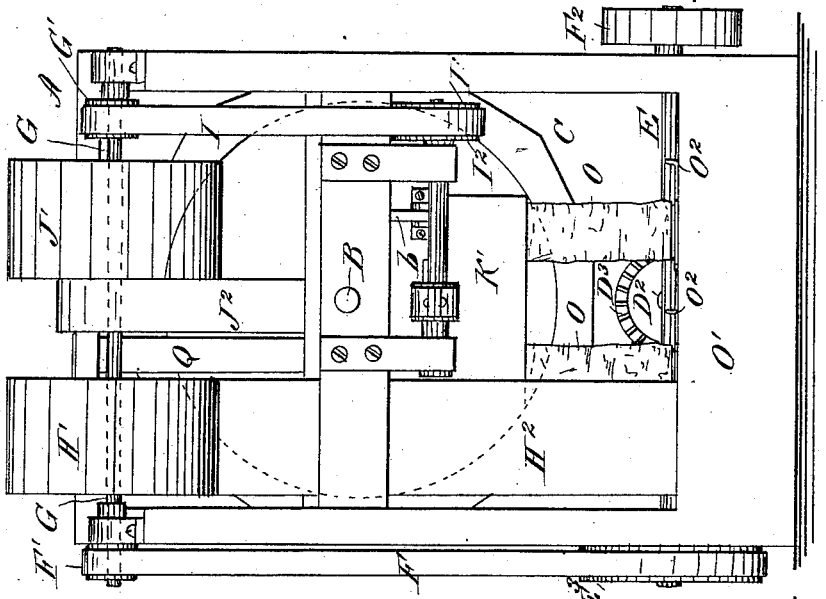
(No Model.) 2 Sheets—Sheet 1.

W. KLOSTERMANN.

MIDDLINGS PURIFIER.

No. 267,226. Patented Nov. 7, 1882.

Fig. 2.



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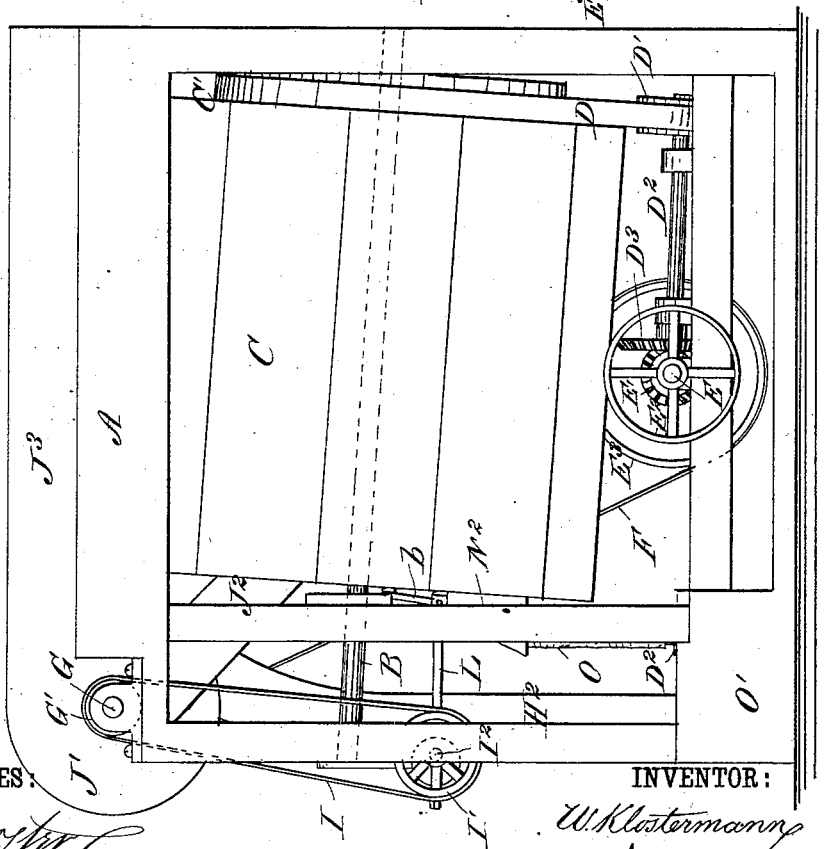

