2 Sheets—Sheet 1

S. BERNHEISEL & J. YOUNG.

FLOUR BOLTING-MACHINE.

Patented Nov. 28, 1876.

No. 184,821.

Fig. 1.

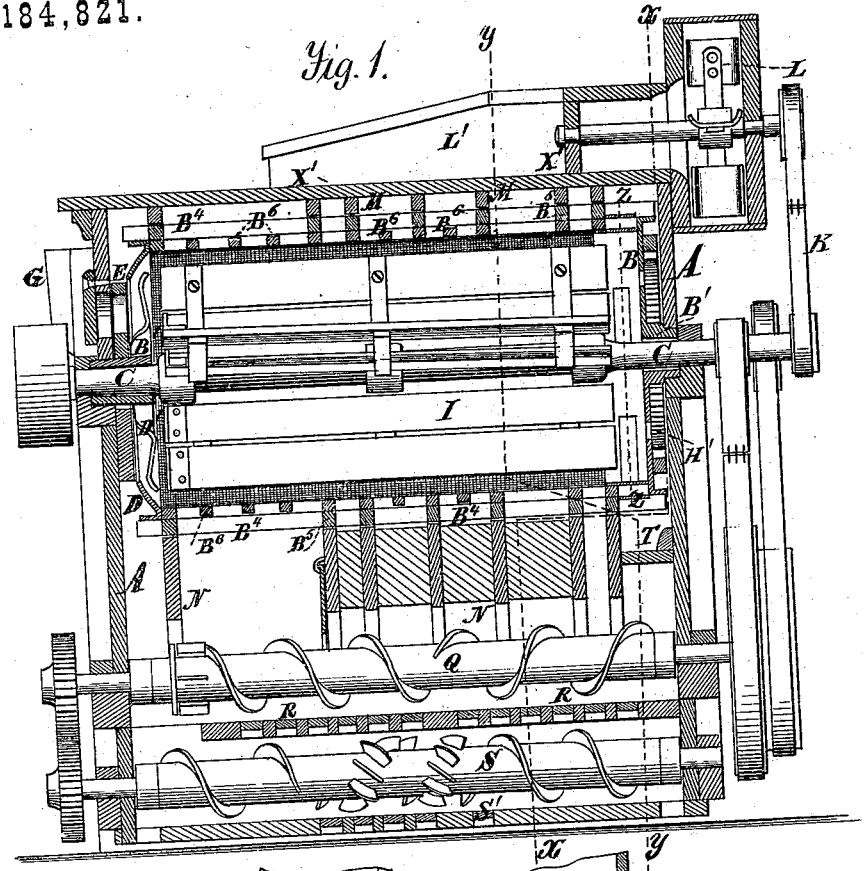


Fig. 2.

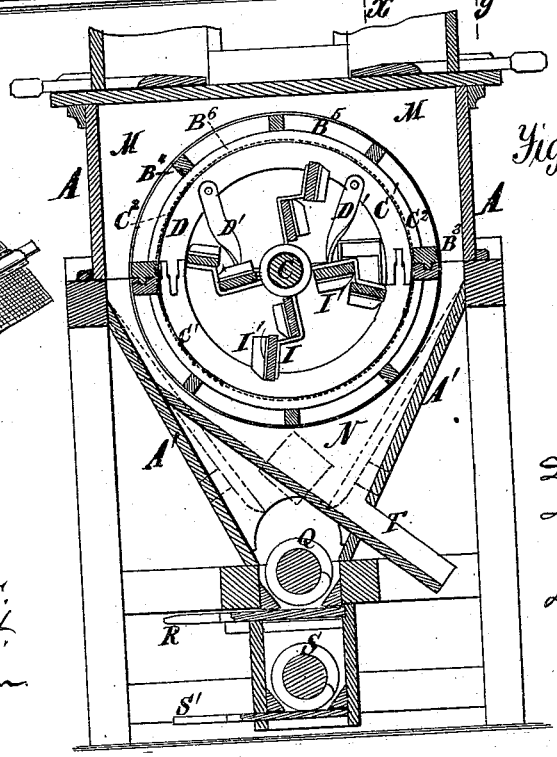
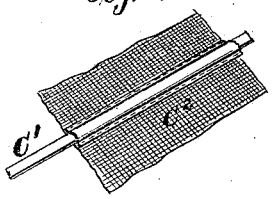


Fig. 8.



