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FROST & MONROE.

Mode of Separating Flour from Bran.

No. 6,148. Patented Feb. 27, 1849.

Fig: 1.

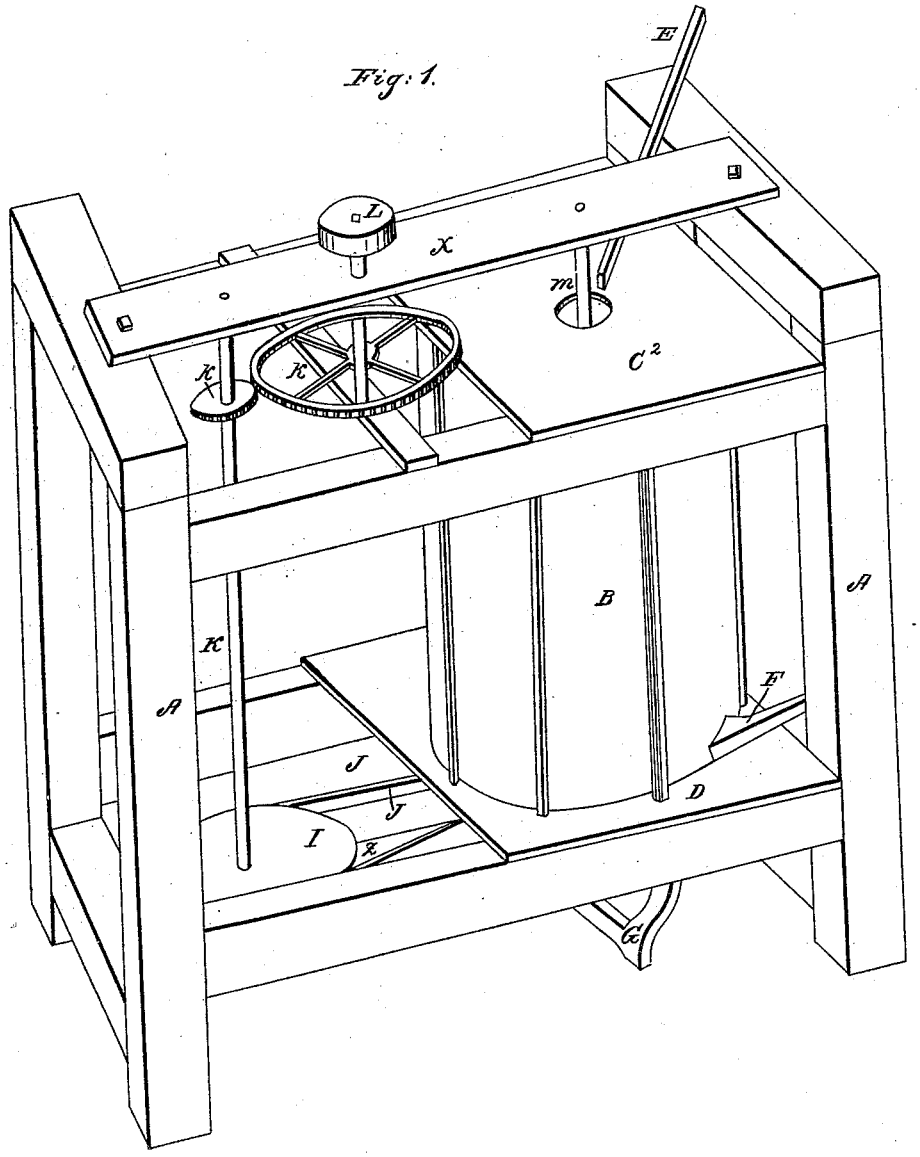

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Fig: 2.

