No. 740,344. PATENTED SEPT. 29, 1903.

C. L. WHITE.

FLOUR BOLTING MACHINE.

APPLICATION FILED APR. 18, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

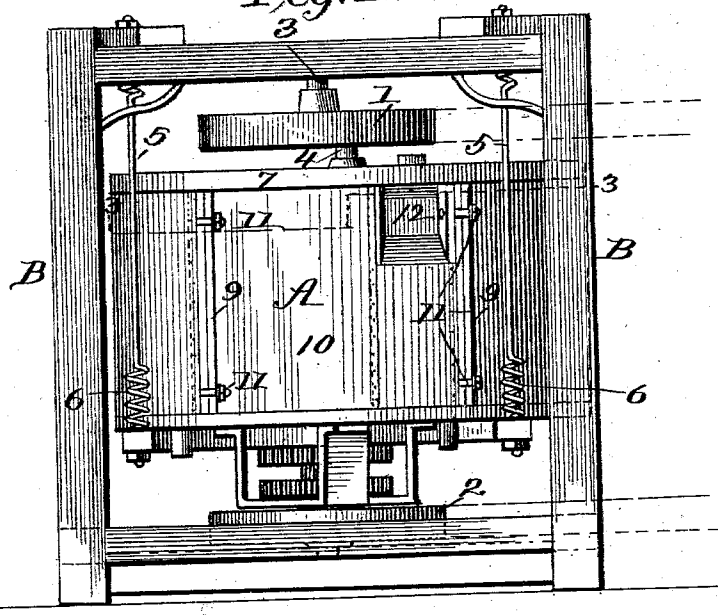
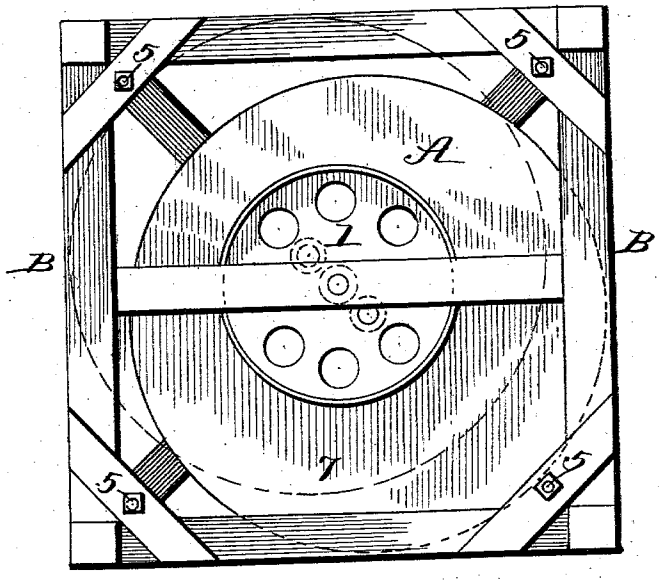


Fig. 2.



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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3.

