(No Model.) 2 Sheets—Sheet 1.

J. D. HURST.

MIDDLINGS PURIFIER.

No. 265,087. Patented Sept. 26, 1882.

Fig. 1

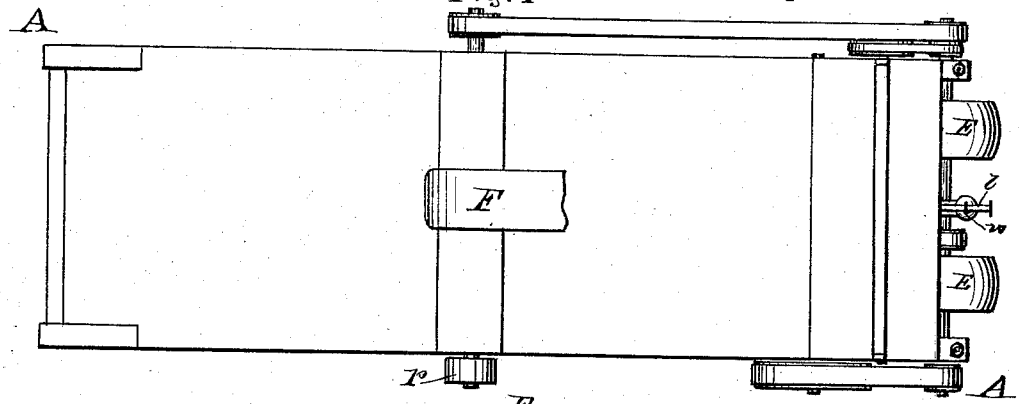


Fig. 2

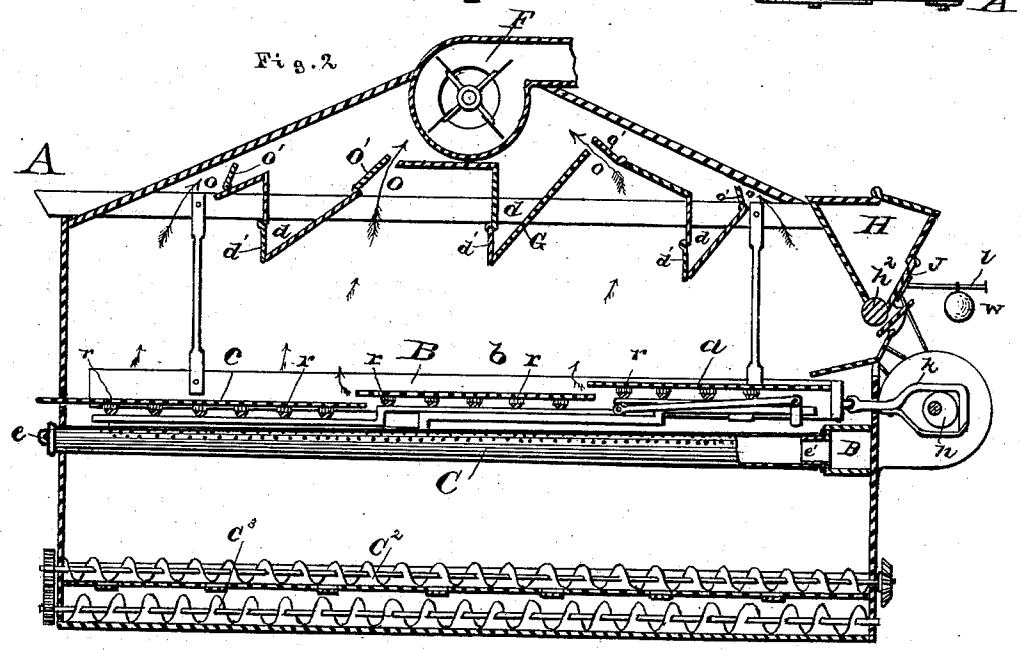


Fig. 7

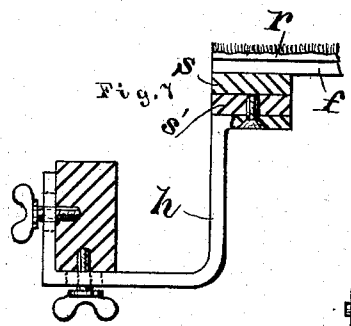


Fig. 6

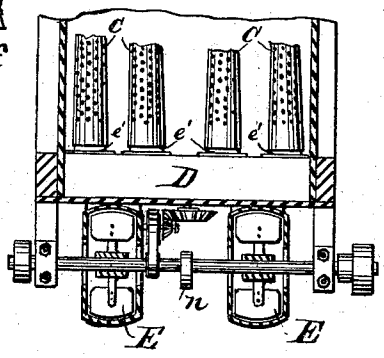
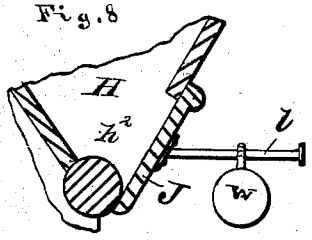