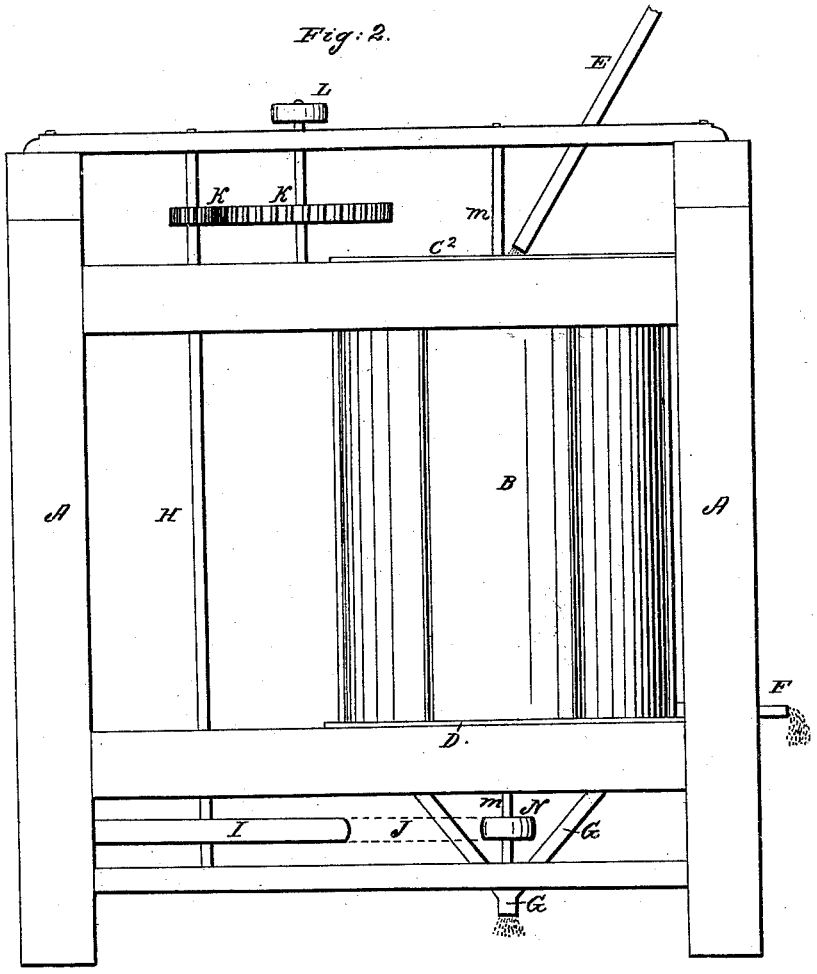

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Fig: 4.

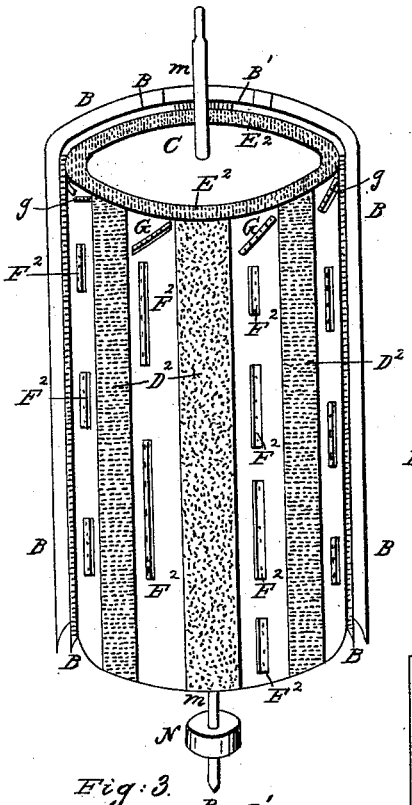


Fig: 5.

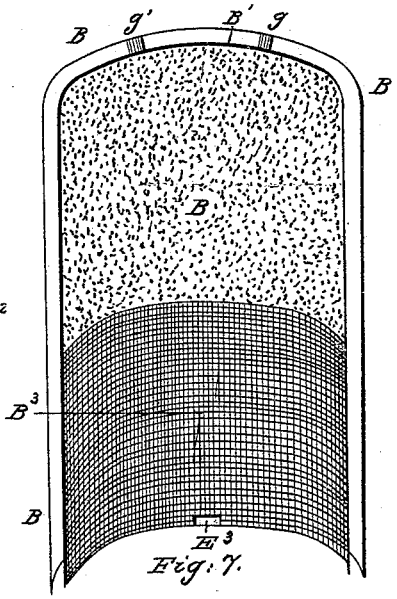


Fig: 7.

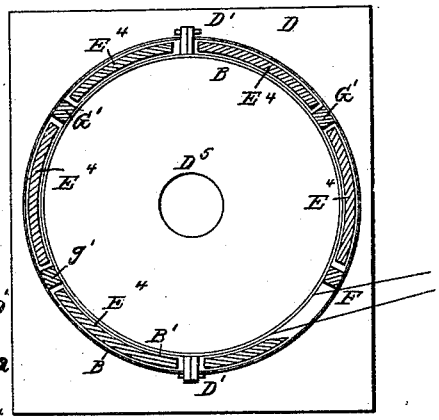
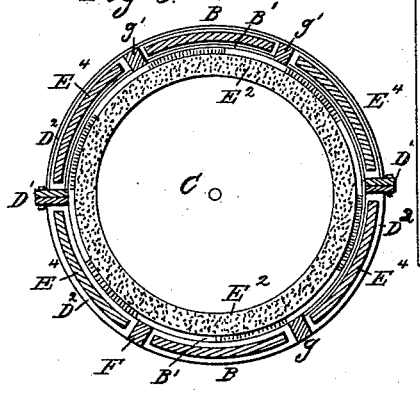


Fig: 3.



