

BEAN & WRIGHT.

Grain Winnow.

No. 29,233.

Patented July 24, 1860.

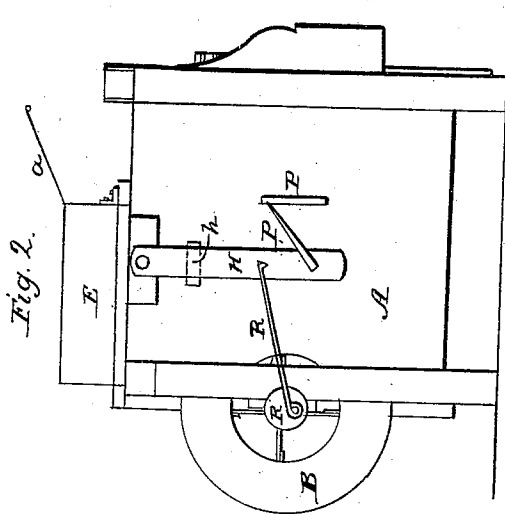
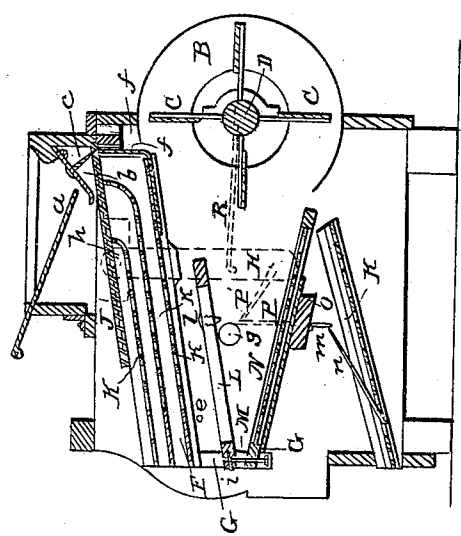


Fig. 1.



Witnesses.
W. B. Gale.
C. S. Gale.

Inventors:
John Bean
Ben Wright
By their Attorneys
N. S. Gale

UNITED STATES PATENT OFFICE.

JOHN BEAN AND BENJN. WRIGHT, OF HUDSON, MICHIGAN.

GRAIN-WINNOWING MACHINE.

Specification of Letters Patent No. 29,233, dated July 24, 1860.

To all whom it may concern:

Be it known that we, JOHN BEAN and BENJAMIN WRIGHT, of Hudson, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in the Construction of Winnowing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, and in which—

Figure 1 represents a vertical longitudinal section of a grain winnowing machine, constructed on our improved plan, and Fig. 2 a side elevation of the same showing the arrangement of the driving or operative parts.

The nature of our invention consists in combining with a distributing sieve a series of sieves peculiarly formed and arranged; by means of which the grain, as it passes from the hopper, becomes equally distributed on the various sieves.

To enable others skilled in the art to make, construct and use our invention we will now proceed to describe it in detail.

In the accompanying drawing, A, represents the casing of the machine; at its rear end is arranged the barrel, B, inclosing the fans, C', mounted on a horizontal revolving shaft, D, to which motion is to be imparted in any suitable manner.

E', is the hopper; it is mounted over the rear end of the casing, A, and consists of a quadrangular frame, into which is made to fit, in suitable grooves made for that purpose, an inclined slide, *a*, the lower edge of which may be scalloped. To the under and rear side of the frame of the hopper is hinged the plate, *b*, which has its lower edge bent upward, as shown in Fig. 1. It (plate *b*) is provided at its rear end with a bolt or pin, *c*, projecting downward and sunk into a block, *d*, which is secured to the rear end of the sieve frame. This bolt or pin allows the hinged plate to swing but to a certain extent; when the sieve frame slides back it (the hinged plate) attains its lowest depression, and while the said frame slides forward, the hinged plate is caused to vibrate upward, and so on alternately. The plate, *b*, is so constructed and arranged that, even in its lowest position, the upturned edge should present a sufficient bar to prevent the grain from sliding off.

The sliding frame which supports the

sieves consists of two side beams, F', braced in rear by a connecting piece, and in front by the shoe, G'. This frame is held at the desired inclination by its front end being made to rest upon rollers or pins, *e*, (and which may be so arranged as to be adjustable at various heights) and having at its rear end a spring, *f*, which is loosely connected or secured to the upper end of the casing of the machine.

The desired reciprocating motion is communicated to the sieve frame by means of an arm, *h*, with which the rocking lever, H, is provided, said arm—and which is made to play through a slot formed for its reception in the casing of the machine—being at its other end secured to a side beam, F', of the sieve frame.

