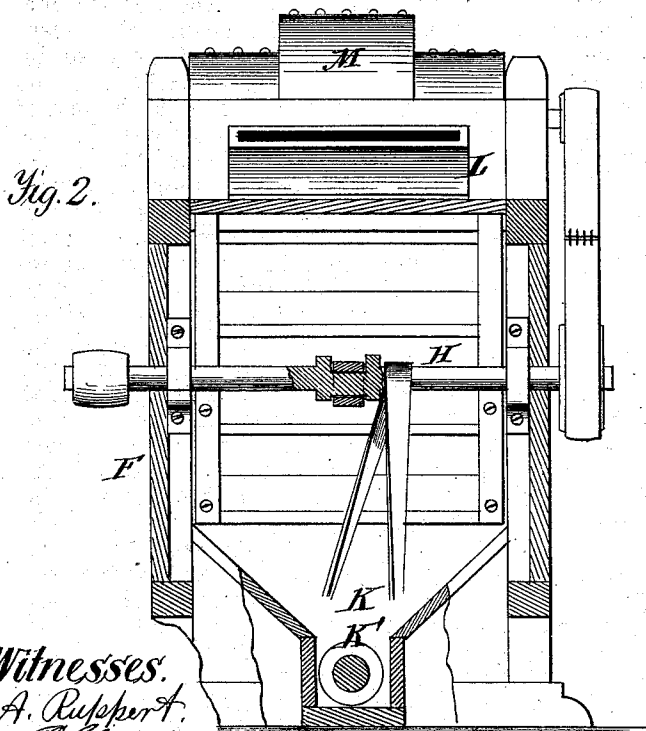
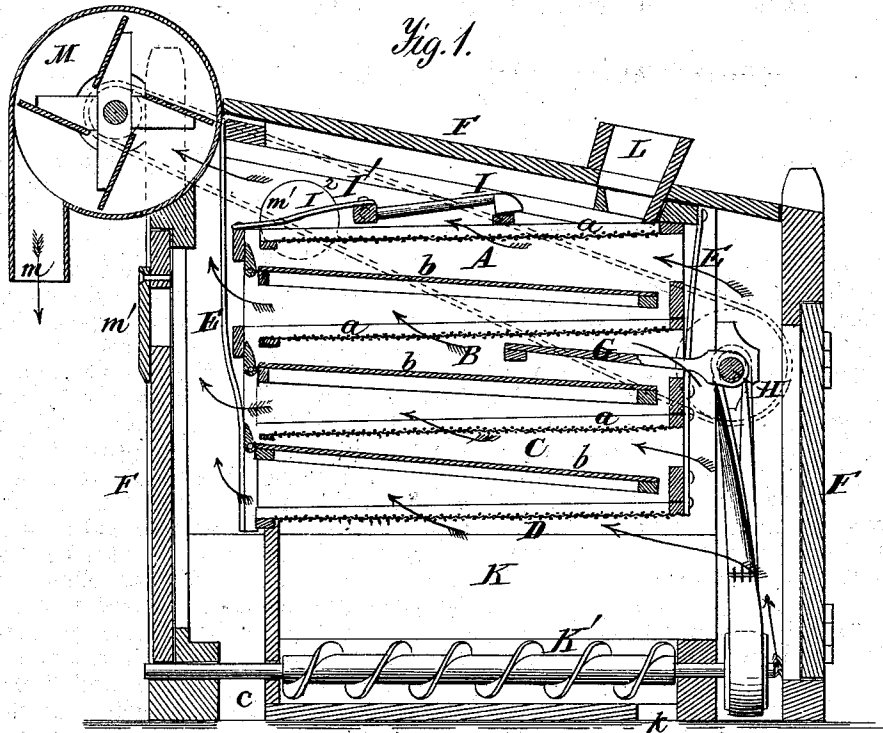


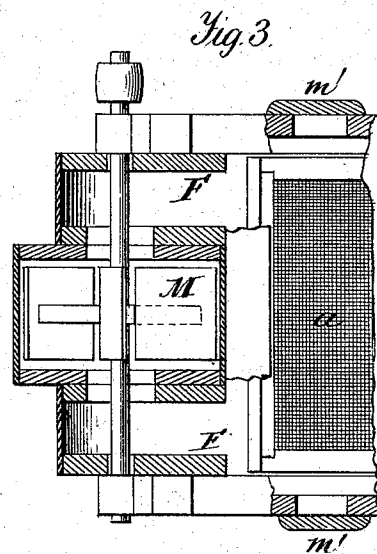
J. W. MORRISON.
Middlings-Purifiers.

No. 155,589.

Patented Oct. 6, 1874.