4 Sheets—Sheet 4.

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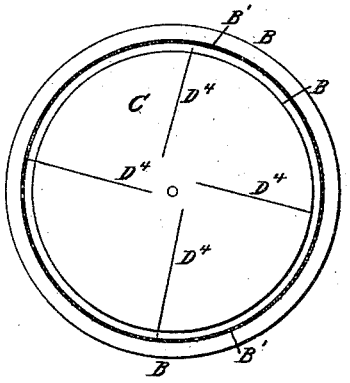
Fig: 6.



UNITED STATES PATENT OFFICE.

I. FROST AND J. MONROE, OF ALBION, MICHIGAN.

MACHINERY FOR SEPARATING FLOUR FROM BRAN.

Specification forming part of Letters Patent No. 6,148, dated February 27, 1849; Reissued May 13, 1855, No. 302.

To all whom it may concern:

Be it known that we, ISACHAR FROST and JAMES MONROE, of Albion, in the county of Calhoun and State of Michigan, have invented a new and useful Machine for Cleaning and Separating Flour from Bran, Shorts, and Ship Stuffs; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view. Fig. 2 a longitudinal or side elevation. Fig. 3 a view of the upper end of the cylinder, bolt, and case. Fig. 4, a perspective view of cylinder, showing part and position of the bolt and case. Fig. 5 a view of bolt and edges of case. Fig. 6 a view of lower end of the cylinder. Fig. 7, a view of platform and conductors.

Fig. 1 is the full machine in perspective, the frame of which (A, A,) should be made about two and a half feet wide by four feet long inside, and about four feet high, and of timber at least four inches square.

B represents a cylindrical case of sheet iron supported on the inside by ribs running lengthwise two inches square said case to be twenty two inches in diameter and thirty two inches high, inclosed in which, (and supported by and attached to the ribs upon the inside of the case) is a cylindrical bolt made of wire bolting cloth B, B and perforated sheet iron B′ eighteen inches in diameter and thirty two inches high; also inclosed within said case, and within the bolt is a revolving cylinder C, sixteen inches in diameter, and twenty nine inches long, and attached to, and driven by, the shaft M.

At C^2, is represented the cover or top to the case (B) through the center of which is a hole 4 inches in diameter rising through which is the shaft M.

At D is shown the platform on which rests the case, and through the center of which is to be a hole D^5 similar to that in the top (C^2) through which may pass the shaft M′; also for the free admission of air, being more fully shown at Fig. 7.

At E is shown a conductor used to convey bran &c., through the top to the inner portion of cylinder for cleaning.

At F is shown a conductor through which is discharged the bran, &c., after cleaning.

At G are shown conductors to convey off the flour, the upper ends of which are connected with the bottom of the bolt; or the spaces E or openings in the bottom D between the bolt and the case.

At H, I, J, K, K, and L, respectively, are shown the shaft, pulley, band, pinion, spur wheel and driving pulley, used to drive the cylinder the required velocity—the band J passing from the pulley I, and around the pulley N attached to lower end of the shaft M, M, as shown at Fig. 2.

Fig. 2 at A, A, represents side view of the frame; B the case, surrounding the bolt, cylinder, &c.; C^2, top of case; D, platform; E, conductor to feed the machine; F, conductor for bran after cleaning; G, G, flour conductor; H, shaft; I, large pulley; J, band; K, K, pinion and spur wheel; L, driving pulley; M, M, cylinder shaft; N, pulley.

Fig. 3 shows the top view of the cylinder, bolt and case with the top (C^2 Fig. 1) removed. B shows the edge of case. B′ the edge of bolts. C, the upper end of the cylinder; D′, D′, Fig. 7 an extension of ribs upon the outside of the case to admit of bolts to fasten the case (which is made in sections) together.

Fig. 4 shows in perspective the cylinder made of wood and parts of one half of the case and bolt; B B, the case; B′, B′, B′, bolt; C, the cylinder; at D^2, D^2, D^2, on the cylinder is represented sections or strips of teeth projecting outward about three fourths of an inch from the surface, the teeth may be made of brads, or small nails, with the heads removed and driven in; or, may be made by driving large tacks through strips of leather at intervals of one fourth of an inch, more or less, and nailing the strips of leather on the cylinder with the points of the tacks projecting; the latter mode is the best; the sections of teeth should cover about one half of the surface of the cylinder. E^2, is a similar strip to those at D^2, constructed in the same manner and nailed on the upper end and around the outer edge with the teeth projecting upward, it may be from two to 4 inches wide.

