2 Sheets—Sheet 1.

F. M. MAHAN.

FLOUR BIN AND SIFTER COMBINED.

No. 191,694. Patented June 5, 1877.

Fig 1

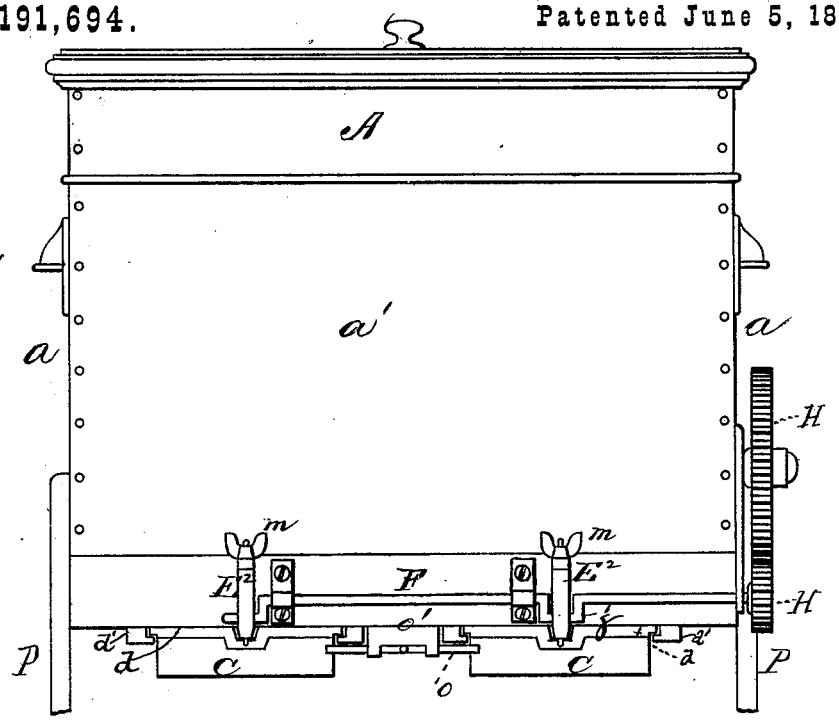
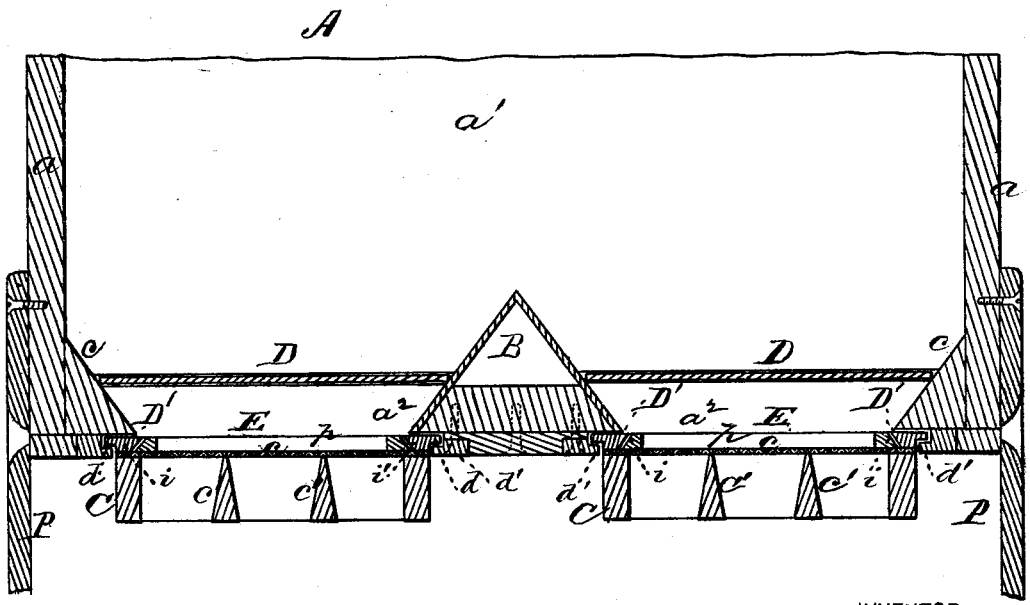


Fig 2



WITNESSES

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2 Sheets—Sheet 2.

F. M. MAHAN.

FLOUR BIN AND SIFTER COMBINED.

