(No Model.) 3 Sheets—Sheet 1.

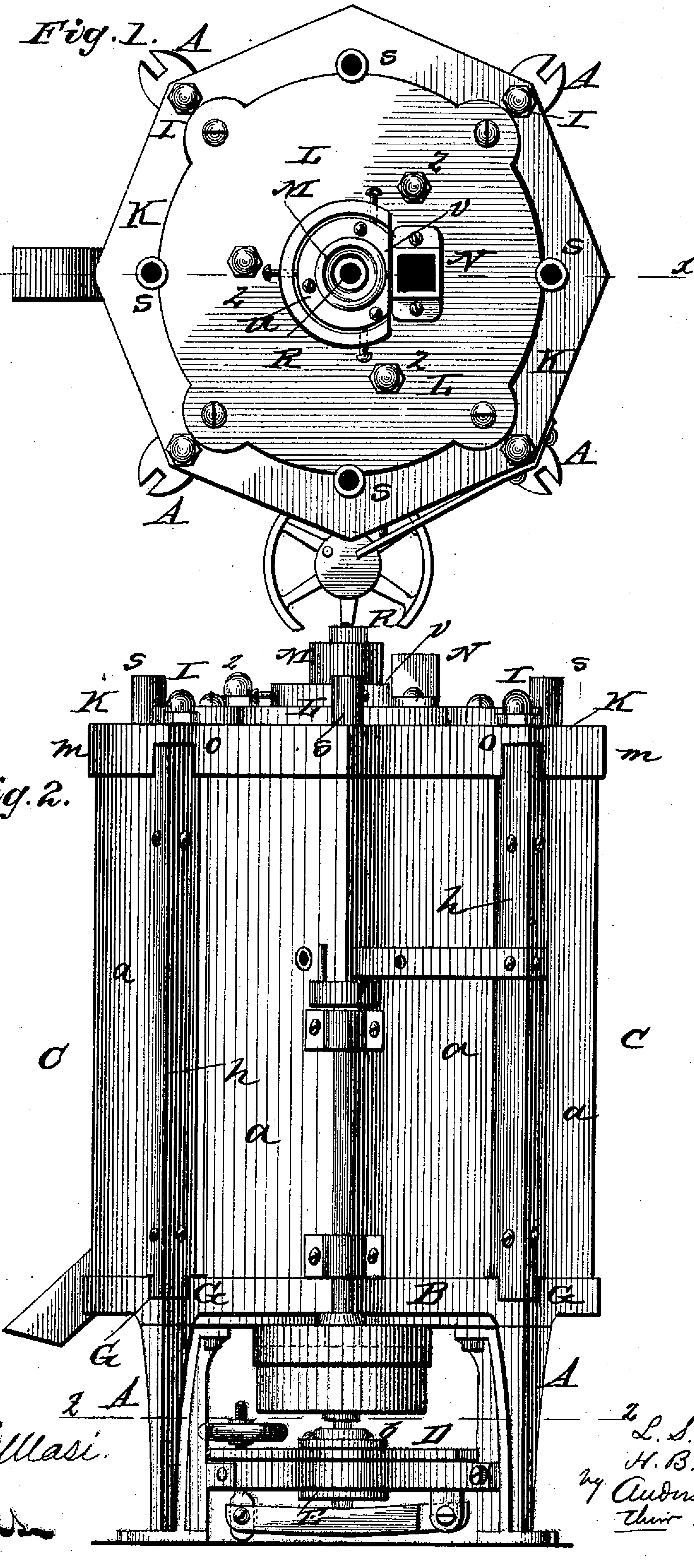
L. S. HOGEBOOM & H. B. SMITH.

BRAN DUSTER AND CLEANER.

No. 321,108. Patented June 30, 1885.

Fig. 1.

Fig. 2.



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L. S. HOGEBOOM & H. B. SMITH.

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Fig. 3.

