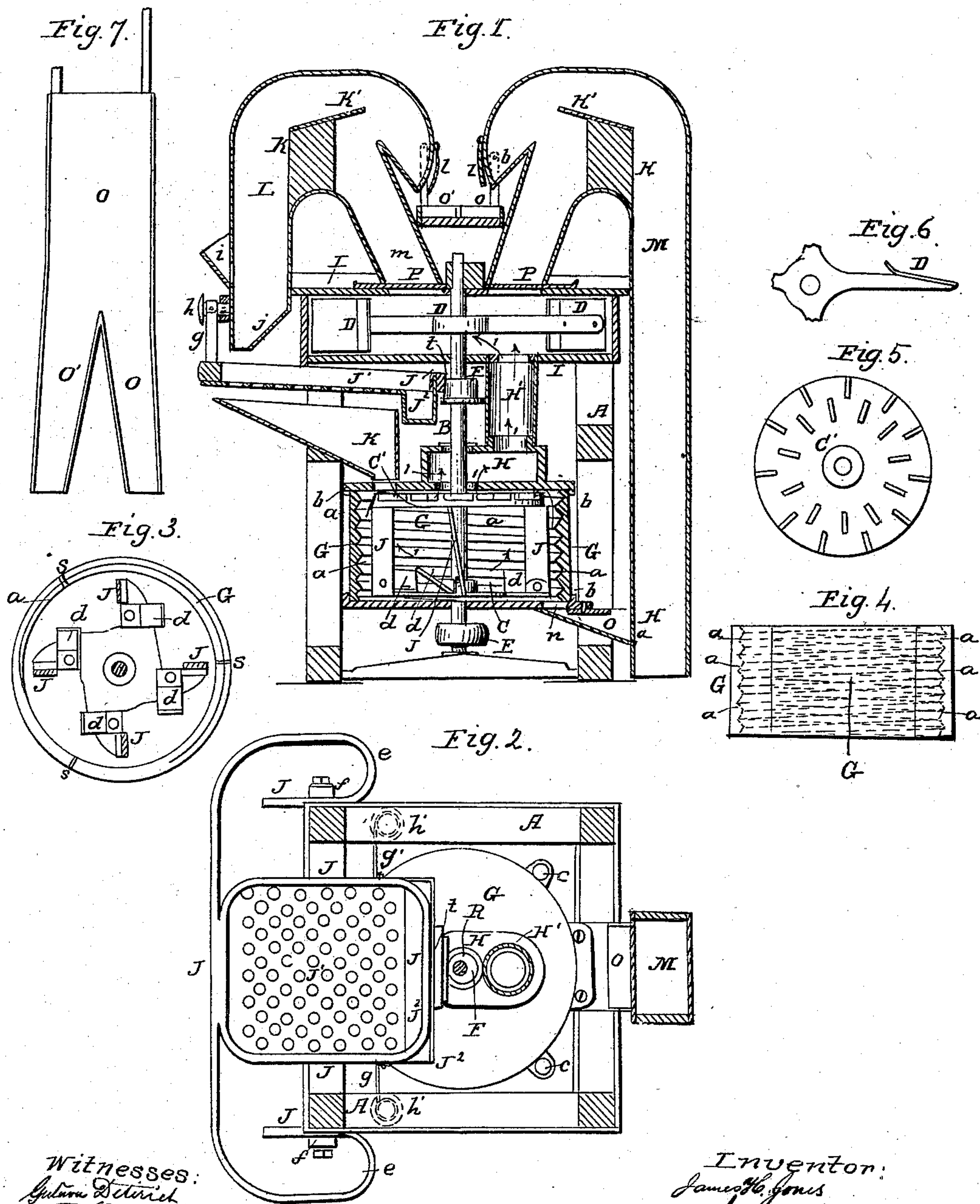


Smut Machine.

No. 36,784.

Patented Oct. 28, 1862.



Witnesses:
Gustav Dietrich
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UNITED STATES PATENT OFFICE.

JAMES H. JONES, OF DAYTON, OHIO.

IMPROVEMENT IN SEPARATORS AND SMUT-MACHINES.

Specification forming part of Letters Patent No. 36,784, dated October 23, 1862.

To all whom it may concern:

Be it known that I, JAMES H. JONES, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in a Grain-Separator and Smut-Machine Combined; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical central section of my improved machine; Fig. 2, a horizontal section of the same in the line *xx* of Fig. 1. Fig. 3 is a horizontal section of the scourer or smutter in its case or cylinder. Figs. 4, 5, and 6 are details of my invention.

Similar letters of reference in the several figures indicate corresponding parts.

The nature of my invention consists in scouring the grain by passing it through a screw on the inner surface of the cylinder, and in such passage subjecting it to a beating and blasting action.

It also consists in a screening apparatus whose frame is constructed and applied to the scouring machinery in such manner as to support the screen and act as springs to the same, this screening apparatus, as well as the scouring machinery, being arranged relatively to a chess-spout blast-trunk and suction-spout and fan, as will be hereinafter described.

