W. S. & J. L. SNYDER.

Middlings-Purifier.

No. 214,850. **Patented April 29, 1879.**

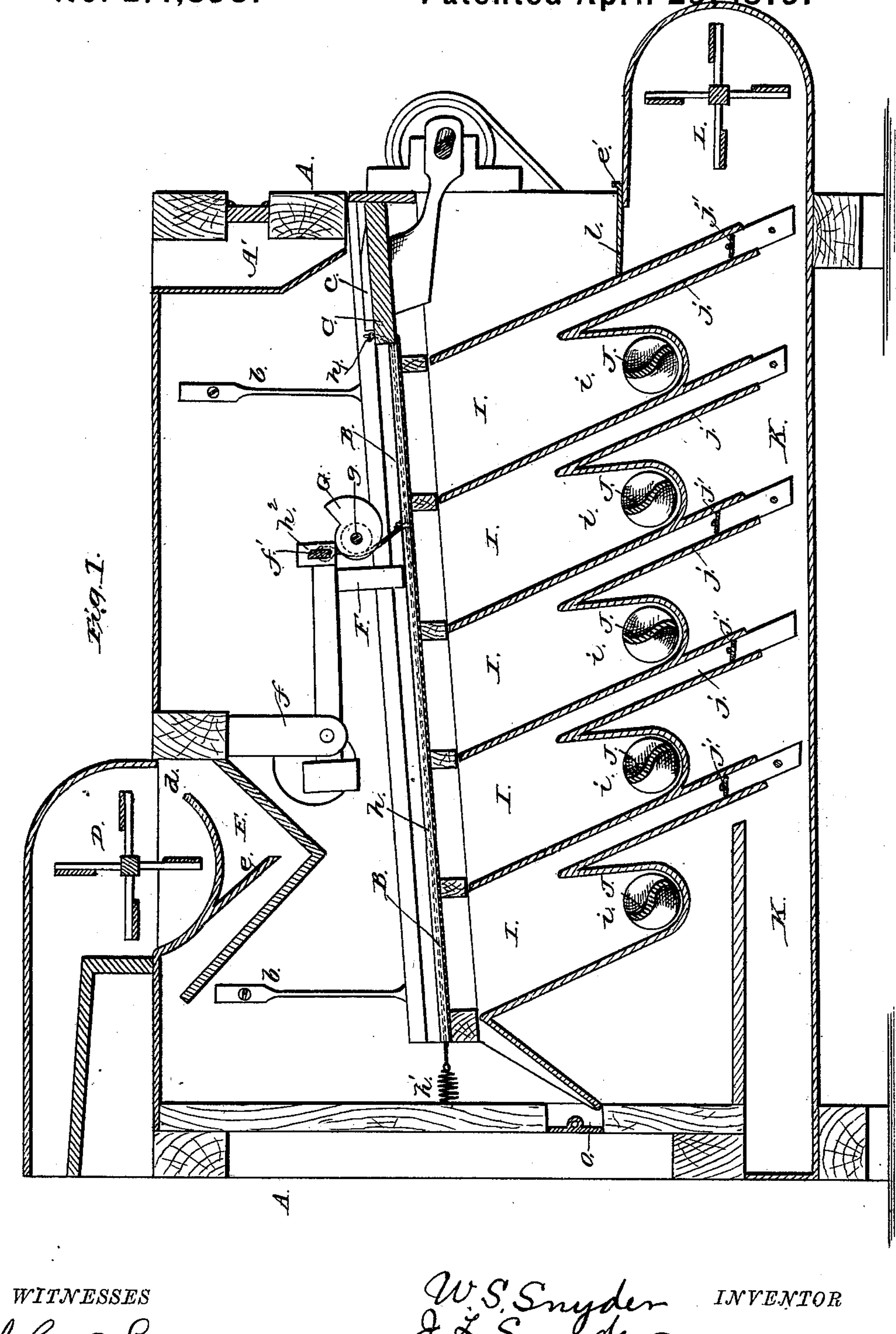

Fig. 1.

WITNESSES

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Fig. 2.