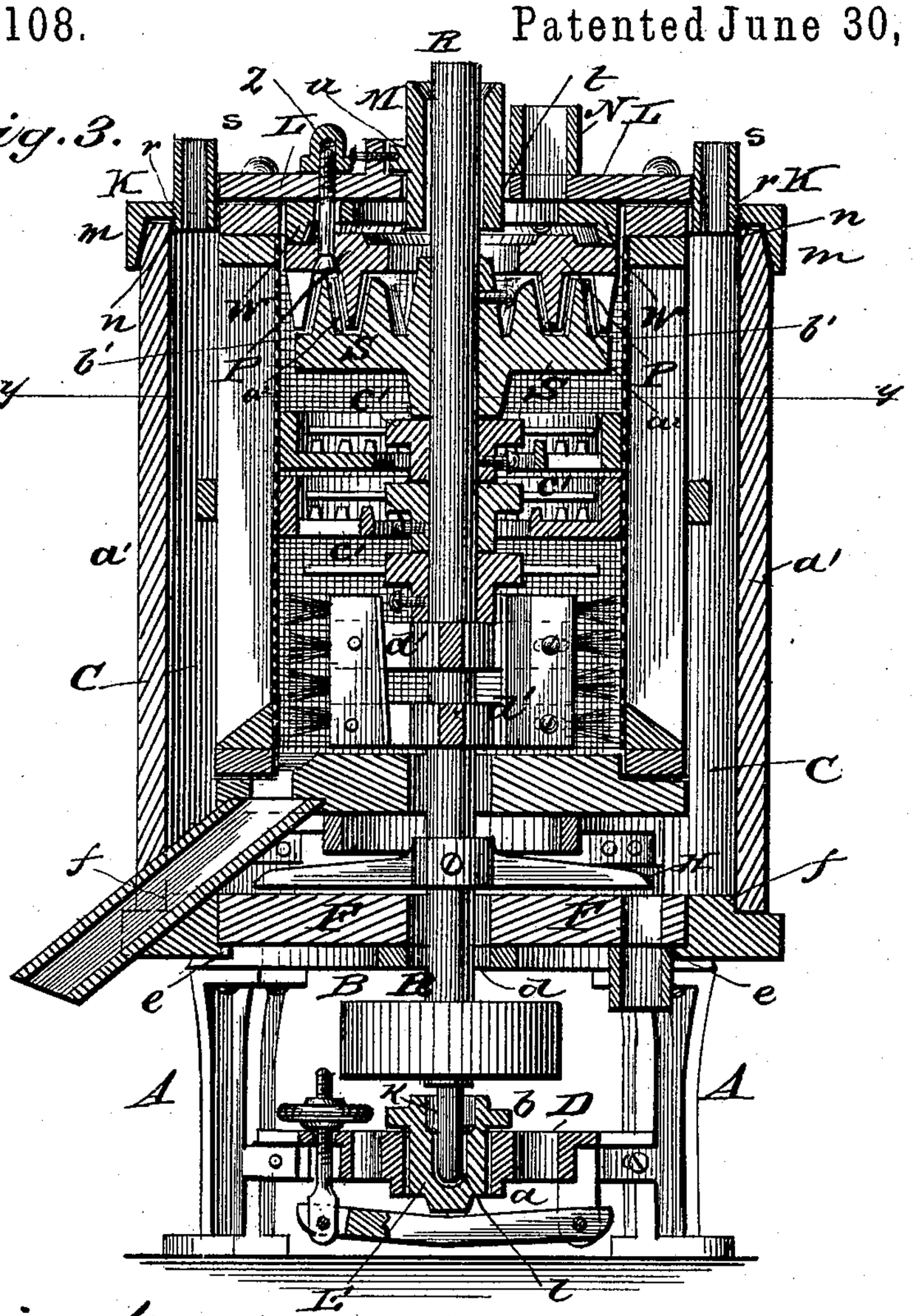
