2 Sheets—Sheet 1.

J. W. METZ.

MIDDLINGS PURIFIER.

No. 170,102. Patented Nov. 16, 1875.

Fig. 1.

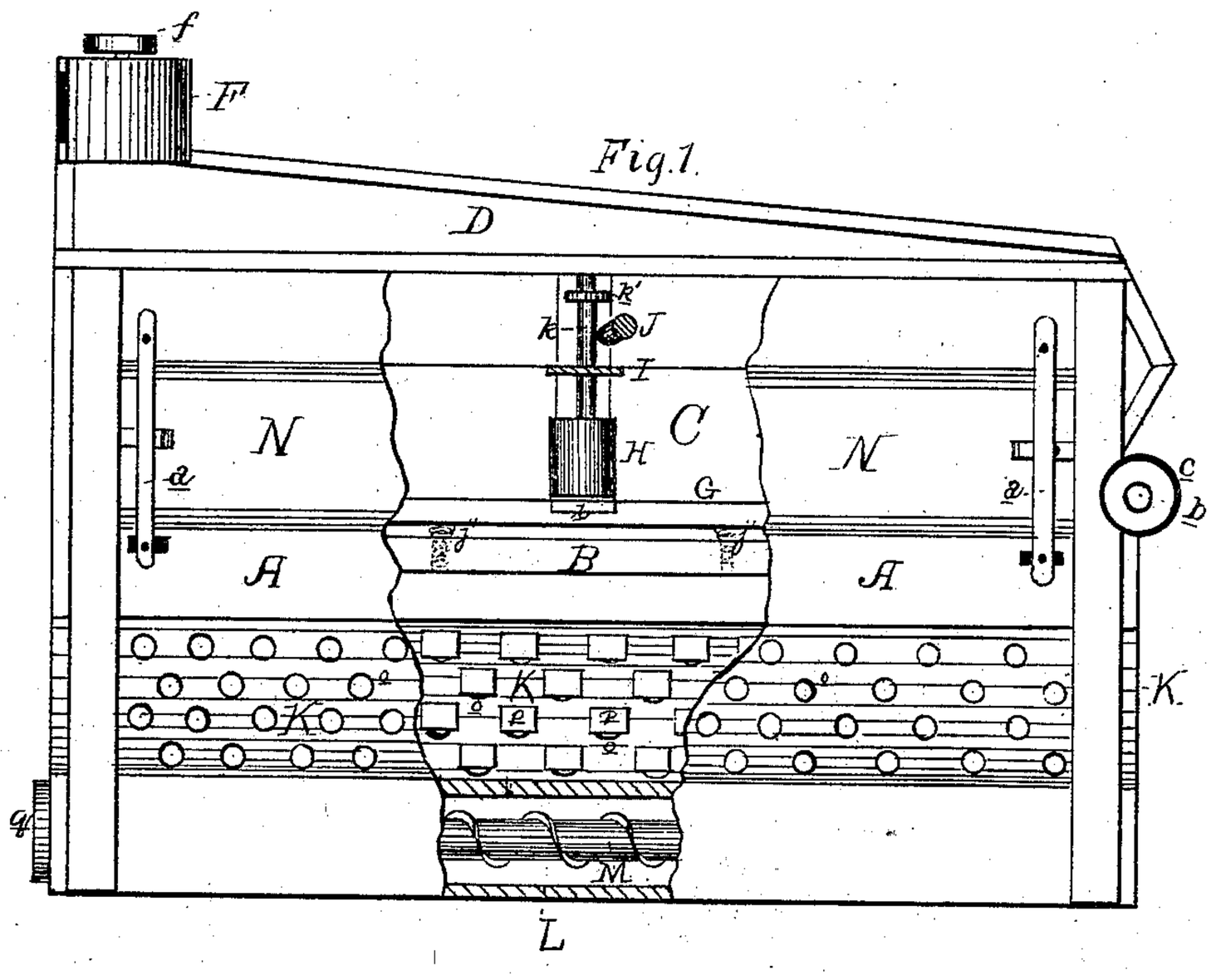
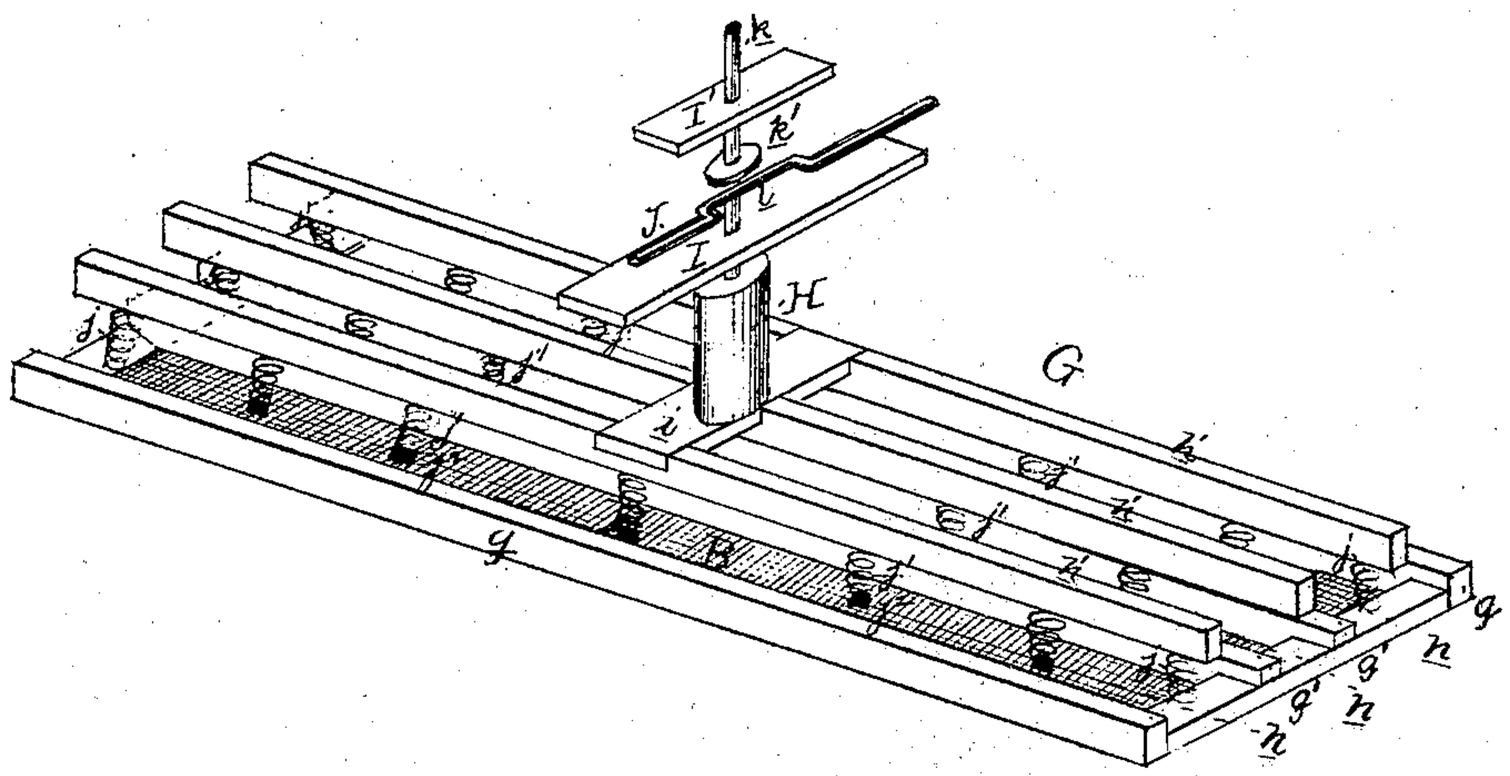


