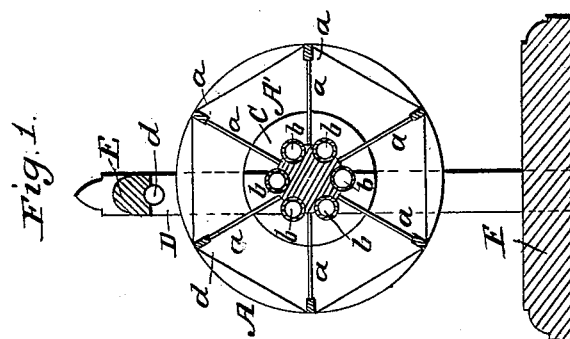
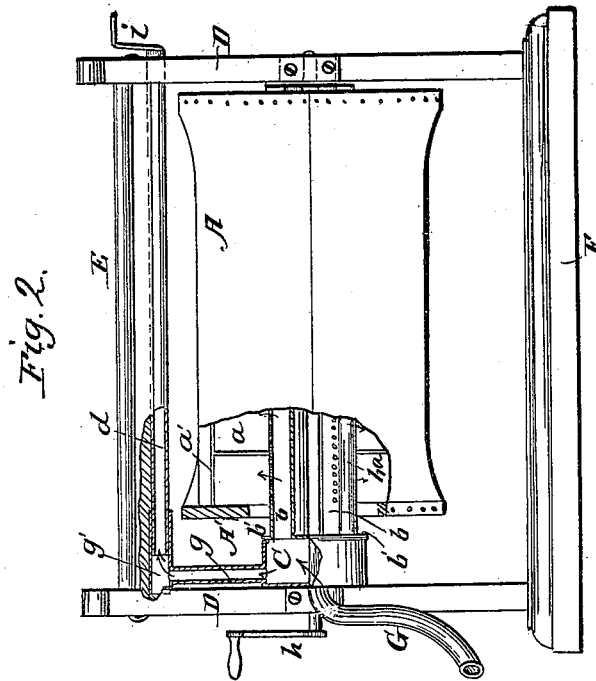


J. E. MADIGAN.

Mill Bolt.

No. 46,919.

Patented March 21, 1865.



Witnesses:

C. L. Popliff  
Theo. Tusch

Inventor:

James E. Madigan  
per Munroe  
Atty.

# UNITED STATES PATENT OFFICE.

JAMES E. MADIGAN, OF BELOIT, WISCONSIN.

## IMPROVEMENT IN APPARATUS FOR BOLTING FLOUR.

Specification forming part of Letters Patent No. 46,919, dated March 21, 1865.

*To all whom it may concern:*

Be it known that I, JAMES E. MADIGAN, of Beloit, in the county of Rock and State of Wisconsin, have invented a new and useful Improvement in Apparatus for Bolting Flour; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an end elevation of my bolting apparatus; Fig. 2, a side elevation, a portion of the meshes of the bolt being broken away to show the perforated tubes within.

Similar letters of reference indicate corresponding parts.

This invention consists in introducing currents of air into the bolt for the purpose of cooling the flour and increasing the efficiency of the bolt, and also in directing a blast of air downward upon the outside of the bolt for the purpose of keeping its meshes clear.

A represents an hexagonal bolt whose bolting-cloth is stretched over rails *a'*, of equal length and parallel with the axis B, and which rails are held up by radial rods *a*. The cloth is also secured at the left-hand end of the bolt to the periphery of the head A', which is perforated so as to leave an annular space between its inner circumference and the axis B. The head A' is sustained by means of the rails *a'*, whose adjacent ends are secured to it by a dovetail or other suitable joint. The bolt is held in standards D, which rise from a floor or platform F, and are connected at top by a cross-piece, E, beneath which is placed a perforated pipe, *d*, whose right-hand end passes through the right-hand standard D and carries a crank, *i*, by means of which the pipe can be rotated so as to cause its perforations to be presented at different angles toward the bolt beneath or to be turned off altogether. The right-hand end of the pipe *d* fits in a fixed socket, *g'*, secured in the left-hand standard D. The axis B of the bolt revolves in suitable bearings formed for it in the standards D, a crank, *h*, or other means of rotating it being attached to one of its ends which projects beyond the standard. The shaft or axis B is either made hollow or is fitted about its periphery with pipes for the distribution of currents of air within the bolt.

