

(No Model.)

T. A. SEIP.
GRAIN CLEANING MACHINE.

No. 493,451.

Patented Mar. 14, 1893.

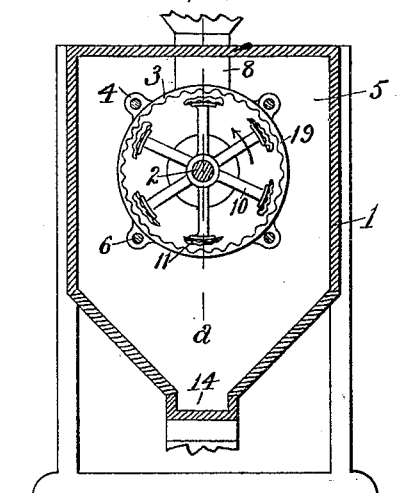


Fig. 2.

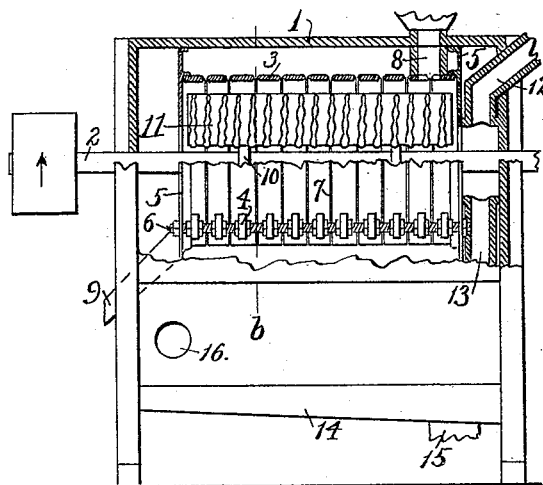


Fig. 1.

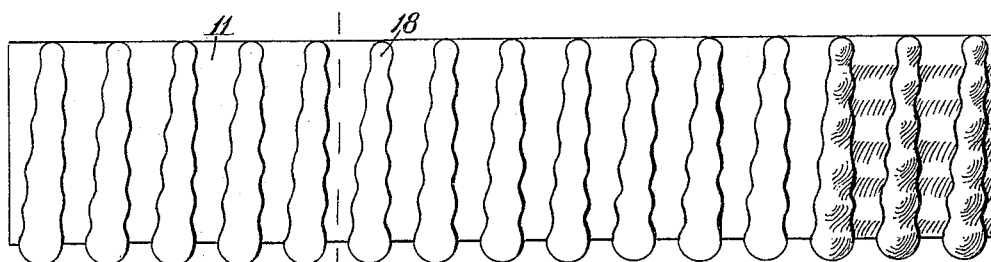


Fig. 5.



Fig. 6.

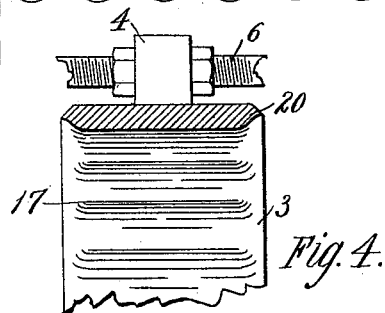


Fig. 4.



Fig. 7.

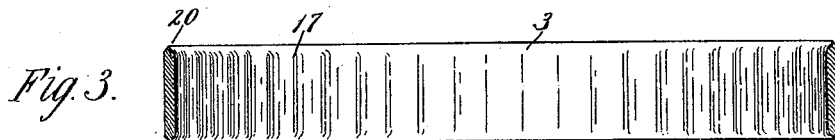


Fig. 3.

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THOMAS A. SEIP, OF DAYTON, ASSIGNOR OF ONE-HALF TO PETER B. HOLLY
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GRAIN-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,451, dated March 14, 1893.

Application filed August 12, 1892. Serial No. 442,896. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. SEIP, of Dayton, Montgomery county, Ohio, have invented certain new and useful Improvements in Grain-Cleaning Machinery, of which the following is a specification.