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2 Sheets—Sheet 2.

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FLOUR BOLTING-MACHINE.

No. 184,821. Patented Nov. 28, 1876.

Fig. 3.

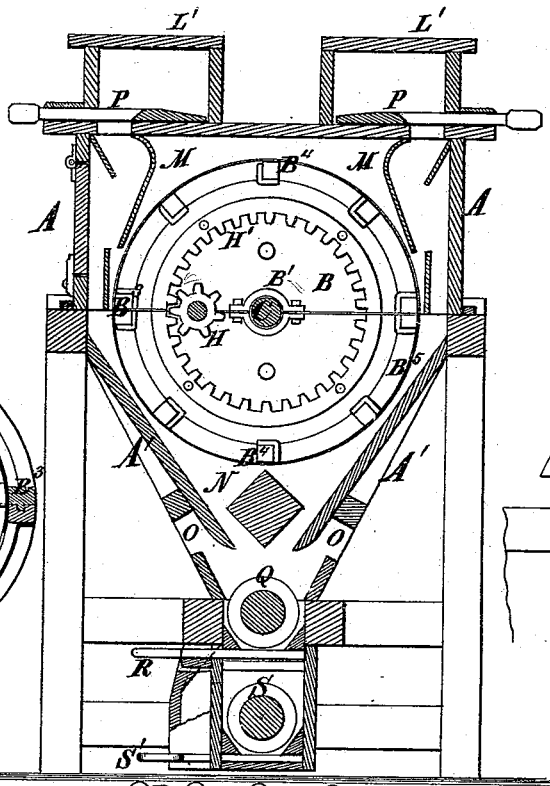


Fig. 6.

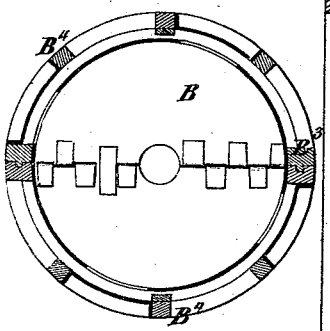


Fig. 7.

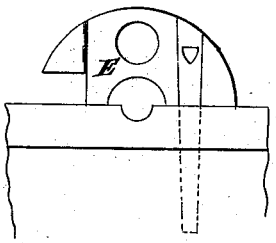
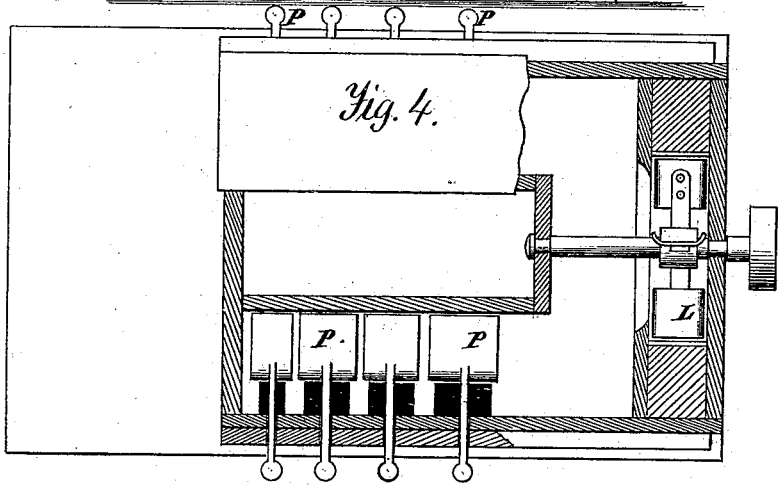


Fig. 4.