Witnesses.
A. Ruppert.
W. P. Chaffin.



Inventor.
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UNITED STATES PATENT OFFICE.

JAMES W. MORRISON, OF CLINTON, ILLINOIS.

IMPROVEMENT IN MIDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. **155,589**, dated October 6, 1874; application filed August 27, 1874.

To all whom it may concern:

Be it known that I, JAMES W. MORRISON, of Clinton, in the county of DeWitt and in the State of Illinois, have invented a new and useful Improvement in Middlings-Purifiers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a vertical longitudinal section of my improved middlings-purifier. Fig. 2 is a sectional front elevation of the same. Fig. 3 is a sectional plan of the rear end thereof.

The same letters of reference are used in all the figures in the designation of identical parts.

The nature of my invention consists in purifying middlings by subjecting them to induced currents of air while they are traveling in thin sheets over a series of vibrating conveying-frames, each frame consisting of a very fine mesh cloth, which only permits the air to pass up through, but prevents the middlings-meal from sifting through, and a tight inclined bottom or board underneath the cloth. The particles of middlings-meal, passing in a state of constant agitation over the cloth and bottom of each conveying-frame, naturally arrange themselves according to their respective specific gravities, the heavier at the bottom, the lighter on top, this action being assisted by the air-currents, which are sufficiently strong to carry off all the dust and fine light impurities, so that by the time the meal reaches the separator, to be graded, all the speck and dust have been removed.

In the example illustrated I have shown a series of three conveying-frames, A, B, and C, arranged above one another, the lower one discharging the purified middlings-meal upon a separating-screen, D. All the conveying-frames and the separating-screen, being connected together, are suspended, by straps E, from the top of an air-tight chest, F, and are vibrated endwise by a rod, G, from an eccentric or crank on shaft H. Each conveying-frame is also provided with a knocker, I, (one only being shown,) which is secured to a bar, I¹, pivoted to the sides of the chest F, and having imparted to it a rocking motion by means

of a flexible strap, I², fastened to it at one end, and at the other end to the vibrating frame. These knockers, by constantly jarring the conveying-frames, will keep the meshes of the cloths open for the free passage of air through them. Each conveying-frame consists of a very fine cloth, *a*, and a tight bottom board, *b*, inclined in opposite directions, and so arranged that the middlings-meal, passing first over the entire extent of the cloth, is discharged upon the elevated end of the bottom board, which returns it to the head of the next cloth in series. After traveling over all the conveying-frames in succession, the purified meal falls onto the head of the separating-screen, which permits all the flour-producing particles to sift through, and discharges the bran and other coarse offal over the tail end into the offal-spout *c*. The flour-producing portion of the meal falls into the receptacle K beneath the screen, and is carried, by the conveyer K', to the aperture *k* to be spouted away for regrinding. The bottom of the receptacle K may contain a series of slides covering a common chute leading to an elevator discharging into the hopper L, from which the middlings-meal passes onto the conveying-frames. Thus, should any portion of the meal sifted through the separating-screen be found specky it may be returned to the hopper L to undergo the purifying action a second or third time before regrinding. M refers to a suction-fan, placed at the upper rear corner of the chest F, drawing air in at the front end of the chest through an opening at the bottom and, causing it to pass through the meshes of the screen D and the cloths *a* of the conveying-frames, carrying the dust and light impurities off with these air-currents to be discharged at *m*. Valves *m'* *m'* are arranged in the rear end and sides of the chest, near the fan, by opening which, more or less, the strength of the currents passing through the screen and cloths can be regulated at pleasure. The shaft H, the conveyer, and the fan-shaft are all belted together in the manner shown, and may be driven by any convenient power.

My invention economizes very much in space over those machines having a single long sieve on which the middlings are sifted and

subjected to air-currents at the same time, and it effects a thorough purification of the middlings-meal without waste of flour-producing particles. By first subjecting the middlings-meal to the air-currents without attempting to sift it, I am enabled to take out the fine bran, fuzz, and other light impurities by an arrangement of vibrating frames, one below the other, thus securing a sufficient extent of traverse, and consequent exposure to air-currents within a small space. The entire volume of meal is conveyed over each of these frames successively, and is still subjected to the air-current on reaching the sieve proper. For sifting merely a short screen will answer, though it may be any desirable length.

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

A series of vibrating conveying-frames, in which the middlings-meal is subjected to induced currents of air before sifting, composed each of a cloth, *a*, and a bottom board, *b*, arranged as described, whereby the whole volume of meal is conveyed over each frame successively, in combination with a separating screen, *D*, and fan *M*, substantially as described.

JAMES W. MORRISON.

Witnesses:

GEORGE B. GRAHAM,
WILLIAM MORRISON.

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