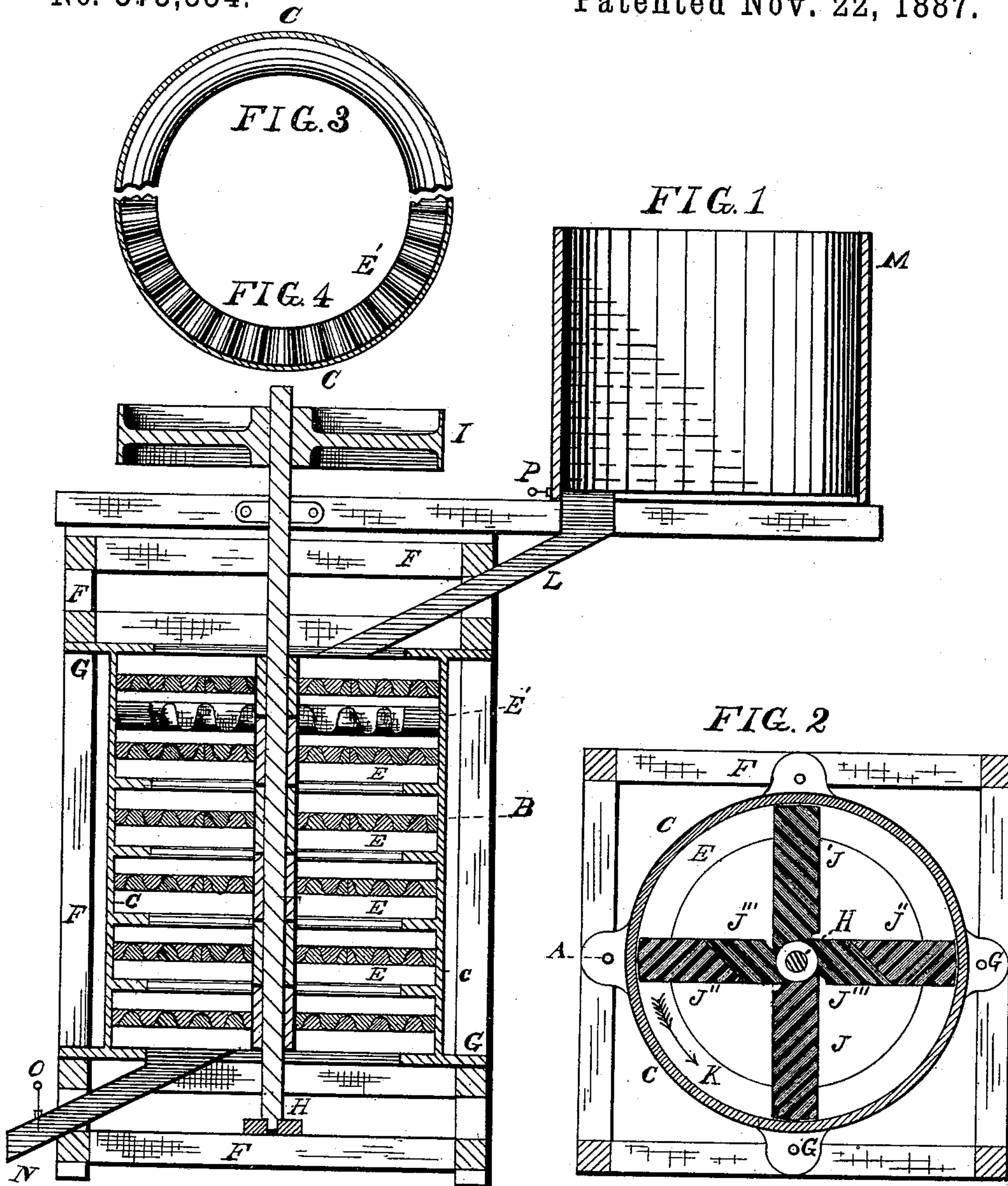


(No Model.)

