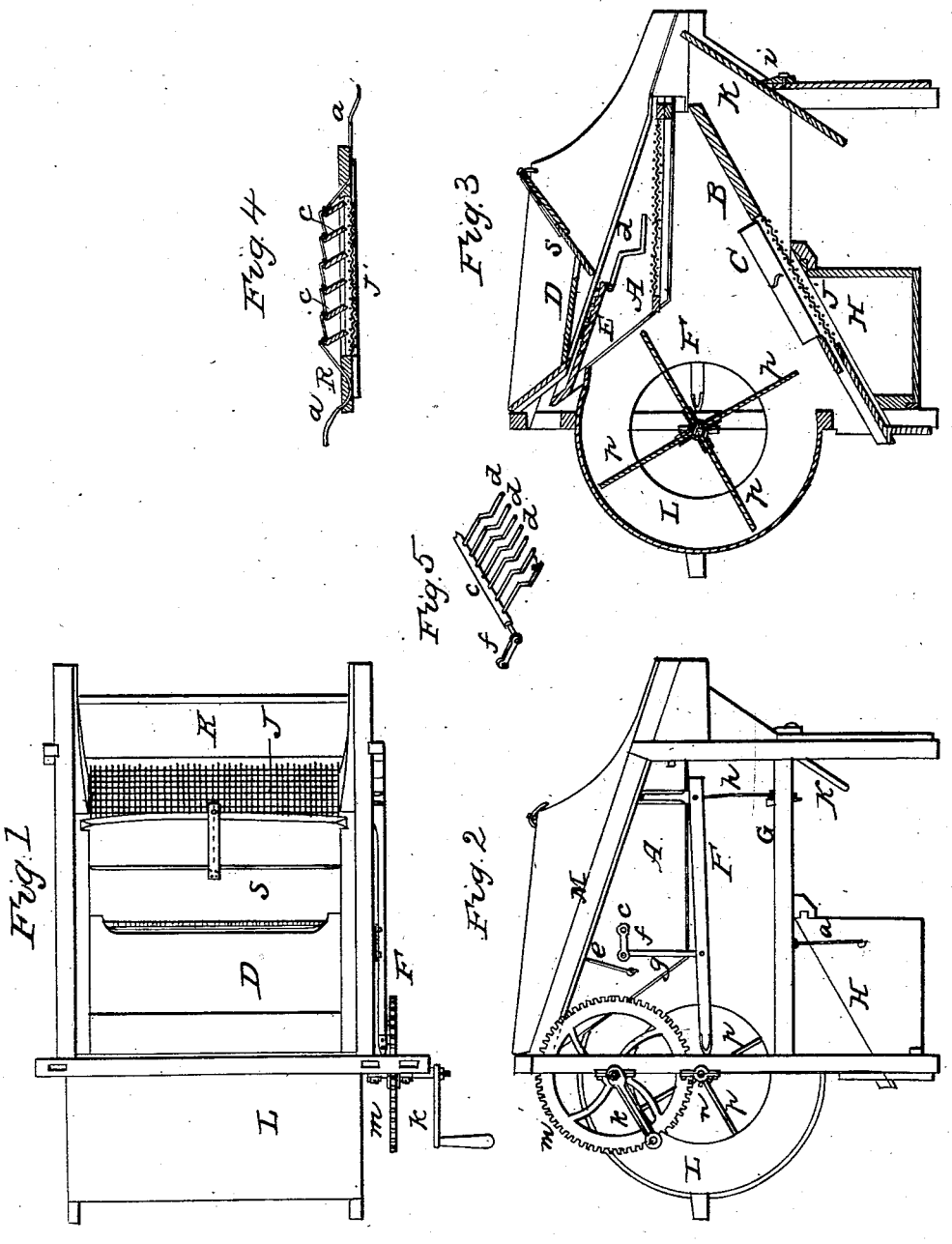
J. BEHEL.

Grain Winnower.

No. 5,250. Patented Aug. 21, 1847.



UNITED STATES PATENT OFFICE.

JACOB BEHEL, OF MIFFLINTOWN, PENNSYLVANIA.

WINNOWING-MACHINE.

Specification of Letters Patent No. 5,250, dated August 21, 1847.

