2 Sheets--Sheet 1.

H. A. BARNARD.

Middlings-Purifiers.

No. 157,267. Patented Dec. 1, 1874.

Fig. 1.

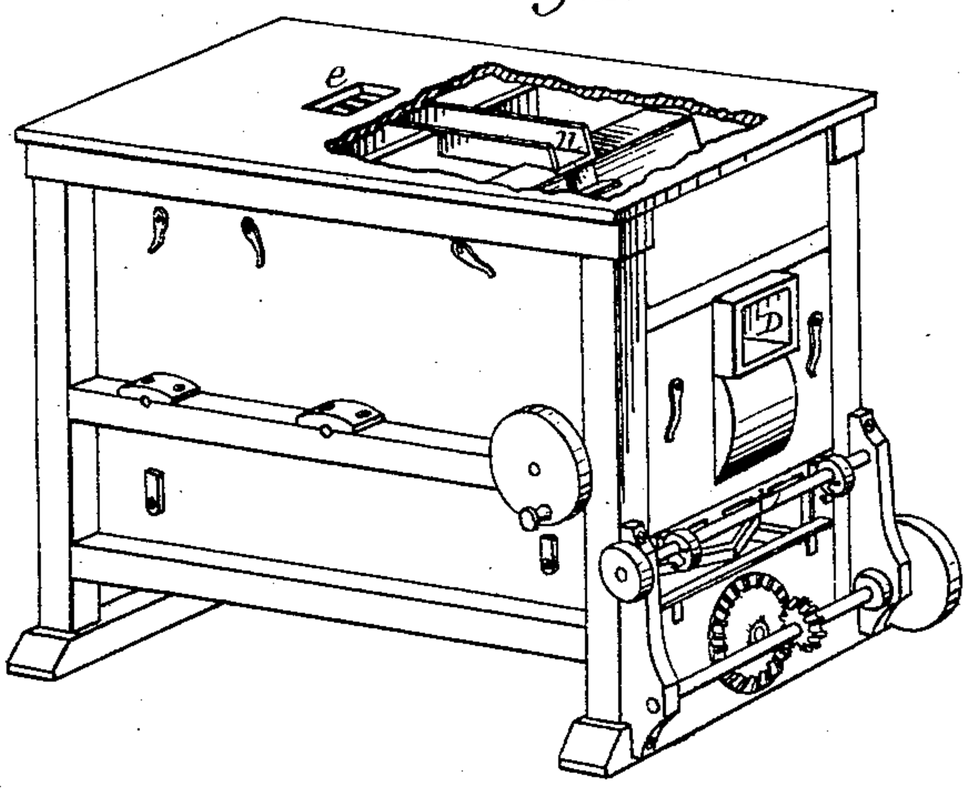


Fig. 2.