At F^2, F^2, and upon the surface of the cylinder is shown strips, or wings of sheet iron or tin fastened to the cylinder with one edge (or both) turned at right angles with the surface of the cylinder so as to form wings, they may be put on at regular or irregular

intervals, so as to balance the cylinder; the upper wings as at G to be put on spirally so as to cause a downward and spiral motion to the current of air between the cylinder and the bolt, but in no case must these wings project beyond the ends of the teeth.

At Fig. 5 is shown sections of the bolt and case, B, B, edges of case, B′, B′, the upper part of bolt made of sheet iron thickly perforated with small holes, by indentation with a sharp pointed punch, and put on with the rough side next the cylinder, so as the more effectually to scour the bran &c. B^3 the lower portion of bolt, made of fine wire bolting cloth.

At E^3 is shown an opening leading into the escape conductor F (Figs. 1 and 2 and 7); the bolt may be made in the manner described or the entire bolt made of either substance described above or any other like substances which will cause the same results. At Fig. 6 is shown the lower end of cylinder case and bolt, B, case, B′, bolt, C, cylinder, D^4, D^4, D^4, D^4, wings projecting downward from the end of the cylinder about one and three fourths of an inch.

D Fig. 7 is shown the platform G′, G′, ribs for dividing the annular space between the case and bolt into sections. D^5 a hole for the free admission of air and through which the shaft of the cylinder is to pass. E^4, E^4, are the segmental spaces or openings in the bottom D between the bolt and case; these spaces should be a segmental mortise cut through the platform corresponding in shape and nearly in size with the annular space, through which they pass the flour (after being bolted) into the conductors G, Fig. 1. F the conductor for the bran after cleaning.

The above described machine when put in the required motion (about eight hundred revolutions per minute) will (if constructed as above) scour and separate from bran, shorts &c. all the remaining particles of flour which may adhere after bolting. After being put in motion the bran, or shorts, or ship stuffs, should be fed in, through the conductor E Fig. 1, thence falling upon the top of the cylinder is carried by the inward current of air over the end and down the sides between the cylinder and bolt when it is beaten or scoured so as to remove all remains of flour the bran continuing in its course (not being permitted to escape through the fine bolting cloth) downward until by a reversed current of air drawn from the bottom by the wings on the lower end of the cylinder it is forced through the conductor (F Fig. 7 and Fig. 1) while the flour passes through the bolt (with the current of air drawn in from the top) into the spaces between the bolt and case, thence passes downward into the conductors G, (Fig. 1); thence to the cooler of the mill, when it is again bolted and fit for use.

The perforated portion of the bolt at B′ may be covered on the convex surface with cloth to prevent the escape of the flour.

The vertical parallel strips of iron H, on the cylinder C may be made rough by punching for scouring the bran.

Having thus fully described the construction, arrangement, and operation of the several parts of our machine we will now add that we do not mean to claim to be the original inventors of a cylinder, nor of a combined punched and reticulated cylinder, nor of a cylinder covered with strips of punched sheet iron and strips of leather filled with tacks such as are used in smut machines nor the arrangement of gearing by which the machine is propelled; but

We do claim to be the original and first inventors of the combination and arrangement of the external upright stationary close cylindrical case B, with the internal combined punched and reticulated upright stationary scourer and bolt B′ B^3 and revolving cylindrical scourer and blower C, constructed, arranged, and operated in the manner and for the purpose herein fully set forth, by which the fine flour that usually adheres to the bran after being subjected to the first bolting operation is now completely separated from the bran and collected in the annular space between the cylindrical bolt and cylindrical case, from whence it descends through the segmental openings in the horizontal base upon which the said bolt and case rest, into conducting spouts, as aforesaid, while the bran is blown from the interior of the bolt through a spout leading through the external case, as aforesaid the meshes of the bolting cloth being kept open by the pressure of air produced inside the combined cylindrical scourer and bolt by the manner in which the oblique, and radial, and parallel wings are arranged on the revolving scouring and blowing cylinder, as above set forth.

In testimony whereof we have hereunto signed our names before two subscribing witnesses.

ISACHAR FROST.
JAMES MONROE.

Witnesses:
J. A. Baily,
Saml. J. Henderson.

[First Printed 1913.]