To all whom it may concern:

Be it known that I, JACOB BEHEL, of Mifflintown, in the county of Juniata and State of Pennsylvania, have invented a new and Improved Winnowing-Machine for Separating Impurities and All Foreign Substances from Grain; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, is a top view; Fig. 2, is a side elevation; Fig. 3, a vertical longitudinal section, and Figs. 4, and 5, are portions of the same detached.

L, is the concave inclosing the fan; *p*, *p*, are the wings of the fan; *n*, is a pinion on the fan shaft; *m*, is the driving cog wheel working into the pinion *n*; *k*, is a crank on the axle of the driving cog wheel.

A, is the shoe in which is placed the screen J. The shoe is the entire width of the machine; its sides pass into and work in openings in the side casings of the machine; by which arrangement screens of much larger size than usual can be made use of, and the entire blast of the fan can be concentrated upon the screens—there being no openings at the sides of the shoe, for the escape of the air. The shoe is suspended by the hooks *e*, at its front end, and is supported by the vertical springs *h*, at its rear end; it receives a horizontal longitudinal reciprocating motion from the pitman F, operated by a crank on the fan shaft.

E, is an inclined board, the ends of which are let into and secured to the sides of the shoe A. The inclined board E, forms the bottom of the hopper, and has recesses cut in its upper surface forming abrupt shoulders *o*, *o*, rising one above the other in regular succession. The object of the shoulders in the inclined board E, is to regulate the feed of the grain from the hopper to the screen J, and to prevent the straw and chaff mixed with it, from clogging and choking the passage from the hopper, the first time the grain is passed through the machine; which they effect in consequence of the forward and back reciprocating movement of the shoe, thus enabling the shoulders on the inclined board E, to take hold of the chaff and grain, and force the same out of the aperture in the hopper on to the screen J.

After the grain has been passed once through the machine, and separated from straw and chaff; the false bottom D, is placed in the hopper, and the feed is regulated by the adjustable gate S. The grain chaff, and straw, falls from the inclined board E, on to a series of vibrating arms *d*, *d*, forming a separator for removing the straw and chaff from the grain, previous to its falling upon the screen. The curved wire arms *d*, *d*, are inserted into the shaft *c*, having its bearings in the sides of the shoe A. The shaft *c*, reciprocates with the shoe A, and is vibrated on its axis by means of a crank *f*, on the end of the same, and the vertical pitman *g*, jointed to the horizontal pitman F; consequently the separator has at the same time a compound reciprocating, and a vibratory motion, by which it is enabled to throw the straw upward and rearward out of the machine. The grain falls from the screen J, on to the apron B, which conducts it to the front of the machine.

J′, is a screen let into and forming a part of the apron B; C, C, are a series of thin slats placed over the screen J′, and secured by joint pins at each end of the same; the outer edges of the slats are connected to each other by a cord *a*, by which they can be elevated and retained on their edges; or can be depressed and retained in a position parallel with the screen J′. When the slats are depressed, they completely cover the screen, and allow the grain to pass freely over the slats; when they are elevated, they allow the grain to freely fall upon and pass over the screen J. When the grain is not sufficiently cleaned by the vibrating screen or screens, the slats C, C, are elevated for it to receive the benefit of the screen J′.

H, is the screen or tail box under the screen J′.

K, is a gage board in the rear end of the machine, for catching the tailings and headings.

Having thus fully described my improved winnowing machine, what I claim therein as new and desire to secure by Letters Patent, is—

1. The forming a series of shoulders *o*, *o*, *o*, one above another, or the inclined board E, forming the bottom of the hopper, in combination with the reciprocating longitudinal movement of the same, for the purpose of regulating the feed from the hopper, substantially as herein set forth.

2. I also claim the combination of the separator shaft *c*, with the shoe A, and with the pitman F,—by means of the crank *f*, and vertical pitman *g*,—for the purpose of imparting to it a reciprocating horizontal movement, and a vibratory movement on its axis at the same time, substantially in the manner and for the purpose herein set forth.

3. I also claim the combination of the screen J′, and the slats C, C, with the apron B, substantially in the manner and for the purpose herein set forth.

JACOB BEHEL.

Witnesses:
Z. C. ROBBINS,
GUY C. HUMPHRIES.