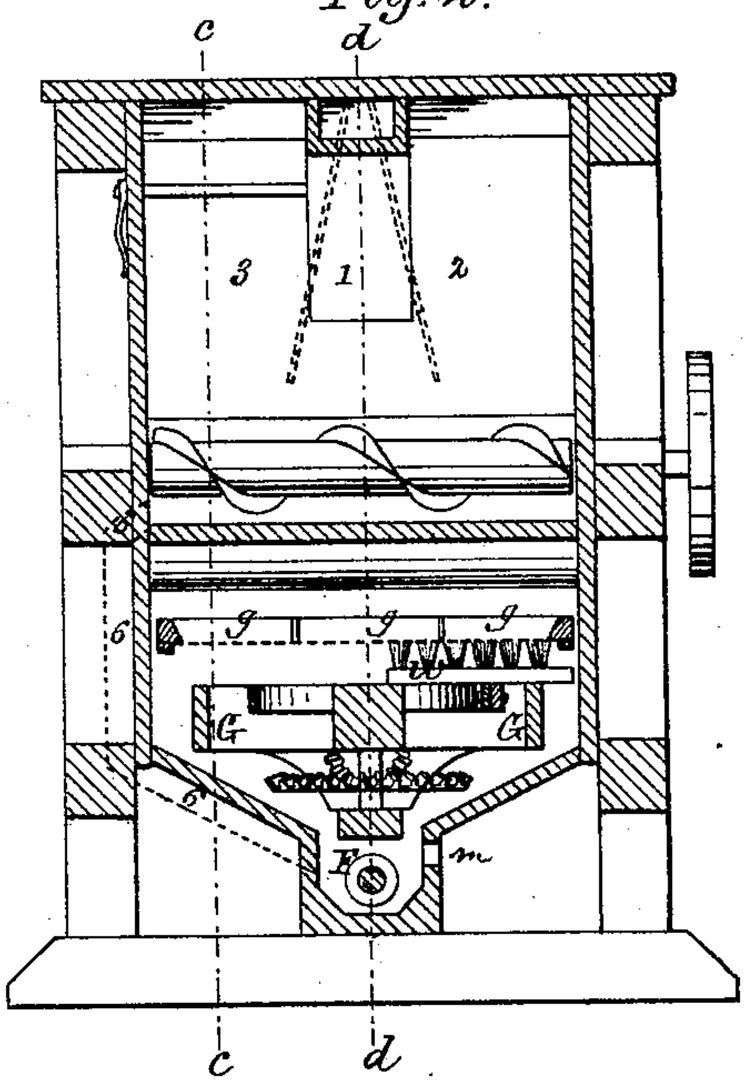


Fig. 3.

