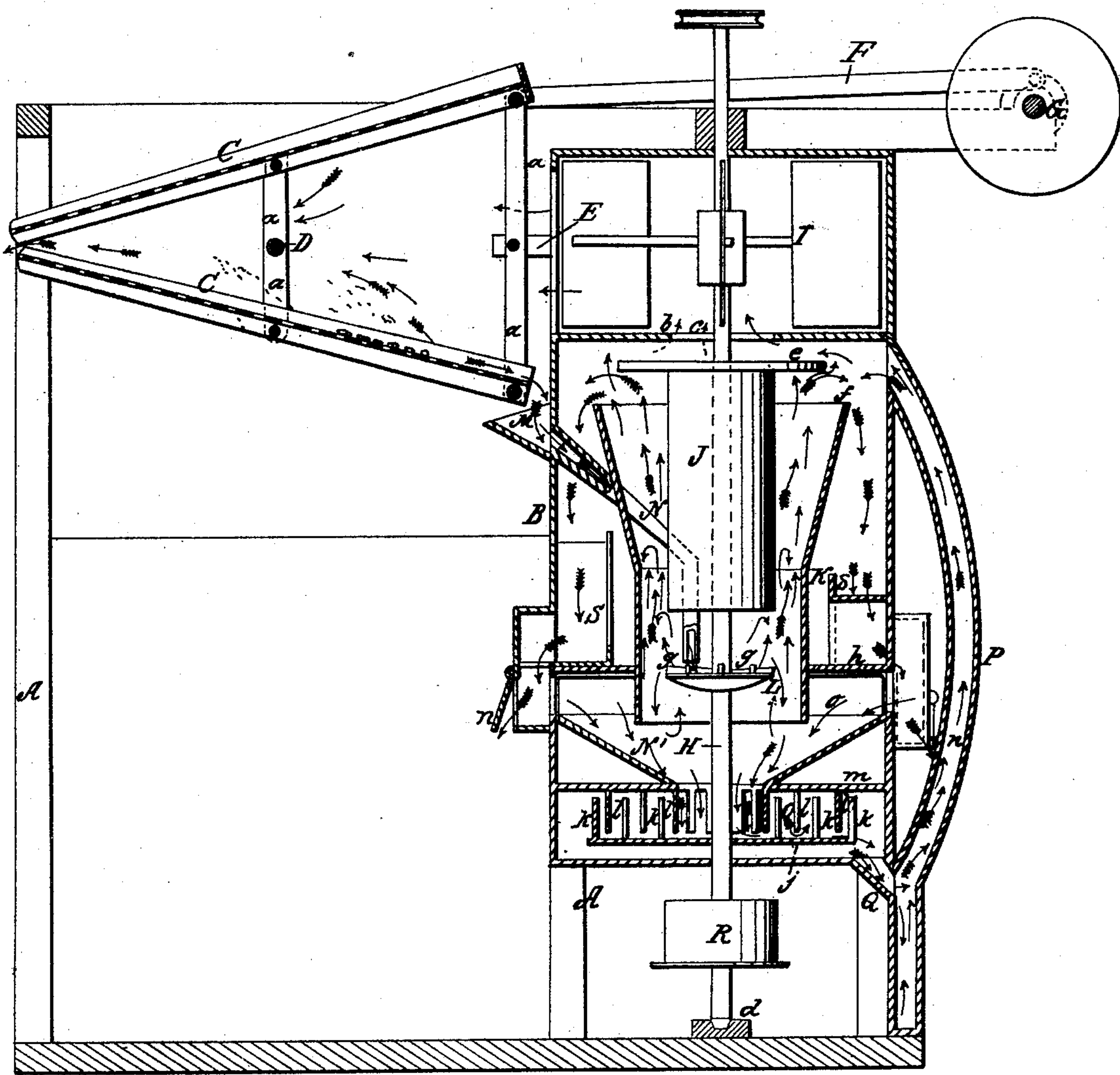


J. TOBIN.

Smut Mill.

No. 20,104.

Patented April 27, 1858.



UNITED STATES PATENT OFFICE.

J. TOBIN, OF NEWARK, NEW JERSEY.

SMUT AND GRAIN CLEANING MACHINE.

Specification of Letters Patent No. 20,104, dated April 27, 1858.

To all whom it may concern:

Be it known that I, JEREMIAH TOBIN, of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Smut and Grain Cleaning Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of the specification, said drawing being a vertical section of my improvement.

This invention consists in a peculiar arrangement of a fan, blast passages, scouring device and screens, as hereinafter described, whereby the desired work, to wit, the cleaning of grain from smut and other impurities may be performed expeditiously and in a perfect manner.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents a framing which may be constructed in any suitable way to support the working parts and B, is a quadrilateral box placed or formed within the framing at one end.

C, C, are two screens, which are placed in the upper part of the framing, said screens being placed one over the other and converging from their inner to their outer ends. These screens are attached to the opposite ends of arms (a) which are secured radially on rock shafts D, E, the arms projecting from opposite sides of their respective shafts. The screens are driven by connecting rods F, from crank pulleys on the ends of a driving shaft G, the screens working alternately in opposite directions.