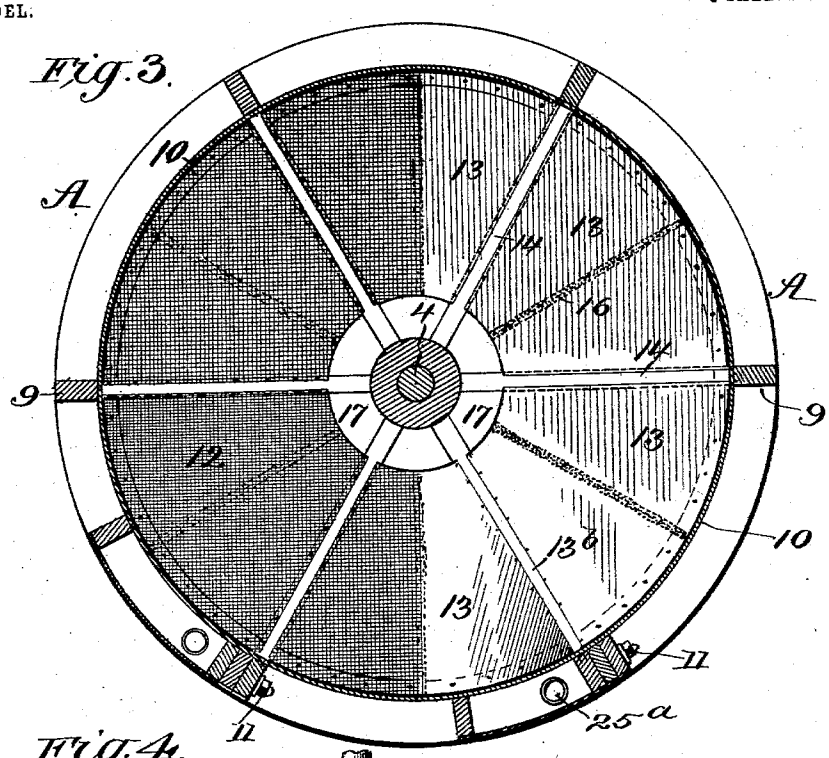

Fig. 4.

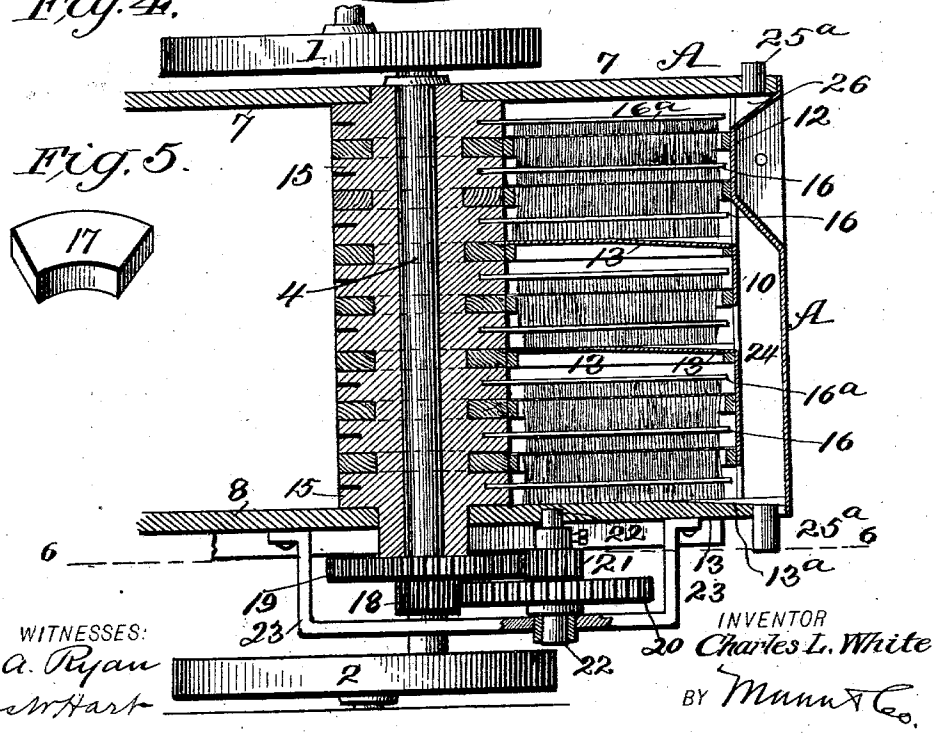

Fig. 5.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 6.

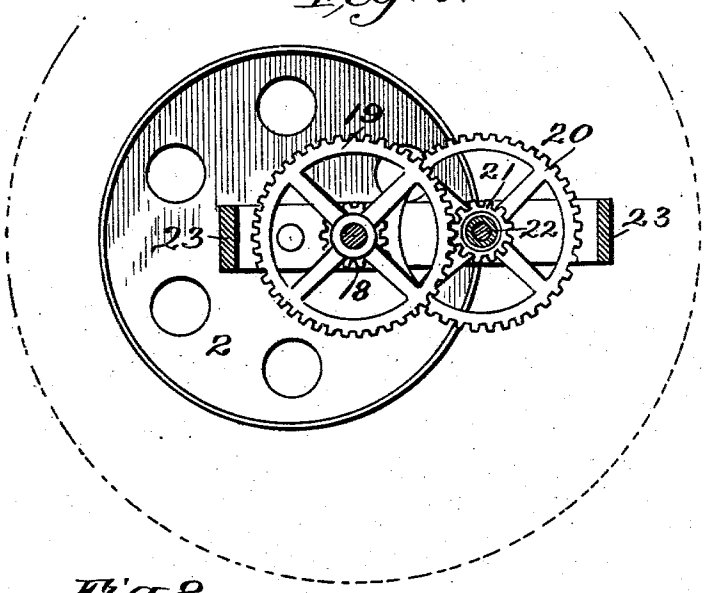

Fig. 7.

