

UNITED STATES PATENT OFFICE.

HENRY JONES, OF CUYAHOGA FALLS, OHIO.

IMPROVEMENT IN MIDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. 194,602, dated August 28, 1877; application filed September 29, 1876.

To all whom it may concern:

Be it known that I, HENRY JONES, of Cuyahoga Falls, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Middlings-Purifiers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the machine, partly open, so as to show the interior. Fig. 2 represents a vertical transverse section, and Fig. 3 a longitudinal vertical section through the machine.

My invention relates to middlings-purifiers in which a stationary suction separating-spout is placed in the interior of a revolving reel to remove the flour and fine *spicula* from middlings, as represented in my patent of May 5, 1874; and my invention consists in providing such a machine with a series of riddles of graduated cloth, and adjustable guide-boards beneath said riddles, the whole being mounted upon a shoe having a rapid vibrating motion, so as to separate the different sizes of middlings as they fall from the reel, with a very small addition to the cost of the machine.

The case or frame is shown at A, and within this case is arranged a revolving reel, B, made and turned without a through-shaft, as follows: At the upper end of the reel there are friction-rollers *a a*, which support that end, and at the other or lower end there is a short shaft, *b*, connected with the reel, upon which short shaft there is a bevel-wheel, C, meshing with a pinion upon the main driving-shaft C¹, said shaft C¹ carrying a pulley, C², over which a belt passes that transmits motion to the shaft Q', and from the latter, in the same manner, to the pulleys *c* and *c'* on the axis of the conveyers D and D'. The reel should be covered with cloth graduated to conform to the divisions in the suction separating-spout E, placed in the inside of the reel, and the bolting-cloth of the screens M should also be graduated in the same order as the reel. The stationary suction separating-spout E is made with three divisions, 1 2 3, more or less, over which there are valves or registers 4 5 6, each separately adjustable from the exterior by rods *d*, one for

each valve. The compartments or divisions 1 2 3 communicate with a common air trunk or passage, F, at the top of the spout, through their respective valved openings, and the air-passage F leads first into the vertical air-passage G, and thence into the fan-chamber H, where an exhaust-fan produces an exhaust current of air through the whole machine. The spout E and air-passages F and G are all united, so as to be slipped into the interior of the reel B from the front end of the reel, which is left open for that purpose. The rear end of the spout E, as it comes to its proper place, takes upon the end of the short shaft *b*, as at *e*, Fig. 3, and is thus supported at that end.

The shape, form, and position of the stationary suction separating-spout E are distinctly shown in Fig. 2, as also the air-passage F and the conveyers D and D', and their relation to the revolving reel B and retaining-screens M.

On each side of the spout E are inclined boards *k*, upon which the middlings carried up by the internally-arranged ribs *ff* of the reel fall, and whence they are directed into the separating-spout E through openings *i i*, and the light particles or *spicula* are caught and carried up and out of the machine by the exhaust-blast, and the heavier particles drop down onto the revolving reel B, and that portion of the material that is bolted through the reel drops upon the inclined guide-board L, running from the center to one side of the machine, while that remaining in the reel is again carried up and thrown into the separating-spout E, to be acted upon by the exhaust-blast, as above described.

The inclination of the reel is very slight, and hence the middlings move slowly from the upper toward the lower end of the reel, but it is caught, carried up, and thrown into the separating-spout several hundred times, and this repeated subjection to the exhaust-blast takes out the fine *spicula*.

As the material advances from one compartment or division to the next, the force of the blast for that particular compartment may be regulated to suit the condition of the material at that stage of separation, and the clothing of the reel may be regulated to correspond with that particular division.

The material to be operated upon is fed in at *m*, and, after having been subjected to the action of the blast within the reel, passes either through the different-sized meshes of the reel or at the lower open end, and in either case is received upon the inclined board *L*, and is delivered through the opening *l* at the upper end of the retaining-screens *M*, each screen being made of suitable cloth to correspond with the one upon the section of the reel immediately above it, so as to retain that portion of the material which is not in condition to pass out of the machine as finished, and deposit it in the conveyer *D'*, while the finished material passes through the meshes of the screens *M*, and falls upon the incline *O*, and thence to the conveyer *D*.

N N are a series of boards that can be regulated as to number or width to catch any unfinished material that may have passed through the meshes of the lower end of the screens, and deliver it into the conveyer *D'*, from which it is intended to return it to the reel, to be again subjected to its action, such being one of the objects of the retaining-screens *M*. These screens *M* and adjustable arresting-boards *N* are supported in grooves *n* formed in vertical partitions of a shoe, *P*, the latter being suspended from straps *g*, attached to it and to the frame of the machine. This shoe has a

rapid vibrating motion transmitted to it by the cam *Q* upon the shaft *Q'* striking against buffers *P'* projecting from each end of the shoe *P*.

The inclines *L* and *O* serve also as connections between the vertical grooved partitions or end pieces of the shoe *P*, and move with it; but they may be otherwise connected and the inclines remain stationary.

Air is admitted to the machine through suitable openings *R*, and passes first through the meshes of the retaining-screens *M*, and then, passing through the meshes of the reel, enters in this doubly-tempered and uniform condition the separating-spout *E*, from which the *spicula* are carried off to the fan and out of the machine.

Having thus fully described my invention, I claim—

The combination of the shoe *P* and its retaining-screens and inclines with a revolving reel, having the internal ribs *f* and stationary suction separating-spout furnished with guide-boards and inlets, as and for the purpose described and represented.

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Witnesses:

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