

(No Model.)

A. C. BRANTINGHAM.
PURIFIER.

3 Sheets—Sheet 1.

No. 582,411.

Patented May 11, 1897.

Fig. 1.

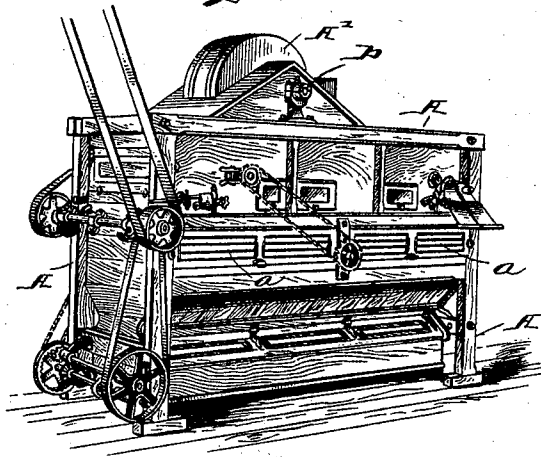
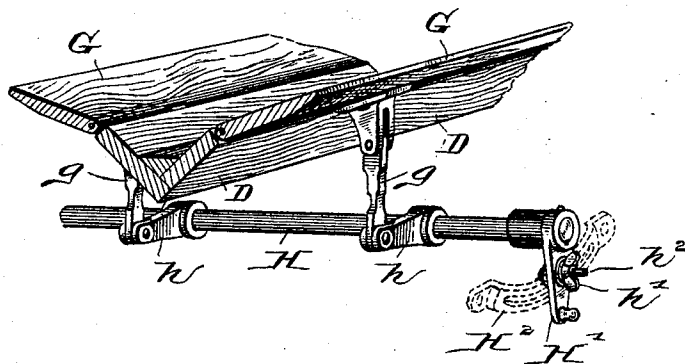


Fig. 4.



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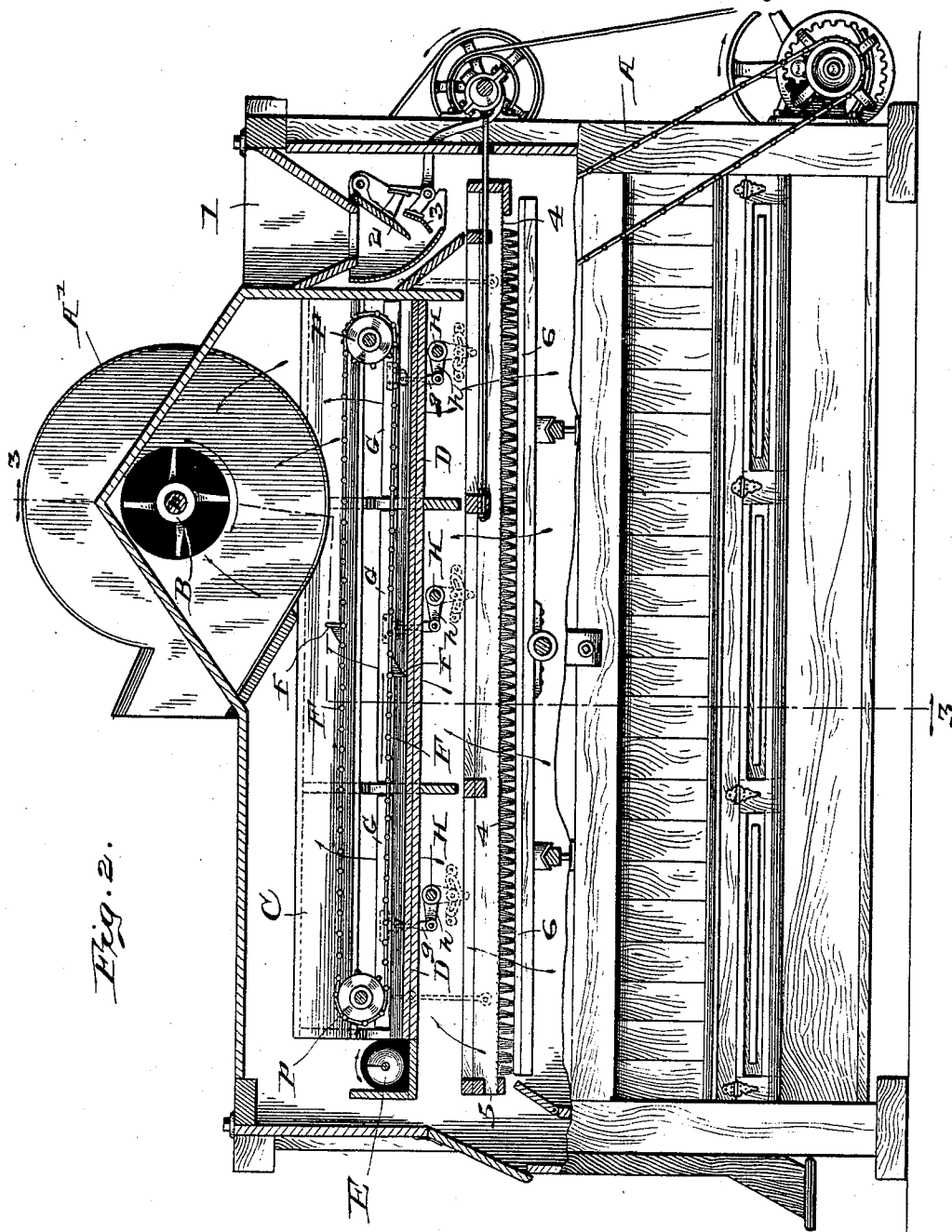