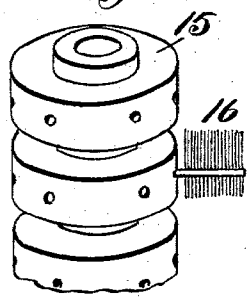

Fig. 8.

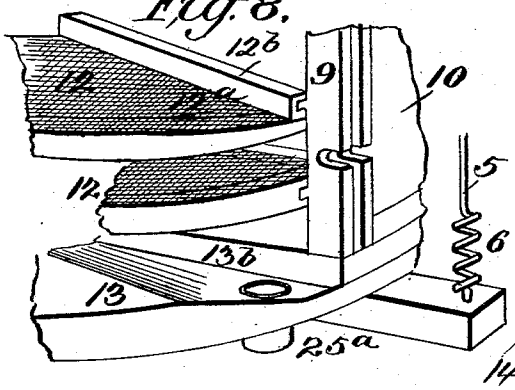

Fig. 9.

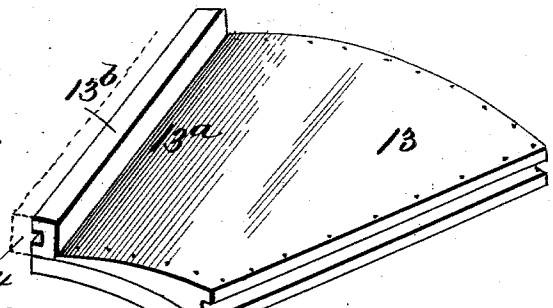

Fig. 10.

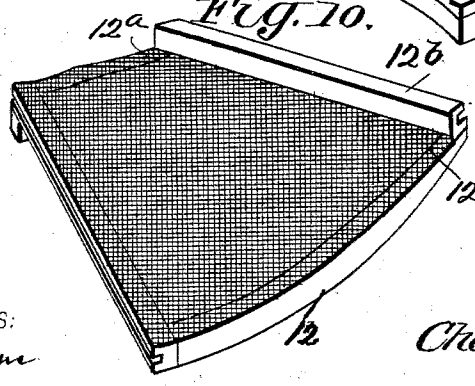

Fig. 11.

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No. 740,344. Patented September 29, 1903.

UNITED STATES PATENT OFFICE.

CHARLES L. WHITE, OF ANDERSON, INDIANA.

FLOUR-BOLTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 740,344, dated September 29, 1903.

Application filed April 18, 1903. Serial No. 153,304. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. WHITE, a citizen of the United States, and a resident of Anderson, in the county of Madison and State of Indiana, have made certain new and useful Improvements in Flour-Bolting Machines, of which the following is a specification.

My invention is an improvement upon that for which I have received Letters Patent No. 672,248, dated April 16, 1901.

The present invention includes improvements in the means for imparting a swinging body movement to the cylinder or box of the machine; also, in the means for rotating independently of the cylinder proper the horizontal brushes which clean the parallel sieves or screens and gathering-boards arranged below them; also, in the construction of such gathering-boards whereby they are better adapted to deliver the sifted product to spouts or conductors arranged at the outer side of the cylinder; also, other minor features of construction and arrangement of parts, as hereinafter described and claimed.

In the accompanying drawings, three sheets, Figure 1 is a side view of my improved machine. Fig. 2 is a plan view of the same. Fig. 3 is a horizontal section of the machine. Fig. 4 is a vertical central section of a portion of the machine, the gearing being shown in full lines. Fig. 5 is a perspective view of a sector-shaped filling-piece for the multiple hub or hollow grooved shaft of the cylinder. Fig. 6 is a horizontal section on the line 6 6 of Fig. 4. Fig. 7 is a perspective view of the multiple hub or hollow shaft which carries the sieve-brushes. Fig. 8 is a detail perspective view of a portion of the cylinder, (a portion of the casing being removed,) illustrating the arrangement of the sieves and the construction of the gathering-boards and sieves. Fig. 9 is a perspective view of one of the sections of the imperforate gathering-boards. Fig. 10 is a perspective view of one of the sieve or screen sections. Fig. 11 is a detail cross-section illustrating the joint and sliding connection between the sieves or screens and the fixed ribs that support them.

