2 Sheets—Sheet 1

E. SLAGLE & J. McC. GRAHAM.

MIDDLINGS-SEPARATOR.

No. 183,715. Patented Oct. 24, 1876.

Fig. 1

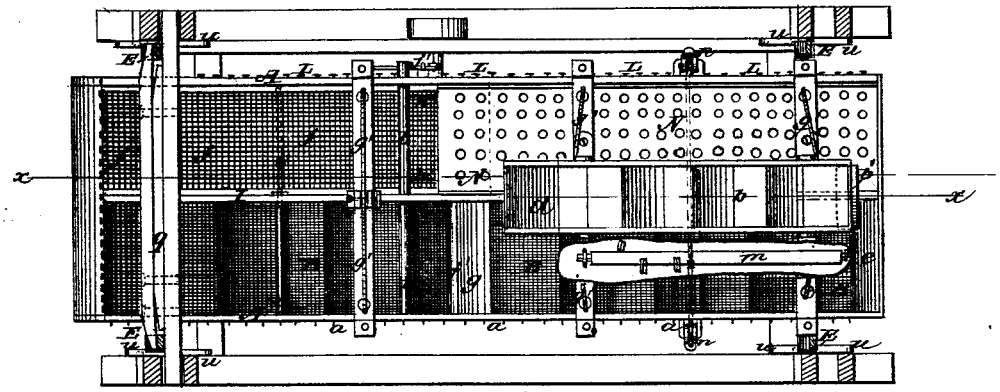
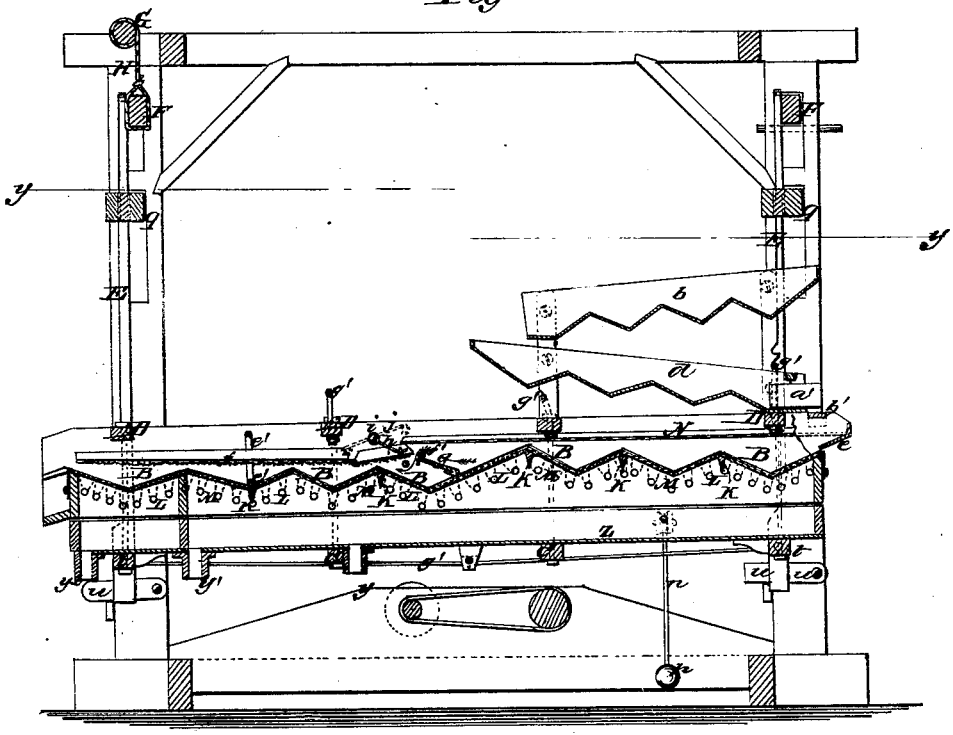


Fig. 2



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2 Sheets—Sheet 2.

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MIDDLINGS-SEPARATOR.

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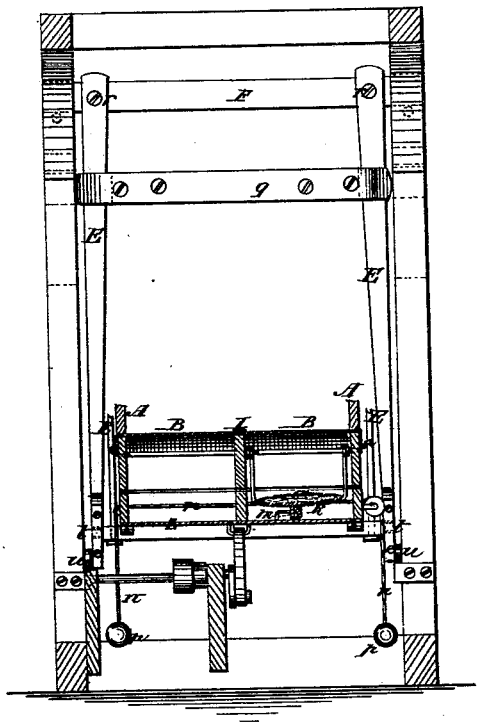
Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWIN SLAGLE AND JOHN McCLURE GRAHAM, OF ALBANY, MISSOURI.

IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. **183,715**, dated October 24, 1876; application filed July 31, 1876.