In this example of my invention I have shown the shaft fitted at different points of its periphery with pipes extending throughout its whole length and securely fastened in grooves upon its exterior. These pipes are perforated upon their exposed or outer sides, so that their perforations will be opposite the corresponding inner faces of the bolt. The right-hand ends of the pipes are closed, but the left hand ends are open, and are set in and connected with a circular plate or head, *b'*, which is fitted by means of a flange to the open end of a circular air-chest, C, which surrounds the left-hand end of the shaft within and next to the adjacent standard D. The plate *b* is so fitted to the chest C as to revolve freely within its open end. A pipe, *g*, extends from the upper side of the said chest to the socket *g'* above, so as to form a communication with the perforated pipe *d*. An india-rubber tube, G, or a suitable pipe connects the air-chest C with a fan or blower or an air pump for the supply of air.

In order to explain the operation and purpose of my invention, it is proper to explain that in the common style of preparing flour from grain the flour, immediately after it has been ground is passed into the cooler, and from the cooler into the bolt, and from the bolt into the packing-box, from which it is delivered into barrels for market. When the flour comes from the stones, it is hot, and therefore it is passed through the cooler to bring down its temperature; but when it is delivered from the cooler into the bolt it still retains a considerable degree of heat, produced in the operation of grinding the grain, the operations of grinding, cooling, and bolting being continuous and successive, and the apparatus for cooling employed being insufficient to reduce the flour to the desired temperature in the space of time allotted for its passage through it. The consequence is that the flour passes from the bolt into the packing-box in a warm state, and is liable to become sour after it is packed in barrels for market.

Another defect in the present or familiar apparatus for bolting is that a great deal of labor and time is required to be expended in cleaning the bolting-cloth, and another is that only one-sixth of the bolt (in a bolt of hexagonal shape) can be used at the same moment of time in the operation of bolting the flour.

In my bolting apparatus a stream of cold air under more or less pressure, according to the requirements of the apparatus, is passed through a pipe or tube, G, into the air-chest C, whence it is distributed into the perforated pipes *b* within the bolt and into the perforated pipe *b* above it. Flour being supplied to the bolt and the bolt being put in rotation, currents of air will issue from the pipes *b* into the mass of flour and reduce its temperature, and at the same time tend to assist the operation of the bolt by pressing and forcing the flour through its meshes on all its sides. The upper pipe, *d*, will at the same time deliver a current of air downward upon the bolt, clearing the meshes on all its sides successively as it rotates beneath it from bran or chaff. The current of air from the pipe *d* may be delivered at any angle by means of the crank *i* on its end, by which it is rotated, or it can be shut off altogether by turning the pipe so that its perforations shall be closed against the under side of the cross-piece E.

The quantity of flour bolted by my apparatus will be greatly increased, and it will be delivered therefrom in a cool state, fit for packing, so that there will be no liability to sour from the effects or from the presence of heat caused by grinding.

I claim as new and desire to secure by Letters Patent--

1. The bolting apparatus herein described, consisting of the cylinder A, blast-pipe G, air-chest C, series of internal perforated pipes, *b* *b*, conducting-pipe *g*, and external perforated pipe, *d*, all combined and operating in the manner and for the purposes specified.

2. So mounting the pipe *d* that it may be turned by a crank, *i*, or other suitable means to deliver the blast at any angle desired.

JAMES E. MADIGAN.

Witnesses:

S. C. FIELD,  
W. JAMES.