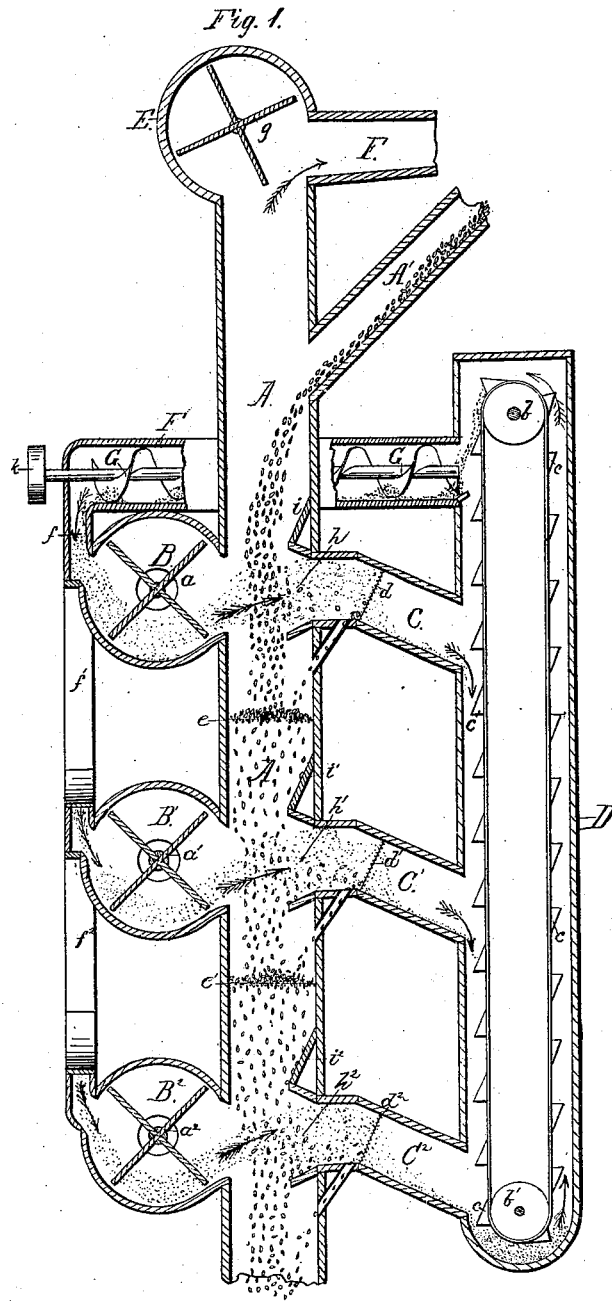


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Machine for Cleaning Grain.

No. 209,173.

Patented Oct. 22, 1878.



WITNESSES

*A. L. Mumman*  
*W. J. Vieser*

INVENTORS

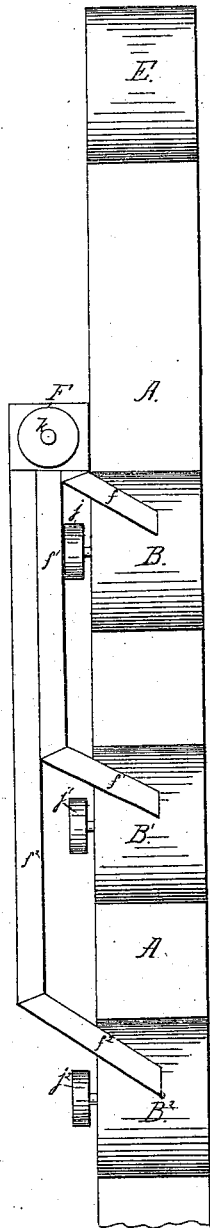
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Fig. 2.



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# UNITED STATES PATENT OFFICE.

JOHN L. KIDWELL AND JAMES A. MALONEY, OF GEORGETOWN, DISTRICT OF COLUMBIA, ASSIGNORS TO THEMSELVES AND DAVID L. SHOEMAKER.

## IMPROVEMENT IN MACHINES FOR CLEANING GRAIN.

Specification forming part of Letters Patent No. **209,173**, dated October 22, 1878; application filed September 30, 1878.

*To all whom it may concern:*

Be it known that I, JOHN L. KIDWELL and JAMES A. MALONEY, of Georgetown, in the District of Columbia, have invented certain new and useful Improvements in Machines for Cleaning Grain; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to a process and means for cleaning grain, by which the grain is subjected to the scouring action of flying sand, so that every portion of the grain will be acted upon during the process of cleaning or separating the grain from its attending extraneous matter, such as field-dirt, smut, beard, and germ.