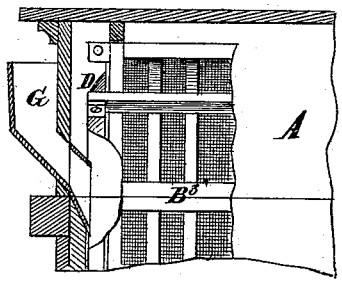


Fig. 5.

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UNITED STATES PATENT OFFICE.

SOLOMON BERNHEISEL AND JOSEPH YOUNG, OF GREEN PARK, PA.

IMPROVEMENT IN FLOUR-BOLTING MACHINES.

Specification forming part of Letters Patent No. **184,821**, dated November 28, 1876; application filed July 6, 1875.

To all whom it may concern:

Be it known that we, SOLOMON BERNHEISEL and JOSEPH YOUNG, of Green Park, in the county of Perry and State of Pennsylvania, have invented a new and useful Improvement in Machines for Bolting Flour and Purifying Middlings, of which the following is a specification:

In the annexed drawings, making part of this specification, Figure 1 is a vertical longitudinal section of the bolting-chest. Fig. 2 is a vertical transverse section of the same on the line *x x*, Fig. 1. Fig. 3 is a similar section on the line *y y* of same figure. Fig. 4 is a plan view, partly in section. Fig. 5 is a partial section, showing the arrangement of the feed. Fig. 6 is a section of the reel on the line *z*. Fig. 7 is an elevation of the stationary head through which the feed passes. Fig. 8 is a perspective view of a section of the bolting-cloth, showing the manner of securing the elastic rings to the cloth.

The same letters are employed in all the figures in the indication of identical parts.

In the annexed drawings, A represents the bolting-chest, a frame tightly inclosed, as is usual in such machines, in the upper part of which is the reel. The reel we have shown in this case is a cylindrical reel, but reels of other form may be used in connection with other parts of this invention, though we have shown the machine throughout as adapted to the cylindrical reel. The reel has two heads, formed in two parts connected by bolts, of which the head B is solid and the head D is annular, both supported on tubular bearings B^1, through which the driving-shaft C passes, carrying on one end the main driving-pulley, and on the other two smaller pulleys, by which motion is communicated to other parts of the mechanism. The reel has an independent slow movement, that of the shaft C being much more rapid. The frame-work of the reel consists, in addition to the heads, of a series of longitudinal bars, of which the two sets of bars B^3 B^3 are attached at the angle of the segmental sections of the heads, and are united by bolts passing through them. Other bars B^4 are in the same manner fastened to the heads at points equidistant from the bars B^3. Segmental pieces B^5 extend between the bars B^3 B^4, resting on other longer semicircular pieces B^6, extended across from one bar B^3 to the opposite one, and passing under the segments B^5 and the bars B^4. This arrangement of the segments leaves the external surface of the ribs of different elevations, the ribs B^5 projecting beyond the ribs B^6, forming channels for a purpose to be hereinafter described.

The frame-work of the reel being thus constructed, the bolting-cloth, which is arranged on the reel in bands of different degrees of fineness, is attached in the following manner: Thin strips of spring steel or brass, of sufficient elasticity, are fastened to the bolting-cloth by sewing down over the spring strips of tape or other suitable material, in the manner clearly shown in Fig. 8. By bending the springs, when thus inserted in their proper relative positions to bear against the segmental ribs, their elasticity will hold the cloth against the ribs, the edges being arranged to come opposite to the bars B^3. The cloth is indicated in Fig. 2 by the dotted line C^2, and the springs by the interior line C^1. The annular head D is supported on the arms of the spider D′, the opening being closed by the round plate E, which is cut away to permit the meal to pass from the hopper G into the reel, and also another hole, regulated by a slide, to admit atmospheric air to the interior of the reel, as required in the operation of the machine. The reel is revolved by means of the pinion H, driven by a belt from a cone of pulleys on the conveyer-shaft, and engaging the internal gear H′ on the head of the reel. The central shaft C carries floats I, preferably constructed of two boards with an open space between them, as shown in Fig. 2, and having plates I′ at right angles to the face of the boards at the end next the annular head. These floats serve to throw the meal against the cloth, and also as auxiliary fans to establish an outward current of air whenever the slide over the opening in the plate E is open.