This invention pertains to improvements in machinery for cleaning grain and the improvements will be readily understood from the following description taken in connection with the accompanying drawings in which:—

Figure 1, is a side elevation of a grain cleaning machine exemplifying my invention, the upper portion of the casing being broken away to expose the screening shell within, and the upper half of the screening shell appearing in vertical longitudinal section and exposing the beater within it, the sectional portion of the drawing being in the plane of line "a" of Fig. 2: Fig. 2, a vertical transverse section of the machine in the plane of line "b" of Fig. 1: Fig. 3, a vertical section, in the plane of line "a" of Fig. 2, of one of the screen rings: Fig. 4, a similar section at one edge of one of the screen-rings, enlarged: Fig. 5, a face view of one of the beater-segments: Fig. 6, a vertical transverse section of one of the beater-segments: and Fig. 7, an edge view of a portion of one of the beater-segments.

In the drawings:—1, indicates the casing of the machine: 2, the beater-shaft journaled horizontally therein: 3, rings surrounding the shaft concentrically and supported within the casing edge to edge and forming a cylindrical screen-shell: 4, lugs projecting exteriorly from the rings: 5, heads for the screen-cylinder, secured within the casing and forming at once the heads to the cylinder and the support for the cylinder within the casing: 6, bolts passing through the heads 5 and through the lugs of the rings and provided with nuts outside the heads and at each side of each lug, these bolts or rods being threaded their entire length and thereby serving to connect the rings together and to connect the rings with the heads, the nuts at the sides of the lugs serving as means by which the rings may be adjusted nicely edgewise or in a direction parallel with the shaft: 7, the screen cracks left between the rings by reason of the fact that the edges of the rings do not make con-

tact with each other, these cracks being adjusted at about one sixteenth of an inch for ordinary operations with such grain as wheat: 8, inlet spout communicating with the interior of the screen-cylinder at the top near one end, this spout connecting through a suitable port formed at the juncture of two rings: 9, outlet spout at one of the heads 5, communicating with the interior of the cylinder at its lower portion at the end opposite the inlet spout 8: 10, spiders fast on the shaft: 11, beater-segments secured to the spiders parallel with the shaft, the exterior surfaces of these segments being longitudinally corrugated: 12, section-conduit adapted to be connected with a suction-fan, this conduit communicating with the interior of the cylinder through that one of the heads 5 which is at the inlet end of the cylinder, the end at which spout 8 connects: 13, suction-connection leading to connection 12 from the casing 1 exterior to the screen-cylinder: 14, the base of the casing, hopped to concentrate the screenings which fall from the screen cylinder: 15, outlet for the screenings from the base of the casing: 16, air inlet to the casing at the end opposite the end to which suction-connection 12 is connected, this inlet admitting air freely to the casing at the end opposite the suction and also to the grain discharge end of the screen-cylinder through the open center of the head of the cylinder at that end of the machine: 17, corrugations upon the interior surfaces of the screen-rings 3, these corrugations extending across the ring parallel with the shaft: 18, a series of wedge-shaped ribs disposed upon the outer surface of the beater-segments 11 and extending transversely across the segments, these ribs being eccentric to the axis of the beater and being transversely corrugated in continuation of the corrugations extending lengthwise of the segments, the ribs being also disposed obliquely with reference to the plane of their revolution: and 20, the edges of the screen-rings 3, these edges being somewhat sharp as a result of suppressing the inward projection of the corrugations of the rings, and of beveling the exterior edges of the rings.

The beater revolves in the direction indicated by the arrows, the eccentric ribs of the

segments sweeping within a short distance of the corrugated interior of the screen-cylinder. The rings of the screen-cylinder are, by means of the nuts on rods 6, adjusted to produce
 5 the desired width of screen crack between the rings, these screening cracks thus extending uninterruptedly entirely around screen-cylinder. Should wear take place in the screen cracks, or should the material in hand call for
 10 a different width of screen crack, the desired width of crack may be obtained by readjustment of the nuts.

