2 Sheets—Sheet 1.

N. P. EISENMAYER & A. DEHNER.

MIDDLINGS SEPARATOR.

No. 183,495. Patented Oct. 24, 1876.

Fig. 1.

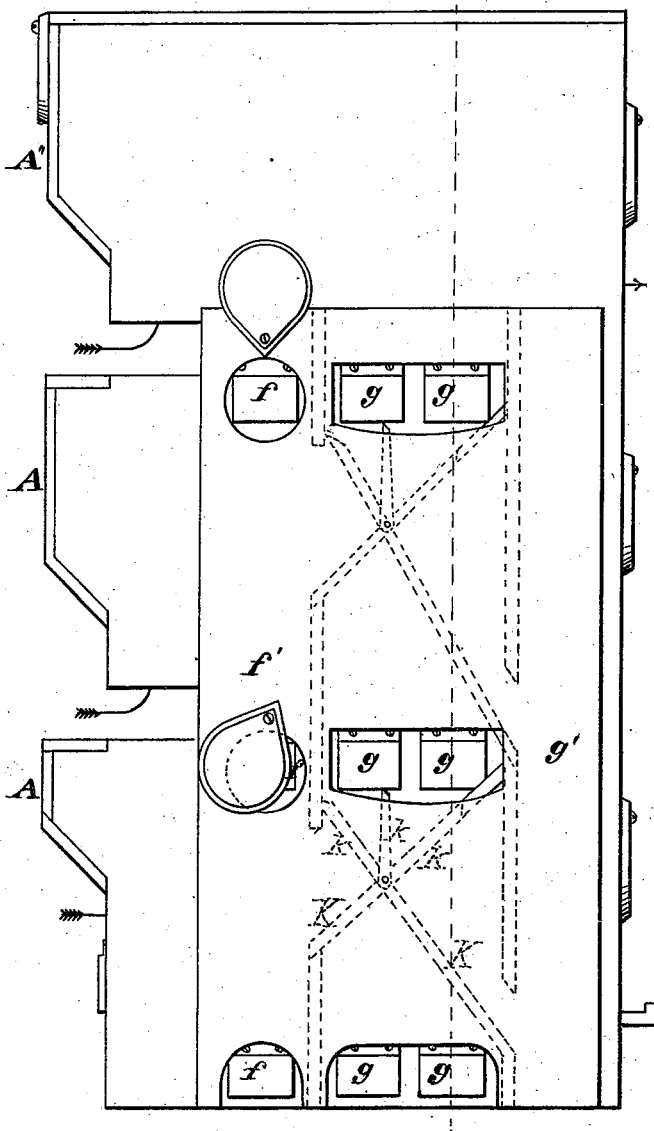
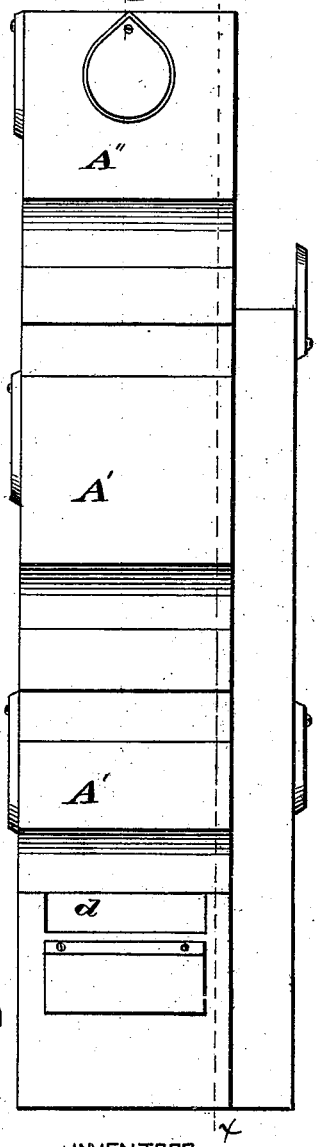


Fig. 2.



WITNESSES.

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2 Sheets—Sheet 2.

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Fig. 3.

