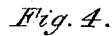
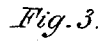
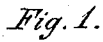


C. S. FULLER.
Middlings-Purifiers.

No. 148,202.

Patented March 3, 1874.



J. J. Donner.
Edouard Wilhelm

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by Jay Hyatt
Atty.

UNITED STATES PATENT OFFICE.

CLARK S. FULLER, OF OSWEGO, NEW YORK.

IMPROVEMENT IN MIDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. 148,202, dated March 3, 1874; application filed February 17, 1874.

To all whom it may concern:

Be it known that I, CLARK S. FULLER, of the city and county of Oswego and State of New York, have invented certain Improvements in Middlings-Purifiers, of which the following is a specification:

My improvement relates to that class of machines in which a bolt or reel is employed for separating the impurities from the good middlings, the main feature of the invention consisting of a reel-bolt composed of overlapping segments, jointed or hinged, so that the overlapping edges will automatically open as they pass above the horizontal plane of the axis, or thereabout, and form longitudinal apertures for the escape of the impurities from the reel, and, as they approach said horizontal plane, close and prevent any escape of the material from the lower half of the reel, except through the meshes of the wire-cloth covering.

In the accompanying drawing, Figure 1 is a vertical section of my improved machine. Fig. 2 is a vertical section in line *x x*, Fig. 1. Figs. 3 and 4 are modifications of the frame sections of the bolt, one showing an angular and the other a straight cross-section.

Like letters of reference designate like parts in each of the figures.

A is the frame and casing of the machine. B is the bolting-reel, mounted in a slightly-inclined position in this casing, in which it fits so as to leave but a narrow space between the reel and the casing on each side. The reel B is formed of rectangular frames B^1 , covered with bolting-cloth, the ends or cross-sections of which may be either straight, curved, or angular, as shown in Figs. 1, 3, and 4. The bolting-cloth may be of uniform texture, or it may be secured to the framing in pieces having a different texture, increasing in fineness from the tail to the head of the bolt in the usual manner. These frames or segments are hinged at one edge by means of pivots, which connect the corners at their ends with the head and tail pieces B^2 and B^3 , respectively, so as to form a sort of flap-valve, with the free edge of each underlapping the hinged edge of the adjacent frame. The free ends of these frames are allowed to swing inward until arrested by the stops of the head-piece B^2 , which is formed with shoulders that conform to the

position of the segments when swung inward or open. This head-piece is secured to the reel-shaft *d* by rods or spokes *b*. The tail-piece B^3 is of circular outline, and is secured by rods or spokes in any suitable manner to a frusta-cone-shaped deflector, B^4 , secured to the reel-shaft at its tail end, with its smaller end extending into the central opening, so as to partially close the same, leaving an annular outlet, in front of which project the edges of the deflector B^4 , for a purpose presently to be explained. The ends of the segmental frames B^1 are connected to the head and tail pieces by cloth, to prevent the escape of the material at these places. The top of the casing, at *a*, connects with the wind-trunk H, which communicates with the eye of the fan, so as to form an exhaust-chamber, E, within the casing. F F are wing-boards above the reel, hinged to the casing at their lower edges, so that their upper and free edges are inclined toward the center and air-outlet *a*. The inclinations of these boards are adjusted, and the openings between their adjacent edges regulated, by hand-levers *f*, attached to the boards and extending to the outside of the casing. J is the hopper, formed in the chamber E below the reel, and discharging into a trough, *k*, provided with a conveyer, L. *m m* are any suitable valves or openings, through which air is admitted into the exhaust-chamber below the reel, and by which the force of the draft can be regulated. The unpurified middlings is fed into the reel at the head thereof, through a spout, in any suitable and well-known manner. The opening at the tail of the bolt may also be connected in any suitable manner with the wind-trunk that leads to the eye of the fan.

The machine being set in motion, an exhaust-current is induced upward through and around the reel-post. As the latter revolves in the direction of the central arrow the free edges of the segmental frames that are below the horizontal line *s s* fall outwardly by gravity, and rest against the hinged edges of the adjoining frame, so as to form a close casing around the lower half of the reel, as shown in Fig. 1. When carried by the revolution of the reel above this horizontal line the frames fall inward and rest upon the stops formed by the heads of the bolts and deflector B^4 , so as to

leave an open space between the adjacent edges of the frames, running longitudinally of the bolt, through which particles of bran and other light impurities within the bolt are carried upward with the air-current induced by the fan, and are permitted freely to escape, whence they are conducted through the wind-trunk to the fan. The good middlings sift through the meshes of the wire cloth in the lower and closed portion of the bolt, from whence they fall through the hopper into the trough *k*, from which they are discharged by the conveyer in a well-known manner at one end, or through several openings when the different grades of material are required to be kept separate. As the reel revolves and brings the segments below the line *s s*, the free edge of the segments swing outward against the fixed edges of the adjacent ones, thereby producing a concussion which jars and clears the wire cloth in a most efficient manner of the material which has lodged in its meshes or adhered thereto. If desired, a strip of cloth, *v*, attached to a pendulous frame, *w*, as shown in Fig. 1, so as to sweep in contact with the outer surface of the bolt may also be employed for the purpose. The free edges of the hinged segments are beveled, as shown at *i*, so that the material will more readily fall from one segment to the other and be more effectually prevented from escaping between the segments as the reel revolves. The cone-shaped shield *B*⁴ operates to cause the heavier impurities that have not escaped at the top of the reel to pass around the

edges of the shield before they can escape through the annular outlet at the tail of the reel, whereby any granules of good middlings that may be carried along with the air-current are arrested and deflected upon the wire bolting-cloth. The inclined wing-boards *F* serve to deflect the impurities as they rise toward the discharge-aperture, and thus facilitate the escape, while they may also be employed to regulate the force, of the draft.

While I prefer as the simplest the segments operating by gravity, as hereinbefore described, yet I do not wish to confine myself to this means, as the segments can be kept open or closed, as desired, by means of springs and other mechanism actuated from the outer end of the reel-shaft.

What I claim as my invention is—

1. A reel-bolt composed of hinged segments which open and close, and thereby form apertures at the top of the reel for the escape of the impurities as the reel revolves, substantially as hereinbefore set forth.

2. The combination, with an exhaust-chamber communicating at the top with the eye of the fan, of the hinged segmental reel *B B'*, as and for the purpose hereinbefore set forth.

3. The combination, with the tail end of the reel and the outlet formed therein, of the shield and deflector *B*⁴, as and for the purpose hereinbefore set forth.

Witnesses: CLARK S. FULLER.

CHAS. P. UNDERWOOD,
J. T. CHUTE.