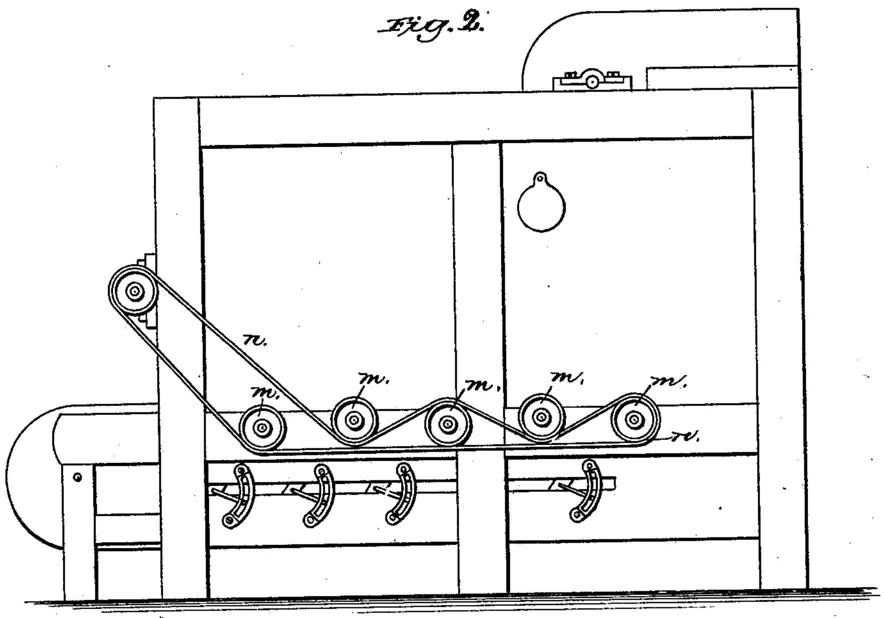
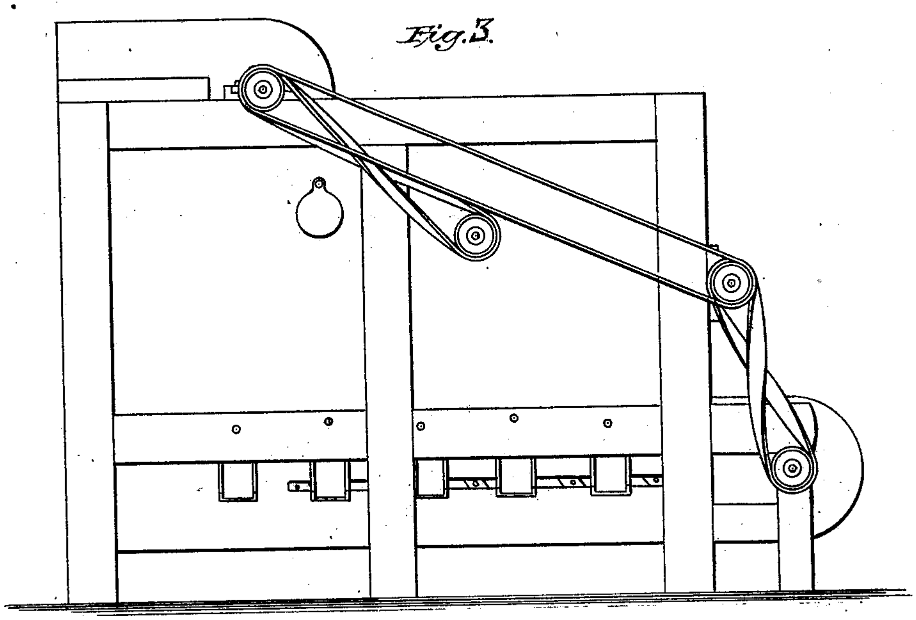


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM S. SNYDER AND JOHN L. SNYDER, OF AURORA, INDIANA.

IMPROVEMENT IN MIDDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. **214,850**, dated April 29, 1879; application filed February 24, 1879.

To all whom it may concern:

Be it known that we, WILLIAM S. SNYDER and JOHN L. SNYDER, of Aurora, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Middlings-Purifiers; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 represents a longitudinal vertical section of our improved machine; Figs. 2 and 3, opposite side views of the same.

This invention relates to improvements in the class of middlings-separators employing a reciprocating or vibrating screen, a blast-fan and suction-fan for assisting the bolting process and removing the light impurities, and rapping or knocking devices for keeping the meshes of the screen clean; and the invention consists in the construction and arrangement of parts, all as will be hereinafter fully described, and specifically pointed out in the claims.

In the drawings, A represents the casing and frame of our improved machine; B, an inclined screen, suspended by spring-rods *b*, and operated through the medium of an eccentric mounted on a transverse shaft at the head of the machine, and connected with the screen in the usual manner.

At the head of the screen is arranged a spreader, C, provided with a series of pivoted radiating slats, *c*, for conducting or delivering the material from the usual hopper A′ evenly upon or to the head of the screen its entire width.