To all whom it may concern:

Be it known that we, EDWIN SLAGLE and JOHN McC. GRAHAM, of Albany, county of Gentry, and State of Missouri, have invented a new and Improved Flour-Bolt, of which the following is a specification:

This invention relates to improvements in the flat inclined shaking flour-bolt, having cloth arranged in wave-like form, for which a patent was granted to us February 1, 1876, No. 173,074, which said improvements are hereinafter described in detail, reference being had to the accompanying drawing, in which—

Figure 1 is a plan view of the bolt and horizontal section of the frame, taken on the line *y y*, Fig. 2. Fig. 2 is a longitudinal sectional elevation taken on line *x x* of Fig. 1, and Fig. 3 is a transverse section.

Similar letters of reference indicate corresponding parts.

A represents the side-boards and B the cloth of the flat shaking-bolt, which is suspended by flexible hangers E from cross-bars F, which are adjustable up and down, and one has a roller, G, and chains H, to regulate the inclination of the bolt. For wide sieves a partition, I, will be used in the middle of the bolt, but for narrow ones this will not be needed. The cloth B is arranged in wave-like form on the cross-pieces K, and is secured at the middle and the edges between the edges of the partition I and sides A, which are divided in the zigzag lines of the waves; and, in addition, the cloth is attached at one side to the points *a*, projecting from the side of the bolt, and at the other side it is sewed to a line of tacks, L, by cords M, which stretch the cloth laterally. The cloth is also pasted to cross-pieces K, to prevent being chafed by them, and it has paper strips placed between it and the partition I for like protection, the paper being pasted to the cloth. Over a portion of the upper end of the cloth is a riddle, N, for throwing off the dough balls, which, in this example, is represented as being made of perforated zinc; but it may be made of coarsely-woven wire-cloth, if preferred. Below the cloth is a zinc cooling plate or bottom, *z*, to receive the flour and discharge it through one or more openings, *y* y^1 y^2, &c., as may be preferred, for dividing or cutting off the different grades. Over the upper portion of the bolt are a couple of cooling-troughs, *b d*, with wave-like zinc bottoms, for cooling the meal as it passes along to the bolt, said coolers being mounted on the bolt for being shaken thereby. From the lower end of the lower cooler the meal is discharged onto the upper end of the bolt, which is constructed in the sloping form shown at *e*, coinciding with the slope of the first wave of the cloth, and discharging onto it, which we find in practice to be a better form than a vertical form, as the meal flows naturally and quickly onto the riddle. The riddle *n* discharges onto a finer riddle, *f*, of woven wire, at the middle of the bolt, which, besides continuing the discharge of the dough balls, is designed in some cases to receive the bran from the bolt B, after a certain amount of flour has been separated from it, and is no longer needed for scouring the flour, and separating the running flour and the middlings from it, the flour and the middlings to be again separated by the bolt B below. The transfer of the bran to this riddle is effected by the chute *g*, the riddle *f* being low enough therefor, for which the part of the bolt B under it is arranged lower than the part above the chute. The chute *g* is also useful in checking back the meal on the waves of the bolt, and a rod, *f'*, is arranged along the upper edge of it for increasing this action. The upper part of the riddle *f* is made to rise up, in case it is not desired to deliver the bran onto it, and it is for that purpose connected to a rock-shaft, *i*, to which a rock-lever is connected, from which cords are to extend either up or down to any floor for shifting it at will. *k* is a swinging knocker under the cloth B, for keeping it from clogging, the said knocker being covered in the part which strikes the cloth with wool, to prevent chafing the cloth. *m* is a brake, to stop the knockers when desired. It consists of a long bar extending along under any number of the knockers, and so mounted that by pulling the cord *n* it will swing up against the knockers and stop them, and pulling it the other way will release the knockers and allow them to act. The cord has a weight, *p*, at each end, capable of holding the brake when relieved of the opposite weight, which may be set on a shelf for so relieving it.

The tension of the flexible hangers E is regulated by sliding the cross-bars *q*, through which they pass, up and down along them. They are connected to the bars F, by which they are suspended, with a single screw, *v*, and they connect with the bolt by slipping the perforated lower ends on the ends of the rods *t*, whereon they are confined by the buttons *u*, fixed between them and the parts of the frame so that they cannot escape, but can be readily released by swinging the buttons over out of the way. *a'* is a gate in the mouth of the lower cooler, for regulating the distribution of the meal. Between the two divisions of the bolt and *b'* is a chute for delivering the meal to the middle of the divisions. *e'* represents rods for binding the cloth down in lower angles, and producing the required tension of the cloth.

We propose to employ tension-rods *g'* in various forms in the construction of the bolt, for making it strong as possible with a given weight of material.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The step-bottom troughs *b d*, arranged on and shaking with the bolt-frame, as shown and described, to cool and granulate the unbolted flour.

2. The combination of riddles N and *f*, the latter having the adjustable section *h* and the chute *g*, with the bolt, substantially as specified.

3. The combination of swinging knockers *k*, having a protecting substance of soft material, with the shaking bolt, substantially as specified.

4. The brake *m* and weighted adjusting-cord *n*, combined with the swinging knockers, substantially as specified.

5. The flexible hangers E, connected to the bolt by detachable connection with bars *t*, and secured by buttons *u*, substantially as specified.

6. The combination of rod *f'* with the chute *g*, riddle *f*, and the bolt B, substantially as specified.

7. The combination of the vibrating tension-rods *e'* with the cloth B, arranged in wave-like form, substantially as specified.

EDWIN SLAGLE.
JOHN McCLURE GRAHAM.

Witnesses:
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L. B. SPAINHOWER.