MARSH & WHITNEY.

Rice Huller and Grain Scourer.

No. 9,692. Patented April 26, 1853.

Fig: 2.

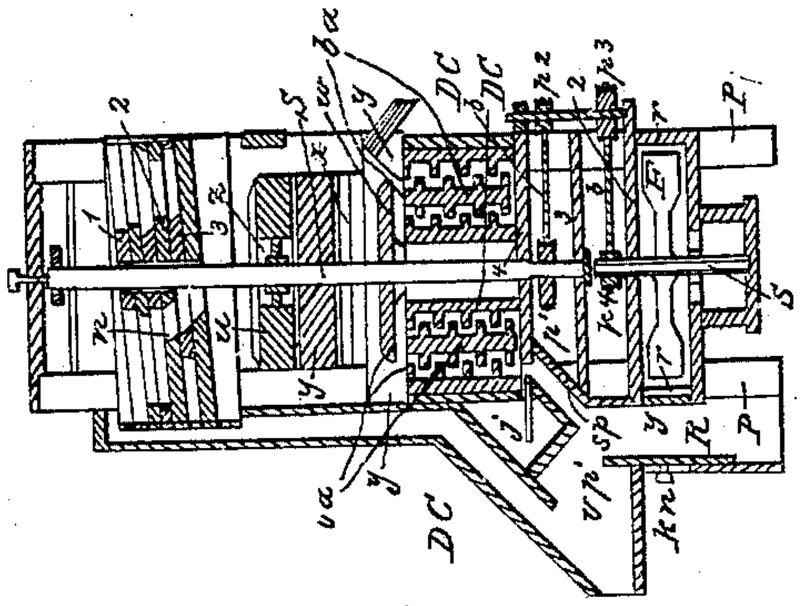


Fig: 6.

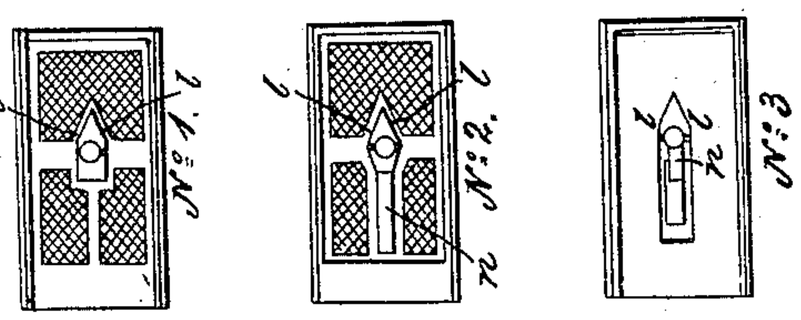


Fig: 5.

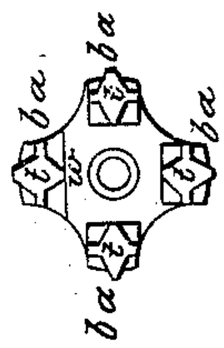


Fig: 4.

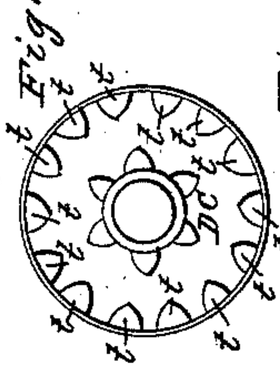


Fig: 3.