Referring in the first instance to Figs. 1 and 2, A indicates the cylinder or circular body of my improved machine, and B the vertical frame in which the same is arranged and duly supported. 1 and 2 are combined band and fly wheels arranged, respectively, above and below the cylinder A and journaled at 3 in the center of the top and bottom portions of frame B. The cylinder A is eccentrically connected with the band-wheels 1 2 by means of a shaft 4, (see Fig. 4,) which is fixed in sockets in said wheels, so that it does not rotate, but is carried around bodily with the wheels. As in my previous invention, the cylinder is suspended by four rods 5, which are provided at their lower ends with spring-coils 6, which furnish a slightly-elastic support, allowing a corresponding vertical vibration or tremulous movement of the cylinder as a whole. Thus the wheels or pulleys 1 2 being driven by belts or by a single belt, as the case may be, the cylinder A is swung in a circle around the vertical axes of the wheels without, however, rotating on its own axis.

The cylinder proper is composed of top and bottom portions or heads 7 and 8, vertical bars 9, connecting such heads, (see Figs. 1 and 3,) and a sheet-metal or other casing 10 arranged within the said bars. A portion of the casing is made removable, as will be seen in Figs. 1 and 3, where the same is secured by screw-bolts 11, the latter being arranged in notches in certain fixed bars. Within the casing 10 is arranged a series of horizontal sieves or screens 12 and a series of imperforate gathering boards or shelves 13. (See Figs. 4 and 8.) In both cases the sieves and gathering boards are constructed in truncated sector-shaped sections, (see Figs. 9 and 10,) which are detachable, the same being supported upon radial spokes or bars 14. (See Figs. 3 and 11.) These spokes or bars are supported at their outer ends by the vertical bars 9, and their arrangement and support at the inner ends is as follows: The shaft 4 of the cylinder, which is concentric with the latter, passes through a hollow shaft, multiple-groove or sectional hub 15. (See Fig. 4.) As shown in Fig. 7, such shaft or hub 15 is constructed in circular sections separated by narrow spaces, such sections being provided with radial bores to receive the shafts of brushes 16. The aforesaid spokes or bars 14 extend inward into these grooves, as shown in Fig. 3, and are separated by truncated sector-shaped filling-pieces 17, (see Fig. 5,)

which are constructed of wood. Such filling-pieces are secured to the spokes or bars 14 by some suitable cement, and are thus held immovable with the bars, so that both slide together in the grooves of the hub as the latter rotates. In brief, the bars 14 and filling-pieces 17 remain immovable with the body of the cylinder, while the hub 15 and the brushes attached thereto rotate independently of the cylinder. The outer sides or edges of the filling-pieces 17 are flush with the edges of the adjacent hub-sections of the hollow shaft 15. As indicated in Fig. 11, each bar 14 is provided with a tongue or tongues adapted to enter the corresponding groove or grooves in the sieve or gathering-board sections, which it supports, such sections being thus adapted to be readily slid into and out of place. The hollow shaft or multiple hub 15 rotates on the central shaft 4 independently thereof and also of the cylinder proper. The means for imparting such movement will be understood by reference to Figs. 1, 4, 6. As previously stated, the shaft 4 is keyed fast in the band wheels or pulleys 1 2. A spur-pinion 18 is keyed no said shaft, and above the same is a large spur-gear 19, which is keyed on the hub 15 and rotates therewith around the shaft 4. The aforesaid pinion 18 meshes with a gear 20, which is fast with the pinion 21, that in turn meshes with the hub-gear 19. The said gear 20 and pinion 21 are mounted upon a shaft 22, which is journaled at its lower end in a bracket 23, secured to the under head 8 of the cylinder A, while the upper end of said shaft has its bearing in said lower head 8. It will now be understood that as the pulleys or wheels 1 2 are rotated and the shaft 4 thus carried bodily around the axial center of said pulleys and the cylinder A swung bodily with said shaft independent rotation is imparted to the hollow shaft or multiple hub 15, whereby the brushes are carried around, over, and under the sieves or screens 12 and over the gathering-boards 13. This rotation of the brushes with the hub 15 is slow; but it is evident that by change of the differential gearing 20 and 21 any required speed may be imparted without change in the principle of my invention or the general operation of the machine. It will be further seen that by the support afforded by the radial spokes or bars 14 and the filling-pieces 17, the latter sliding with the bars in the grooves of the multiple hub 15, the sieves and gathering-boards are held fixed in position as the brushes rotate. The brush-shafts are held in radial sockets in the hub-sections, as before stated, and any suitable means may be employed for securing them. Certain of the brushes, 16^a, (see Fig. 4,) are single or provided with a single depending line of bristles, while the others, 16, have also upwardly-projecting bristles. It is obvious that the single brushes are adapted to operate upon the top sieve or screen, while the double brushes 16 are adapted to act against the under side of a sieve or screen and also against the sieve or gathering-board arranged below. Thus both the upper and under sides of the several sieves or screens are brushed and cleaned by the brushes as the latter are carried slowly around, and the meshes of the sieves are thereby kept clear, so as to do the most effective work. The length and elasticity of the bristles of the several brushes are such as to enable them to pass easily over the thick bars 14, projecting from the under surface of the several sector-shaped sections 12.

