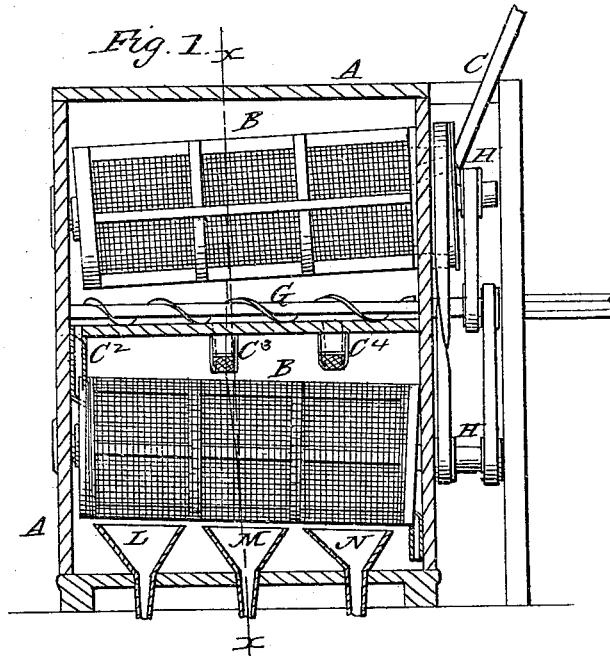


REED & WILLIS.

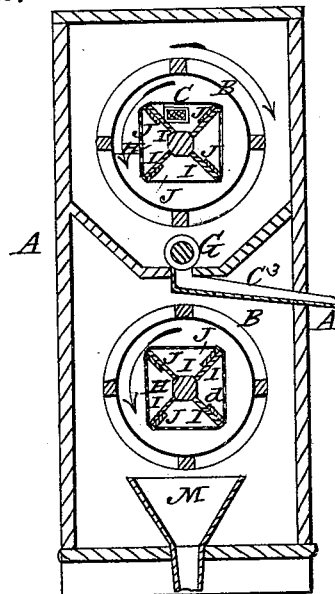
Mill Bolt.

No. 7,063.

Patented Jan'y 29, 1850.



*Fig. 2.*



# UNITED STATES PATENT OFFICE.

J. M. REED AND WM. B. WILLIS, OF NEAR CHARLESTOWN, VIRGINIA.

## FLOUR-BOLT.

Specification of Letters Patent No. 7,063, dated January 29, 1850.

*To all whom it may concern:*

Be it known that we, JOHN M. REED and WILLIAM B. WILLIS, of near Charlestown, in the county of Jefferson and State of Virginia, have invented a new and useful Improvement in Bolts for Bolting Flour, which is described as follows, reference being had to the accompanying drawings of the same, making part of this specification.

Figure 1, is a side elevation of the machine—a portion of the case in which the bolts revolve being removed in order to show the bolts, conveyer &c. Fig. 2, is a vertical transverse section at the dotted line *x x* of Fig. 1 showing the revolving shafts and radial wings surrounded by a wire screen—said wings having been added to the bolts and made to revolve for the purpose of throwing the flour through the meshes of the screen against the bolting cloth by the centrifugal force and at the same time forcing a blast of wind through the meshes to keep them open and free from clogging,—and at the same time conveying the fine flour through said meshes freely.

Similar letters in the several figures refer to corresponding parts.

The bolt case A—bolts B B for bolting the flour—the conducting parts C<sup>1</sup>, C<sup>2</sup>, for conducting the flour to and from the bolt gearing, or bands and pulleys for turning the bolts—conveyer G for conveying the flour to the discharging spouts C<sup>3</sup>, C<sup>4</sup>, and spouts L, M, N for separating the several grades of flour and stuffs are made and arranged in the usual manner.