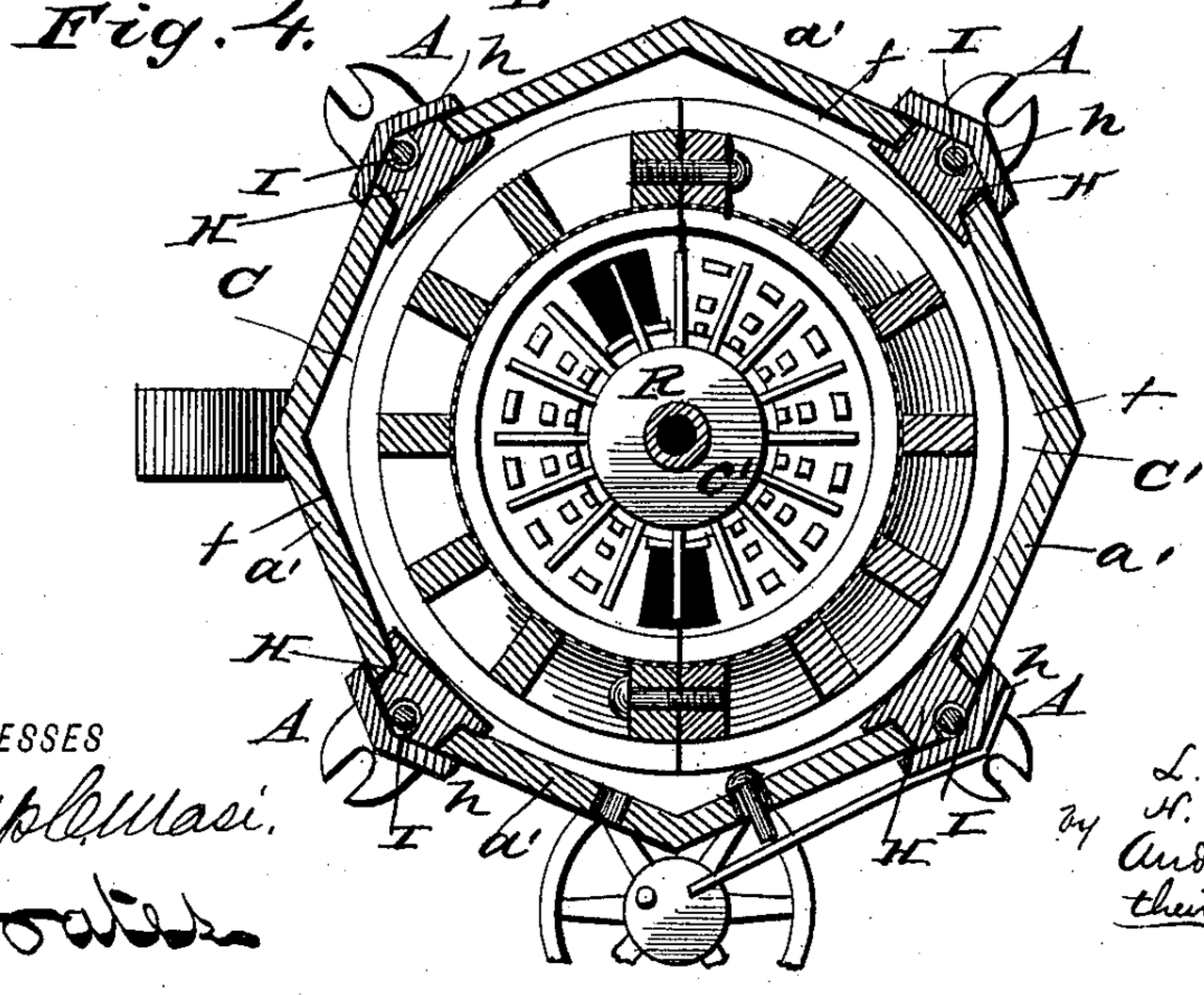


