J. M. CLARK.

Bolting Apparatus.

No. 24,857. Patented July 26, 1859.

Fig. 1,

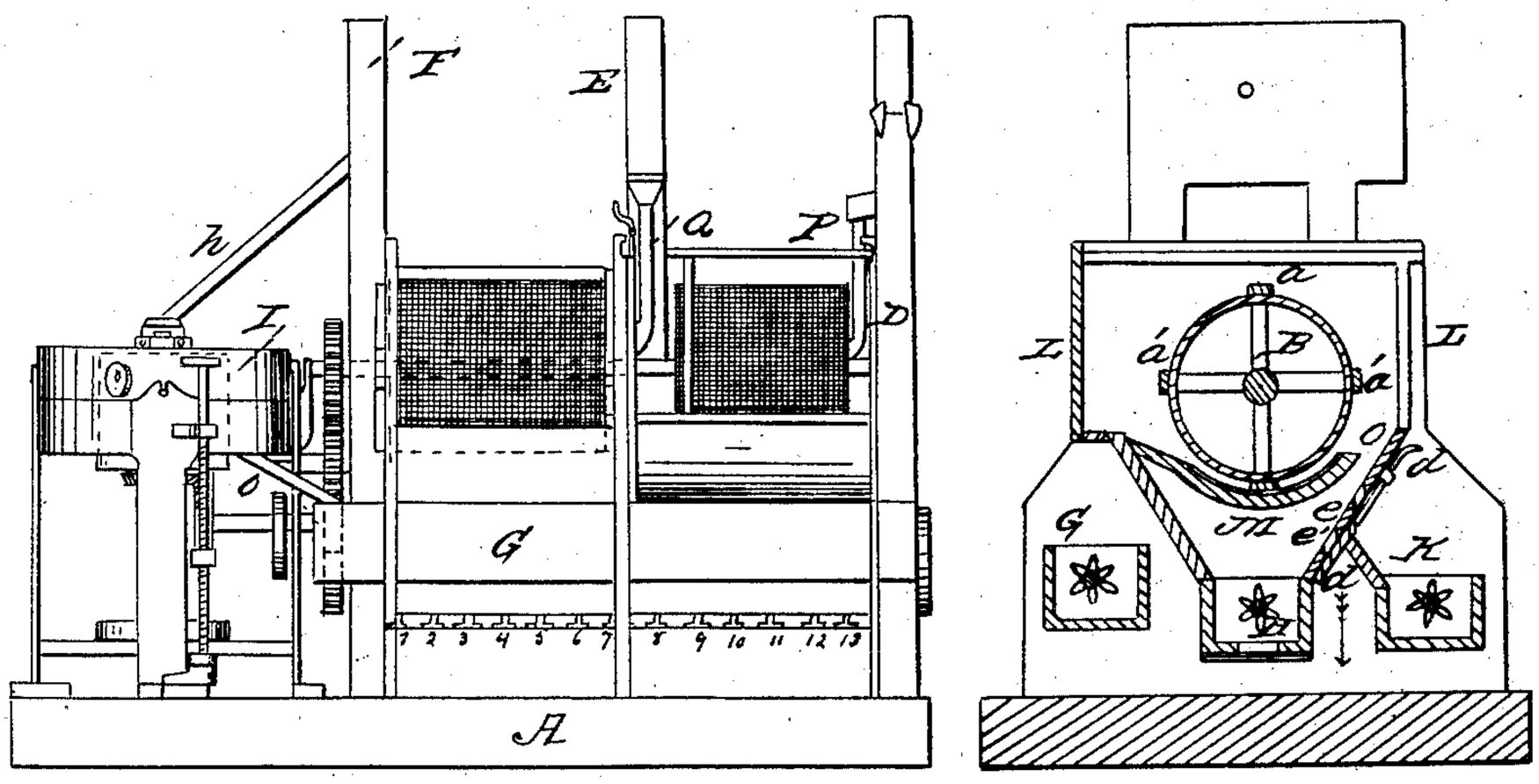


Fig. 2,

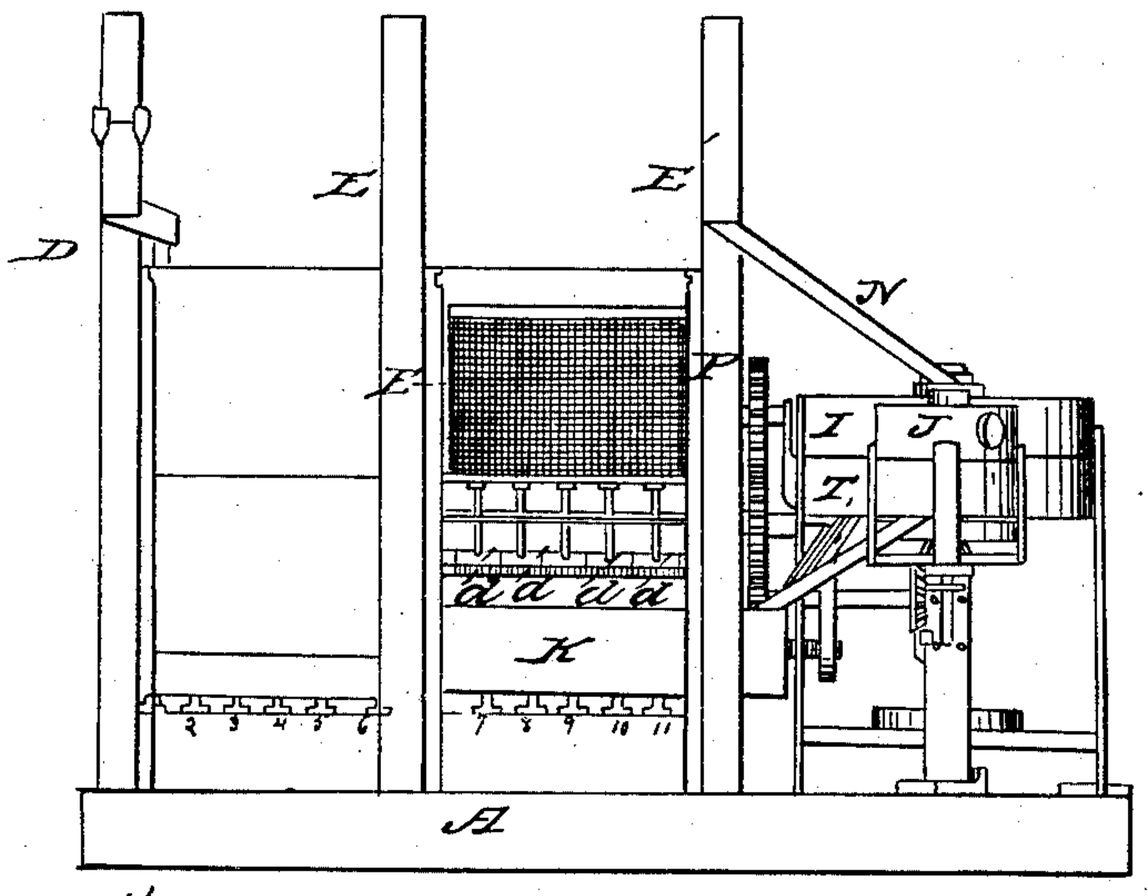
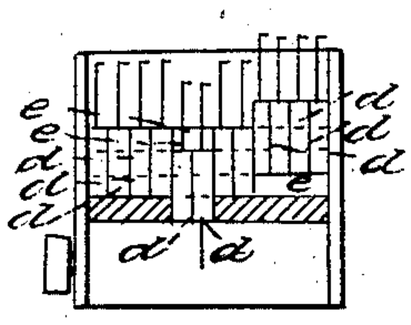


Fig. 4,



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UNITED STATES PATENT OFFICE.

JAMES M. CLARK, OF PHILADELPHIA, PENNSYLVANIA.

FLOUR-BOLT.

Specification forming part of Letters Patent No. 24,857, dated July 26, 1859; Reissued October 4, 1859, No. 833.

To all whom it may concern:

Be it known that I, JAMES M. CLARK, of Philadelphia, in the county of Philadelphia and the State of Pennsylvania, have invented certain new and useful Improvements in Bolting Apparatus and Combined Grinding and Regrinding Mills; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in the combination of a main grinding mill and a re-grinding mill with two or more bolts, and of a series of valves and apertures, as hereinafter described.

Figure 1, represents a side elevation showing the two bolting cloths exposed. Fig. 2, is a view of opposite side of the apparatus only one bolting cloth being exposed. Fig. 3, is a cross section through the front bolting cloth and through the three conveyers. Fig. 4, is a view representing the system of slide valves which regulate the flow of the different qualities of flour, &c.

In the figures, A represents the base on which is elevated the bolting chest L L, said chest being provided with a converging bottom as shown in Fig. 3. Within the bolting chest are placed two bolting reels, on one and the same shaft, and both the chest and the reels are divided by means of a partition at or near the center of the chest.

D, E, F, represent three elevators, D, and F being placed at each end of the bolting chest with the center elevator E, near the center of the chest.

P represents the spout which leads down from the elevator D, into the rear bolting reel C, and Q represents a spout which leads from the elevator E into the front bolting reel B.

G represents a long conveyer which carries the ground material from the main grain grinding mill where it is first ground back to the elevator D.