The improvements which we have made consist in placing inside each of the ordinary flour bolts certain inclined revolving screens and blowers, each being composed of a shaft H having radial arms I and wings J surrounded by a wire screen of coarse mesh to protect the bolting cloth—said wings striking the meal as soon as it enters the revolving wire screens and throwing the meal through the meshes of the said wire screens and through the bolting cloths by centrifugal force and at the same time creating blasts of wind within the bolts for the purpose of forcing the flour through the meshes of the bolts, and thus doing away with the necessity of having a multiplicity of long bolts for gradually working the flour through the meshes of these bolts by turning them slowly in the manner practised in some of our mills thereby saving

much expense as short bolting cloths with said revolving wings and wire screens will perform the operation of bolting flour as effectually and more expeditiously than by the use of long bolts without said revolving wings, and screens.

The revolving radial throwers and blowers are made and arranged in the manner represented in the drawings, having their shafts H, inclining in opposite directions and their centers coincident with the centers of the bolts, and turning in suitable boxes or bearings in the frame. They are turned by cogged or band gearing in the directions indicated by the arrows.

The upper or lower bolt may be made stationary, or to revolve. Both of the central shafts of wings and screens revolve. The lower bolt when stationary, is fixed to the frame. When the upper bolt revolves its bearings are formed by the round portion of the shaft of the upper wings passing through the lower head of the bolt on which it turns and a circular plate or disk placed on the said shaft fitting into a corresponding round opening in the upper head of the bolt, in which disk an opening is made to allow the shaft to pass through and another opening to admit the lower end of the feeding spout through which the meal is introduced to the bolts—being first passed into the center of the wire screens.

The screens that surround the radial wings and into which the flour is first conducted are composed of suitable sized wire woven into meshes of any convenient size for the purpose of confining the large extraneous substances that are sometimes found mixed with the meal and that would be liable to break the bolting cloths by being thrown violently against them by the rotary motion of the radial wings. These screens may be in the form of cylinders or polygons and fitted and secured around and over the edges of the wings and open at both ends; or they may be constructed in any suitable manner to effect the desired end.

The combined rotating radial wings and wire screens being put in motion by any adequate power at a rate of about 100 or 200 revolutions per minute, the meal to be bolted is introduced to the inside of the upper revolving wire screen where it is struck by the revolving radial wings and thrown by the centrifugal action against the inside of the wire screen,— through the meshes of

which the flour and some of the bran passes and strikes against the inside of the bolt, which may be stationary, or revolving, as preferred. A stationary position, however, 5 is generally preferred—the flour being driven through its meshes by the force of the air when put in motion by the action of the revolving radial wings aforesaid while the wire screen prevents any hard, or heavy, 10 substances from striking against the bolting cloth and by making use of currents of air created by the revolving wings to drive the flour through the meshes of the bolting cloth instead of passing the flour through long 15 inclined revolving bolts, much shorter bolts may be used and yet the flour be equally well bolted and much more rapidly and producing a great saving of expense in bolting cloth and the time required in performing 20 the bolting. This operation separates the family flour, superfine, and fine flour from the offal. The offal then passes from the upper wire screen and bolt through the spout C<sup>2</sup>, to the lower wire screen and bolt 25 where it is treated in a similar manner in order to separate it into the several grades of superfine flour, middlings, shorts, ship-stuffs and bran,—and to bolt out any flour remaining in the stuffs. The remaining superfine flour descending through the spout 30 (L) the middlings through the spout (M) and the ship stuff through the spout (N)—

and the shorts and bran passing out at the tail end of the lower bolt.

We do not claim to be the original and 35 first inventors of bolts for bolting the flour, or of any of the several parts of the bolting apparatus that have heretofore been used for that purpose in the ordinary modes, but what we do claim as our invention and de- 40 sire to secure by Letters Patent is—

The combination of the revolving wire screens with the ordinary bolts, whether stationary or revolving, for bolting flour, 45 by which the larger particles of bran and extraneous substances that may chance to pass into the bolts with the meal are separated therefrom by the said wire screens and are thus prevented from coming in contact with the bolting cloth while the wings 50 drive the flour through the screens and bolting cloth by the combined action of centrifugal force and currents of air produced by the rotary motion of said wings by which the advantages stated in the foregoing 55 specification are obtained.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

JOHN M. REED.  
WM. B. WILLIS.

Witnesses:

GEORGE H. TURNER,  
BENJAMIN B. WELSH.