Fig. 4.



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BRAN DUSTER AND CLEANER.

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Fig. 5.

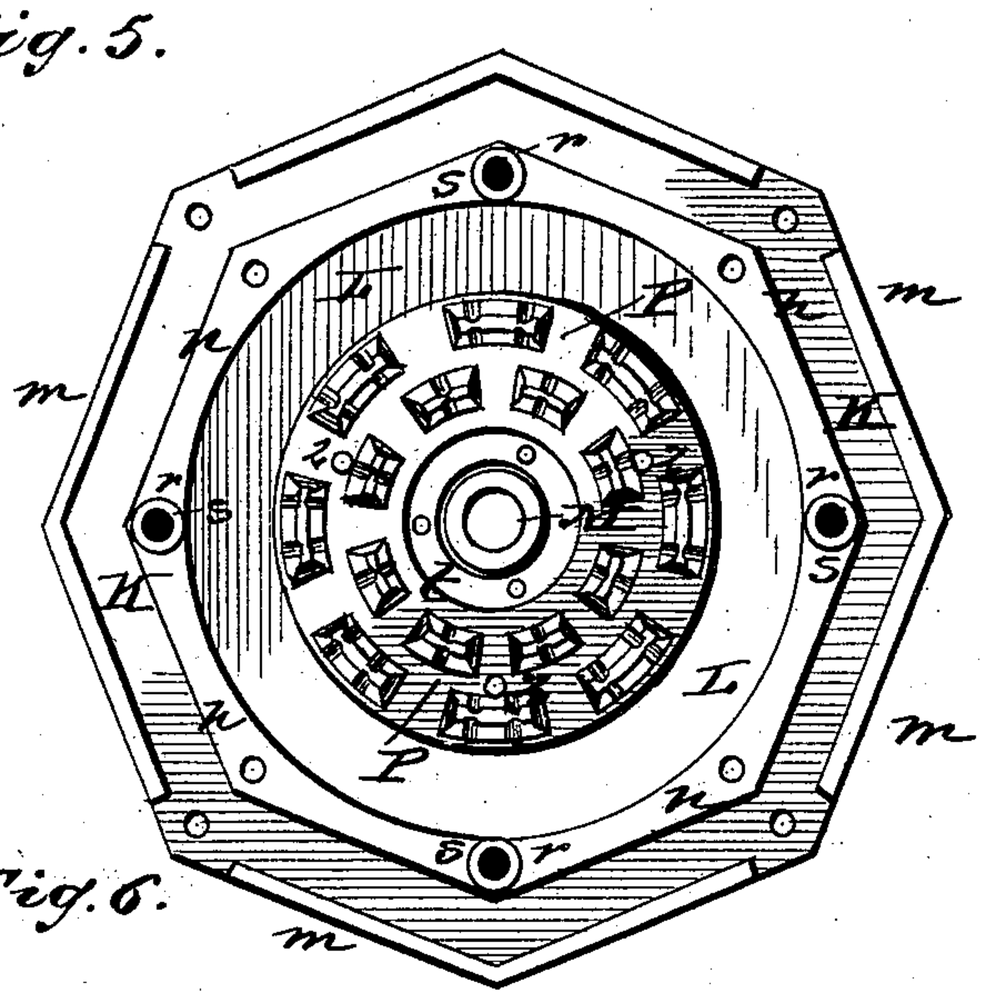


Fig. 6.

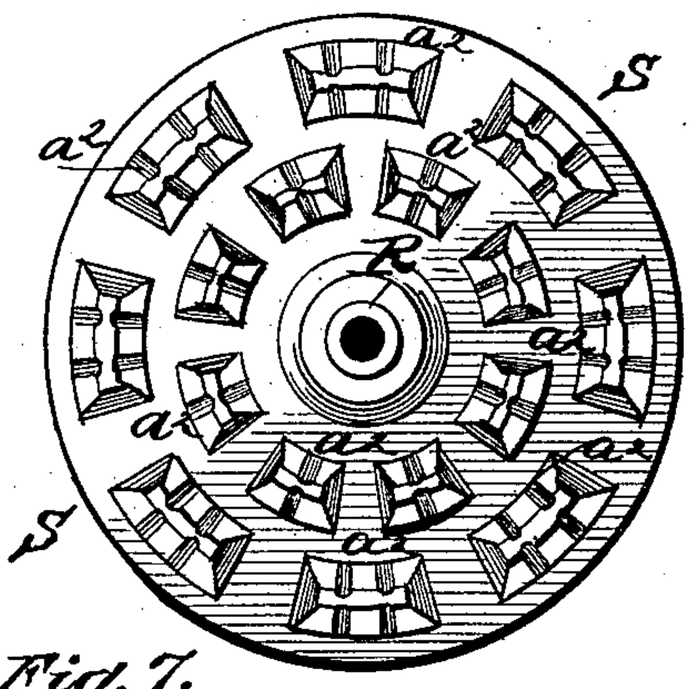


Fig. 7.

