(No Model.)

C. B. SLATER.

GRAIN SCOURER.

No. 343,402. Patented June 8, 1886.

Fig. 1.

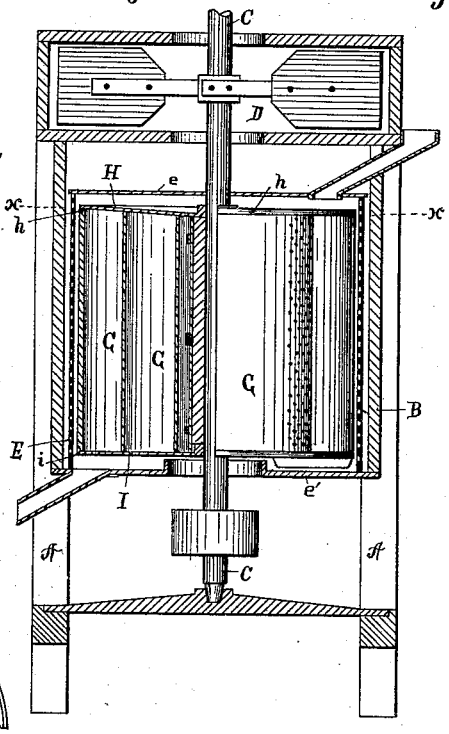


Fig. 3.

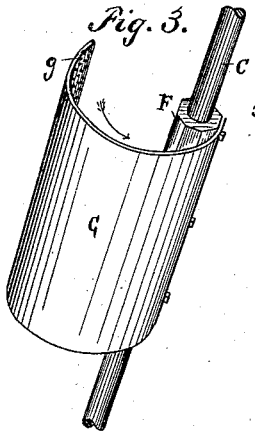


Fig. 9.

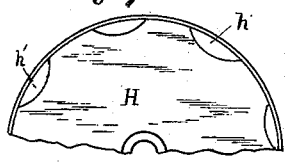


Fig. 2.

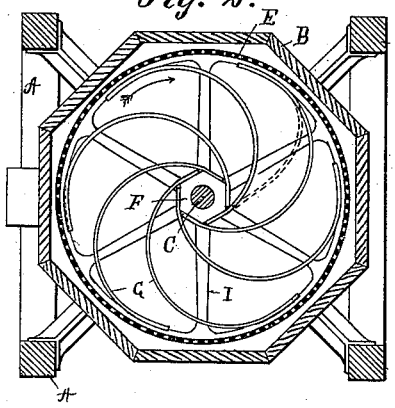


Fig. 4.

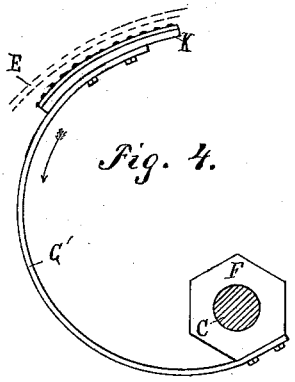


Fig. 6.

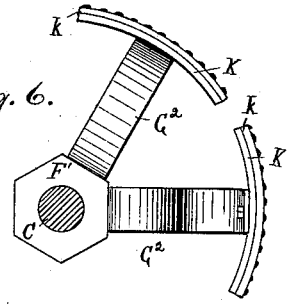


Fig. 7.

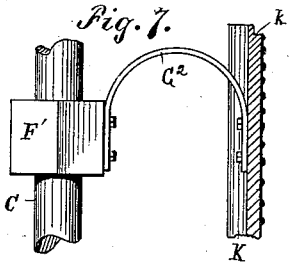


Fig. 8.

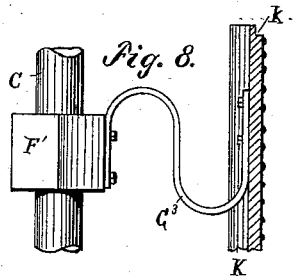
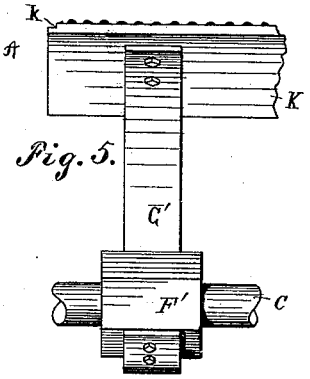


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES B. SLATER, OF BLANCHESTER, OHIO.

GRAIN-SCOURER.

SPECIFICATION forming part of Letters Patent No. 343,402, dated June 8, 1886.

Application filed January 28, 1886. Serial No. 190,033. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. SLATER, a citizen of the United States, and a resident of Blanchester, in the county of Clinton and State of Ohio, have invented a certain new and useful Grain-Scourer, of which the following is a specification.

My invention relates to machines for scouring and cleaning grain.

The main object of my invention is to provide a more perfect means to bring the grain under treatment between the scouring-plates and the perforated case, so that all the grain will be continually brought under the action of the scourers from the time it enters the machine until it is discharged. Its object is also to provide an improved means by which the scouring-blades will automatically adjust themselves with relation to the cylinder, according to the quantity of grain passing through the machine, and hold the grain between the blades and cylinder with yielding pressure.

The invention will be first fully described in connection with the accompanying drawings, in which the same or like parts are indicated by the same reference-letters wherever they occur throughout the various views, and then particularly referred to, and pointed out in the claims.

