wheat can be separated from garlic, smut, and all foreign matter. Garlic can be separated effectually from wheat, only by this mode; and smut can be blown out whole, which must be decidedly preferable to any mode of rubbing, by which it becomes pulverized, in which case a portion of the matter must adhere to the grain, and thus pass into the flour. This mode is also much more effectual in separating cheat from wheat than any other mode now in use.

What we claim as new, and of our own invention, and which we wish to secure by Letters Patent, is—

The construction of the winnowing machine, or fan, with a vertical flue, or aperture (B) as set forth, in combination with the inclined plane (P) and the vertical plates, I, J and L, the two first being governed by regulators C and D, the whole combined, constructed and operating substantially in the manner described in the specification.

DAVID PHILIPS.
ASA JACKSON.

Witnesses:
GEO. W. FALES,
SAMUEL F. KAUB.