

J. FICKINGER.  
FLOUR BOLT.

No. 108,246.

Patented Oct. 11, 1870.

FIG:1.

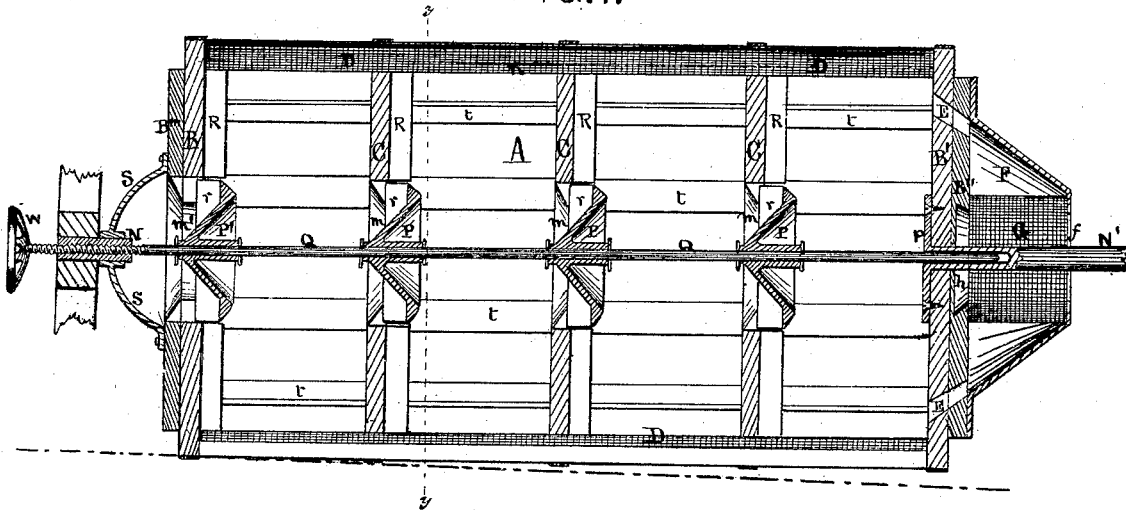


FIG:2.

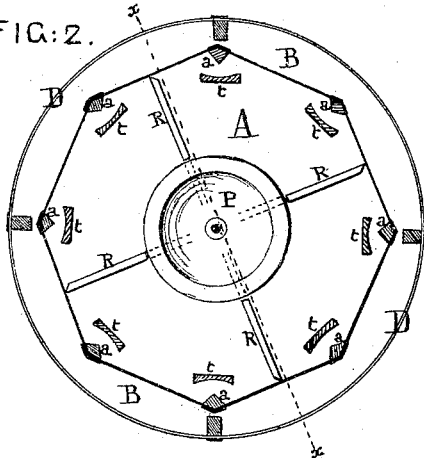


FIG:3.

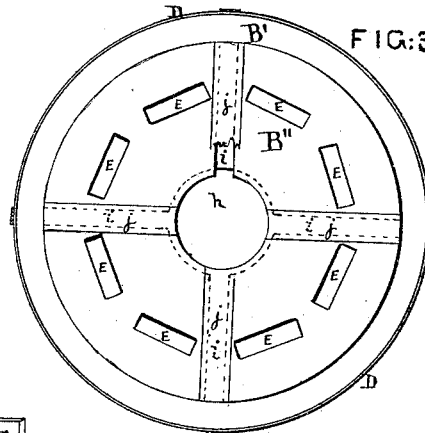
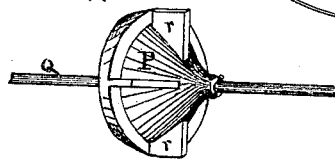


FIG:4.



Witnesses

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JACOB FICKINGER, OF KINGSVILLE, OHIO.

Letters Patent No. 108,246, dated October 11, 1870.

## IMPROVEMENT IN FLOUR-BOLTS.

The Schedule referred to in these Letters Patent and making part of the same.

I, JACOB FICKINGER, of Kingsville, in the county of Ashtabula and State of Ohio, have invented an Improved Vermin and Bug-proof Sectional Flour-Bolt, of which the following is a specification.

The first part of my invention relates to the construction of the reel of a flour-bolt, in sections or compartments, each covered with a different number of bolting-cloth, separated by transverse partitions, and communicating with each other by a central aperture in each partition; the object of this part of my invention being to detain the flour in its passage through the reel over the different cloths, to perfect the separation of the different qualities of flour.

The second part of my invention relates to the use of metallic cones, connected and operated by a longitudinal rod in the axis of the reel, to serve, first, as guides in conducting the flour passing through each compartment or division of the reel to the central apertures in the partitions separating it from the next succeeding division; and, secondly, as valves to close said apertures, and regulate the opening thereof, and, consequently, the passage of the flour through the reel.

