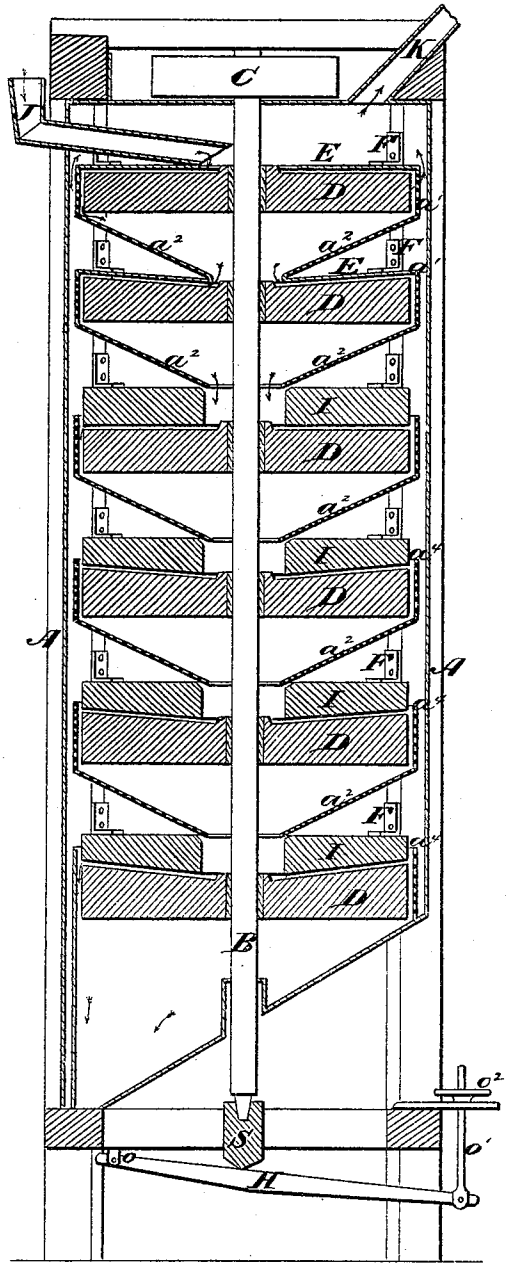
G. W. McNEIL.

Smut-Mills.

No. 151,415. Patented May 26, 1874.



Witnesses.
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A.M. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

GEORGE W. McNEIL, OF AKRON, OHIO.

IMPROVEMENT IN SMUT-MILLS.

Specification forming part of Letters Patent No. **151,415**, dated May 26, 1874; application filed April 27, 1874.

To all whom it may concern:

Be it known that I, GEORGE W. McNEIL, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Smut-Machines; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which the figure is a sectional elevation.

Similar letters of reference in the accompanying drawings denote the same parts.

My invention relates to improvements in smut-machines; and consists in the employment of a series of stones attached to, and revolving with, a vertical axis, the upper surfaces of the revolving stones being conical and inclined inwardly toward their hubs or eyes, and revolving under stationary iron plates similarly inclined or having conical surfaces inclined inwardly, by means of which the grain introduced at the top of the machine passes down near the eye of the first stone, and is thence moved outwardly by the centrifugal action of the revolving stone to its outer circumference, the grain being scoured and cleaned between the conical revolving stone and the stationary iron plate, similarly formed, and the movement of the grain retarded by the inward inclination of the faces of the stones to the vertical axis, so that the grain is thoroughly scoured or cleaned. The grain thus carried by the centrifugal action of the first revolving stone to its outer edge or circumference falls by gravity into a stationary perforated conductor of the form of a frustum of a cone, with a cylindrical edge projecting above the space between the stone and plate, which conveys it to the next scouring-plate and stone, near the eye of the latter, where the process is repeated, the grain being thus carried through as many pairs of revolving stones and stationary iron plates and revolving and stationary stones as desired, (some six pairs being ordinarily employed,) until it arrives at the base of the machine, the dust and foreign matter being discharged by a current of air forced by a blower into the space between the stones and plates and the outer casing, and thence out of the machine through a spout at its upper end, the cylindrical edge on the hoppers or conductors projecting above the space between the stationary plate and the revolving stone and between the revolving and stationary stones, hereinafter described, to prevent dust, dirt, &c., from passing into said space as they are carried upward to be discharged from the machine. My invention further consists in constructing the iron stationary scouring-plates and perforated conical conductors or hoppers in one piece, by means of which the parts are braced, and all ingress of the dust, &c., (carried upward by the current of air introduced at the base of the machine into the space between the revolving stone and the iron scouring-plate,) is prevented.

In the accompanying drawings, A represents the outer casing of the machine, in the base of which is stepped the revolving vertical axis B, to which suitable power is applied by a band passing around the pulley C. The vertical axis B passes through the eyes of the stones D, which are attached thereto so as to revolve with the shaft. The step S, on which the lower extremity of the vertical axis rests, can be vertically adjusted by means of a lever, H, fulcrumed, at *o*, to the side of the case or frame, and supported at the opposite side of the machine by an adjustable arm, o^1, which can be raised or lowered by turning a screw-nut, o^2. The revolving stones D D are of the form of an inverted frustum of a cone, and are thus shaped to retard the progress of the grain in the scouring process when actuated by the centrifugal force of the revolving stones, thus rendering the scouring and cleaning process more thorough. E E are iron scouring-plates in the form of an inverted cone, with the same inclination as the conical upper faces of the revolving stones D D. The iron scouring-plates E E are attached, by brackets F F, to the case or frame of the machine, and are bent at a right angle at the outer edge or circumference of the revolving stone, and thence continue in a vertical line, as seen at a^1, a short distance below the lower face of the stone, when they are inclined, as seen at a^2, to form a conical conductor or hopper, a^2, for the grain, and thence bent around to form a second scouring-plate, as shown in the drawing. The scouring-plates and hoppers, being in one piece, brace each other, and likewise prevent the introduction of

dust and other impurities between the scouring-plates and the revolving stones. The conductors or hoppers a^2 a^2 are perforated for the passage of dust, &c., as hereinafter more fully described, and extend from the outer circumference of one of the revolving stones to a point near the eye of the stone below it. I I are stationary stones, having their lower surfaces in the form of an inverted cone; and a^4 a^4 are the cylindrical vertical sides of the hoppers or conductors a^2 a^2, made to project beyond the space between the stones, for a purpose hereafter set forth. A blower is applied at the base of the machine to generate a current of air between the casing or frame of the machine and the stones and iron scouring-plates.

The grain to be cleaned is introduced at the spout J, near the eye of the upper revolving stone, and is forced by the centrifugal force of the latter between it and the upper scouring-plate, and thence over the outer edge of the revolving stone to the hopper below it, which conveys it near the eye of the second revolving stone, when the operation is successively repeated until the grain reaches the bottom of the machine thoroughly cleaned, the dust and other impurities passing through the perforations in the hoppers hereinbefore described, which are too small for the grain to pass through, and thence out of the machine through the discharge-spout K.

I claim as my invention—

1. In a smut-machine, the employment of revolving stones having their upper surfaces of an inverted conical form, in combination with the scouring-plates E E and perforated hoppers a^2 a^2, substantially as described, and for the purpose set forth.

2. The scouring-plates E E and perforated hoppers a^2 a^2, made in one piece, substantially as described, and for the purposes set forth.

3. The revolving and stationary stones D I, constructed as set forth, in combination with the perforated hopper a^2, the upper edges a^4 of which project above the space between the stones, substantially as described, and for the purposes set forth.

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Witnesses:
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