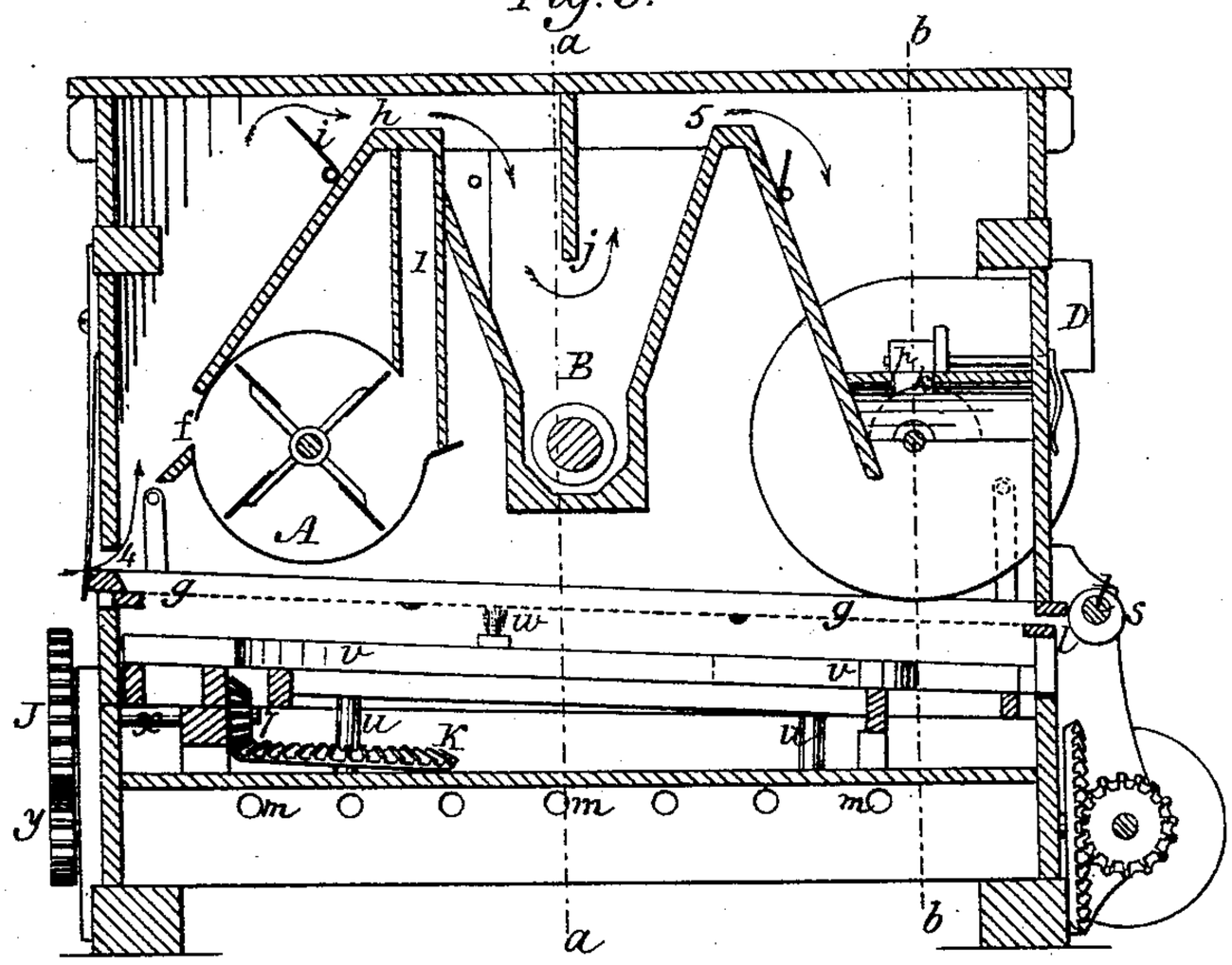
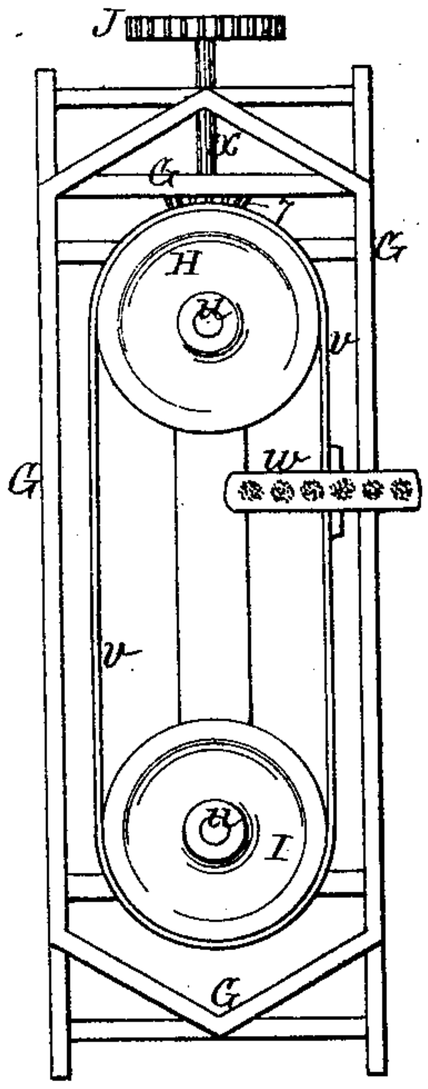


Fig. 4.



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THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

H. A. BARNARD.

Middlings-Purifiers.

No. 157,267. Patented Dec. 1, 1874.

Fig. 5.