Fig. 2.



Attest:
Chas Thurman
C. F. Dyer.

Inventor:
John W. Metz
by Geo. W. Dyer & Co
Attys

2 Sheets—Sheet 2.

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Fig. 3.

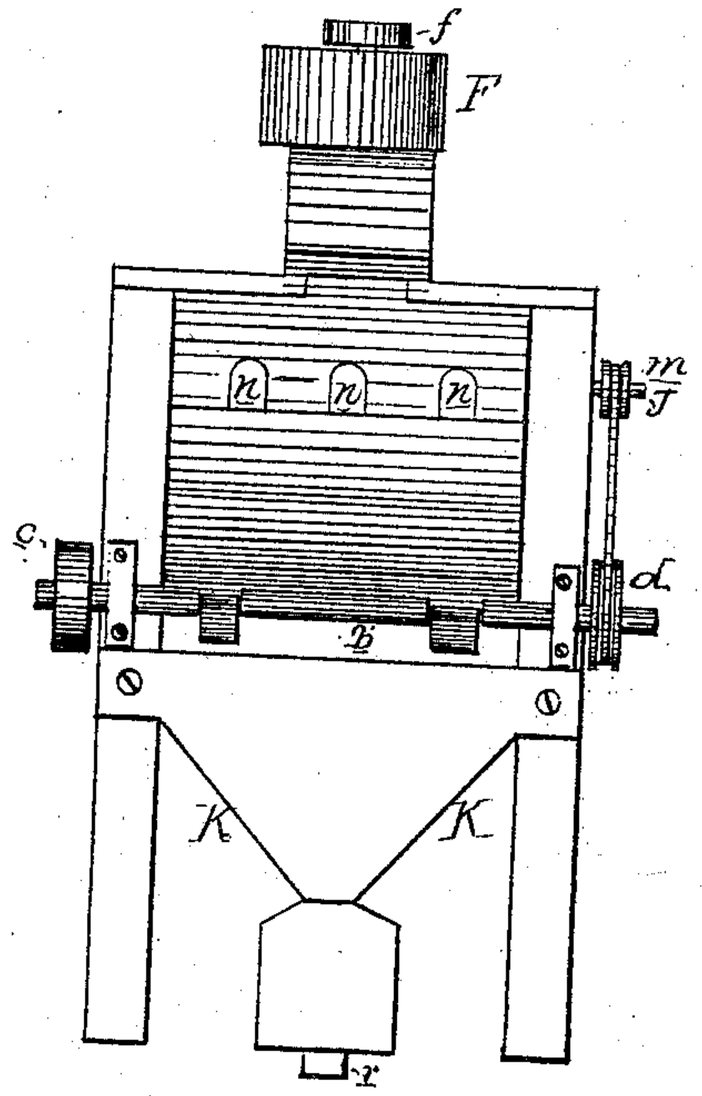
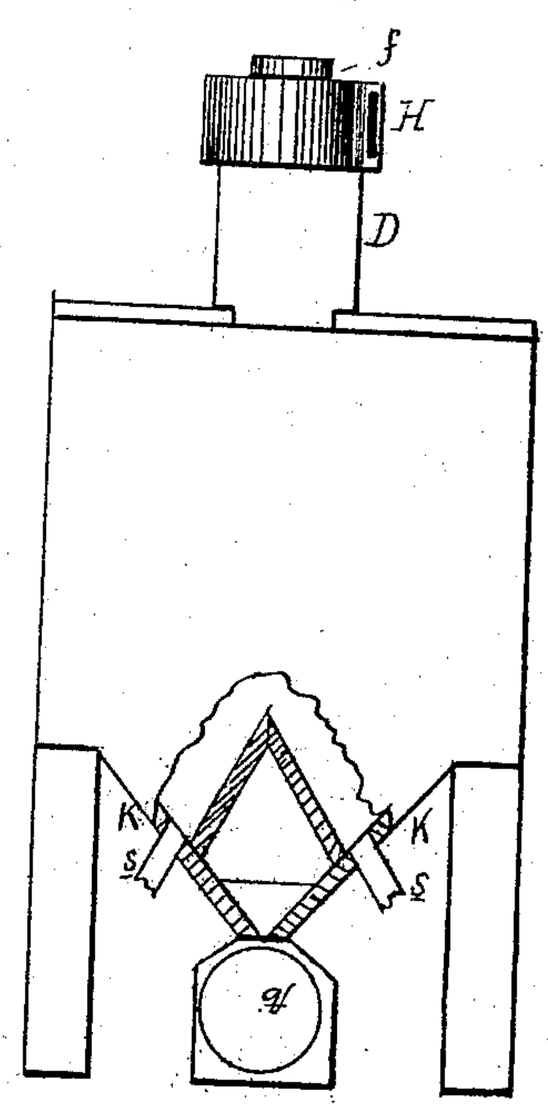


Fig. 4.



Attest;
Chas. Thurman.
R. N. Dyer.

Inventor;
John W. Metz
by Geo. W. Dyer & Co.
Attys

UNITED STATES PATENT OFFICE.

JOHN W. METZ, OF GEORGETOWN, DISTRICT OF COLUMBIA.

IMPROVEMENT IN MIDDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. **170,102**, dated November 16, 1875; application filed October 11, 1875.

To all whom it may concern:

Be it known that I, JOHN W. METZ, of Georgetown, in the county of Washington and District of Columbia, have invented new and useful Improvements in Middlings-Purifiers; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to that class of machines for dressing flour in which knockers are employed to clear and keep open the meshes of the screens; and the novelty therein consists, mainly, in the construction and arrangement of the knocking apparatus, and its manner of application to the screen; in the means employed to pass currents of air through the screen; and in the various operative combinations connected therewith, all as more fully hereinafter explained.

In order to enable those skilled in the art to make and use my machine, I proceed to describe the same, having reference to the drawings, in which—

Figure 1 is a side elevation of the machine, with the outer cover partly broken away; Fig. 2, a separate view, in perspective, of the screen and knocking apparatus, complete. Fig. 3 is an elevation of the front end of the machine; and Fig. 4, a similar view of the last end of the same.