Fig. 8



Attest

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

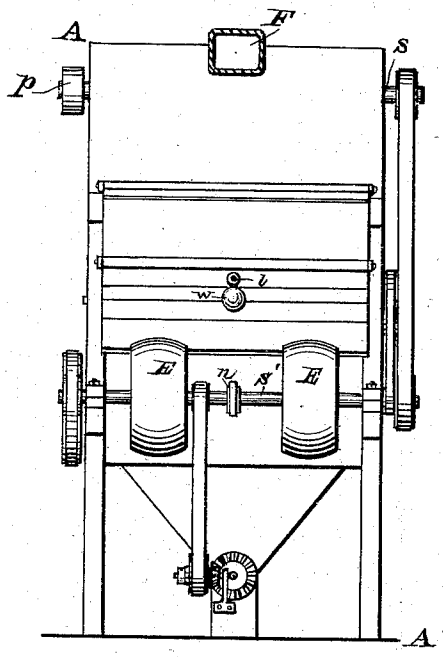


Fig. 4

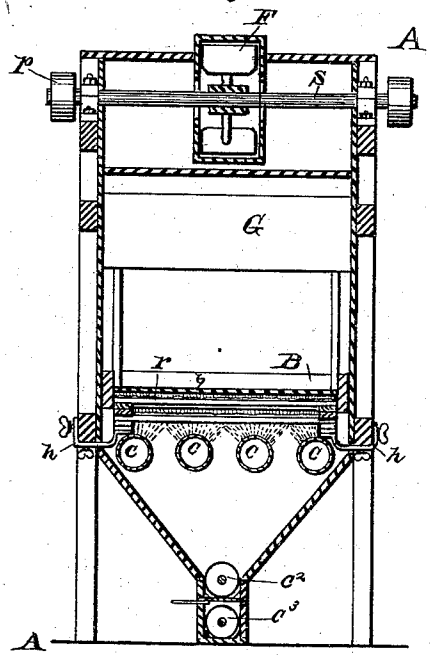
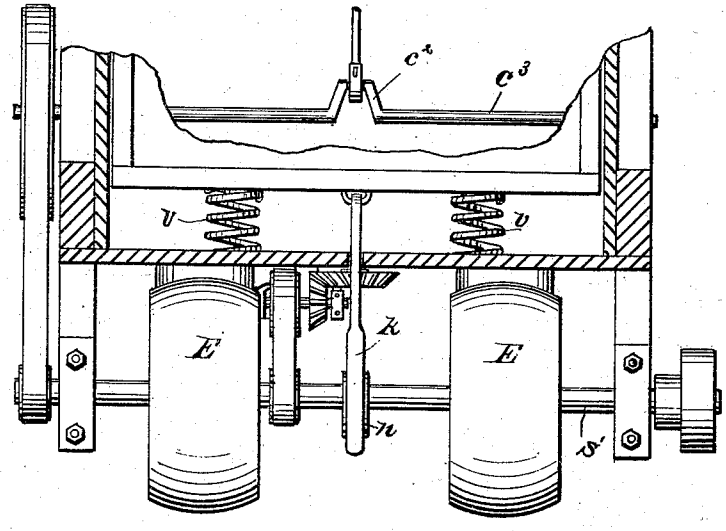


Fig. 5



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UNITED STATES PATENT OFFICE.

JOHN D. HURST, OF SALEM, OREGON.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 265,087, dated September 26, 1882.

Application filed May 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. HURST, a citizen of the United States of America, residing at Salem, in the county of Marion and State of Oregon, have invented new and useful Improvements in Middlings-Purifiers, of which the following is a specification.

My invention relates to improvements in middlings-purifiers; and my invention consists in certain elements of mechanism and combinations of parts, as hereinafter fully set forth and pointed out.

In the accompanying drawings, Figure 1 is a plan view of my improved purifier. Fig. 2 is a longitudinal sectional elevation. Fig. 3 is a front elevation, and Fig. 4 a transverse sectional elevation, of the same. Figs. 5 to 8, inclusive, are detailed views of some of the various parts.

The same letters refer to the same or corresponding parts throughout the several views.

In the said drawings, A A represent the outer casing of the machine, in which is suspended the vibrating frame D, containing the screens *a b c*, which are made in the ordinary manner of bolting-cloth, and arranged in a series, as shown in Fig. 2, with the front end of one a short distance below the rear end of the preceding one, with an open space between. Under the vibrating frame B is a number of tubes or pipes, C, perforated along the upper side and opening at the front end into a chamber or box, D, into which air is forced by the fans or blowers E E. The pipes C are placed sufficiently close together so that the air issuing from the perforations therein will cover the whole surface of the cloth on the screens *a*, *b*, and *c*. They are tapered slightly throughout their length, with the rear ends projecting through the outer casing, A A, and closed by removable stopper *e*. The front ends, where they join the box D, fit over nipples or flanges *e'*, secured to said box D in such a manner that the pipes may be readily removed when desired.