An important feature of my invention is the construction of the gathering-boards and sieves with an inclined or trough-like portion 12^a and 13^a. (See Figs. 1, 8, 9, 10.) In brief, on one or more sides of the machine or cylinder A one of the sieve-sections 12 is inclined downward toward the adjacent rib 12^b, (see Figs. 8 and 10,) whereby a trough-like depression is formed. Thus coarse material swept around over a series of sieves which are in the same plane is collected in the groove or trough 12^a by the brushes, from which place it is carried outward into a spout or vertical conductor and discharged. Gathering-boards 13 are also provided (see Figs. 4 and 9) with a similar depression 13^a and adjacent rib 13^b. The fine material or flour received from the screen above is swept around on the gathering-boards and collected at 13^a and discharged laterally into a spout 24. (See Fig. 4.)

It will be seen that the ribs 12^b and 13^b, Figs. 9 and 10, form an effective stop for the material swept around by the brushes over the sieves or the gathering-boards and that even without the adjacent depression or groove a certain desirable result may be effected. The arrangement is such that the trough 12^a of a sieve-section is not directly over a corresponding trough-section of a gathering-board, nor is a trough-section of one set of sieves over a like section of the set of sieves directly below.

As indicated in Figs. 1 and 4, the crushed grain or material to be bolted is fed into the cylinder A through a spout 25 and conveyed on the first screen by an incline 26. The several screens are graduated in respect to the mesh, the upper one being the coarser, the next finer, and so on down. From the side spout or conduit 24 the bolted material is delivered by a spout 25^a. It will be observed in said Fig. 4 that the bottom or head 8 of the cylinder constitutes the lowest gathering-board of the series. In place of double brushes 16^a I may employ two single brushes 16, the bristles of one projecting upward and the others downward.

What I claim is—

1. The combination, with a suitable frame and pulleys arranged at top and bottom thereof and having alined axes, of an interposed cylinder, a central shaft passing through the center of said cylinder and keyed in the two pulleys eccentrically, so as to be carried

bodily around the axes of said pulleys, a hollow shaft or multiple-groove hub mounted upon such shaft and arranged concentrically with the cylinder, a series of brushes carried by said hollow shaft, and gearing for imparting rotation thereto, the same consisting of a pinion which is fast on the fixed shaft, a spur-wheel which is fast on the hollow shaft, and intermediate gears imparting rotation from the pinion to the hollow shaft, substantially as shown and described.

2. In a flour-bolting machine the cylinder proper having a series of horizontal screens and imperforate horizontal gathering-boards arranged below the screens the latter having a radial depression in the upper surface, a radial rib adjacent to and projecting above such depression, and a series of brushes adapted to sweep over the screens and gathering-boards substantially as shown and described.

3. In a flour-bolting machine the combination with a swinging cylinder and means for carrying it bodily in a circular path of horizontal screens and gathering-boards arranged within the same, the gathering-boards being imperforate and having inclines in the upper surface forming radial depressions as specified, upwardly-projecting radial ribs adjacent to such depressions and brushes which rotate over said screens and gathering-boards substantially as shown and described.

4. In a flour-bolting machine the combination with a cylinder proper and means for agitating it of horizontal screens and imperforate gathering-boards both screens and gathering-boards provided with radial depressions in their upper sides, a rotatable shaft arranged in the center of the cylinder, means for rotating said shaft and radial brushes affixed thereto and adapted to work on the surface of the screens and gathering-boards substantially as shown and described.

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Witnesses:
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