Within the box B, a vertical arbor or shaft H, is placed and on the upper part of said arbor or shaft a fan I, is secured, the blast from which passes directly between the two screens C, C. A horizontal plate (b) is placed within the box B, directly below the fan, said plate having a circular opening (c) at its center. The lower end of the shaft H, is stepped at the bottom of the framing A, as shown at (d), and within the box B, just below the plate (b) a stationary cylinder J, is placed, the upper part of which is covered by a circular plate (e) which projects some distance beyond the sides of the cylinder. K, is a case which encompasses the cylinder J. The lower part of this case is of cylindrical form and is placed concentrically with the cylinder J, and the upper

part is of inverted conical form. The upper end of the case K, does not extend upward as high as the plate (e) a space or passage (f) being allowed between them.

On the shaft H, just below the cylinder J, but within the case K, a basin L, is placed, said basin having radial plates or ledges (g) placed in or on it.

M, is a hopper which is attached to one side of the box B, just below the inner end of the lower screen C. This hopper has a tube or pipe N, connected with it, said tube or pipe passing within the case K, and cylinder J, and extending down nearly to the basin L. A horizontal partition plate (h) is placed in the box B, just above the lower end of the case K, and a hopper N', is placed below the case K, said hopper communicating with a scouring device O, which device is formed of a circular plate (j) attached to the shaft H, said plate having a series of vertical rods or beaters (k) on it, which as, said plate rotates pass between similar pendent beaters (l) attached to the under side of a horizontal plate (m).

P, is a blast spout or passage the upper end of which communicates with the box B, just below the plate (b). The lower end of the spout communicates with a passage Q, which leads from the scourer O.

R, is a driving pulley placed on shaft H, below the box B, and S, are inclined spouts attached to the inner sides of box B, between the plates (b), (h), the lower ends of said spouts passing through the sides of the box and having flaps (n) attached. (o) are openings through which air is admitted into the box below the case K.

The operation is as follows: Motion is given the shaft H, and the plate (j), basin L, and fan I, thereon are of course rotated. The grain to be cleaned falls on the uppermost screen C, which is sufficiently coarse to allow the grain to pass through, the larger foreign substances falling off the outer end of the screen. The lower screen C, is too fine to allow the grain to pass through, it therefore falls into the hopper M, the cockle and other finer substances passing through the lower screen. The grain as it passes through the upper screen C, and into the hopper M, is subjected to a blast from the fan I, and light foreign substances are separated from it and the grain is conducted by the tube or pipe N, down in the basin L, which by its rotation

throws the grain from its edge in a circular sheet and slightly upward so as to subject the grain most favorably to the action of the blast produced by the fan, the grain falling down into the hopper N', and while passing down being still subjected to the suction blast produced by said fan I, the space between the cylinder J, and case K, forming the blast passage. This suction blast takes all loose smut, dust &c. from the grain, the smut, dust &c. pass up with the suction and being deflected by plate (e) it is thrown out of the current of air and drops down into the spouts S, and out through the sides of the box B. The hopper N' conducts the grain into the scourer O, which detaches all smut, dust, &c. which may have adhered tightly to it and as the grain passes down through the discharge spout Q, the suction blast in P, will take up all dust, smut, &c. loosened by the scourer, the latter dust and smut also falling into the spout S. In the drawing the red arrows show the direction of the dust, dirt, &c. the black arrows show the direction of the grain and the dotted black arrows show the direction of the blast.

By this improvement the grain will be cleaned expeditiously and perfectly, the blast between the cylinder J, and case K, in consequence of the annular space through which it passes, is not retarded at any part so, that the dust and smut cannot descend. Air cannot be forced with equal velocity at all points through square tubes, it will be retarded by friction at the angles and sides and the central part of the blast will be the strongest, and the outer parts often too weak to carry up the foreign light substances. By my improvement this difficulty is obviated as there are no angles formed

in the space between the cylinder and case and the air will in consequence of this and the comparatively thin annular form in which it is forced upward be of about equal velocity at all points and sufficiently strong to carry up all light substances at any point. By having the fan, screens, scourer and blast passages arranged relatively with each other as herein shown and described, a compact as well as very efficient machine is obtained.

In consequence of having the upper part of the case K, of flaring or inverted conical form the blast as it passes upward is necessarily weakened so that sound grain cannot be carried much above the lower end of said part.

I do not claim the scourer O, for that has been previously used, nor do I claim the screens C, C, separately considered; but Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,

1. The blast passage formed by the cylinder J, and case K, arranged as shown in connection with the rotating basin L, on an equivalent device for the purpose of properly presenting the grain to the action of the blast in said passage substantially as and for the purpose herein shown and described.

2. The screens C, C, fan I, scourer O, blast passage P, cylinder J, and case K, when combined and arranged to operate as and for the purpose set forth.

JEREMIAH TOBIN.

Witnesses:

W. TUSCH,
W. HAUFF.