Fig. 2.

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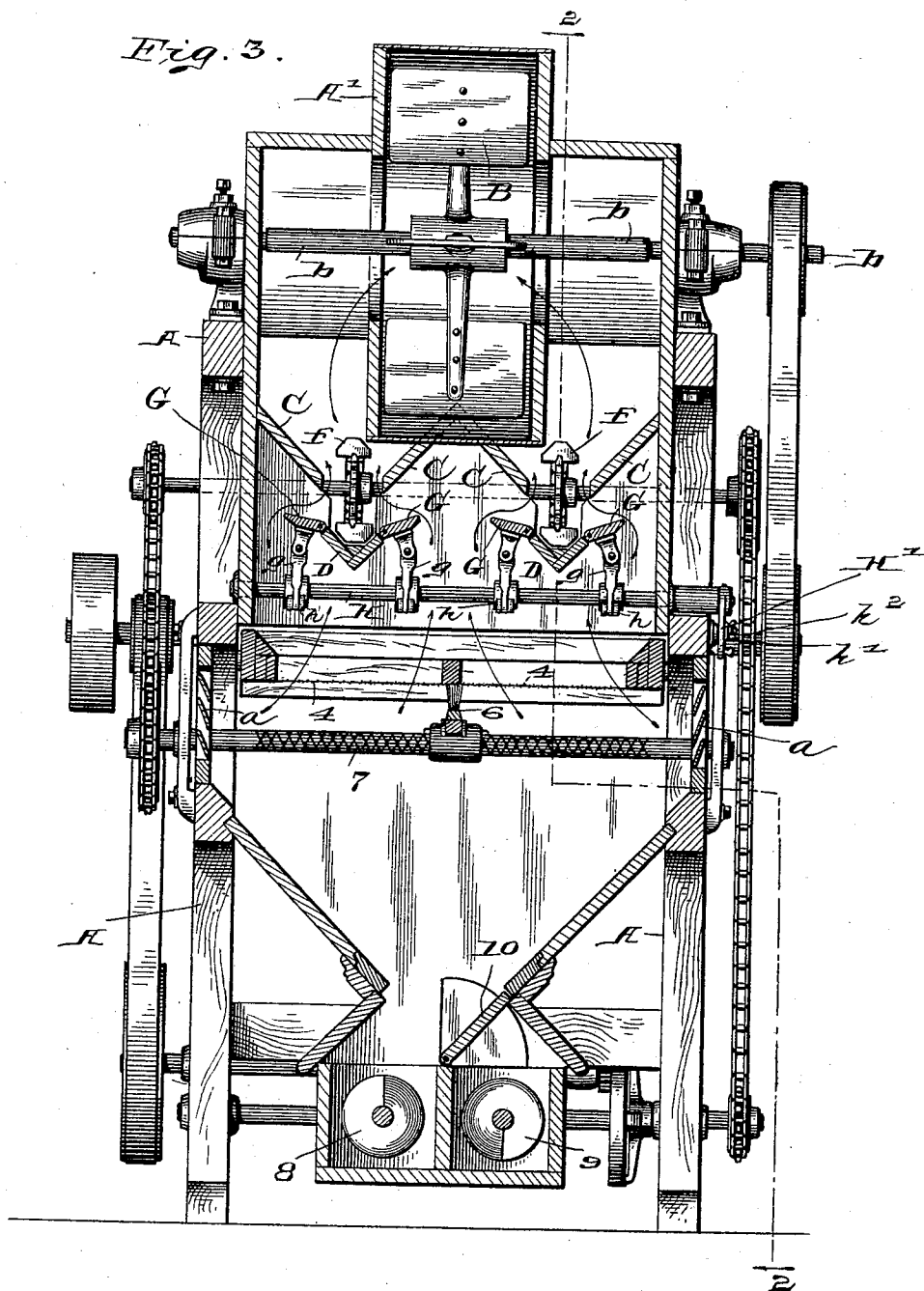
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UNITED STATES PATENT OFFICE.