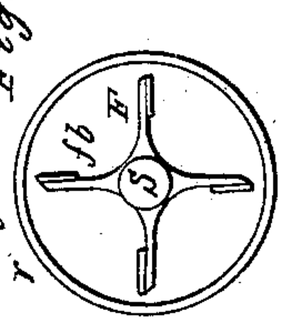
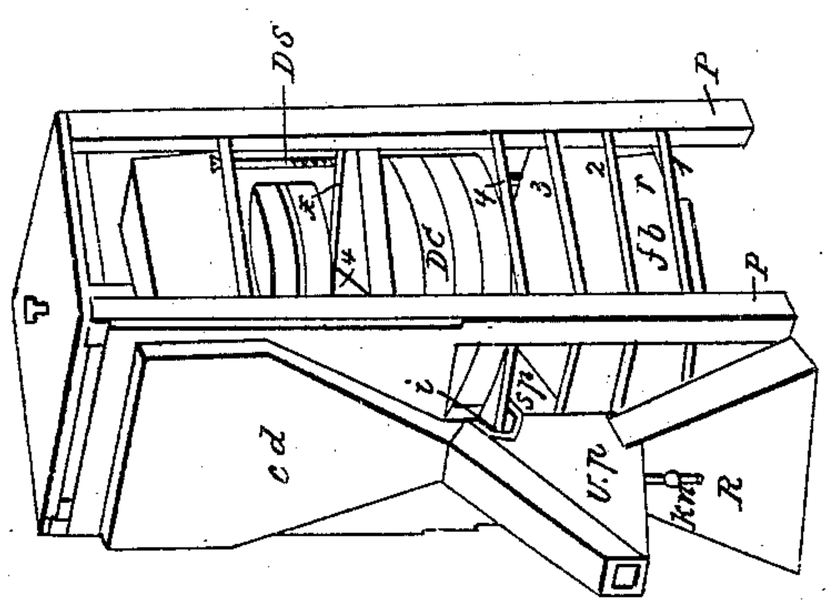


Fig: 1.



UNITED STATES PATENT OFFICE.

DAVID MARSH AND BENNET WHITNEY, OF FAIRFIELD, CONNECTICUT.

RICE-HULLER.

Specification of Letters Patent No. 9,692, dated April 26, 1853.

To all whom it may concern:

Be it known that we, DAVID MARSH and BENNET WHITNEY, both of Fairfield, in the county of Fairfield and State of Connecticut, have invented and made a new and useful Machine Which We Denominate the "Dentated Rice-Huller and Grain-Scourer," it being designed to separate and remove the hull or shuck from rice, and smut and all other impurities from grain; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view, with a part of the case or curb removed to show the screen and mill stones. Fig. 2 is a perpendicular section front to rear through the center. Fig. 3 is a horizontal section showing the fan or blower. Fig. 4 is a horizontal section showing the dentated cylinder. Fig. 5 is a horizontal underside view of the revolving beater. Fig. 6 is a horizontal view of different parts of the screen.

The same letters and numbers as marks of reference apply to the like parts in all the figures.

The frame containing and supporting the machine is constructed of four upright posts, P, fastened together at the bottom by the plates of the fan-box *fb*, and above by horizontal pieces of wood fitted together by mortise and tenor. The fan box *fb*, is made of two plates of iron (or other material,) No. 1 and No. 2, with a cylindrical rim *r*, open in front *q*, for the passage of wind into the vent-pipe *v*, *p*, and in which runs the fan or blower F, the shaft of which *s* projects above the upper plate 2, to receive a pulley p^4. The lower plate 1 has an opening *o*, sufficient to admit the air. Above this pulley is another plate or crosspiece 3; with a socket *k*, in the center to receive the lower end of the main spindle or shaft S. Near the lower end of the spindle is a pulley p^1, from which a band or belt *b*, extends to the back of the machine to carry a small upright shaft, by a pulley p^2, on the lower end of which is another pulley p^3, from which another belt, *bt*, returns to the fan pulley, p^4, the size of which pulleys may be graduated to give the desired speed to the fan or blower.

Above the pulley p^1, is another plate 4, fastened to the posts P, at the corners, which forms the bottom of the dentated cylinder D, C, near the front edge of which is an opening *i* through which the grain escapes after going through the beating process. From this plate rises a cylinder D, C, to any desired height, having teeth *t*, on the interior surface running in horizontal rows. Within this cylinder rises another cylinder D, C^2, from the same plate, having similar rows of teeth on the exterior surface, leaving a space between the extremities of the teeth on each cylinder sufficient for the beating arms *ba*, to revolve between. The beating arms are four or any other number and project downward (nearly to the bottom of the cylinder) from a plate or wheel *w*, which is fastened to and runs with, the main shaft or spindle *s*, at the top of the cylinder. On both the outer and inner sides of the arms *ba*, are teeth *t*, similar to and projecting between the horizontal rows of teeth on the cylinder. The space between the outer and inner cylinders, and also the space between each horizontal row of teeth on the cylinders must be sufficient to allow the beating arms with their teeth to move between them without breaking or crushing the grain when the machine is filled. The plate or wheel *w*, carrying the beating arms *ba*, has openings between the arms *a*, to admit the entrance of the grain from above. The dentated cylinders may be made of cast iron rings, each having its row of teeth, and placed one on the top of another, or the whole may be cast in one piece, and fastened with bolts to the bottom plate No. 4. The outer cylinder has a curb or flange *g*, to receive and confine the grain as it falls from above.