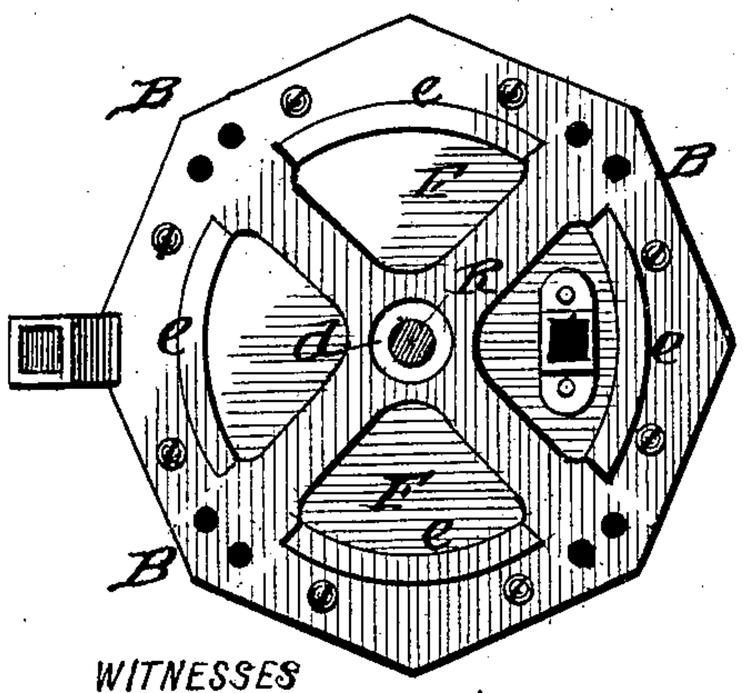


Fig. 9.

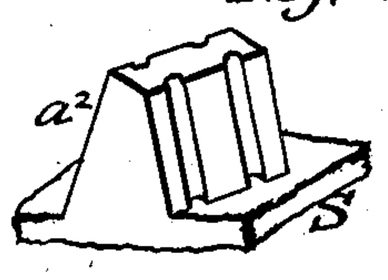
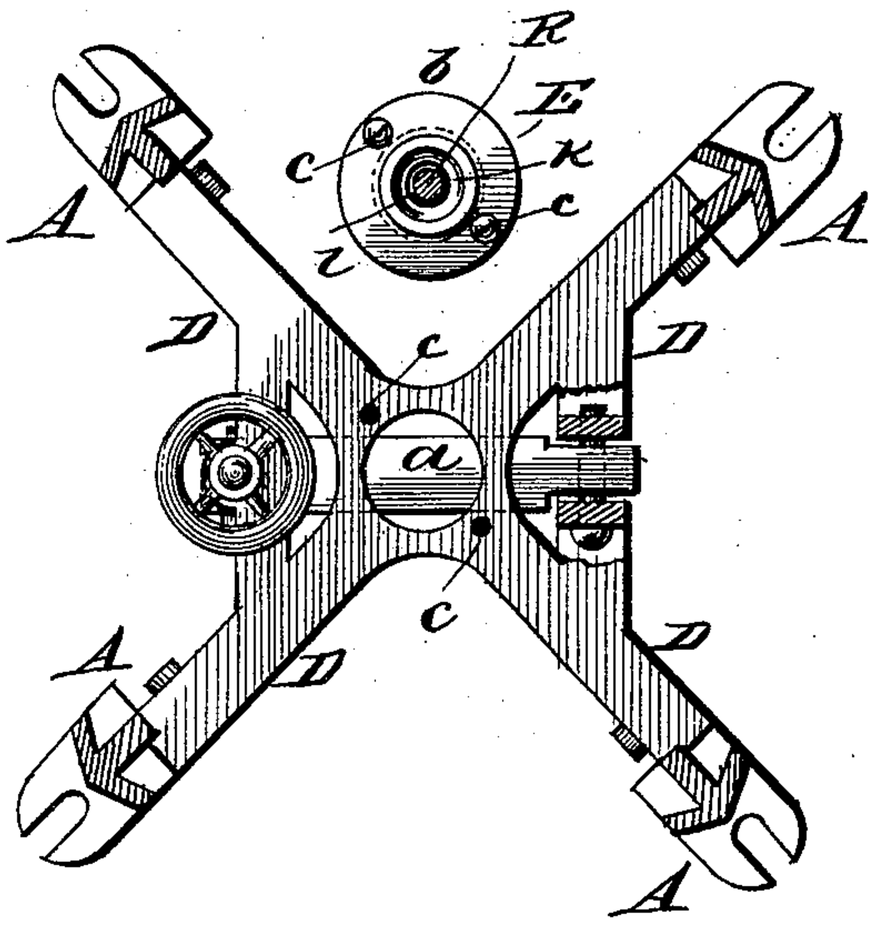


