J. W. COLLINS.

Art of Manufacturing Flour.

No. 217,066. Patented July 1, 1879.

Fig. 1.

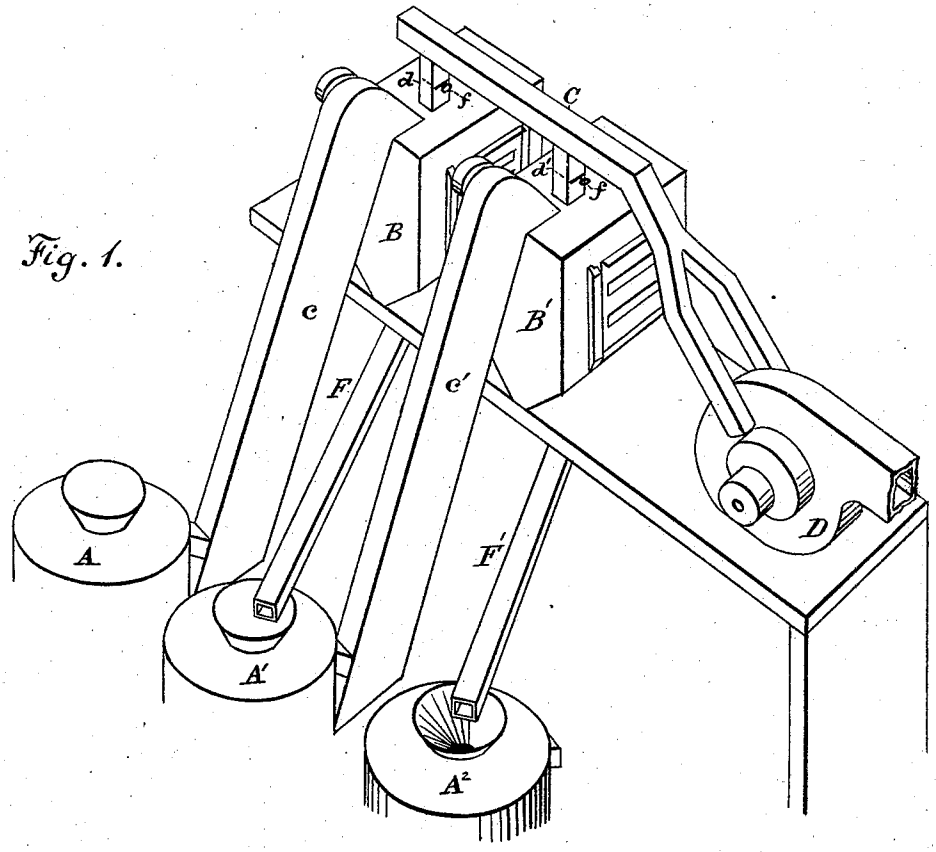
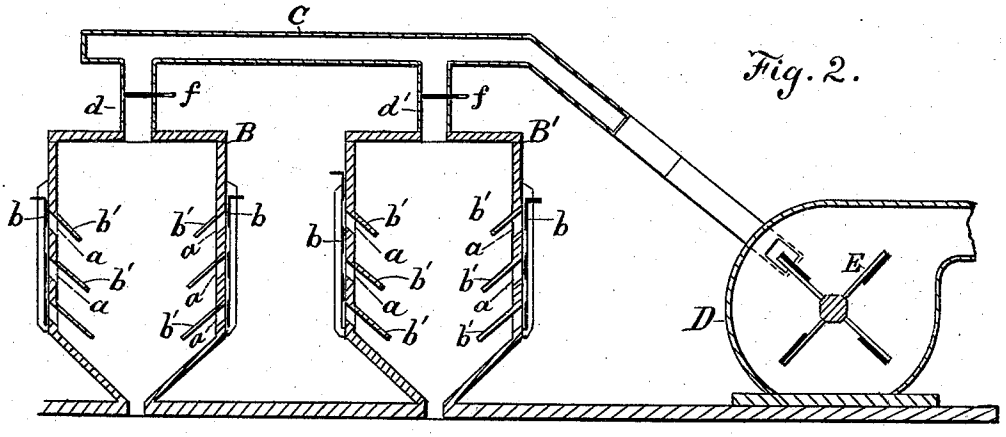


Fig. 2.



Witnesses:

James W. Shanklin

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UNITED STATES PATENT OFFICE.