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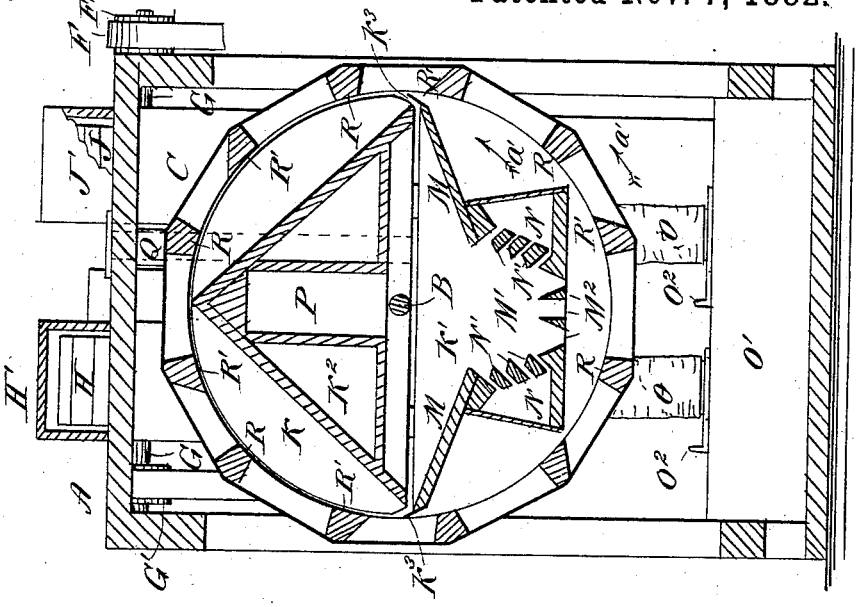

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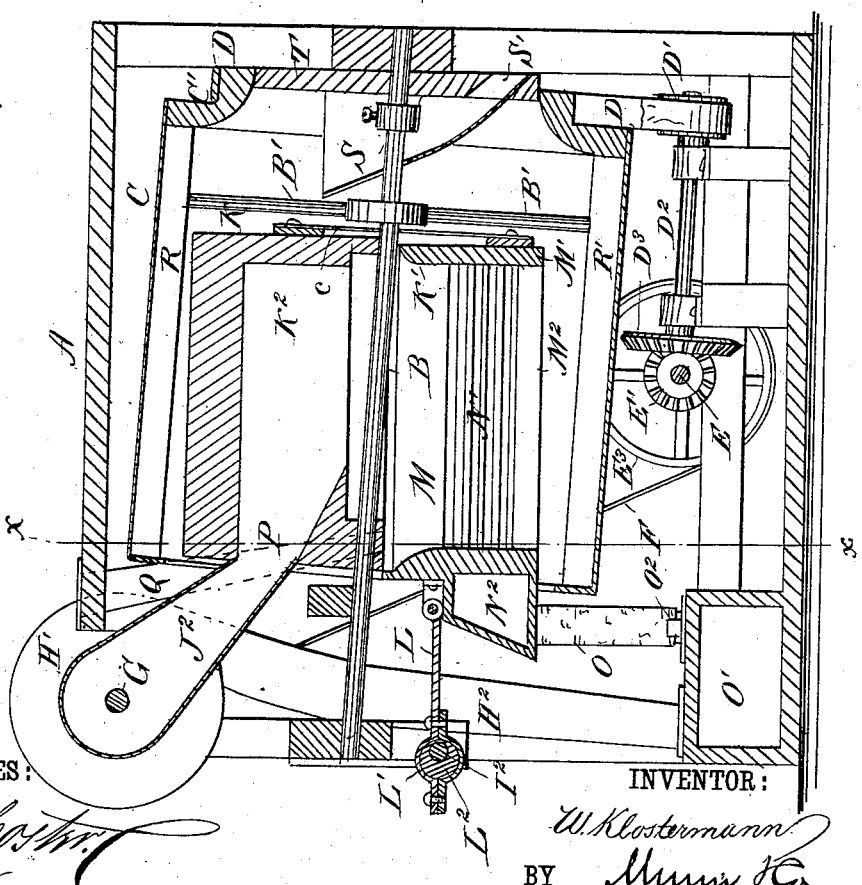

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UNITED STATES PATENT OFFICE.