Fig. 8.



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UNITED STATES PATENT OFFICE.

LEVI S. HOGEBOOM AND HENRY B. SMITH, OF THREE RIVERS, MICHIGAN.

BRAN DUSTER AND CLEANER.

SPECIFICATION forming part of Letters Patent No. 321,108, dated June 30, 1885.

Application filed August 2, 1884. (No model.)

To all whom it may concern:

Be it known that we, LEVI S. HOGEBOOM and HENRY B. SMITH, citizens of the United States, residing at Three Rivers, in the county of St. Joseph and State of Michigan, have invented certain new and useful improvements in Bran Dusters and Cleaners; and we do declare the following to be a full, clear, and exact description of the invention, such as 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 or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a plan view of our device. Fig. 2 is a side view of the same. Fig. 3 is a vertical sectional view. Fig. 4 is a horizontal sectional view taken on line *y y;* Fig. 3, and Figs. 4, 5, 6, 7, and 8 are detail views. Fig. 9 is a perspective view of one of the disintegrating-teeth broken away from one of the disks.

This invention has relation to combined bran dusters and cleaners, and especially to improvements on the machine for which Letters Patent were granted to Levi S. Hogeboom and Frank B. Smith, dated June 12, 1883, and numbered 279,337.

The invention consists in the novel construction and arrangement of devices, as will be hereinafter more fully set forth, and particularly pointed out in the claims appended.

In the accompanying drawings, A indicates the legs of the frame, which are secured to the base-plate or bottom B of the flour-case C.

D represents a spider-frame, which is secured at a sufficient distance beneath the bottom plate, B, to the supporting-legs A. This spider has a central aperture, *a*, adapted to receive a step-box, E, which has an annular face-flange, *b*, to engage the upper face of said spider, and perforations *c* to receive set-screws, by which said step-box may be prevented from turning in its seat. The step-box has a double oil-chamber, *k l*. Beneath this spider is a hinge-bar-carrying device for adjusting the central vertical shaft, similar to those shown in the patent above referred to.

The base-plate B has a central annular opening, *d*, and an inner annular flange, *e*, adapted to support the bottom closing board or disk F of the flour-case. This disk F is provided with a discharge-spout and is secured to the radial arms of the plate B by means of screws or other common fastenings, so that when the fastening devices are removed the disk may be rotated so as to discharge the bran from either side of the machine. The plate B is also provided on its upper face with a flange, *f*, to engage the inner lower sides of the boards *a'*, which form the outer wall of the flour-case, and the recesses G, to seat the lower ends of the uprights H, which are arranged at suitable intervals between the adjacent ends of the boards *a*. These uprights H are longitudinally grooved on their outer sides to seat the vertical threaded rods I, which secure the top and bottom plates to the frame, and are provided with inner longitudinal lateral flanges to close the joints at the meeting ends of the boards *a'*, the outer joints being closed by the vertical batten strips *h*, which may be secured to the outer face of the uprights. Thus it will be seen that the parts may be readily removed or connected.

