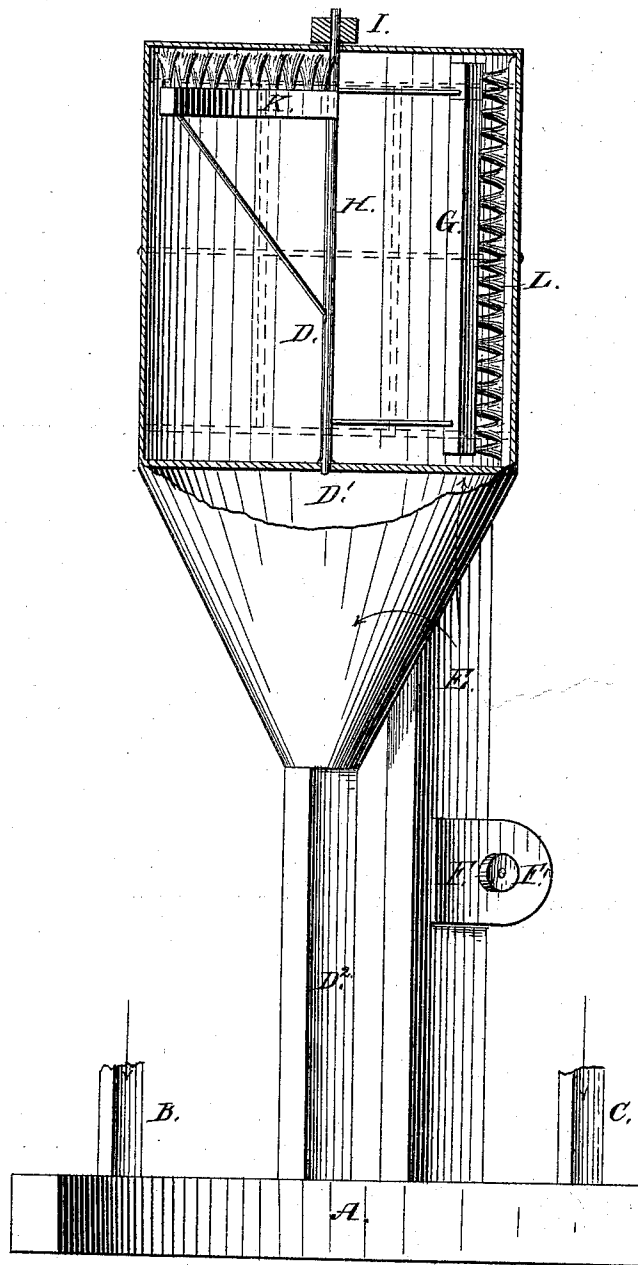


S. L. BEAN.
MILLSTONE-EXHAUST.

No. 171,973.

Patented Jan. 11, 1876.



Witnesses:

John Eils
Jno. D. Patten

Inventor:

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his atty.

UNITED STATES PATENT OFFICE.

SAMUEL L. BEAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN MILLSTONE-EXHAUSTS.

Specification forming part of Letters Patent No. **171,973**, dated January 11, 1876; application filed September 27, 1875.

To all whom it may concern:

Be it known that I, SAMUEL L. BEAN, of Washington, in the District of Columbia, have invented a new and useful Improvement in Millstone-Exhausts, of which the following is a specification:

This invention relates to that class of flour-mills in which currents of cool air are continuously drawn through between and from around the stones while in action by a suction-fan, for the several purposes of maintaining the stones and the grain they grind at as near their respective normal temperatures as may be possible under the circumstances, of avoiding a great percentage of the waste ordinarily occasioned by evaporation, of collecting the dust and fine flour, which would otherwise rise from the stones and become an annoyance around the mill, and loss in sweepings, and of carrying away, in suspension, any vapor that may still be generated in grinding, and which would otherwise condense on the curb and at other points, causing the annoyances which are incident to grinding-mills without such exhaust.