I, is the distributor, which consists of a wire gauze with large sized meshes, and is secured to the upper side of the sieve frame, immediately beneath the hopper. Underneath are arranged the sieves, *k*, *k*, in this instance three in number, which are supported in grooves, formed for their reception in the side pieces, F'. The lower one of these sieves extends clear to the rear end of the sieve frame, while the upper ones are made successively shorter; and their inner ends are bent or turned upward close to the wire gauze as shown in Fig. 1. These sieves—which may be made of zinc or any other suitable material, punched with a number of holes of sufficient size to allow wheat, &c., to pass through—have a solid rim or border at their lower end, to prevent oats or other foreign particles from falling inside of the machine.

L, is the riddle frame, it is supported on the rollers, *g*, and the front end of said frame is made to pass over the standard M, erected on the shoe, G, said standard being provided with a number of vertically arranged holes, for the reception of a pin, *i*; by means of which arrangement the elevation of the front end of the riddle may be regulated as desired. As the sides of the riddle frame are provided bolts or pins, *l*, projecting downward; the said bolts being so arranged in relation to the rollers, *g*, that when the riddle slides forward, the bolts shall strike against the rollers, whereby a jerking or jumping movement will be imparted to the riddle, in such manner as to throw its upper and free end upward for a purpose to be hereafter more fully de-

scribed. The standard, M, is made to pass also through a slot formed in the front end of the frame of the screen, N, arranged below the riddle, and which screen is made to incline downward and is supported at its lower and inner end by the rocking shaft, O. Said shaft communicates a rapid vibratory motion to the screen, whereby the grain which passes down from the riddle is prevented from clogging up the meshes of said screen. To the under side of the rocking shaft, O, is secured an arm, *m*, provided with holes for the reception of the hook of a connecting rod, *n*, by means of which motion is to be communicated to the lower sliding screen, K'. The rocking shaft is operated by the rocking lever, H, through the crank, P, and connecting rod, P', and the rocking lever, H, receives its motion from the shaft, D, by means of the connecting rod, R, and crank, R'.

Having first properly adjusted the scalloped slide of the hopper, so as to regulate the feed of the grain, and having placed the riddle at the desired inclination, the operation is as follows: On motion being communicated to the shaft, D, its fans induce a strong blast of air inside of the machine; and the crank, R', which is mounted on said shaft, imparts, by means of the connecting rod, R, the desired rocking motion to the lever, H, which in its turn communicates to the sieve frame a reciprocating sliding motion, by means of the arm, *h*, and to the shaft, O, a rocking motion by means of the connecting rod, P', and crank, P.

By the sliding of the sieve frame a rapid shaking motion being in its turn imparted to the hinged plate of the hopper, each time that said plate recedes from the adjustable slide or shutter, a certain quantity of grain is allowed to drop. By the vibration of the distributor the falling grain becomes spread out in a horizontal plane, and thereby equally distributed on the various sieves, which form, as it were, separate compartments below of the distributor—The grain passes then through the holes in the sieves, while larger particles are led downward over the surface of the inclined sieves, and carried off at the front end of the machine. The grain which passes then on the riddle,

is freed there from chaff and other impurities by the blast of air coming from the fans, the jerking or jumping motion of the riddle—induced by its projecting pins striking against the rollers on which the riddle rests—causing the light particles, as they fall on the riddle, to be thrown up and thereby more fully exposed to the blast of air, which impels them forward, and off at the front end of the machine.

From the riddle the grain falls on the screen which has a sliding reciprocating motion in common with the other parts as are mounted on the shoe, G'.—The meshes of the screen are sufficiently large to allow small impurities to pass through, while the grain slides down on the screen toward the rear of the machine—but in order to prevent the small grain from clogging the meshes of screen, the latter has in addition to its sliding motion, a quick and irregular vibrating motion communicated by means of the rocking shaft on which said screen rests.

The small grain, &c., which has passed through the meshes of the screen, falls upon the bottom plate of said screen, and is carried a certain distance back; where it is allowed to fall upon the lower screen to which a sliding motion is communicated by means of the arm which connects with the rocking shaft. The large grain is discharged from the upper screen, underneath the fans-casing; and the small grain from the lower screen, near the front end of the machine.

Having thus described our improvements in grain winnowing machines what we claim as new and desire to secure by Letters Patent, is—

The combination of a distributor I, with the sieves K, K, K, when said sieves are arranged, in relation to said distributor as set forth; for the purpose of equally distributing the grain as it is supplied from the hopper.

In testimony whereof we hereunto set our hands to this specification.

JOHN BEAN.

BENJAMIN WRIGHT.

Witnesses:

J. B. FARNAM,

LORENZO PALMER.