J. PAUL.
GRAIN POLISHER.

No. 373,534.

Patented Nov. 22, 1887.



Witnesses
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UNITED STATES PATENT OFFICE.

JOSEPH PAUL, OF TOLEDO, OHIO, ASSIGNOR OF THREE-FOURTHS TO
THOMAS A. TAYLOR, OF SAME PLACE.

GRAIN-POLISHER.

SPECIFICATION forming part of Letters Patent No. 373,534, dated November 22, 1887.

Application filed January 5, 1887. Serial No 223,496. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH PAUL, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have
5 invented a new and useful Grain-Polishing Machine, of which the following is a specification.

My invention relates to improvements in mechanism for cleaning or polishing grain,
10 wherein the grain under treatment is polished by abrasion in a vertical cylinder, preferably having horizontal inwardly-projecting flanges, either corrugated or plain, on the interior thereof, and a vertical power shaft in its cen-
15 ter having peculiarly-constructed wings projecting therefrom in horizontal planes between the planes of said flanges, the said cylinder being provided with suitable supply and discharge pipes, and gates by which the grain is
20 kept any desired time under treatment.

In order that this apparatus shall have the desired effect upon the grain, it is absolutely necessary that the said cylinder and power-shaft shall be in vertical positions, or nearly
25 so, when performing their duty.

I am not the first to construct a machine of this class embodying the vertical cylinder having inwardly-projecting flanges in combination with a power-shaft having horizontally-
30 radiating wings, for such machines are in common use; but in every instance known to me such machines possess the serious fault of forcing the grain outwardly from the said power-shaft and against the interior surfaces of the
35 said cylinder, thereby causing a very unequal density in the compactness of the grain under treatment. To obviate this difficulty and to more nearly equalize the density of the said grain under treatment I have given the shaft-
40 wings a diagonal dressing, whereby the inner portion of a wing may be channeled, so that when speeded in the proper direction it will throw the grain nearly radially outward from the power-shaft, and the outer portion of the
45 same wing should be channeled in an opposite direction, so that by the same movement of the power-shaft the said grain will be drawn inward toward the said shaft. All of the arms may be dressed or channeled in this way; but
50 it is obvious that a part of the wings in any such machine may be wholly dressed or chan-

neled in one direction to force the grain outwardly from the power-shaft, and other wings, (about an equal number,) wholly dressed or
channeled in the opposite direction, to draw
55 the grain inwardly toward the power-shaft, without changing the nature of my invention. By these means, properly proportioned and properly speeded, an almost uniform density
60 of the grain under treatment may be secured and maintained, it being only necessary to keep the said grain at a proper height in the said cylinder. I attain this object by the mechanism illustrated in the accompanying
65 drawings, in which—

Figure 1 is a vertical section of the entire apparatus on line A, Fig. 2. Fig. 2 is a horizontal section on line B, Fig. 1, showing the part of the mechanism below the plane of the
70 said line B. Fig. 3 is a top view of a one-half section of the main cylinder C, having plain inwardly-projecting flanges E. Fig. 4 is a top view of a one-half section of the main cylinder C, having corrugated inwardly-projecting flanges E'.
75

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, F represents the main frame, which may be made of wood or of other suitable material. Attached to this
80 frame by any suitable means—such as the ears G—is the vertical cylinder C. This cylinder C is preferably made of metal, and to its interior vertical sides are preferably attached the inwardly-projecting flanges E or E', and this
85 mechanism is well adapted to do good work when all the said flanges are plain, like E, or all corrugated, like E', or when a part are plain, like E, and a part corrugated, like E', and a limited amount of good work may be per-
90 formed without the employment of any of said flanges, so that while the said flanges are not an indispensable adjunct to the acceptable operation of this mechanism, they are still a valuable addition toward its rapid performance,
95 and, in combination with other peculiar parts, must be considered a part of this invention.