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Fig 3

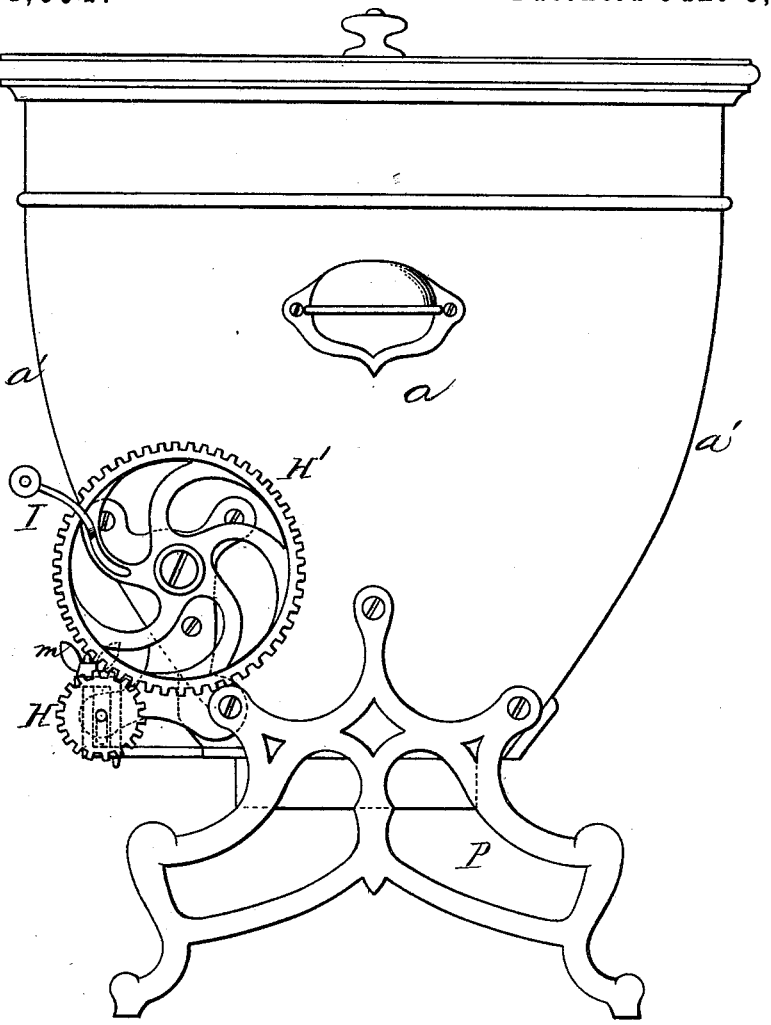
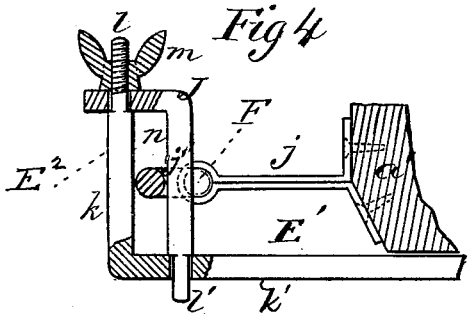


Fig 4



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UNITED STATES PATENT OFFICE.

FRANK M. MAHAN, OF ST. JOSEPH, MISSOURI.

IMPROVEMENT IN FLOUR BIN AND SIFTER COMBINED.

Specification forming part of Letters Patent No. **191,694**, dated June 5, 1877; application filed May 5, 1877.

To all whom it may concern:

Be it known that I, FRANK M. MAHAN, of St. Joseph, in the county of Buchanan and State of Missouri, have invented a new and valuable Improvement in Flour-Bins; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of my invention. Fig. 2 is a longitudinal vertical section thereof. Fig. 3 is an end view of the same, and Fig. 4 is a detail view of the slotted extension.

This invention has relation to improvements in bins for the storage of flour, meal, and other ground cereals.

The object of my invention is to provide a receptacle for articles of domestic use, as flour or meal, and other like substances, which, being provided with a sifter and an agitator, will deliver the grain at its exit end in a proper condition for immediate use—that is, freed of its bran or other foreign substances.

The nature of my invention consists in the combination, with a bin having an aperture or apertures in its lower end covered by a reticulated material, of a reciprocating agitating-frame working above said sifter, and operated by suitable mechanism, and a slide which shuts off or opens the passage between the interior of the bin and said sifters, whereby I am able, during the presence of the grain in the bin, to deliver it in condition for immediate use from the bin, all as hereinafter more fully set forth.

In the annexed drawings, the letter A designates a flour or meal bin, having vertical ends *a* and inclined downwardly-tapering sides a^1, ending in a bottom, a^2. This bin is supported on legs P P. This bottom, in the drawings, is represented as having two openings, *b*, that are closed by a suitable reticulated material, *c*, and are separated by an angular rib, B, which separates and delivers the grain in the bin to one or both of the openings *b* aforesaid. The end walls *a*, at their junction with the bottom a^2, are each provided with an inclined guide, *c*, that forms, with the inclined sides a^1 of the bin and the angular rib B aforesaid, a funnel, which accurately directs the contents of the bin to the sifter. These latter are each stretched over a rectangular frame, C, and are supported and prevented from sagging by means of angular transverse strips *c'*, extending across the said frame.