WILLIAM KLOSTERMANN, OF COLOGNE, MINNESOTA.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 267,226, dated November 7, 1882.

Application filed June 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KLOSTERMANN, of Cologne, in the county of Carver and State of Minnesota, have invented a new and Improved Middlings-Purifier, of which the following is a full, clear, and exact description.

This invention relates to improvements in middlings-purifiers; and it consists in the peculiar construction and arrangement of parts, as hereinafter more fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which the same letters of reference indicate the same or corresponding parts in all the figures.

Figure 1 is a longitudinal elevation of my improved middlings-purifier. Fig. 2 is a front end elevation of the same. Fig. 3 is a longitudinal sectional elevation of the same. Fig. 4 is a cross-sectional elevation of the same on the line *x x*, Fig. 3.

In a box or frame, A, a shaft, B, is journaled, inclined slightly to a horizontal plane, and on this shaft a long drum, C, parallel with and surrounding said shaft, is rigidly mounted, near the lower end of the shaft, by arms B′. This drum may be cylindrical or polygonal in form, and may be made of wood or metal. A large belt-pulley, C′, is formed at the lower end of the drum C, and around this pulley C′ a driving-belt, D, passes, which also passes around a small belt-pulley, D′, on a horizontal shaft, D^2, journaled in the bottom part of the frame A, which shaft has rigidly mounted on its inner end a beveled-cog wheel, D^3, engaging with smaller beveled-cog wheels E′, mounted rigidly on a transverse shaft, E, journaled in the bottom of the frame A, which shaft has mounted on one end a belt-pulley, E^3, for the belt from the motor, and at the opposite end a belt-pulley E^3, over which a belt, F, passes, also passing over a wall-pulley, F′, mounted on the end of a shaft, G, journaled on the rear end of the top of the frame A. Two rotary fans, H and J, are mounted on this shaft G, and are surrounded by suitable casings, H′ and J′, provided with spouts H^2 and J^2, and the casing J′ of the fan J is provided with an outlet-channel, J^3, extending over the top of the frame A. The fan H is an air-forcing fan or blower, and the fan J a suction-fan.

Over a pulley, G′, mounted on the shaft G, a belt, I, passes, which also passes over a pulley, I′, rigidly mounted on a transverse shaft, I^2, journaled on the rear end of the frame A. A middlings-distributing box, K, contained within the drum C, is mounted loosely to slide on the shaft B. The lower section, K′, of the distributer K is hung to the upper section, K^2, at the front end by means of pivoted link-pieces *b*, and at the rear end by spring-bands *c*, which accelerate the movements of the lower section, K′, when the same is vibrated by means of a rod, L, pivoted to the front end of the lower section, K′, and provided at the opposite end with a ring, L′, surrounding a disk, L^2, mounted eccentrically upon the shaft I^2. The lower section, K′, of the distributer K has two longitudinal top boards, M, slightly inclined from the longitudinal edges toward the middle of the distributer, a longitudinal opening being formed between the inner or adjoining edges of these boards M. A longitudinal box, M′, is attached to the under sides of the boards M, in the bottom of which a series of longitudinal slots, M^2, are formed. Longitudinal wind-chambers N are formed by the sides of the box M′, the bottom of the same, and a series of longitudinal slats, N′, placed longitudinally and inclined in their width from the top and middle toward the bottom and sides of the box M′, and so arranged that the uppermost slats N′ project slightly beyond the inner edges of the boards M, and each slat projects slightly beyond the one next above it. Longitudinally-slotted walls will thus extend from the inner edges of the boards M to the bottom of the box M′, and these slotted walls will be inclined from the sides toward the middle of box M′, as shown in Fig. 4. The wind-chambers N have extension-boxes N^2 at the rear ends, and from these extension-boxes flexible tubes or conductors O extend to the wind-chest O′, into which air is forced by the blower H, the spout H^2 of which extends downward to the wind-chest O′. Sliding gates O^2 on the wind-chest O′ serve to regulate the quantity of wind admitted into the wind-boxes N of the distributer K. The upper section, K^2, of the distributer K is made in the shape of a peaked roof, and the lower edges of the inclined sides are within longitudinal inclined flanges K^3, attached to the upper outer edges of the boards

M. The spout J^2 of the suction-fan J passes into an opening, P, in the rear end of the upper section, K^2, of the distributer K. A feeding-chute, Q, extends from the top of the frame or box A through the upper section, K^2, of the distributer and delivers the middlings upon one of the boards M of the lower section, K′.