In the drawings, A represents the case or shell of the machine, preferably rectangular, composed of suitable frame-work. About midway is suspended the screen B, inclined a little away from the entrance end, supported on hangers *a* and vibrated by the eccentric shaft *b* driven from a pulley, *c*, at one end, and having a pulley, *d*, at the other end. Over this screen B is an open chamber, C, the central portion D of which is raised, being highest at the discharge end of the machine, and upon that end is mounted a fan-case, F, containing a suitable exhaust-fan, the pulley *f*, which drives the same, being suitably connected with one of the other pulleys. Directly over the screen B, which is composed of an outside frame, *g*, with intermediate longitudinal sleepers *g'*, to give better support to the bolting-cloth, which is secured to the under side of the same, leaving longitudinal recesses or channels *h*, is placed the knocking-frame G, which is composed of three or more longitudinal bars, *h'*, of about the same length as the screen-frame, as many being necessary as there are recesses or channels *h*, said bars being secured together by a central cross-piece, *i*. Under each end of each of said bars is a spiral spring, *j*, which is secured to such end, and to that part of the frame *g* which is beneath it, and intermediate spiral springs j^1, preferably four or more in number, each terminating in a rubber spring or cap, j^2, and extending down to a point near the bolting-cloth, but not touching it. Adapted to strike upon the central cross-piece *i* is the knocker H, having a shaft, *k*, passing loosely through guide-bars I and I', and having between them a collar, *k'*. A shaft, J, passing across the machine is bent in the center at *l*, so that in its revolutions the bent portion strikes the collar, raises the knocker, and, in its further revolution, releases it and suffers the knocker to fall. This shaft has at its outer end a pulley, *m*, adapted to be driven by the pulley *d*. At the entrance end of the machine are spout-holes *n*, from which the flour passing from the millstone finds entrance upon the screen. Below the screen the sides K of the machine are drawn in closely together, and are perforated with numerous openings *o*, each of which is covered on the inside with a hood, *p*, which prevents the flour from passing out of said openings, while it does not prevent the entrance of air through the same. Below the sides K is the conveyer chamber L, having a proper conveyer, M, driven by a pulley, *q*, which conveyer carries the flour forward in the machine to the spout *r*, out of which it has final exit. Between the tail end of the screen and the end of the machine is a passage for the material going over the screen, and terminating in a spout, *s*. Upon the sides of the machine are removable pieces N to give access to the interior of the chamber over the screen.

In operation, the products of grinding, passing into the machine through the several openings, are deposited in the various recesses or chambers of the screen, which is vibrated back and forth, and, being a little inclined,

gradually pass along toward the tail end of the screen. The knocker continually striking upon its frame imparts a jarring motion to the same, which is communicated to the bolting-cloth B by means of the springs j^2, with their rubber caps, by means of which the meshes of the cloth are kept continually open. At the same time, by the operation of the exhaust-fan, currents of air drawn into the machine through the openings are continually passing up through the meshes of the bolting-cloth, by means of which, and the jarring spoken of, the fine flour is caused to settle to the bottom and to fall through said meshes into the conveyer-chamber. The coarser parts, meanwhile, passing along to the tail end of the machine are discharged through the spouts.

The advantage of my particular construction consists in the peculiar elasticity of the knocker-frame itself, and the springs through which the shock is communicated from the knocker to the screen-frames and to the bolting-cloth, and, also, in the peculiar construction and arrangement of the hoods placed above the openings in the case, by means of which the currents of air drawn into such openings by the action of the exhaust are caused to impinge more equally over every part of the bolting-cloth than would be the case if such openings were longitudinal slots, as heretofore.

Having thus described my machine, what I claim as new therein, and my invention, is—

1. In a middlings-purifier, the combination of a knocker adapted to impart a jarring motion to a knocking-frame, and an elastic knocking-frame adapted to transmit said jarring motion to the bolting-cloth at all points, substantially as described.

2. The knocking-frame G, having the springs j and j^1, substantially as and for the purposes set forth.

3. The combination of the knocker H, the shaft J, and the knocking-frame G, substantially as and for the purposes set forth.

4. In combination with the bolting-cloth of a screen the knocking-frame G, substantially as and for the purposes set forth.

5. In combination, the openings *o*, the hoods *p*, the screen B, and the exhaust-fan, substantially as and for the purposes set forth.

This specification signed and witnessed this 4th day of October, 1875.

JOHN W. METZ.

Witnesses:

E. C. WEAVER,

CHAS. THURMAN.