A belt, K, leading from a pulley on the end of shaft C, drives an exhaust-fan, L, the wind-trunk of which leads out of the top of the bolting-chest, with which it communicates, under regulation, by the slides P. On the inner face of the chest we fasten a series of thin board partitions, M and N in such position

that their interior edges shall conform as nearly as may be, without actual contact, with the outer edges of the segments B^4. By this means open spaces are formed between the partitions M and N and ribs B^4 on the sides, and between the bolting-cloth and the sides of the casing, and extending from the bottom of the hopper A′ to the wind-trunk L′. The sides of the hopper are extended inward along so much of the length of the reel-chest as is indicated by the letters X X′, Fig. 1, so as to form an opening, O, on each side, admitting atmospheric air to the channels formed between the ribs and partitions, as described. The area of these respective channels is regulated by the independent slides P P, so that the rising currents of air, drawn upward by the exhaust-fan, may be under control.

A conveyer, Q, having its spiral floats arranged to convey the meal both ways from the middle, is placed in the bottom of the hopper over a series of slides, R, by means of which the meal moved by the conveyer may be cut off at any desired point or points, and distributed according to grade upon a lower conveyer, S, by means of which it may be discharged through spouts regulated by slides S′, or through the discharge-spouts at the end.

The operation of this machine is as follows: The meal is fed in at the hopper G, passing through the annular head into the bolt, where it is thrown against the surface of the revolving cloth by the floats I. Air may be excluded or admitted, as regulated by the slide covering the hole in the stationary plate E. Through the fine cloth at the head of the reel the finest flour will first be taken off in the usual manner, the returns being regulated by the slides R, as in the ordinary bolting-chest. The separation of the coarser parts of the meal commences to be made after the meal has passed the partition at X, and as the particles fall through the cloth into the respective channels they are exposed to the ascending currents of air, the force of which is regulated by the slides P. In falling through these currents the middlings will be purified by the removal of the fine pulverulent impurities, which are mingled with the granular particles. The heavier particles, thus separated, may be graded, as desired, by means of the slides R and S′.

When the meal has passed the length of the reel, the bran, which cannot pass through any of the cloths, will escape through openings formed for the purpose in the lower end of the reel adjoining the solid head, and escaping by the spout T.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A cylindrical reel, the frame of which is formed by a solid and an annular head, with bars B^3 B^4, and segmental ribs B^5 B^6, substantially as set forth.

2. In combination with the frame of a cylindrical reel, the springs C^1, for holding the cloth in position, substantially as set forth.

3. In combination with the annular head of a bolting-reel, the stationary plate E, through which the journals of the reel pass, and also having openings for the admission of the meal and air in quantities regulated by a valve, substantially as set forth.

4. In combination with the segmental ribs B^5 surrounding the reel, the partitions M and N, forming channels leading from the lower part of the chest to the wind-trunk, passing the reel, substantially as set forth.

5. In combination with the air-channels formed by the ribs of the rest-bolt, and partitions M and N, the regulating-slides P, substantially as set forth.

6. In combination with the air-channels formed by the ribs of the rest-bolt, and partitions M and N, a reel clothed with different grades of cloth corresponding with the channels, and valves for regulating the delivery, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

SOLOMON BERNHEISEL.
JOSEPH YOUNG.

Witnesses:
B. EDW. J. EILS,
HARRY C. BIRCH.