ALLEN C. BRANTINGHAM, OF TOLEDO, OHIO, ASSIGNOR TO THE NORDYKE & MARMON COMPANY, OF INDIANAPOLIS, INDIANA.

PURIFIER.

SPECIFICATION forming part of Letters Patent No. 582,411, dated May 11, 1897.

Application filed January 9, 1897. Serial No. 618,628. (No model.)

To all whom it may concern:

Be it known that I, ALLEN C. BRANTINGHAM, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Purifiers, of which the following is a specification.

My invention relates to that class of machines employed in milling which are commonly denominated "middlings-purifiers."

It consists, mainly, in an improved apparatus by which the current of air passing through the machine is regulated, whereby, among other advantages, I secure an arrangement in which all those surfaces upon which deposits of material are likely to be made will, when such deposits are dislodged, discharge the same into conveyers, so that none of it can fall back onto the sieve. Heretofore "avalanches" of lodged material falling upon the sieves have been a serious detriment to the operation of the machine. This has been attempted to be remedied to some extent by providing manually-removable devices for receiving such material; but these, through carelessness or inattention, are neither so certain nor so efficient as the apparatus which forms the subject-matter of my present application, which will now be fully described, and the novel features of which will afterward be pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof and on which similar letters and figures of reference indicate similar parts, Figure 1 is a perspective view of a machine embodying my present invention; Fig. 2, a view, partially in elevation and partially in longitudinal section, as seen from the dotted line 2 2 in Fig. 3, on an enlarged scale; Fig. 3, a transverse sectional view of the same on the dotted line 3 3 in Fig. 2; and Fig. 4, a fragmentary perspective view, on a still further enlarged scale, illustrating still more clearly the leading feature of my present invention.

The machine in many respects is of substantially a well-known form, differing from those heretofore used for the most part merely in details of construction. The material is introduced into the hopper 1, and its flow is regulated by the automatic regulating appa-

ratus 2 3, through which it falls into the sieve 4, down which it passes to the other end of the machine, and the coarse heavy material is discharged at the point 5, while the various grades of good stock have been sifted through and the light fluffy material has been carried off by the air-current during the passage. A suitable brush 6 is driven back and forth by a screw 7 in an ordinary and well-known manner and serves to keep the under side of the sieve 4 clean. The good stock as it falls is conveyed away by the conveyers 8 and 9, that portion which shall be taken by each being determined by sectional gates 10, certain sections whereof are turned to discharge in one direction and other sections of which are turned to discharge in the other direction, thus dividing this part of the machine lengthwise, as is common and as will be readily understood. The sieve 4, as is also well understood, is generally of varying fineness, being finest where the unseparated material is first received and coarser at and near the discharging end.

In the upper central portion of the machine is located a fan-case A', within which, mounted on a shaft b, is an exhaust-fan B, and in the sides of the main casing A of the machine are slats a, between which are openings for the admission of air, these openings being located, as will be most clearly seen by an inspection of Fig. 3, just below the sieve 4. The consequence is, when the machine is in operation, that there is a current of air flowing in through these air-openings, between the slats a, and thence up through the sieve and the air-passages thereabove to the eyes of the fan, and this, as is well known, carries off and up to the fan the light fluffy material which it is desired to separate from the heavier stock and drives it thence to a dust-collector or wherever may be desired.