Screen-cylinders of any desired length may be built up by using a greater or less number
 15 of the screen-rings. The grain enters the cylinder at spout 8 and is acted on by the beaters which subject it to a whipping action and tumble it around the interior surface of the screen-cylinder, the obliquity of the ribs of
 20 the segments gradually moving the mass of grain toward the discharge end of the machine from whence it flows through spout 9. The effect of the beaters in tumbling the grain is to subject the grain to the best character
 25 of frictional action and to insure in a superior degree the endwise turning or tumbling of the grain. Screenings separated from the grain become sifted through the joint-crack 7 between the screen-rings and these cracks are
 30 evidently of a self-cleaning character. The screenings may pass away through outlet 15. The suction arrangement, if employed, draws off the lighter dust from the grain within the cylinder and from the screenings which have
 35 dropped from the cylinder. As ribs 18 are wedge-shaped, the grain which they attack becomes more or less choked between them thus increasing the rubbing pressure. The screen-cracks, being continuous, no transverse
 40 edges present themselves to cut the grain or to produce clogging. The beaters, as they rotate, throw the grain forcibly outward against the inner wall of the screening cylinder, and if the inner wall of that cylinder were smooth the
 45 tendency of the grain would be to slide around within the wall. But the corrugations 17, extending across the inner walls of the rings, prevent this sliding movement of the grain, and, as a result, the grain is thrown outwardly,
 50 in a tangential direction, instead of sliding on along the wall of the cylinder, rebounds inwardly and is again acted upon by the beaters, the grain thus becoming subjected to a series of rotary tumbles. Were the corrugations 17 continued clear to the edges of the
 55 rings of the screen-cylinder, then there would be the same tendency to rebound at the screen-cracks except as regards those smaller particles which would go through or wedge
 60 into the screen-cracks, and the result would be the eventual clogging at the screen-cracks. But I do not carry the corrugations 17 to the screen-cracks. I stop them before they reach the edges of the rings and therefore the rings,
 65 at the screen-cracks, present smooth circular inwalls. The grain thrown tangentially

against the inwall of the cylinder at the screen-cracks is therefore at liberty to slide around the inwall at the crack, small particles finding their way out through the cracks, 70 and wedged in particles being loosened as they are driven around by following particles, thus avoiding the choking and the grain-cutting tendency which would result from having the inwalls of the rings corrugated 75 clear to the screen-cracks.

I claim as my invention—

1. In a machine for cleaning grain, the combination, substantially as set forth, with a shaft and beaters, of a fixed screen-cylinder 80 surrounding the shaft and beaters with its inner wall contiguous to the exterior of the beaters, said fixed screen-cylinder being provided with a series of continuous uninterrupted circumferential screen-cracks, and 85 with longitudinally laid corrugations upon its inner wall between the screen-cracks.

2. In a machine for cleaning grain, the combination, substantially as set forth, with a shaft and beaters, of a series of rings surrounding the shaft and beaters with the inner wall contiguous to the beaters, each ring being integrally formed provided with a circumferential series of exteriorly projecting 90 lugs of less width than the ring, and threaded rods extending through said lugs and provided with adjusting nuts at each side of said lugs. 95

3. In a machine for cleaning grain, the combination, substantially as set forth, with 100 a shaft and beaters, of a fixed screen-cylinder formed of a series of rings with their inner walls contiguous to the exterior of said beaters and with their side edges separated entirely around the screen, the interior surfaces of said rings being provided with inward 105 projections or ribs lying lengthwise of the cylinder and forming corrugations within the rings, said ribs retreating or vanishing at the edges of the rings, leaving the inner walls of 110 the rings smooth at each side of the crack of separation between the rings.

4. In a machine for cleaning grain, the combination, substantially as set forth, with a fixed screening-cylinder, a shaft therein, and 115 spiders on the shaft, of longitudinally corrugated beater segments secured to the spiders and provided with transversely disposed eccentric ribs having the corrugations of the segments extended transversely across them. 120

5. In a machine for cleaning grain, the combination, substantially as set forth, with a screening-cylinder, a shaft therein and spiders on the shaft, of longitudinally corrugated beater segments secured to the spiders and 125 provided with transversely disposed wedge-shaped eccentric ribs upon their exterior surfaces.

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