The third part of my invention relates to the combination of a solid head-plate with the upper end of the reel, this plate being, however, provided with a series of concentric feed-ways or apertures cut through the same, near its circumference, for feeding the flour into the bolt; the object of this part of my invention being, not only to facilitate the exclusion of bugs and extraneous substances, injurious to the cloths, but also to distribute the flour passing into the reel against the inner surface of the bolting-cloth covering the same.

The fourth part of my invention relates to an auxiliary device for the protection of the reel against bugs and vermin, to be used in combination with the concentric "feed-ways," in the upper head of the reel, and with an outer wire screen or casing, inclosing the entire length thereof, said device consisting of a conical metallic cap, to cover the upper end of the bolt, and extend to its rim, or nearly so, and provided with a wire sieve, to cover its feed-opening.

The fifth part of my invention relates to the combination of journal-arms with the heads of my improved sectional bolt, to avoid the use of a shaft extending through the same, and to permit the use and operation of central valves in connection with central openings in the partitions dividing the several sections or compartments of the reel.

The sixth part of my invention relates to the combination of longitudinal "fall-boards" or strips,

with the inner edges of the longitudinal ribs of the reel, these fall-boards being placed under each rib, and secured at each end to the transverse partitions of the reel, so as to present their flat, wide surface to the angle of the rib; the object of this part of my invention being to keep the volume of flour passing through the reel in continual contact with the cloths, and causing it to pass over the same with a sliding motion, as the reel revolves, to facilitate the separation of its particles.

The seventh part of my invention relates to the combination of radial projecting guide-strips, upon the upper side of each partition in the reel with the projecting conical surfaces of the valves, and with radial vanes or strips projecting therefrom; the object of this part of my invention being to facilitate the passage of the flour successively from one compartment in the series to the next.

The eighth part of my invention relates to the combination of a set-screw, threaded upon the end of the rod carrying and connecting the conical valves, covering and regulating the central communicating apertures between the several sections or compartments of my improved bolt, with a central, longitudinal, threaded aperture in the lower journal of the bolt; this threaded end of the rod being made to project through the journal, and provided with a hand-wheel, to facilitate its operation; the object of this part of my invention being to provide for an adjustment of the valves in the bolt, and, consequently, to regulate the rapidity of the flow of flour through the same, without arresting the reel in its revolutions.

In the accompanying drawing—

Figure 1 is a longitudinal central section of my improved flour-bolt, in the line *x x* of fig. 2, with its valves wide open.

Figure 2 is a transverse section thereof in the line *y y* of fig. 1, looking to the left.

Figure 3, a view of the upper head of the reel, with its outer cap removed, illustrating the arrangement of the concentric feeding-apertures therein, and of the radial discharging-channels, extending from its central recess.

Figure 4, a view, in perspective, of one of the conical valves, closing and regulating the openings between the compartments of the reel.

A represents an octagonal bolting-reel, but which may be constructed of a hexagonal or otherwise polygonal form.

This reel is constructed of the ribs *a a*, covered exteriorly in the usual manner with bolting-cloth of proper texture.

Instead, however, of being left open at each end,

and from end to end, as in the ordinary bolting-reels in use, its ends are closed by means of circular plates or heads, B B', secured to the ends of the ribs *a a*, and it is divided interiorly by transverse partitions C, into two or more sections or compartments, each of which is covered with a different number of bolting-cloth.

The heads B B' project radially beyond the circumference of the reel, and to their perimeters are secured the ends of a wire cylinder, D, completely encircling the reel A.

The meshes of this cylinder are made close enough to effectually prevent an entrance of the black bug which attacks and destroys bolting-cloths, and yet sufficiently open to allow a free passage of the flour falling from the reel.

The upper head B' is pierced with a number of feeding or supply-apertures, E E, fig. 3, arranged concentrically and inclining from the exterior inwardly toward the circumference of the reel, as shown in fig. 1.

To guard against an entrance of the black bug, or of any foreign substance through these apertures, and to facilitate a distribution of the flour thereto, I place upon this head a second plate, B'', fig. 1, of smaller diameter, through which the openings E E are extended, and secure thereto an outer, conical metallic cap, F, having a central opening, *f*, through which the journal of the reel projects, and the flour to be bolted is introduced, and insert a cylindrical wire sieve G, so as to extend from the rim of its opening *f* to the face of the plate B'', as shown in fig. 1.

A recess, *h*, having inwardly-beveled edges, and of a circumference somewhat smaller than that of the sieve G, is cut centrally into the head-plate B'' and radial channels *i* (see fig. 3,) are cut therefrom to the outer rim of said plate, and covered with metallic strips *j j*, to form conducting apertures, through which any foreign matters, arrested by the sieve, and, falling to the lower end thereof, are immediately discharged.

The lower head B is strengthened by an outer plate, B'', corresponding to the plate B'' on the upper head.