In the midst of the frame F and concentric with the cylinder C is the power-shaft H, carrying the pulley I. Attached to said shaft H
100 and radiating therefrom in horizontal planes are a series of wings, J, which, for the purposes

of description, are marked J J' J'' J''', and in this instance I have chosen four of such wings as a most effective number to employ in a single plane of revolution; but it is obvious that more or fewer may be employed without changing the nature of my invention. When the flanges E are employed, the wings J are placed about midway vertically between the planes of the flanges.

The main feature of this invention consists in the construction of the upper and under surfaces of the wings J, commonly termed their "dressing," the surface lines of which are disposed in two separate series, each by its direction and rotation being adapted to work the grain under treatment in an opposite radial direction, the first series to throw it outwardly and the second to draw it inwardly, and the lines of said dressing are diagonal to direct radials from the center of rotation, and the said diagonal lines in the two series are disposed at about right angles to each other. For instance, assuming that the power-shaft H, with its wings J, is rotated in the direction of the arrow K, Fig. 1, then the outwardly-throwing series of dressings would consist of the wings J and parts of wings J'', and the inwardly-drawing series of dressings would consist of the wing J' and parts of wings J'''. In like manner, should all of the wings in one plane of revolution be constructed as shown at J and J', or as shown at J'' J''', it is obvious that their action upon the grain under treatment would be substantially identical, provided that in both cases they revolve in the same direction.

At L is a supply-pipe, which, connecting with any storage, M, is used to supply the cylinder C. At N is a discharge-pipe, having a gate, O, for controlling the delivery of the grain.

Having described my invention, its operation is as follows: Motive power is supplied, through the medium of the pulley I, to the power-shaft H, which shaft should revolve about one hundred and seventy-five times per minute. By means of pipes L and N and their gates P and O the grain is maintained at a proper height for treatment in the cylinder C. This height may be varied at the pleasure of the operator; but in all cases the depth of the grain should be such as to cover one or more sets of the wings J. As before stated, the rotation of the wings J should be in the direction to correspond with their diagonal dressing, to the end that the inner series of channels will throw the grain outwardly and the outer series of channels will draw it inwardly, thereby re-

lieving the interior surfaces of the cylinder of excessive pressure and establishing a more uniform density of the grain, under treatment.

The office of the plain flanges E is to retard the tendency of the grain under the action of the wings J, from taking a too rapid rotary motion in the direction of the movement of the arms J, and the office of the corrugated flanges E' is the same as that of the flanges E, besides which, a more abrading effect is accomplished by virtue of their corrugated form, and the work of cleaning the grain is thereby more speedily accomplished.

Having described my invention, I do not claim, broadly, a vertical cylinder having horizontal inwardly-projecting flanges on the interior thereof, combined with a vertical power-shaft having thereto secured wings which project in horizontal planes between the planes of the flanges; but

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

1. In a grain-polishing machine, the combination of a vertical cylinder having horizontal inwardly-projecting flanges on the interior thereof, the vertical power-shaft, wings secured thereto and projecting horizontally between the planes of the flanges, and provided with two series of diagonal channels extending in different directions upon the horizontal surfaces of said wings and radiating from their respective centers of rotation, substantially as shown and described.

2. In a grain-polishing machine, the combination of a vertical cylinder having horizontal inwardly-projecting corrugated flanges on the interior thereof, the vertical power-shaft, wings secured thereto and projecting horizontally between the planes of the flanges and provided with two series of diagonal channels extending in different directions upon the horizontal surfaces of said wings and radiating from their respective centers of rotation, substantially as shown and described.

3. In a grain-polishing machine, the combination of a vertical cylinder and a vertical power-shaft, wings secured thereto and projecting in horizontal planes and provided with two series of diagonal channels extending in different directions upon the horizontal surfaces of said wings and radiating from their respective centers of rotation, substantially as shown and described.

JOSEPH PAUL.

Witnesses:

W. A. COLLINS,
W. H. A. READ.