Just below each fan-eye is constructed an open-bottomed trough having inclined sides C. Beneath these open-bottomed troughs are placed close-bottomed troughs D, adapted to receive any material which may fall through the openings in the bottoms of the troughs C. These troughs extend substantially from end to end of the machine and at one end discharge into the conveyer E. Chains or belts (pref-

erably sprocket-chains F) are mounted upon wheels or pulleys *p* at or near each end of these troughs and are provided with conveyer-blades *f*, which are shaped to substantially fit the troughs D. The consequence is that as these are propelled any material which has fallen into these troughs will be conveyed to and discharged into the conveyer E, whence it may be conveyed out of the machine.

Hinged to the upper edges of the sides of the troughs D are wings G, which form continuations of said sides and are adapted to be operated to vary the size of the openings between themselves and the lower edges of the sides of the troughs C. These wings are operated by rock-shafts H through arms *h* and links *g*. At the outer ends these shafts have crank-handles H', and segments H² (shown in dotted lines in Fig. 4) are secured upon the sides of the machine, and by means of said segments, bolts *h*², and thumb-nuts *h'* the shafts may be adjusted to and secured at any desired point and the wings thus given any desired position, as will be readily understood.

It is desirable that the openings between the wings G and the edges of the sides of the trough C should be variable at various points in the length of the machine, and I therefore divide said wings into sections and provide operating means for each section. As will be observed by an examination of Fig. 2, there are in the machine shown three sets of wings and three operating-shafts H with their attachments. By means of a greater number of variations of position of these parts might, of course, be secured. It may be remarked that in the drawings, especially in Figs. 3 and 4, the extreme open position of these wings is illustrated and that commonly in operation the wings would be elevated to a position more nearly in line with the sides of the troughs to which they are attached, but of course the position is determined by the operator and is varied from time to time in accordance with the needs of the work being performed.

It will be observed that the sides of all those parts upon which any portion of the material drawn upwardly by the air-current may be deposited are arranged to discharge ultimately into the troughs D and that by no possibility can any portion of such material upon becoming dislodged from any of such surfaces be thrown back onto the sieve 4. Such deposits, too, are continuously automatically removed by the machine itself without attention from the operator, and the air-current can be controlled at any point throughout the length of the machine and from both sides of each trough equally by simply rocking a shaft or shafts H from one position to another. The equal draft from both sides of each trough I regard as a matter of considerable consequence, as the operation of the air is thus

more evenly distributed over the sieve and through the material deposited.

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

1. In a purifier, the combination, with the sieve and a fan, of a series of troughs located between the sieve and the fan, certain of said troughs having open bottoms, and certain other of said troughs being located below the open bottoms of the first and having hinged wings which form a continuation of their sides, means for adjustably positioning said wings, and conveyers located in said lower troughs, whereby any material deposited therein will be carried to and discharged from the ends thereof, said purifier having ingress-openings below the sieve whereby the air-current flows from below through said sieve, and thence over the edges of the wings of the lower troughs and up through the open bottoms of the open troughs to the fan.

2. The combination, in a purifier, with the sieve, and a fan for drawing off the light material, of trough-like structures interposed in the path of the air-current, the upper one having an open bottom, and the lower one being positioned below and covering said open bottom of the first and provided with adjustable wings forming extensions of its sides, whereby the space between the sides of the upper and lower trough structures can be regulated, and a conveyer located within said lower trough structure whereby the material deposited therein may be conveyed away, substantially as set forth.

3. The combination, in a purifier, of a trough structure to receive deposits of light material, wings forming extensions of its sides, said wings being divided into sections, and a separate adjusting apparatus for each section, whereby the positions of the wings at various points in the length of the trough may be independently adjusted, substantially as set forth.

4. The combination, in a purifier, with the sieve, and a fan whereby the light material is drawn away, of a trough for receiving deposits of such material interposed between the sieve and the fan, wings hinged to the sides of said trough and forming extensions therefor, and means for adjusting said wings consisting of a rock-shaft, arms thereon, and links connecting said arms to said wings, whereby each set of wings can be adjusted simultaneously and alike, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Toledo, Ohio, this 28th day of November, A. D. 1896.

ALLEN C. BRANTINGHAM. [L. S.]

Witnesses:

GEO. J. RUDD,
M. W. PLATT.