The drum C is provided on its inner surface with a series of longitudinal elevator-strips, R and R′, placed alternately. The strips R have a wedge-shaped cross-section, with the base of the wedge at the surface of the drum, and the strips R′ have an irregular wedge shape, with the smaller end at the surface of the drum, forming pockets on one side of all the strips R′ throughout their length, as shown. If the drum revolves in the direction of the arrow *a′*, the strips R carry some of the middlings upward and drop them on the right-hand side of the peaked top of the section K^2, and the strips R′ carry the middlings around sufficiently to drop them on the left-hand side of the peaked top of the section K^2. A funnel-shaped receptacle, S, provided at its bottom with a spout, S′, is attached to the inner surface of the front circular end plate, T, of the drum, which end plate fits loosely in the end of the drum C, and is attached to a cross-bar of the frame or box A, so as not to rotate with the drum C.

The operation is as follows: The middlings are fed through the chute Q upon one of the boards M, and, sliding down the same, drop and fall through the slots in the floor of the box M′ upon the drum. The air issuing from the slots between the strips or slats N′ carries the dust and light particles upward, and the draft-fan draws this dust, &c., into the fan-casing J′ and ejects it through the outlet-tube J^3. The middlings that drop upon the cylinder C are carried upward by the elevator-strips R R′ and drop on the sides of the peaked top of the section K′, down which they slide upon the boards M, are again subjected to a current of air, and so on. As the cylinder C is inclined, the heavier and purified middlings will gradually move toward the lower end of the cylinder C, and when they have arrived at this lower end of the cylinder they are again raised by the strips R R′ and drop into the funnel-shaped receptacle S, and then pass off through the bottom chute or spout, S′, of the same.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a middlings-purifier, the combination of an inclined rotary drum provided with elevator-strips on its inner surface, and a vibrating middlings-distributer arranged therein, as set forth.

2. In a middlings-purifier, the combination, with a vibrating middlings-distributer and an elevator-drum surrounding it, of devices for creating a current of air in the distributer, substantially as herein described, and for the purpose set forth.

3. In a middlings-purifier, the combination, with the elevator-drum C, of the fixed upper middlings-distributer section, K^2, and the lower vibrating distributer-section, K′, and means, substantially as described, for causing an air-current through the distributers, substantially as herein shown and described, and for the purpose set forth.

4. In a middlings-purifier, the combination, with the elevator-drum C, of the fixed middlings-distributer section K^2, the vibrating section K′, the links *b*, and the spring-strips *c*, substantially as herein shown and described, and for the purpose set forth.

5. In a middlings-purifier, the combination, with the inclined elevator-drum C and the middlings-distributer K, of the suction-fan J, the blower H, the feeding-chute Q, and the funnel-shaped receiving-vessel S, substantially as herein shown and described, and for the purpose set forth.

6. In a middlings-purifier, the combination, with the elevator-drum C and the middlings-distributer K, of the blower H, the suction J, the wind-chest O′, the tubes or conductors O, and the wind-boxes N in the middlings-distributer, substantially as herein shown and described, and for the purpose set forth.

7. In a middlings-purifier, the combination, with the elevator-drum C, of the upper middlings-distributer section, K^2, having a peaked top, and of the lower section, K′, provided with side flanges, K^3, substantially as herein shown and described, and for the purpose set forth.

8. In a middlings-purifier, the lower section, K′, of the middlings-distributer, constructed with two inclined converging side boards, M, a slotted or apertured bottom, and a series of parallel slats, N, between the inner edges of the boards M and the slotted or apertured bottom, which slats form the inner sides of the longitudinal wind-boxes N and the central space for the middlings, substantially as herein shown and described, and for the purpose set forth.

9. In a middlings-purifier, the combination, with the cylinder C and gable-roofed distributer, of the strips R R′, attached to the inner surface of the same, the strips R and the strips R′ having an irregular wedge-shaped cross-section, with the smaller end of the wedge resting against the drum, substantially as herein shown and described, and for the purpose set forth.

WILLIAM KLOSTERMANN.

Witnesses:
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JACOB MEÜNISSEN.