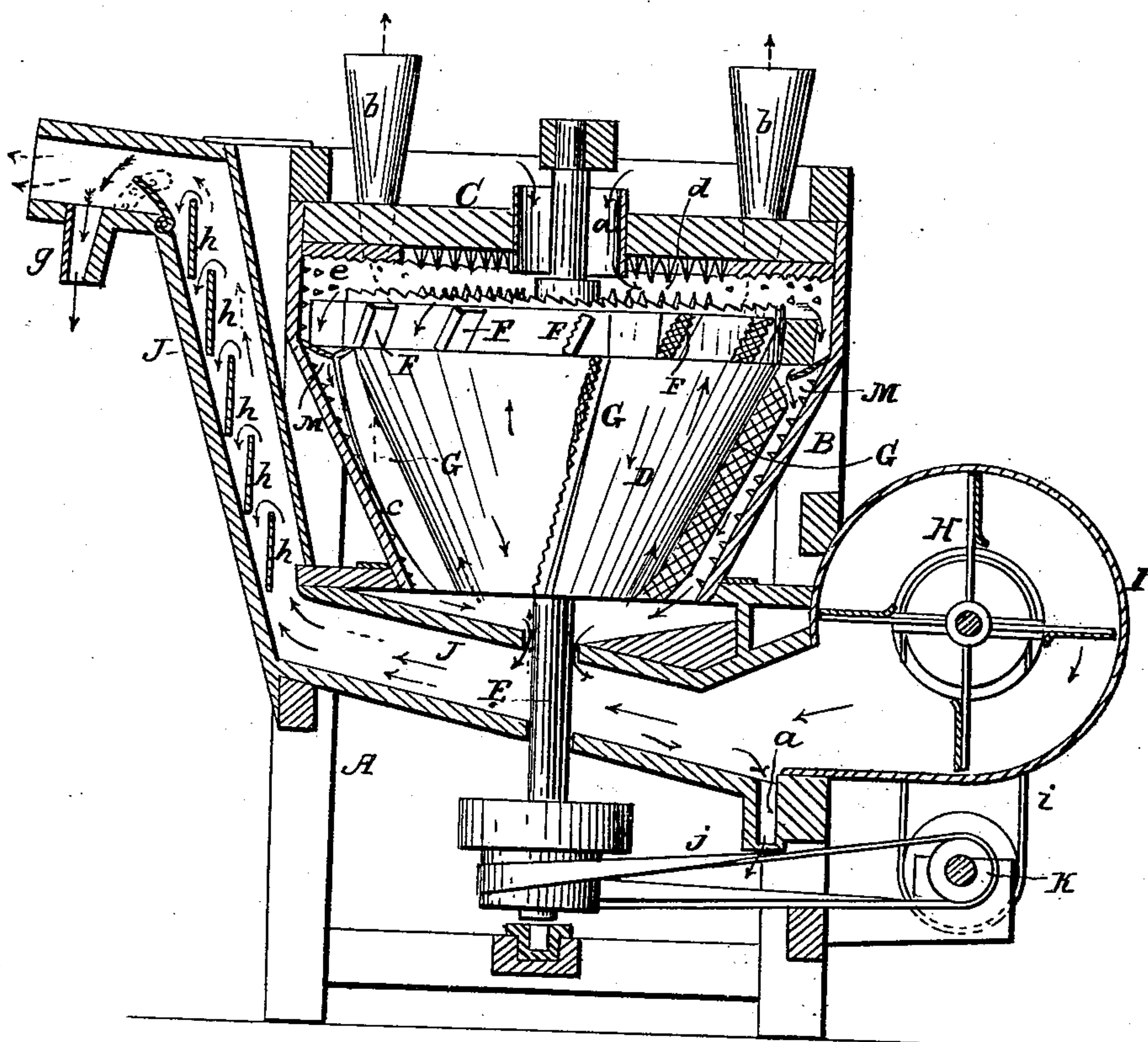


G. HEBERLING.

Grain Cleaner.