As the sifters support the entire weight of the contents of the bin when the sliding doors D are open, this provision is very necessary, to prevent the said sifters from being torn loose from the said frame. These frames are each provided with a metallic rim, D', rigidly secured thereto, and provided at each side with a flange, *d*, that engages with slideways *d'* upon the under side of the bottom of the bin, the said rim being secured to the frame above the sifter.

E represents an agitating-grate, of any suitable material, the cross-bars of which are preferably triangular in section, the apex of the angle being upward. One of these grates is allotted to each sifter, and they are arranged above the same after the manner of a sash, so as to reciprocate readily in reference thereto. They are of the same width as the rim and sifter, but of less length, and their lateral edges are beveled, as shown at *i*, to correspond to the beveled slideways *i'* in said rims. They are also provided with an angular operating-handle, E^1. These latter extend out beyond the bottom of the bin, and terminate in a vertical slotted extension, E^2.

F represents a shaft, having its bearings in arms *j*, projecting from the sides of the bin, and provided with cranks *j'*, that are engaged with the slotted extensions E^1 above mentioned. This shaft is provided at one end with a small cog-wheel, H, that meshes with a larger cog-wheel, H', actuated by a suitable crank-arm, I, or other equivalent device.

The actuation of the wheel H' imparts rotary movement to the shaft F, which is converted into a reciprocating motion of the agitating-grates through the cranks and slotted extensions engaged therewith. This motion will be more or less rapid, according to the relative sizes of the cogs H H'.

The extensions E^1 are each composed of the

short branch *k* of the angular arm E¹, and of a flat elbow-shaped piece, J. Branch *k* has upon its upper end a rabbeted screw-threaded spur, *l*, adapted to pass through an eye in the end of the elbow-plate, and the longer branch *k'* has, near the heel of the shorter one, a perforation adapted to receive a rabbeted spur, *l'*, upon the remaining end of the said plate. When this latter is applied to angular arm E¹, as shown in Fig. 4, it forms therewith an oblong slot, *n*, for the reception of the crank on the shaft F, and the elbow-plate is secured to the said arm by means of a thumb-nut, *m*, applied upon the screw-threaded rabbet aforesaid. When the cranks are all engaged with the slotted extensions aforesaid, and the shaft is rotated, the agitators will be reciprocated simultaneously; but, if it be desired that only one be actuated, the elbow-plates J on the ends of the arms of the remaining sifters will be removed by detaching the thumb-nuts on their respective angular arms, and the desired result will be attained. If it should prove necessary to remove the sifters for repairs or other purposes, a latch-bar, *o*, arranged in a slotted slide, *o'*, and operated by a suitable handle, will be operated, releasing one of the sifter-frames, which may then be drawn out. By reversing the latch the other sifter will be released, and may then be removed from the bin. These latches also hold the sifter-frames steady during the reciprocations of the agitators. By thrusting the slides D aforesaid inward, thereby closing the lower part of the bin, the supply of flour to the sifters will be immediately cut off. Sometimes the legs may be left off and the bin placed in a safe or cupboard adapted to this purpose.

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

1. The combination, with a bin having vertical ends and converging sides and delivering-apertures separated by angular ribs, of a reticulated material, closing said apertures, and reciprocating agitators arranged above said sifters, substantially as specified.

2. In combination with a bin having spaced delivery-apertures and angular ribs between them, of the removable sifter-frames C, having lateral flanges *d*, adapted to be received in slideways of the bin, substantially as specified.

3. In combination with a hopper-bin for ground grain, having delivery-apertures and an angular rib separating the same, and provided with slideways *d'*, the sifter-frames having angular supporting-ribs, adapted to be received in said ways, and the agitators adapted to reciprocate on the sifter-frames, substantially as specified.

4. The combination, with a hopper-bin having spaced sifting devices and metallic slides *d* upon its under side, of the agitators E, sashed in the frames of the sifting devices, the angular arms E¹, the slotted extensions E², a crank-shaft, and an operating device therefor, substantially as specified.

5. The combination, with a hopper-bin having spaced delivery-apertures and ribs separating the same, and a reticulated material closing the said apertures, of the reciprocating agitating-frames E, the angular slotted arms E¹, the shaft F, having crank-arms engaging said slotted arms, and a mechanism for rotating said shaft, substantially as specified.

6. The combination, with the stationary sifters, the reciprocating agitator-grates, and the angular arms attached to said grates, of the angular elbow-plates J, removably secured to said arms to form slots *n* for the reception of the cranks of the operating-shaft, substantially as specified.

7. In a mechanism for operating the agitators of a combined flour-bin and sifter, the combination, with the crank-shaft F and the angular arm E¹, of the detachable angular plate J, substantially as specified.

8. The combination, with the angular arm E', of the detachable elbow-plate J, forming, with said arm, an oblong slot, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

FRANK M. MAHAN.

Witnesses:
JAMES C. OGDEN,
S. R. OWEN.