W. P. ROBINSON.

MACHINES FOR SCOURING AND DECORTICATING GRAIN.

No. 169,589. Patented Nov. 2, 1875.

Fig 1

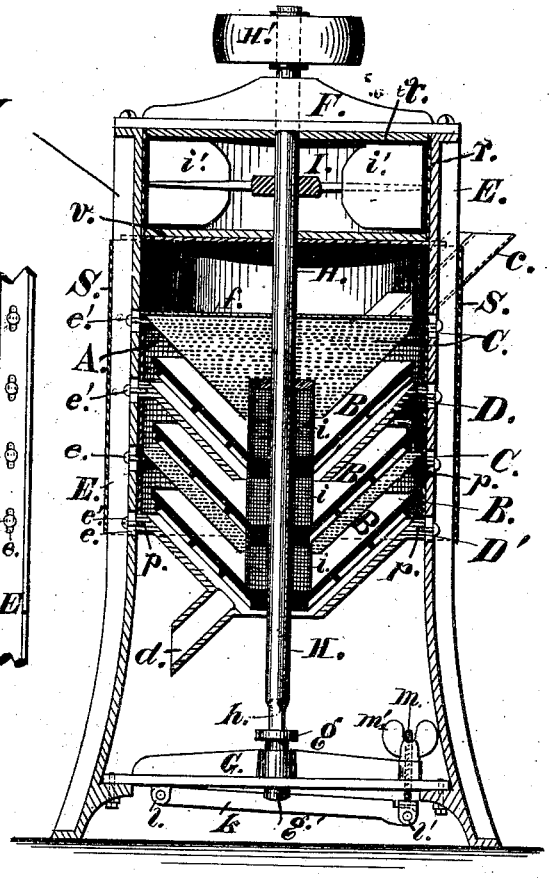


Fig 2

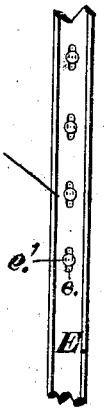
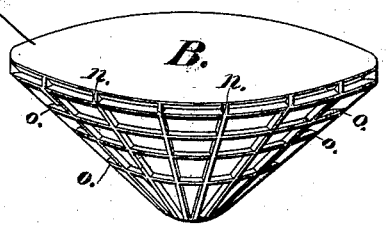


Fig 3



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UNITED STATES PATENT OFFICE.

WILLIAM PITT ROBINSON, OF BUFFALO, NEW YORK.

IMPROVEMENT IN MACHINES FOR SCOURING AND DECORTICATING GRAIN.

Specification forming part of Letters Patent No. **169,589**, dated November 2, 1875; application filed July 29, 1875.

To all whom it may concern:

Be it known that I, WILLIAM PITT ROBINSON, of the city of Buffalo, county of Erie and State of New York, have invented certain Improvements in Machines for Scouring and Decorticating Grain, of which the following is a specification:

The object of this, my invention, is to improve upon machines heretofore invented for hulling, cleaning, and decorticating grain and seeds; such machine, for instance, as those described in the Letters Patent of the United States issued to me, dated the 15th day of January, 1872, for improvement in grain scouring machines, and other like Letters Patent issued to me, dated the 9th day of July, 1872, for improvements in grain-decorticating machines.

My said invention relates, first, to the construction of the frame of the machine of three or more upright posts, which are held together by cross-bars or cross-ties, and the stationary hoppers hereinafter described, and which are provided with a series of vertical slots in them, through which screws, having button-heads, are passed into lugs in the said stationary hoppers, in order to fasten the hoppers to the posts, these slots being used instead of round holes simply to render the hoppers adjustable in height. It relates, secondly, to the construction of a series of scouring-wheels, having the general form of the body of a funnel, and attached to a vertical shaft which passes up through them centrally. When the shaft revolves, these scouring-wheels revolve, of course, and they have their motion within a cylindrical shell of wire-cloth or perforated sheet metal, and their outer peripheries do not extend quite to such shell, but leave a sufficient interval between them for the grain or seeds to fall through when thrown out against the shell by the operation of the machine. These grinding-wheels are provided on their under or outer sides with both horizontal and vertical ribs or ridges, to act as beaters upon the grain or seed against the upper surfaces of the stationary hoppers, just below them. It relates, thirdly, to the combination of a foot piece or step for the said vertical shaft, a lever, a screw, and the frame, adapted to render the shaft adjustable vertically. It relates, fourthly, to a plain thin perforated stationary hopper of the same general form with the imperforated stationary hoppers in combination therewith, and with the blowing apparatus, all of which will be hereinafter more fully described.