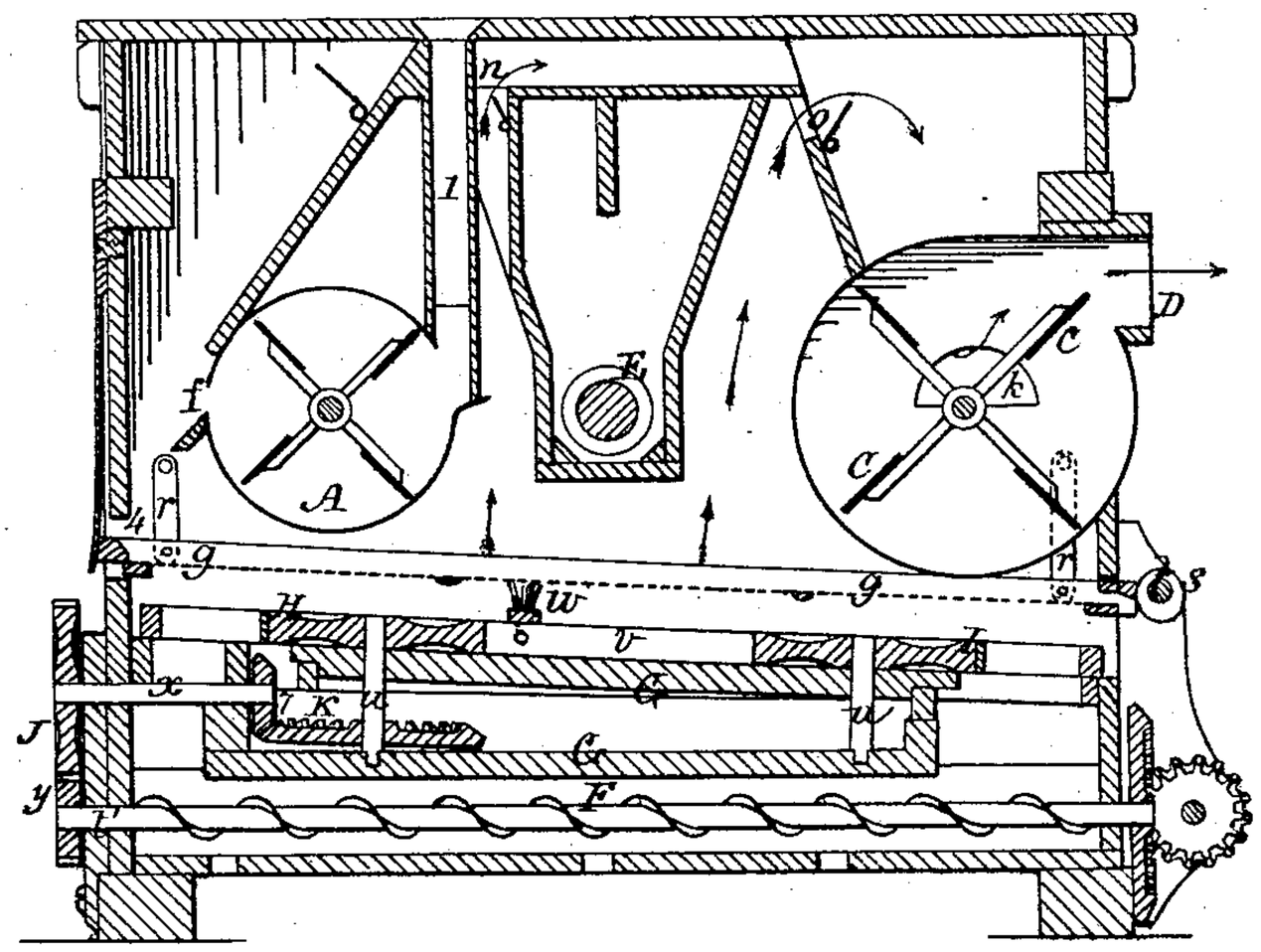


Fig. 6.