No. 16,439.

Patented Jan. 20, 1857.



UNITED STATES PATENT OFFICE.

GEORGE HEBERLING, OF QUINCY, ILLINOIS.

GRAIN-SEPARATOR.

Specification of Letters Patent No. 16,439, dated January 20, 1857.

To all whom it may concern:

Be it known that I, GEORGE HEBERLING, of the town of Quincy, in the county of Adams and State of Illinois, have invented a new and Improved Grain-Cleaning Machine; and I do hereby declare that the following is a full and exact description of the same, reference being had to the annexed drawing, making a part of this specification, said drawings being a vertical section of my improvement.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction, and operations.

A, represents a rectangular frame constructed in any proper manner, to support the working parts of the machine.

B, represents an inverted conical shell which is made of cast metal, and secured to the frame A. The inside of this shell is provided with teeth, spikes, or a corrugated, or roughened surface. The upper part of this shell is covered by the plate C, which plate has an opening marked *a*, at the center. It is also provided with the conical tubes *b, b*, inserted in it near its outside edge; any number of these tubes as is desirable may be used. The center portion of the under-side of the plate C, is provided with teeth or spikes marked *d* for the purpose of breaking the straw, smut balls, &c. The outer portion of the under side of the plate C, is corrugated or roughened, these corrugations are marked *e, e*, for the purpose of roughening or breaking the scale, and dust up on the grain as it passes to the outer edge. The breaking of the straw, and smut balls likewise the scouring of the grain by the same plates, is an important point in my invention.

D, represents a cast metal conical cylinder corresponding in form to the sheet marked B, and is placed within the said shell. This cylinder is attached to the vertical shaft E, and revolves with it. This cylinder is made smaller than the shell B, to allow a space between it, and said shell for the fans, or beaters F, and G to move clear of the teeth or spikes *c*.

The upper or top surface of the cylinder D is provided with spikes or teeth, and a roughened or corrugated surface similar to that upon the underside of plate C. This cylinder, and the plate C, can be set as close together as is desirable. Upon the perpendicular sides of the cylinder D, are fastened

the flanges or beaters F, to act as beaters and fans for the purpose of knocking off the smut and dust from the grain as it passes from between the top of the cylinder D, and plate C, also to assist in producing a blast for the purpose of carrying off the dust and smut through the tubes *b, b*, as fast as it is scoured from the grain; by this means the grain is not allowed to roll in its own dust, hence it does not have a chance to adhere to it again as it otherwise would. This is an important point in cleaning grain.

The flanges, or fans, or beaters G, are fastened to the cylinder at an angle instead of being placed on a vertical line with the machine, for a treble purpose: Firstly, for the fans or beaters G, to form a blast through the machine to blow the smut, dust, &c., out of the grain as fast as it is scoured from it; it will be seen that by the means of these fans a constant current of air from the bottom to the top is always passing through the machine when in motion; secondly; these fans act as beaters and assist in scouring the grain. Thirdly, they being fastened to the cylinder upon an incline, insure the grain to be kept bounding upward between the cylinder D, and the case B, for a sufficient time to insure its being perfectly scoured.

The beaters F, upon the vertical sides of the cylinder D, are shorter than the fan beaters G, also they are placed nearer to each other. The outer edges of the flanges G, are longitudinally of slightly convex form.

M, is a curved rim which receives the grain as it passes from the fan beaters F, for the purpose of conveying the grain to the sides of the cylinder D, so that the fan beaters G will strike it, otherwise it would fall directly down the sides of the case B, and would not be acted upon by fan beaters G.

H, represents a fan which is inclosed in the case I, attached to and at one side of the frame A. This frame is made in any suitable manner.