F is the exhaust-fan, placed in the top of the casing A A, and inclosed by the irregular partition G, through which is formed a number of openings, *o*, closed by valves *o'*, and a series of depressions, *d*, which I term "dead-air chambers," and each of which is provided at the bottom with a small door, *d'*, for the purpose hereinafter more fully set forth.

Under each of the screens *a*, *b*, and *c* is a series of rubbers, *r r*, which consists of strips *f*, covered with sheep-skin with the wool left on, or other suitable soft substance. The rubbers extend clear across the width of the screens, and are supported at each end on sliding strips *s*, which reciprocate on the stationary slides *s'*, supported at each end by pieces *h* of iron or other suitable material, shaped as shown in Fig. 7, and secured to the framework of the outer casing, A A, in such a manner that they may be adjusted up or down, pressing the rubbers *r* with more or less force against the cloth of the screens.

H is the feed-hopper, in the bottom of which is my variable automatic feed, which consists of the hinged part J of the hopper bearing against a roller, h^2, turning in the bottom of the hopper H, against which it is pressed by a weight, *w*, on the rod or lever *l*. C^2 and C^3 are conveyers, arranged in the bottom of the machine in the ordinary manner, for conveying the refined middlings to a suitable discharge-opening.

The power to drive the machine is supplied to one end of the shaft S, on which is the exhaust-blower F referred to above, and from the other end is transmitted by belt to the shaft S', on which are secured the blowers or fans E E. A vibratory movement is imparted to the frame B by an eccentric, *n*, secured on the shaft S', the high point of which, striking the curved arm *k*, attached to the end of the vibrating frame B, draws it forward, when it is returned by springs *v v*. The reciprocating rubbers *r* receive their motion through medium of a pitman, *x*, from a crank, c^2, on a shaft, c^3, which is slowly rotated by belt or otherwise from shaft S'. The throw of the crank c^2 is equal to the distance between the rubbers *r*, so that the whole surface of the cloth is gone over at each stroke of the rubbers. The conveyers C^2 and C^3 receive their motion by suitable gearing from shaft S', as does also the roller h^2 of the automatic feed.

The operation is as follows: The middlings to be purified enter at the hopper until there

is sufficient to press the hinged part J from the roller, leaving an opening, through which the middlings are evenly fed by the rotating roller h^2 and fall on the forward end of the first screen, over which they are made to travel by the vibrations of the frame B and fall successively on and travel over the remaining screens of the series. The air from the pipes C passes up through the screens, taking up the light fluffy stuff, allowing the heavy screened middlings to fall into the conveyers C^2 C^3, and from thence to the discharge-spout. Each screen being raised above the succeeding, with a space between, the middlings fall successively from one to the other, and while falling are subjected to a current of air from the pipes passing in the opposite direction, more thoroughly purifying them. The light fluffy stuff is drawn up by the exhaust-fan F through the openings *o*, which may be more or less closed by the valve *o'*, thus distributing the draft over the different screens as desired, and, passing over the depressions or dead-air chambers *d*, allows any heavy substance which may have been carried up by the draft to settle in the depression, from whence it may be removed from time to time, or may be allowed to drop back onto the screens through the doors *d'*. By having the pipes C gradually reduced in size from front to rear the force with which the air issues from the perforations therein is kept uniform throughout. If the pipes should from any cause become stopped or partially filled with dust or other substance, they may be readily cleaned by removing the stoppers *e* at the rear end and allowing the blast from the fans E E to pass directly through them.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a middlings-purifier, the combination of the adjustable rubber *r*, consisting of a strip, *f*, covered with suitable soft substance, sliding piece S, and slide S', with the slotted frame A, angle-bar *h*, and set-screws for adjusting the slides vertically, substantially as shown and described.

2. In a middlings-purifier, the combination with the reciprocating frame B, and the screens *a b c*, arranged at different levels in a series upon said reciprocating frame, of the series of adjustable rubbers *r*, arranged at different levels to suit the screens, and mechanism for operating said rubbers in such a manner as to sweep the entire under surface of the screens, substantially as shown and described.

3. In a middlings-purifier, the combination of the blower-fans E E, a series of graduated and perforated tubes, C C, the reciprocating frame B, screens *a b c* arranged thereon in an overlapping series at different levels, the adjustable rubbers *r r*, hopper H, irregular portion G, having valved openings, the dead-air chamber *d*, and the exhaust-fan F, all substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN D. HURST.

Witnesses:
J. E. STEVENSON,
FRANK JOHNSON.