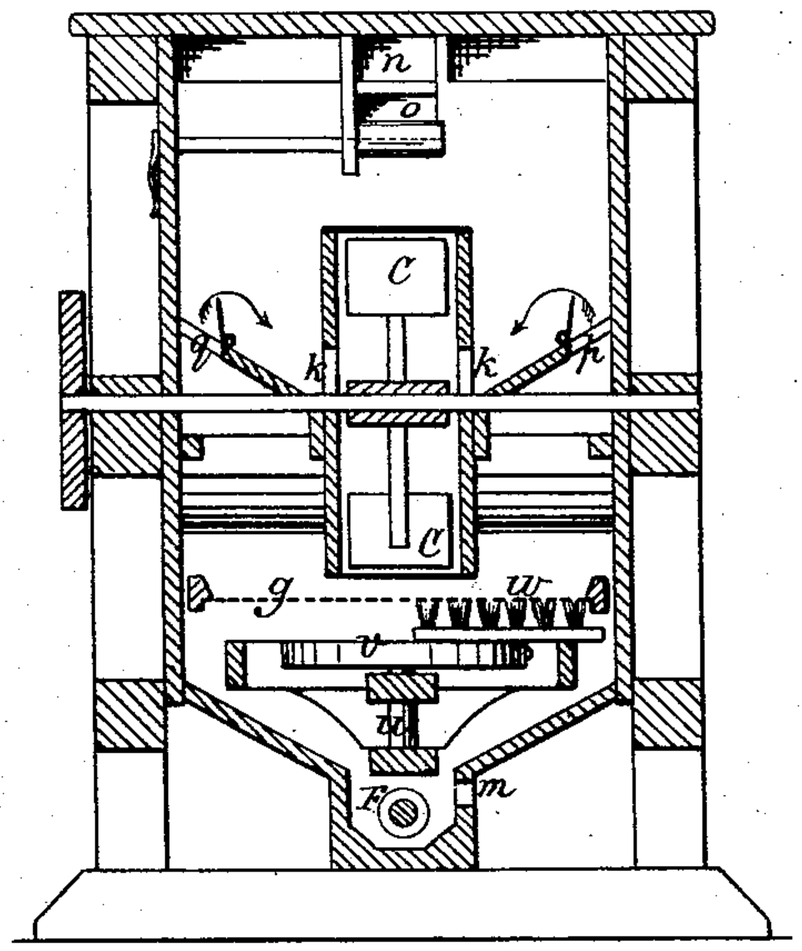
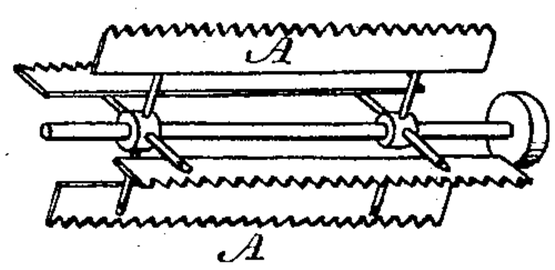


Fig. 7.



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UNITED STATES PATENT OFFICE.

HEMAN A. BARNARD, OF MOLINE, ILLINOIS.

IMPROVEMENT IN MIDDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. **157,267**, dated December 1, 1874; application filed May 19, 1874.

To all whom it may concern:

Be it known that I, HEMAN A. BARNARD, of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Middlings-Purifiers; and I do hereby declare the following to be 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 with a portion of the top shown as broken away to expose the interior. Fig. 2 represents a vertical transverse section through the machine taken at the line *a a* of Fig. 3. Fig. 3 represents a vertical longitudinal section thereof taken through the line *c c* of Fig. 2. Fig. 4 represents a top plan of the brush and brush-frame. Fig. 5 represents a vertical longitudinal section through the machine taken through the line *d d* of Fig. 2. Fig. 6 represents a vertical transverse section through the line *b b* of Fig. 3. Fig. 7 represents, in perspective, the stirring or agitating wheel separate from the machine.

This invention relates, first, to a multiple feed in combination with a stirrer or evener for delivering the middlings uniformly on the screen; second, it relates to a horizontal endless traveling-belt, which carries a brush for brushing the screen from below to prevent it from clogging.