In the drawings, Figure 1 is a vertical section of the machine. Fig. 2 is a side elevation.

A represents a grain-spout, through which the grain to be cleaned passes from the garner or other receptacles. B B<sup>1</sup> B<sup>2</sup> are pressure or blower fans. C C<sup>1</sup> C<sup>2</sup> represent outlet-spouts; D, an elevator-chest; E, a suction or exhaust pan. F is a conveyer-chest; G, a conveyer used for conveying sand to the fans B B<sup>1</sup> B<sup>2</sup>. *a a' a<sup>2</sup>* are fan-blades. *b b'* are pulleys over which an elevator-belt passes. *c c* are cups on elevator-belt; *d d<sup>1</sup> d<sup>2</sup>*, diaphragms placed in grain-spout A.

The operation of the machine is as follows: The grain to be cleaned is conveyed by a spout, A', to the spout A, and in its descent through the vertical spout A is met at intervals by a shower of sand, &c., forced from the pressure-fans B B<sup>1</sup> B<sup>2</sup>. The sand then continues on its course, passing through the wire-gauze diaphragm in the spouts C C<sup>1</sup> C<sup>2</sup>, which is of sufficient fineness of mesh to prevent the grain passing through with the sand. The latter then passes into the elevator-chest, and is carried by the cups or buckets up to the conveyer G, and thence returned to the fans B B<sup>1</sup> B<sup>2</sup>. The grain in its descent through the spout A is retarded momentarily at a point between each fan by another diaphragm,

*e e'*, the object of which is to check the impetus of the falling grain and spread the stream so that nearly every grain will be submitted to the scouring action of the sand, &c., in its passage across the spout A.

The lighter material, such as field-dust and beard of the grain, which has been whipped off and held in suspension, being of less specific gravity than either the grain or sand, will be carried off and away from the machine by the exhaust-fan, placed at the top of the spout A, to be carried away into any suitable receptacle. In cleaning grain, as heretofore practiced, it has been impossible, owing to the means employed, to reach every portion of the grain, and it was thought that means producing attrition of the grains in themselves would cause a cleaning action; but such is not the case. In other instances means have been employed where a surface describing a plane, or nearly so, was brought in contact with the grain; but, owing to the configuration of the grain, the result sought in that direction was not satisfactory, as the constant rubbing of the grain where it was brought against the rubbing surface would very often cause a peeling of the bran or cuticle, and in this condition would be ground into an impalpable powder-like flour, and cannot be separated from the flour.

It is the subjecting of grain to the scouring action of moving sand, &c., however propelled, which distinguishes our improvement in the art from all modes heretofore known.

We are aware that sand propelled under pressure has been used for the purpose of engraving or cutting hard substances, and such we do not claim; but

What we do claim, and desire to secure by Letters Patent, is—

1. The improved process of cleaning and scouring grain, which consists in subjecting the same to the action of air and sand, or sand or other equivalent material forced against and through the grain by any suitable means, substantially in the manner hereinbefore described and set forth.

2. In a machine for cleaning grain, the combination, with a vertical grain-spout, of one or more blower or pressure fans, adapted to propel, force, or blow streams of any metallic, vit-

reous, or silicious material crosswise or in a direction contrary to the falling grain, and independent outlets for the cleaning material, substantially as and for the purpose set forth.

3. In a machine for cleaning grain, the combination, with a wheat-flowing spout, of one or more blower or pressure fans, adapted to propel, force, or blow streams of any metallic, vitreous, or silicious material crosswise or in a direction contrary to the falling grain, and independent outlets for the cleaning material and an exhaust-fan, substantially as and for the purpose set forth.

4. In a machine for cleaning grain, the combination, with a vertical grain-spout, of one or more blower or pressure fans, adapted to propel, force, or blow streams of any metallic, vitreous, or silicious material crosswise or in a direction contrary to the falling grain, and independent outlets for the cleaning material,

and an exhaust-fan and an elevator, substantially as and for the purpose set forth.

5. In a machine for cleaning grain, the combination, with a vertical grain-spout, of one or more blower or pressure fans, adapted to propel, force, or blow streams of any metallic, vitreous, or silicious material crosswise or in a direction contrary to the falling grain, and independent outlets for the cleaning material, and an exhaust-fan, an elevator, and one or more diaphragms for retarding the grain, substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

JOHN L. KIDWELL.  
JAMES A. MALONEY.

Witnesses:

ED. SHOEMAKER,  
C. W. SHOEMAKER.