Directly above the wheel which holds the beating arms, *ba*, is a stone *y*, hung on cross arms *x*, suspended by four bolts *b*, *s*, which extend above the curb and may be raised and lowered by nuts and screws at the top. Above this is another stone *v*, fastened to the spindle *s* and running with it, having an opening or eye in the center *z*, through which the grain passes as it comes from the screen.

The screen directly above the stones with the spindle passing through it, is made in three parts:—the lower one, 3, having a tight bottom is designed to carry off the dust and fine particles which sift from the grain as it passes through; the second one, 2, is of wire of sufficient fineness to retain the grain, the first, 1, is a coarser wire sieve through which the grain passes while the straws and other

coarse substances are separated from it. Number one and three discharge into a conductor *cd*, leading into the vent pipe *v*, *p*, of the blower. No. 2 discharges through an opening *n*, from the lower end running backward and downward to the center. The spindle *s* may be carried by a pulley placed on it near the upper or lower end. On the spindle where it passes through the screen is a projection or eccentric by which the screen is shaken, by the said projection coming in contact at each revolution of the spindle, with an angular projection in the eye of the screen. At the bottom of the curb over the dentated cylinder is an opening and spout *m* through which the excess of grain may escape when the cylinder is full to prevent clogging the stone and screen to be returned to the hopper by an elevator.

In front of the screen stones and cylinder is a conducting passage *e*, *d*, the upper part perpendicular and the lower part inclining about 45 degrees, contracting on the sides, and uniting at the lower end with the vent pipe *vp*. The vent-pipe *vp*, is made with the bottom horizontal, and placed about on a level with the top plate 2 of the fan box *fb*, the top inclining about 45 degrees, and sides perpendicular; and open in front for the egress of chaff &c. Back and below the vent pipe *vp*, is the receiving box R, which is made of boards, the front and back perpendicular the ends inclining inward at the top, and bottom horizontal. This box may be fastened to the frame of the machine or used detached if found more convenient by setting it under the spout *sp*, and letting it rest on the floor on which the machine stands. On the front of the receiving box R, is a slide *sl*, the upper edge of which may be raised or lowered in the vent pipe by the knob *kn* (the shank of the knob being set in the slide.)

The operation of the machine is as follows:—The grain is put into the screen No. 1, which separates the coarser parts from it, and passing through this into No. 2, which separates the dust and finer particles (the impurities passing out into the conducting *ed*,) it is conveyed by opening *n*, through No. 3 into the eye *z* of the runner stone, *v*. Passing out from between the stones, (which are set at such a distance as to break any larger substances but not to crush the grain,) it falls through the curb *g*, into the dentated cylinder, D, C, where it is subjected to the beating process as long time as the operator may choose; it being detained in the said dentated cylinder by closing the orifice *i* by drawing out the said slide *j*, over the said orifice *i*, thus keeping the orifice closed until sufficiently beaten, when it is discharged through the said orifice *i* by drawing out the said slide *j*, thus permitting the grain to escape into the spout *sp*, which carries it through a current of air, from the blower F, which current of air separates and blows out the chaff, hull, or husk from the grain as it passes down into the receiver R. The line upon which the current of air passes through the grain to winnow out the chaff or hull is regulated by raising or lowering the slide, *sl*,—so that no grain shall be blown out or any chaff or hulls fall into the receiver. The grain may be taken out of the receiver by a spout near the bottom—or by an elevator.

Of the above described machinery and which we desire to secure by Letters Patent: we claim—

The two dentated cylinders and the dentated beating arms, running between them; to be used in connection with the above described machinery.

In witness whereof we have hereunto set our hands this tenth day of March, one thousand eight hundred and fifty three.

DAVID MARSH.
BENNET WHITNEY.

In presence of—
IRA NICHOLS,
STEPHEN HAWLEY.