Figure 1 is a central longitudinal view through the case of a vertical machine provided with my improvements, one side of the revolving scourers being shown in elevation and the opposite side in central vertical section. Fig. 2 is a transverse section taken through line *x x* of Fig. 1. Fig. 3 is a perspective view in detail of one of the scouring-blades, the shaft, and hub to which it is secured. This view illustrates my preferred form of scourer-blade. Figs. 4 and 5 are detail views of a modified form of my invention, Fig. 4 being a plan, and Fig. 5 a rear side elevation. Figs. 6 and 7 are detail views illustrating another modification, Fig. 6 being a plan, and Fig. 7 a longitudinal elevation, of the shaft, hub, and spring-arm, the scouring-blade being shown in longitudinal section. Fig. 8 is a view similar to Fig. 7, illustrating another form in which the spring-arm for carrying the scourer-blade may be made. Fig. 9 is a plan view looking upon the under side of the plate or cap of the revolving scourer.

A represents the frame of the machine; B, the housing; C, the driving-shaft; D, the suction-fan or exhaust; E, the perforated cylinder, and *e* and *e'* its ends. These parts do not differ from the machines now in common use. A detail description of them is therefore not necessary.

Referring first to Figs. 1 to 3, inclusive, F is a polygonal hub secured upon the shaft C, to the flat sides of which hub are secured in any suitable manner the curved-spring scourers G. These are preferably made of spring-steel, and extend from the hub outward in proximity to the perforated cylinder E. The scouring-surfaces *g*, which form the outer portions of the plates, may be made perforated, corrugated, or roughened in any approved manner, or brushes may be attached either to all or part of the blades, if desired. I have shown in the drawings six of these curved spring-blades to work within the cylinder; but the number may be varied according to the work required, and the curve of the blades may also be varied from the form shown in the drawings—for instance, as indicated in dotted lines, Fig. 2—as I do not desire to limit myself to any particular form of curve. The dish-shaped plate H has a downwardly-projecting flange, *h*, which overhangs the edges of the scouring-blades and prevents their contact with the cylinder E. This plate has also, as shown in Fig. 9, perforations *h'*, through which the grain is fed into the scourers. The spider I has upturned flange *i*, for the same purpose as flange *h* upon plate H.

In the modification shown in Figs. 4 and 5, instead of the curved steel plate G, two series of narrow spring-bands, G', are employed at opposite ends of the case, upon the outer ends of which are secured scouring-plates K. The ends of these plates are rabbeted, as shown at *k*, and the flanges *h i* overlap their diminished ends and prevent the plates K from being thrown so far out by centrifugal force as to strike the cylinder E. The hubs F' in this case need only be as long as the width of the spring-arms.

In the modification shown in Figs. 6 and 7, the spring-arms G² differ from those shown in

Figs. 4 and 5 in their mode of attachment to the hubs F′ and plates K, being secured to the hubs and plates at a right angle to the position shown in Figs. 4 and 5. In Fig. 8 the spring-arm G^3 is also a narrow steel strip, like G' and G^2, but is S-shaped, instead of a simple curve.

In Figs. 1 to 5, inclusive, the shaft C rotates in the direction of the arrows, the curved scourers being tangential to the case, so that the spaces between the scourers and case taper from the feed to the discharge—that is, the leading edges of the revolving scourers are farther from the case than the following edges. In operation the grain is therefore crowded between the scouring-surfaces and case and more surely forced through between them and brought under their rubbing action, as there is no chance for the grain to be forced ahead of the plates. The scouring-plates K, or brushes, when used, are also secured upon the ends of the spring-arms, tangential to the circumference of the case, for the same purpose. The hubs F F′ may be dispensed with and the inner ends or edges of the scouring-arms secured directly to the shaft, which in such case is better if made polygonal between its bearings; but this is a matter of mechanical construction merely.

In fitting my device for use, the springs, whether made in the shape of a single curve extending from end to end of the scouring-cylinder or of a series of curved arms, as shown, should be made so that when the machine is at rest the scourers will bear with some pressure against the flanges *h i*, and this pressure should be stronger when the plate G is used, as the atmospheric resistance acts against the centrifugal force and tends to throw the outer ends of the plates nearer to the axis of revolution. This form I prefer to use, because the grain is constantly thrown outward by the plates and no grain is liable to fall down within the scourers and thus escape their action, the plates G inside of the scouring-surfaces, in fact, acting as beaters.

The machine shown is vertical, but it may also be used in the horizontal position. In such case the convex surfaces of the plates should be provided with light ribs spirally arranged, to carry the material under treatment from the feed to the discharge end of the machine.

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

1. In a grain-scourer, the combination, substantially as specified, of a perforated cylinder, the scourer-shaft, the spider I, and cap H, secured to said shaft and having flanges *h i*, the curved spring-metal arms secured to the shaft, and the scouring-plates carried by the spring-arms, as set forth.

2. The combination, substantially as hereinbefore set forth, in a grain-scourer, of the perforated cylinder, the shaft C, automatic self adjusting spring scourers secured to said shaft, the cap H, perforated at *h′* to admit the grain, and having flange *h*, and the spider I, having flange *i*, to receive the impact of the scourers and protect the cylinder.

CHARLES B. SLATER.

Witnesses:
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