To enable those skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

The middlings are fed into the machine at *e*, Fig. 1, whence they pass, by or through three avenues—viz., a central one, 1, and two side avenues, 2 and 3—to the stirrer or evener A, which is revolved by a belt passing around a pulley arranged upon its shaft or axis. This stirrer or evener throws the middlings out in a uniform sheet through the opening *f*, where they meet an exhaust current of air drawn into the machine through the openings 4, and where the first separation takes place, the lighter particles following the direction shown by the arrows, Fig. 3, and the heavier particles dropping on the upper end of the screen *g*, and uniformly thereon throughout its entire width. Where the lighter particles pass over the partition, as at *h*, there is arranged an air-valve, *i*, which can be opened or closed from the exterior of the machine to regulate the force of the blast. After the material carried up and over the partition *h* passes that point it, together with the air-current that carries it, passes down into the eddy-chamber B, whence it is deflected by the partition *j*, under which it passes, and where the blast is so reduced in force as to drop its heavier particles in the eddy-chamber B, while the light impurities pass up over the partition 5, and into the eye *k* of the fan-chamber, and are expelled by the fan C out through the exit-passage or trunk D. The light middlings collected in the eddy-chamber are moved by a conveyer, E, into a passage, (shown by dotted lines at 6, Fig. 2,) whence they go into the conveyer F at the under part of the machine and pass out with that which comes through the screen *g*, the heavy middlings passing over the screen and out of the machine at *l*. The trough in which the conveyer F works has openings *m* through it, through which a current of air is drawn by the fan C, and which current passes through the screen *g*, and, as shown by the arrows at Figs. 5 and 6, carries off all the light particles or impurities through valved passages, as shown at *n o*, and into the fan-case and out with those brought into the fan-case by the avenues at Fig. 3, but without mingling until they meet in the fan-case or chamber. The impurities taken up from the upper and lower ends of the screen pass through the valved openings *p q*, Fig. 6, and thence into the fan-case and out at D with the other impurities drawn up and into said case through the other avenues and valved passages before mentioned, but without commingling until they arrive in the fan-case or chamber. The screen *g* is slightly inclined, hung on straps *r*, and receives a longitudinal shake-motion from the cams *s* on the revolving shaft *t*. Underneath the screen *g* is arranged the brush-frame G. (Seen entire in Fig. 4.) In this brush-frame there are arranged two pulleys or wheels, H I, supported upon short vertical shafts *u*, and around these wheels or pulleys passes an endless belt, *v*, to which is attached a block on which is fastened a brush, *w*, which travels with said belt around the pulleys, being always

in contact with the screen, and in each revolution sweeping its entire surface to keep it free. The brush is driven from an exterior shaft, *t'*, which is a continuation of the conveyer-shaft F, upon which there is a small bevel-gear, *y*, that gears into and drives a larger bevel-wheel, J, on a horizontal shaft, *x*, which extends into the case, and has upon its end a bevel-gear, 7, which drives a bevel-wheel, K, on one of the short shafts *u*, that carry the pulley-wheels around which the brush-belt passes. One of these wheels being driven, it and the belt revolve the other one.

The conveyers and the stirrer are driven by suitable mechanism on the exterior of the case, and need no detailed description.

The valves which control the air-inlets or passages have rods connected to them, which extend out through the case, so as to be opened, closed, or regulated from the exterior.

The stirrer A, being distinctly shown in Fig. 7, and above mentioned as to its use, will be readily understood.

To keep the middlings uniformly spread over the screen, so that no part of the screen shall be overloaded, longitudinal partitions may be made on the screen to keep the middlings from massing on any one portion of the screen.

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

1. The multiple feeding-passages 1 2 3, vertically arranged and separately inclosed, in combination with the stirrer A and opening *f* therefrom, for the purpose of distributing the middlings evenly upon the stirrer and throwing them out into the exhaust blast in a uniform sheet, and allowing them to fall uniformly upon the screen, as and for the purpose described and represented.

2. In combination with the screen *g*, the brush *w*, attached to the endless belt *v*, and by it carried around its driving-pulleys, which have vertical journals, whereby the brush is always continuously moving in contact with the screen, and in each revolution sweeps its entire surface, as described and represented.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of April, 1874.

HEMAN A. BARNARD.

Witnesses:
ELLSWORTH MAPES,
J. SILAS LEAS.