D represents a suction-fan, arranged on top of the machine in the usual manner, but taking its air through an opening, *d*, extending across the entire width of the fan-case, and communicating with the interior of the machine above the screen, thus producing an even suction-blast the entire width of the machine. Arranged under the suction-fan and above the screen is a vacuum-chamber, E, extending entirely across the machine, and through which the air-currents pass to the fan, an inclined board, *e*, extending down from the fan-case into said chamber, deflecting any heavy materials drawn into said chamber by the suction-blast, where they are allowed to settle, while the lighter impurities are drawn into the fan-case, and discharged therefrom into the usual dusting-chamber.

F represents a hammer, pivoted in the suspended bearings *f*, and raised by a cam, G, centrally mounted on a revolving shaft, *g*, the hammer in its descent striking the longitudinal central bar of the screen, thus jarring the screen, and thereby keeping its meshes clean. In addition to the hammer for keeping the meshes of the screen clean, a series of longitudinal cords, *h*, connected at one end with springs h^1, and drawn tight across the upper surface of the screen, are employed, said cords being drawn back from the screen when the hammer is raised by means of cords h^2, connected to the cords *h*, and to a transverse bar, *f′*, connected to the hammer; and when the hammer is released from contact with the cam the cords will also be released, and, through the medium of the springs h^1, will strike the screen in resuming their original position, thus detaching particles adhering thereto, and, in connection with the hammer, more effectually keeping the meshes of the screen clean or open.

I represents a series of transverse chambers, formed by rearwardly-inclined partitions arranged below the screen, and provided with pockets or hoppers *i*, in which are arranged transverse conveyers J, for removing and discharging through the side of the machine the material bolted through the screen. These chambers communicate with a longitudinal wind-trunk, K, extending the length of the machine, by means of transverse spouts *j*, which are provided with adjustable or pivoted valves *j′*, operated from the outside of the machine, for regulating or controlling the air-currents passing through the same. Arranged in one end of the wind-trunk, for supplying air thereto, is a blast-fan, L, which receives its air through an opening, *l*, controlled by a sliding valve, *l′*.

By the above-described arrangements of parts the air-currents from the blast-fan can be more evenly distributed through the screen, and at the same time so regulated as to in-

crease or diminish the strength of the blast through different sections, as may be deemed expedient, thus greatly or materially assisting the bolting process.

The inclined partitions forming the chambers I deflect the blast, causing it to aid the travel of the material, and are inclined so that the top edge of each partition reaches beyond the vertical plane of the adjacent side of the conveyer-trough in its rear, so that the material descending into the chamber falls into said trough, and none falls into the blast-passage.

Each of the conveyer-shafts is provided with a pulley, *m*, at one end, and are simultaneously operated by a single endless band, *n*, passing over a pulley on the eccentric-shaft, and alternately under and over each succeeding pulley on the conveyer-shafts, as clearly shown in Fig. 2. By this arrangement of the band in reference to the pulleys all of the pulleys are simultaneously operated by the band, while they also perform the function of band-tighteners for the band.

The suction and blast fans, and cam and eccentric shafts, are also operated through the medium of endless bands and pulleys, in the usual and well-known manner.

The operation of our improved machine is as follows: The middlings, being evenly distributed onto the head of the screen, as above described, are carried over and bolted through the screen by the motion imparted thereto, the air-currents from the blast-fan passing up through the screen, raising the lighter impurities to the top of the material, where they are subjected to and carried off by the suction-blast, while the heavy impurities—bran, &c.—are carried over the tail of the screen, and discharged out of the machine through an opening, *o*, closed by an automatic discharge-valve.

We are aware that blast and suction fans used in connection with separators employing a reciprocating screen, also hammers and elastic cords for keeping the meshes of the screen clean or open, are old, and such we do not desire to claim, broadly, as our invention; but,

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

1. In a middlings-separator, the combination, with the screen B and longitudinal wind-trunk K, provided with blast-fan L, of the intermediate inclined transverse chambers, I, having pockets or hoppers *i* and wind-spouts *j*, communicating with said wind-trunk, substantially as and for the purpose herein shown and described.

2. The combination, with the screen B and spring cord or cords h h^1, of the pivoted hammer F, provided with the transverse bar f', the connecting cord or cords h^2, and the mechanism for operating the hammer, substantially as and for the purpose herein shown and described.

3. In a middlings-separator, the longitudinal wind-trunk K, provided with the blast-fan L, inclined transverse chambers I, having pockets or hoppers *i* and wind-spouts *j*, communicating with said wind-trunk, in combination with the screen B, fan-case, provided with transverse opening *d*, and the suction-fan, the several parts arranged relatively to each other, substantially as and for the purpose herein shown and described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

WILLIAM S. SNYDER.
JOHN L. SNYDER.

Witnesses:
GAYLORD J. HART,
THOMAS O. LINDSAY.