To enable others skilled in the art to carry out my invention practically, I will proceed to describe one mode of embodying the same with reference to the drawings.

A is the frame of the machine; B, the central shaft, with beater C C' and fan D arranged fast upon it. This shaft has a belt-pulley, E, and an eccentric, F, keyed upon it.

G is the scouring-cylinder, with a screw or spiral groove, *a*, in its inner circumference. This cylinder is made up of cast segments, and its bottom and top plates confine the segments together by means of shoulders *b* and clamp screw-bolts *c c*. The beater C has its blades J set oblique to a perpendicular, so as to throw the grain against the screw-groove, and also to produce an upward current, which is furthered by wings *d d*, arranged on the bottom of the beater in a position oblique to the horizon, and by the fan D.

H H' is a suction-spout and chamber con-

necting the cylinder G with the fan case I, as indicated by the arrows 1 1.

J J' J² is a screening apparatus. The frame J thereof is made, as represented, in one piece, with the properties of a spring in its parts *ee*, and is attached by means of clamp-buttons *ff* to the sides of the frame, so as to spring back and forward, and is hung or suspended loosely at its rear side ends and at the center of its front by means of straps *g g'*, which are adjustable in length, so as to alter the inclination and throw of the screen by means of turn-buttons *h h' h'*, as represented.

K is a hopper placed under the screen and leading into the top of the scouring-cylinder.

L is a chess spout or trunk with hopper *i* and screen *j* near its front lower end; also with a directing-partition, *k k'*, and escape-valve *l*, leading out into a discharge-spout. This trunk has a branch portion, *m*, below and in rear of the partition, and this connects with the fan case I, as shown.

M is a "light-grain" trunk, similar in construction to L, excepting that its lower end extends down to the bottom of the frame and there communicates with the open atmosphere and with the scouring-cylinder, the latter communication being effected by means of a hole, *n*, in the bottom of the cylinder, and by a spout or incline gutter, *o*, leading from said hole into the trunk, as shown.

O O' is a forked spout hung incliningly under the valve-passages of the trunks L M, and serving to conduct off in one direction the chaff or chess, and in another direction the light grain, &c.

P P are slide-valves arranged between the fan-case I and the branches *m m*, for the purpose of regulating the suction or blast of the fan in the trunks L M.

The motion or vibration of the screen and frame J J' is produced by means of the eccentric F, which is set so as to strike in revolving with the shaft B an offset, *t*, of the frame J, as represented.

The operation of the whole machine is as follows: The grain enters the spout L from the supply-hopper *i* and falls upon the wire-gauze *j*, thence runs down across the spout L in its passage. Thus all matter lighter than grain is raised by the blast or suction fan and caused to pass off through the valve-passage *l* into the forked spout O O'. This operation

takes out the smut-balls without breaking them before the entrance of the grain into the cylinder G. The grain now passes through the sieve J, which leads off all matter larger than the grain and passes it out through its cross-spout J². From the sieve the grain passes by the hopper K into the cylinder G, first depositing upon the toothed or flanged plate C', and then by centrifugal force is thrown therefrom into the spiral groove *a*, and kept there by the beaters J striking it in its descent, it following lengthwise the line of the groove with great speed, and by rolling against one another and the surface metal of the groove the grains are scoured without injury. The screw scouring-surface retains the grain in frictional contact with the cylinder along the whole depth of the cylinder and the length of the one unbroken line around the circumference of its inner surface, said line traversing spirally the whole surface from top to bottom. The wings *d d*, standing backward at an angle of about forty-five degrees, equalize the blast on all parts of the scouring-surface and gives it a direction upward, so as to operate in conjunction with a suction through the spout H H', and thus carry up the dust, &c., removed from the grain in its descent. The grain when scoured passes into the lower end of the long trunk or suction-spout M. While passing out of the end of the same it is deprived of light imperfect grains by the suction of the fan, and such light grains are raised and deposited into the forked spout through the valve-pas-

sage *l* of the spout M, the partitions *k k'* insuring the escape of the light matter from the heavy and good grain which rises in the spouts L M.

Having thus described my invention and set forth its advantages, what I claim, and desire to secure by Letters Patent, is—

1. A scouring-cylinder which answers as a concave for a smut or grain-cleaning machine whose inner circumference is dressed with a screw or spiral scouring-surface, substantially as and for the purposes set forth.

2. The combination, with such screw or spiral scouring-surface, of a beater, C C, whose blades J J and wings *d d* are arranged and operate in the manner and for the purpose substantially as described.

3. The sieve and frame J J', so constructed and arranged on a smut or grain-cleaning machine that the frame supports and acts as springs to the sieve, substantially in the manner and for the purpose described.

4. The combination of the screw concave, the beater, the trunks M L, suction-spout H H', fan D I, sieve J J', and shaft B E F, the whole constructed, arranged, and operating substantially as described.

Witness my hand, in the matter of my application for patent on grain-separators and smut-machines, this 25th day of August, 1862.

JAMES H. JONES.

Witnesses:

F. BARLOW,
JAMES TURNER.