In the accompanying drawing, Figure 1 represents a central vertical section of a machine embracing my improvements; Fig. 2, a front elevation of a portion of the length of one of the posts of the frame, and Fig. 3 a perspective view of one of the grinding-wheels.

E and E are two of the posts before mentioned, and *e* the slots, and *e'* the screw-heads therein; H, the vertical shaft, and H' a band-pulley on the upper end thereof, and I *i' i'* the blower, fixed upon the shaft also. G is the foot-piece for the vertical shaft; K, a lever, pivoted to the lower side thereof at one end, and operated by the screw *m* at the other, to raise and lower the shaft. The cross-piece F and the foot-piece G, together with the stationary hoppers, serve to make a stiff frame for the operative parts. The letter B indicates the scouring-wheels, which are attached at their respective centers to the shaft H, which is inclosed by the cylinder of wire cloth or perforated sheet metal *i i i*, and *n n* are the vertical or radial ridges before mentioned. D D are the solid stationary hoppers, and C C the perforated stationary hoppers, both having lugs, into which enter the button-headed screws *e'* through the slots *e* in the posts E, and thus they are held in any position to which they may be adjusted by means of the slots *e* and the button-heads of the screws *e'*.

The stationary hoppers do not extend to and touch the inner perforated hollow cylinder, and an annular space is left, therefore, between their inner edges and that cylinder, through which the grain and seeds fall upon the next scouring-wheel below, which in revolving throws them out by centrifugal force over their peripheries, and thence they fall upon the next stationary hopper below, and then slide down by the force of gravity, and are scoured, abraded, and decorticated by the beaters on the under side of the scouring-wheel. In this operation the stationary hoppers hold the seeds and grain against the beaters, and both the scouring-wheels and

hoppers are adjustable, as before specified, so that their distance may be regulated as may be desired, according to the size and character of the seeds or grain to be operated upon. The outer perforated cylinder A incloses the hoppers and grinding-wheels, and may be in a continuous sheet or may be in sections, extending from one post to another, and be fastened to each.

S indicates an imperforated case, which serves among other purposes to confine the draft of air made by the blower within the machine until it has done its work. The radial and circular ribs or ridges on the under side of the scouring-wheels are remarkably efficient in their action upon the grain. The radial ridges serve to spread the grain in thin sheets upon the stationary hopper below, and to act upon and roll over each individual seed or berry, and thus secure thorough and uniform work. The horizontal or circular ridges, on the other hand, not only act upon the grain by their surfaces, but they also prevent a too rapid downward flow of the grain, some portions of which otherwise might escape downward before it had been thoroughly acted upon.

In operation the blowing apparatus performs an important part. It may be of any suitable construction, as I claim nothing as new in that apparatus.

In the drawings, Fig. 1, the fans *i i* are placed upon the upper end of the shaft, and the draft, of course, will come from below up through the machine, passing upon the under side of a grinding-wheel outwardly, and then down the upper side of the same inwardly and vertically in jets through the perforations in the perforated hoppers, and out through the perforations in the outer perforated cylinder A, and will carry away with it such dirt, dust, bits of bark, and foreign matters as are contained in the grain as fast as they shall be ground or broken loose therefrom.

In the drawings the perforated and imperforated hoppers alternate with each other. The imperforated ones are thicker and stronger, and, therefore, better able to withstand hard grinding action from the scouring-wheels, and can be adjusted with that view accordingly, while the perforated ones are better calculated for sifting and cleaning, and may be adjusted accordingly. All of the hoppers, however, may be of either kind alone, but the best results are produced with the arrangement shown in the drawings.

The cutting and grinding capacity of the scouring-wheels may be increased by coating them with sand, emery, or other gritty substance. The grain is fed to the machine through spout C above, and is discharged through spout *d* below.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the post E, provided with a series of vertical slots, *e*, the button-headed screws *e'*, and the hoppers G G B B B, adapted to hold up the frame and to hold said hoppers in an adjustable manner, substantially as shown and described.

2. The scouring-wheels B, having horizontal ridges or beaters *o* on their under sides, in combination with stationary hoppers D and C, substantially as and for the purpose described.

3. The combination of the scouring-wheels B, having radial or vertical ridges *n* in their under sides, and the series of stationary hoppers D C, constructed and arranged substantially as and for the purpose described.

4. The combination of the scouring-wheels B, having the horizontal ridges or beaters *o*, and the vertical or radial ridges *n*, and the series of stationary hoppers D C, substantially as and for the purpose described.

5. The scouring-wheel B, provided with the radial ridges *n* and the horizontal ridges *o* on its under side, substantially as and for the purpose described.

WM. PITT ROBINSON.

Witnesses:
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