My improvement consists of the following features: First, in so arranging the suction-fan that it will draw the air from the stones, through the discharge-pipe, or "chop-spout," as it is termed, in the direction in which the meal is flowing. This arrangement has these advantages, among others, that every particle of the meal will be subjected, without fail, to the action of the induced air-currents, and thus render it of an even temperature, which is very desirable in bolting; and that such action, while maintained up to the point where the meal enters the conveyer or other receptacle, will effect a clean discharge of the meal from the stones; whereas in all millstone-exhausts heretofore known and used the air-currents obstruct, in a measure, the free discharge of the meal, because they leave the stones in a direction contrary to that in which the meal flows. Second, in providing for an automatic return from the dust-chamber to the conveyer, or other meal-receptacle having, like the conveyer, an uninterrupted connection with the bolt or bolts, of the fine dust and flour which are carried up with the air-currents, and are separated therefrom by the bolting-cloth, which forms the wall of the dust-

chamber, and through which the saturated air escapes. This is effected by making the bottom of the dust-chamber of funnel shape, and connecting it, by a pipe or spout, with said conveyer or other meal-receptacle. The main object of this feature of my invention is to automatically carry the collected dust to the bolts and utilize all its component parts. Third, of a revolving brush or brushes for sweeping off the dust and fine flour settling on the bolting-cloth of the dust-chamber, to keep the meshes open, as well as to prevent any accumulation of particles of flour in this chamber.

In the annexed drawings I have omitted a representation of the stones, and only illustrated such parts as are necessary to a clear understanding of my invention.

I have shown my improvements applied to a conveyer, A, into which, in this instance, two chop-spouts, B and C, discharge the meal from two pairs of stones. The conveyer, it will be understood, is the ordinary means for directing the meal either directly to the bolt or bolts or to an elevator, which carries it to the bolt or bolts. The dust-chamber D, which is a cylindrical cage covered with bolting-cloth—reticulated cloth preferably—of the required firmness, around the sides, and at the top also, if found desirable, is supported above the conveyer, and has a funnel-shaped bottom, D¹, connected, by a pipe, D², with the conveyer. This dust-chamber is connected, by another pipe, E, and an intermediate fan, F, with the conveyer. The fan is driven by a pulley, F', and is so arranged as to draw air through the chop-spouts and discharge it into the dust-chamber, as indicated by the arrows.

The air, expanding on its entrance into the dust-chamber, gives up the greater portion of the dust and fine flour it carried in suspension. What still floats in it will be separated from it by the bolting-cloth, through the meshes of which the vapor-saturated air escapes. All the dust and flour falling onto the funnel-shaped bottom of the dust-chamber return automatically to the conveyer through the pipe D².

The brush G, for sweeping the flour and dust from the bolting-cloth of the dust-chamber, is secured to a central shaft, H, which may be driven by a pulley, I. A second brush,

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K, is used to sweep the top of the dust-chamber, where it also is covered with bolting-cloth.

A fixed wire or comb, L, should be arranged in the path of each brush to clean it periodically when at work.

The stones or gang of stones will be so constructed that the suction produced by fan F will cause currents of air to flow in at the eyes of the stones, and some also at the periphery of the curbs, so that all points may be evenly affected by the air-currents.

The dust-chamber may have a flat bottom, and the dust and flour falling onto it may be conducted into the pipe D² by moving scrapers; or the flat bottom might rotate under stationary scrapers. Such arrangements are, however, mere equivalents, in this instance, of the funnel-shaped bottom, which I prefer on account of its simplicity, for spouting away the collected dust and flour. The dust-chamber may also be cleared of the dust and flour collecting on its reticulated cloth by other known means than brushes.

The gist of my invention as to these features consists in providing for continuous automatic cleaning of the meshes of the cloth covering the dust-chamber, and the automatic spouting away of the collected dust and flour to the bolt or bolts, whether it be returned to the meal-conveyer, to be carried thither or to a separate spout, or be directly discharged into such bolt or bolts.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with one or more pairs of millstones, of an exhaust, drawing the air from the stones through the discharge or chop spout thereof in the direction in which the meal is flowing, and the dust-collecting chamber, substantially as and for the purpose specified.

2. The combination, with the conveyer or other receptacle for the meal ground by a pair or gang of stones, of an exhaust, the elevated dust-chamber of which has a funnel-shaped bottom, connected, by a pipe, with said conveyer or receptacle, substantially as and for the purpose specified.

3. The combination, substantially as specified, of the millstone-exhaust, the dust-collecting chamber, covered with cloth, onto which portion of the dust is deposited by the air-currents, and the brush or brushes for sweeping the cloth to remove the dust and open the meshes for the escape of the air.

4. The combination, substantially as specified, of the exhaust, the dust-collecting chamber, a spout for conveying the dust to the bolts or their connections, and automatic means for discharging the dust from the collecting-chamber into said spout.

In testimony whereof I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

SAML. L. BEAN.

Witnesses:

B. EDW. J. EILS,
JOHN EILS.