H (in Fig. 3,) represents a conveyer which is situated under the converging bottom of the bolting chest and extending its entire length; said conveyer being provided with apertures and slides as seen in Fig. 1 and marked 1, 2, 3, 4, 5, and 6, &c., for the purpose of withdrawing any portion of the bolted material which may fall into said conveyer if desired.

K represents a short conveyer which is for the purpose of conveying the material which has been reground in the re-grinding mill J, to the elevator E, from whence it is carried into the front bolting reel B Fig. 1.

I and J represent two grinding mills; I being the large mill, in which the grain is ground before bolting, and J a small regrinding mill which is used for the purpose of regrinding the fine flour, middlings, shorts, ship-stuff, and bran, or any portion of either of them which may require regrinding and which re-ground material is never allowed to pass into the bolt where the double extra and extra flour is made as it comes directly from the main grain grinding mill.

a, (Fig. 3) represents one of the converging sides of the bottom of the chest which side *a* is provided with apertures *e* and *e'*. The aperture *e* leads into the conveyer K extending from bolt head F' to bolt head E'. The aperture *e'* allows the material or any portion of it to pass out between the conveyers H and K as rejected.

In Figs. 3 and 4, *d* represents a slide valve, or a series of valves which are made without apertures, of any proper material, and are long enough to cover both apertures *e* and *e'* at the same time; by sliding up these valves I cover the aperture *e* and by pushing down the valves *d* I cover the aperture *e'* and open the aperture *e*, or by drawing the valve so that its upper end just covers the upper aperture, I close both apertures at the same time by the valve *d*. The bolt C being too fine to allow coarser material to pass through it this material is caused to pass out at the end of the bolt reel, C, and thence to the elevator E and up said elevator and emptied into spout Q through which it passes to bolt B. The superfine flour, fine flour, middlings, shorts, shipstuff, and bran pass through this bolt and fall on the circular bottom M. Beginning at the head of the bolt B, the grades are, first superfine, fine, middlings, shorts, ship-stuff, and bran. As the reel revolves the scrapers *a'* carry the material on bottom M forward to the opening between said bottom and inclined side *a* of bolt chest as seen in Fig. 3. The valves *d* being closed, at the head of the bolt B the superfine flour passes down the side of the chest into conveyer H from which it is drawn off at valves 1, and 2.

The next valves *d*, *d*, being opened allow the fine flour to pass into the conveyer K, from it, to and up elevator E down spout Q into bolt B where it is rebolted and refined as super fine flour. The slide valves *d* next to and near the tail of the bolt being closed, the middlings pass down into the conveyer H and is carried along by it into the elevator F, up said elevator to spout *h*, down said spout to the regrinding mill J where it is all reground and passes through spout P into conveyer K, by which it is carried to elevator E up said elevator and emptied into bolt B again, where it is rebolted and refined with the qualities being bolted, and yields superfine and fine flour, and falling down as before is drawn off at valves 1, 2. The shorts, ship-stuff, and bran when required to be re-ground can also be sent back to the regrinding mill, in the same manner and by the same means and at the same time as is the middlings; so too can the fine flour, middlings, shorts, ship-stuff, and bran or either of them or any portion or quality of either of them; so also can any quantity or quality of these different grades by means of the valves *d* be rebolted without regrinding if desired.

In the construction of my valves *d* I can make a more perfect valve with much less expense, as I do not cut holes through them which is as expensive as to make my valves, and those valves with holes are not so perfect in their operation as mine are, for it will be seen that on each side of a hole there is left standing a portion of the valve which will catch the falling material on it and carry it to the wrong place, but in the case of my valves there is no side left, and at each moving of the valve all the material that is to fall is removed with it, and there can be no mixture of the different qualities: further, I, by one valve can shut one aperture at a time, either the upper one *e*, or the lower *e'*, or at pleasure I can close both, by the same valves; or I can alternate the valves *d* so as to have when desired both the apertures closed or both opened at either end of the inclined side, or I can have some of them opening the upper aperture and others the lower one, thus at will so alternating them as to accomplish the end desired, the whole being perfectly under the control of the miller. By means of the arrangement of my apertures and valves *d* I am enabled to dispense with spouts, which thus saves much expense.

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

Slide valve *d*, or a series of slide valves *d* without holes in them so arranged and operating with the apertures *e* and *e'* in the sides of bolting chest that either of these apertures can be opened or closed, or both closed when required, for the purpose of turning the material as desired in either of three directions, as set forth.

In witness whereof I hereunto set my name in the presence of the subscribing witnesses.

JAMES M. CLARK.

Witnesses:
C. M. ALEXANDER,
T. H. ALEXANDER.