This lower head, and each of the partitions C C of the reel are pierced with central apertures *m*, in size about one-half the diameter of the reel for the passage of the flour through the bolt.

These apertures are flaring or outwardly beveled on their lower edges, and are fitted with cones P P, working thereinto from the upper side, as fully illustrated in fig. 1.

These cones or valves P P are all secured upon a central rod, Q, passing centrally through the journal at the lower end of the reel, and working into an aperture bored for the purpose in its upper journal, so that a longitudinal movement toward the lower end of the reel will simultaneously close all of the communicating openings in the partitions of the reel, and the discharge-opening at its lower end, and a reverse movement thereof will open them.

Each cone is provided with thin, radial flanges *r r*, projecting out from its conical surface, as far as its perimeter, (see fig. 4,) and which, fitting into corresponding grooves in the rim of the aperture to be closed by the cone, serve as guides thereto.

The journals N N' of the bolt may be secured to each head in any suitable manner, so as to project centrally therefrom.

In the accompanying drawing I have illustrated the upper journal N', as secured to a plate, *p*, fitting against the inner face of the head B', and projecting thence outwardly through the head, and the lower journal N, as secured to the lower head-plate

B'', by means of arms or brackets S S spanning the central discharge-aperture therein.

The lower journal N is pierced longitudinally with a central aperture, properly threaded, to receive the end of the valve-rod Q, which is likewise threaded to screw therein.

The end of the valve-rod projecting through the journal is provided with a hand-wheel, W, by means whereof it is turned to operate the valves.

The ribs *a a* are beveled on their inner sides (which project within the reel, see fig. 2,) to form an angle of forty-five degrees, and a strip or narrow "fall-board," *t*, is placed centrally in front of each rib, parallel thereto, with its face toward the same, the ends thereof being secured in the transverse partitions of the reel, as shown in fig. 1.

The outer side or face of each fall-board *t*, facing its appropriate rib *a*, is made slightly convex in transverse section, as illustrated in fig. 2, so that the flour, thrown inwardly from the bolting-cloth, in the revolutions of the reel, is caught on the rib and thrown out again at such an inclination to the face of the cloth as to cause it to slide over the same, facilitating thereby its sifting.

The flour, entering the bolt through the feed-aperture *f* in the cap F, passes through the cylindrical sieve G, and, being distributed over the head-plate B'', passes through the concentric apertures E E therein, against the bolting-cloth of the first compartment of the reel A.

As the reel revolves, the flour passing over the edges of the ribs *a a* is thrown against the strips or "fall-boards," *t t*, and thence back again upon the cloth, and, as it is carried forward, because of the inclination of the reel, is caught against strips R R, secured radially against the upper face of each partition C (and of the lower head B,) in register with the vanes *r r* of the cones P, and thus led down upon the conical flaring surface of the cone at the central opening *m* in the partition, and over the surface of the cone on through said opening into the next compartment, where it is again distributed over the reel by centrifugal force.

The bugs, &c., caught in the entrance-sieve G are thrown out by centrifugal force through the channels *i i* in the head, and, by means of this sieve, in combination with the outer cap F and cylindrical casing D, the entrance of bugs and vermin into the bolt is effectually prevented.

The outer cylinder serves also as a protection for the cloth against accidental or mischievous thrusts or injury from without.

The lower opening *m'* is guarded by means of its conical valve P', by which it may be completely closed.

I claim as my invention—

1. The combination of two or more transverse centrally-perforated or annular partitions C C, with the interior of a bolting-reel, A, to retard the passage of flour through the same, substantially as herein set forth.

2. The combination of the conical flaring valves P P, with the central openings *m*, in the transverse partitions C C, and the lower head-plate B of a sectional bolting-reel, to close and control said openings, substantially as herein set forth.

3. The concentric apertures or feed-ways E E, formed in the head-plate B' of a flour-bolting reel, for distributing the flour delivered within the reel upon and against the bolting-cloth covering the same, substantially as herein set forth.

4. The combination of a conical cap, F, protected by a sieve, G, with the concentric feeding-apertures E E, in the head B' of the reel A, substantially as herein set forth.

5. The longitudinal strips or "fall-boards," *t t*, com-

bined with the ribs *a a* of a bolting-reel, substantially as and for the purpose herein set forth.

6. Radial guide-strips *R R*, projecting from the upper side of each partition *C*, and the lower head *B* of a sectional bolting-reel, in combination with flaring valves or cones *P P*, suspended over or against the central openings *m*, in said partitions and head, substantially as herein set forth.

7. The combination, substantially as herein described, of a hollow journal-arm *N*, secured to and

supporting the lower head *B*, of a sectional bolting-reel, the rod *Q* connecting and controlling the valves closing the apertures *m* in its interior partitions *C*, and the journal-arm *N'*, secured to the upper end of the reel.

Witness my hand to this specification.

JACOB FICKINGER.

Witnesses:

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