JOHN W. COLLINS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN THE ART OF MANUFACTURING FLOUR.

Specification forming part of Letters Patent No. **217,066**, dated July 1, 1879; application filed January 30, 1879.

To all whom it may concern:

Be it known that I, JOHN WEB. COLLINS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in the Process of the Gradual Reduction of Grain to Flour; and I do hereby declare that the following is a full, clear, and exact description of the invention, 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 letters of reference marked thereon, which form a part of this specification.

My invention relates to the manufacture of flour; and consists of the continuous process of drawing off from a series of graduated grinding devices for the gradual reduction of grain to flour the whole product as fast as reduced, and separating by air-currents from that product the finer and lighter portions, and returning the coarser portions for regrinding in the next progressively lower set of grinding devices provided for that purpose, and conveying to a bolt or chest of bolts the whole product of the series of steps as it is reduced to the required fineness, and bolting it all together, as hereinafter more fully described.

In this process any suitable machinery and devices may be employed. Those at present employed are represented by the accompanying drawings, in which—

Figure 1 is a perspective view; and Fig. 2 is a vertical section through the meal-chests, air-spouts, and fan.

A A^1 A^2 represent several sets of millstones adjusted to gradually reduce the grain to flour of the required fineness. The grain may be thus gradually reduced by rolls or by any other grinding devices instead of the stones.

B B′ represent meal-chests, provided with air-flues *a*, having slide-valves *b*. The interiors of these chests are provided with cant-boards *b′*, inclined downward, and preferably graduated in width from the bottom upward of the chests, so that the lowest boards will be the widest and the upper boards will be the narrowest, as shown in Fig. 2 of the drawings, to distribute more thoroughly the air upon the meal as it falls into the chests from the elevator-spouts; and suitable spreaders should be adjusted to spread the falling meal in the chests.

The elevator-spouts *c c′* are adjusted to receive and elevate the meal from the exit-spouts of the stones A A^1 and deliver it into the chests B B′. On the top, and communicating with the interior of these chests, are air-spouts *d d′*, having slide-valves *f*, and communicating with the air-spout C, leading to the chamber D, provided with the fan E.

F F′ represent spouts leading from the bottom of the chests to the hoppers of the stones A^1 A^2.

As the meal runs from the stones A, adjusted to partially reduce the grain, it is elevated through the spout *c* into the chest B; and the finer and lighter portions of the meal, consisting of the fine flour, fine middlings, fine-cut bran, and fibrous particles, and the light, coarser portions of the bran, are drawn off through the air-spouts *d* C by the air-currents produced by the suction-fan E, and conveyed to a receiving-chamber. The balance of the meal in the chest B too coarse and heavy to be drawn off by the air-currents is conducted through the spout F to the hopper of the stones A^1, which are adjusted to further reduce this meal; and after being run through these stones it is again elevated through the spout *c′* into the chest B′; and, as above described in relation to the chest B, the finer portions of the meal are drawn off from the chest B′ through the air-spouts *d′* C by the air-currents and conveyed to the same receiving-chamber; and the portions of the meal too coarse and heavy to be thus drawn off from the chest B′ are conducted through the spout F′ to the hopper of the stones A^2, which are adjusted to complete the reduction of the grain into fine flour and middlings, which are then conveyed from these stones to the same receiving-chamber with the meal drawn off by the air-currents from the chests; and the whole material thus conveyed to one receiving-chamber may be conveyed or spouted to one bolting-chest and all bolted together, thus dispensing with the different bolts required by the ordinary process.

In this process the bran, being light, most of it in a comparatively coarse state, is drawn off with, and is readily separated in bolting

from, the fine flour, instead of being reduced to fine specks and passed through the bolts with the fine flour, as in the usual process.

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

In the manufacture of flour, the continuous process consisting in drawing off from a series of graduated devices for the gradual reduction of grain to flour the whole product as fast as reduced, and separating by air-currents from that product the finer and lighter portions, and returning the coarser portions for regrinding in the next progressively lower set of grinding devices provided for that purpose, and conveying to a bolt or chest of bolts the whole product of the series of steps as it is reduced to the required fineness, and bolting it all together, substantially as and for the purposes described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

JNO. WEB. COLLINS.

Witnesses:

JNO. P. LOTHROP,

W. BURRIS.