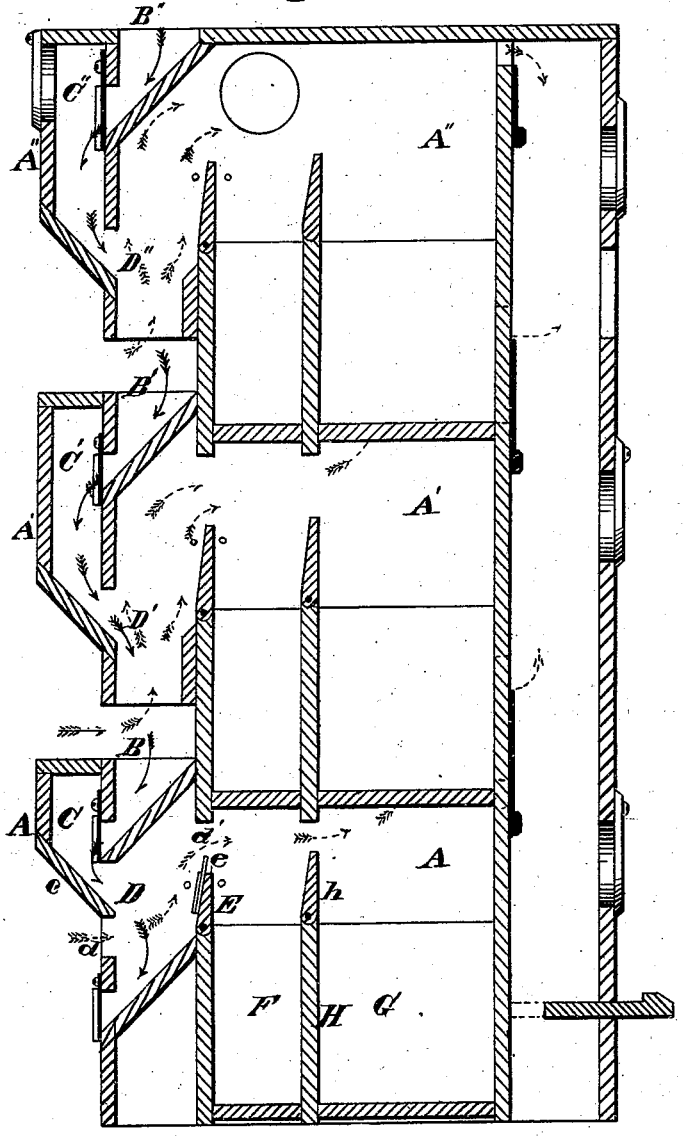
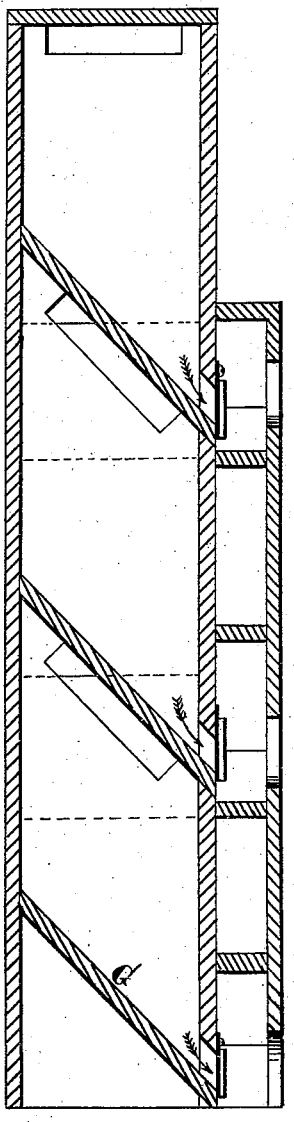


Fig. 4.



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UNITED STATES PATENT OFFICE.

NICKOLAS P. EISENMAYER AND ADOLPH DEHNER, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. **183,495**, dated October 24, 1876; application filed June 3, 1876.

To all whom it may concern:

Be it known that we, NICKOLAS P. EISENMAYER and ADOLPH DEHNER, residents of St. Louis, Missouri, have invented new and useful Improvements in Middlings-Purifiers, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a side elevation of the invention, the dotted lines indicating the arrangement of the spouts for conducting the contents of the settling-chambers therefrom; Fig. 2, a front elevation; Fig. 3, a longitudinal vertical section taken on the line *x x*, Fig. 2, the arrows in full lines indicating the course of the middlings, and the arrows in dotted lines indicating the course of the air-current; and Fig. 4 a vertical transverse section taken on the line *y y* of Fig. 1.

Similar letters refer to similar parts.

The present invention is an improvement made upon a middlings-purifier constructed by ADOLPH DEHNER, one of the parties hereto; and it relates to the means employed in further separating that portion of the middlings which is carried from the separating-flue into the settling-chamber. It further relates to the means for controlling and adjusting the amounts received, respectively, in the different divisions of the settling-chamber. It further has reference to the means for properly delivering the contents of the settling-chamber. It further, and especially, has relation to the provision by which the air-current is enabled to act properly and effectually upon that part of the middlings which is to be carried into the settling-chamber. It further has reference to the construction for graduating the opening to the settling-chamber.

Referring to the annexed drawing, A A′ A″ represent a middlings-purifier containing our improvements. As shown, the purifier is made three stories high, but any desirable number can be used, and in practice we prefer several. B B′ B″ represent the chutes, which, respectively, in the different stories of the purifier, receive the middlings; thence the middlings pass into the flues C C′ C″, respectively, and thence into the separating-flues D D′ D″, respectively.