K indicates the top annular plate, which is provided with an outer downwardly-extending marginal flange, *m*, to engage the outer upper sides of the boards *a'*, and an inner under flange, *n*, to engage the inner upper sides of said boards. This plate K is also provided with recesses *o* in the marginal flange *m* for the entrance of the uprights and their batten strips, and with vertical apertures *r*, which may carry the short vertical tubes *s*, which provide outlets for the heated air rising in the bran-case.

L indicates the top covering-plate, which is secured to the annular plate K, and closes its annular opening. This plate L is provided with a central aperture, *t*, for the passage of the central vertical shaft, carrying a bushing, M. This bushing extends through said aperture *t* to a sufficient distance above its outer surface, and is provided with a flange, *u*, which engages the outer surface of the plate L around the aperture *t*. This flange is cut away to leave a plane surface on one side, as shown at *v*. Against the plane portion of this flange, and to the outer face of the plate L, is secured a rectangular hopper, N, which assists in preventing the bushing from turning

in the aperture *t*, the flange of which is secured by screws to said plate L. The plate L is also provided on its under side with a deep annular flange, *w*.

P indicates a non-revolving adjustable disk, which is secured to the under side of the top plate, L, over the flange *w*, by means of set-screws and vertical threaded studs *z*, which pass through perforations in said top plate, so that by manipulation of the set-screws the threaded studs, which are made fast to the disk P, may be drawn toward or forced away from the under side of the plate L, causing its teeth to engage with greater or less friction the teeth of a revolving disk on the central vertical shaft. This disk is also provided with a central aperture for the passage of the central vertical shaft and the admission of the grain as it falls from the hopper.

R indicates the central vertical shaft, the lower end of which is seated in the step-box E, arranged in the spider-frame D under the machine. This shaft R is provided near its upper end with a disk, S, which is made fast to said shaft by a key or locking-screw, and is provided on its upper face with annular series of teeth, which occupy the annular interspaces between the teeth of the upper adjustable disk, which is secured to the top plate, L. These teeth are peculiar in construction, being tapering from their bases to their extremities, their inner walls being of less height than their outer walls, (see Fig. 9,) and their opposite sides having vertical transversely-curved grooves a^2. The disk S, which is secured to the central vertical shaft, is provided with an annular marginal extension, *b'*, to engage the lower ends of the outer series of teeth on the upper adjustable disk. Beneath the disk S, on the central vertical shaft, are arranged the usual whippers, *c'*. This shaft is also provided beneath the whippers with radial arms *d'*, which are slotted transversely near their outer ends. To these arms the fan-blades and brushes are adjustably secured by set-screws or other suitable devices.

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

1. The disintegrating-disks having, respectively, an annular series of teeth which taper from their base, are higher on their outer than their inner sides, and are provided on opposite sides with vertical circular grooves, substantially as specified.

2. The combination, with the top plate, L, of the bushing M, having the annular flange provided with perforations to receive securing-screws, and having a plane side, *v*, and the rectangular feed-hopper secured to the said plate L against the plane side of the bushing-flange, whereby the latter may be prevented from turning in its seat, substantially as specified.

3. The combination of the central vertical shaft, the disintegrating-disk S, secured to the said shaft by the set-screw passing transversely through its hub, the top plate, L, the bushing M, the ring having the under annular flange, W, secured to the bushing M, as shown, and the non-revolving disintegrating-disk adjustably connected to the plate L by threaded bolts and nuts, substantially as specified.

4. The combination, with the top plate, L, of the upper annular plate, K, having the inner flange, *n*, the bottom plate, B, having the flange *f*, the uprights H, recessed on opposite sides, rods I, strips *h*, and boards *a'*, adapted to enter the recesses of the said uprights and form the flour-case, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

LEVI S. HOGEBOOM.
HENRY B. SMITH.

Witnesses as to Levi S. Hogeboom:
THEODORE COOLEY,
J. W. WATKINS.
Witnesses as to Henry B. Smith:
DAVID KNOX, Jr.,
FRANK BURTON SMITH.