J, represents a spout which passes under the shell B, and is set at a slight angle, but always of a sufficient angle to allow the grain to slide down to the opening or spout *a'* as is represented. The spout J, then projects upward nearly vertically terminating with a short horizontal spout as is shown in

the drawings. In this horizontal spout the valve *f*, is placed for the purpose of regulating the current of air. It is also provided with a spout marked *g*, for the discharge
5 of poor grain and cheat.

h, h, h, h, h, are plates placed in the vertical portion of the spout *J*; they are placed at an angle with said spout for the purpose of catching the light but good grain which
10 would otherwise be likely to be carried out by the blast with the cheat, and poor grain.

All the grain that falls over these plates passes down the back side and bottom of the spout *J*, therefore passe out of the opening *a'* with the plump grain, and is saved.
15

The fan *H* is driven by the belt *i*, from the pulley attached to the shaft *K*, said pulley being driven by the belt *j*, from a pulley attached to shaft *E*.

20 The operation of this machine is as follows: The machine is first put in motion, then the grain to be cleaned is fed into the opening marked *a*, it then passes in between the plate *C*, and the top of the cylinder *D*, and is thrown outward by the centrifugal
25 force of the machine until it reaches the outer edge of the top of the cylinder *D*, and as it falls over said edge it is caught by the fan beaters *F*, by them it is thrown and beat around until it falls upon the curved rim
30 *M*. (I would here have it fully understood that, as the grain passes from the opening *a*, the spikes, or teeth *d*, break all of the smut balls, straws, &c., then it passes between the
35 corrugated or scouring surfaces *e, e*, which roughen or break the outer scale, and dust on the grain, then the fans or beaters *F*, knock off all the dust, and smut adhering to the grain which smut, and dirt is carried
40 off through the spouts *b, b*, by the current of air caused by the fans, or beaters *F*, and *G*.)

The grain is conveyed by the means of the curved rim *M*, against the sides of the
45 conical cylinder *D*, where the grain will be caught by the fans, or beaters *G*, said fans, or beaters keep it dancing, and bounding in the space between the case *B*, and cylinder *D*, until it is sufficiently scoured, it will
50 then find its way to the bottom, and pass out into the spout *J*. It should be remembered that the reason why the grain does not pass directly down between the case *B*, and cylinder *D*, is because the fans, or beaters
55 are fastened upon the cylinder at an angle

which as they (the fans) strike the grain have a tendency to throw it upward. As the grain passes into the spout *J*, it is struck by the blast from the fan *H*, which blast carries all the cheat and light grain up the
60 vertical portion of the spout *J*; as these light good grains pass up the vertical spout, with the cheat and shrunk grains they fall over behind the plates *h, h, h, h, h*; these plates produce what may be called an eddy,
65 or a partial vacuum, it will be readily understood how this eddy or vacuum is produced by referring to the drawings, and why the heaviest of the grain carried up the vertical portion of the spout by the blast
70 will fall over, and down behind the said plates *h, h, h, h, h*. The cheat and shrunk grains pass up over the valve *f*, and fall into the spout *g*; the cheat and shunk grains fall behind the valve *f*, upon the same principle
75 that the good grains fall behind the plates *h, h, h, h, h*. All the dust, &c., that has not been blown out by the fans, or beaters *F*, and *G*, is blown out of the tail of the spout
80 by the fan *H*.

It will now be apparent to any person acquainted with grain cleaning and smut machines that the grain which passes through this machine, will be secured in the most
85 perfect manner and at the same time it is most effectually cleansed from cheat, shrunk grain, and all other impurities usually found in grain. The solid black arrows show the direction of the sound grain; the
90 red arrows show the direction of the light but good grain; the dotted red lines show the direction of the cheat, and chaff, &c. The dotted black lines show the smut, dust, &c.

I distinctly disclaim the invention of the
95 separate devices herein described, as no one of them is new, but

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

The arrangement in a grain cleaning machine of the plate *C* armed with teeth *d* and
100 rubbers *e*, the conical cylinders *D*, with beaters, and fans *F*, and *G*, attached, chute or rim *M*, plate *h*, tubes *b*, and fan *H*, all constructed and operating substantially in
105 the manner above set forth.

GEO. HEBERLING.

Witnesses:

WM. H. CATHER,
S. K. CAMPBELL.