So far, the construction is similar to that above referred to. Instead, however, of constructing the separating-flue, as shown in the upper stories of the purifier, with vertical walls extending below the level at which the middlings are delivered to the flue, we construct it as shown in the lower story A. There, as will be seen, the entrance *d* to the separating-flue is immediately below the point at which the middlings are delivered on the bottom *c* of the flue C′, and, instead of extending the separating-flue upward, past and above the level where the middlings are delivered, and arranging the opening to the settling-chamber in the upper part of such extension, we make the entrance *d′* to the settling-chamber almost directly opposite the mouth of the delivery-flue C. The partition E, between the separating-flue and the settling-chamber F, is also made in the form of a valve; but we make such valve shorter vertically, and provide it with an extension, *e*, in the form of a slide, which can be set in and out upon the valve E. In the place of a single settling-chamber we employ two chambers, F and G, and which are formed by means of the partition H. The upper part of this partition is made in the form of a valve, *h*, which can be moved laterally and similarly to the valve E. The upper edge of the valve *h* is, preferably, higher than that of the valve E. The settling-chambers, as seen in Fig. 1, are, at their sides, provided with outlets *f* and *g g*, respectively, the chamber G, which is larger than the chamber F, having two outlets. A system of spouts (shown in dotted lines, Fig. 1) is arranged to connect with these outlets *g g*, and as follows: At the upper end of the spouts K K′ a valve, *k*, is arranged to turn either toward the front of the purifier or toward the back, and so as to direct the contents of the chamber G either into the chute leading from the chamber F, or into an independent chute, or by turning the valve so as to come between the outlets *g g* part of the contents of the chamber G can be diverted into the spout *f′*, leading from the chamber F, and part can be directed into the spout *g′*.

The operation is as follows: The middlings are delivered through the chute B and flue C into the separating-flue D, where they encoun-

ter an air-current, (created either by blowing or suction,) which carries the lighter and inferior portion of the middlings into the settling-chambers F and G, while the heavier and better part drops through the separating-flue. Owing to the relative arrangement of the mouth of the delivery-flue C and the separating-flue D, and the construction and the arrangement of the opening into and from the latter, the air-current is enabled to strike the various particles of the middlings directly sidewise, or in a direction most favorable for the air-current to act upon the particles, and in consequence the coarser portions thereof are readily separated and carried past the valve E into the chambers F and G. If too little passes into the settling-chambers, the valve E is turned outward, and if too much, inward; but to enable the valve to be of sufficient length in the latter situation to effect its purpose, and also to be short enough in the former position to leave sufficient space above it for the particles to enter the settling-chamber, we furnish it with the slide *e*. By setting this slide suitably in or out, the valve can be properly lengthened or shortened. In dividing the settling-chamber into two parts, F and G, provision is thereby made for a further separation of the middlings, the poorer, coarser, and lighter part being carried into the farther chamber G. If too much or too little is carried into this chamber, the valve *h* is turned suitably, and so as to enlarge the opening into that chamber into which it is desired more of the middlings should fall. In this manner a very effective separation and classification can be accomplished; but to make it still more complete, we bring into use the valve *k*, at the upper end of the spouts K K, and the independent outlets *g g*. If that part of the settlings falling in the chamber G is found suitable to mix with that coming from the chamber F, the valve *k* is turned outward, and so as to deliver into the spout *f'*. If it is not desirable to put the contents of the chambers together, the valve *k* is turned in the opposite direction. If part of the settlings in the chamber G should go one way and part the other, the valve *k* is turned so as to come between the outlets *g g*, and divert the settlings accordingly.

What we claim is—

1. The combination of the flue C, separating-flue D, openings *d* and *d'*, valve E, extension *e* of said valve, and chamber F, substantially as described.

2. The combination of the flue C, arranged as described, the separating-flue D, openings *d* and *d'*, valve E, extension *e* of said valve, and chambers F and G, substantially as shown and specified.

3. The combination of the flue C, flue D, openings *d* and *d'*, valve E, extension *e* of said valve, chambers F and G, and valve *h*, substantially as described.

4. The combination of the separating-flue D, openings *d* and *d'*, valve E, extension *e* of said valve, chambers F and G, valve *h*, and the independent outlets *g g*, substantially as and for the purpose of enabling the middlings to be thoroughly separated and classified.

5. The combination of the flue D, valve E, chambers F and G, valve *h*, spouts K K, valve *k*, and outlets *g g*, substantially as described.

6. The combination of the separating-flue D, valve E, extension *e* of said valve E, and the settling-chamber F, substantially as described.

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Witnesses:
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DANL. T. POTTER.