

P. R. MILLER & C. D. ELDER.

FEATHER-RENOVATOR.

No. 179,422.

Patented July 4, 1876.

Fig. 1.

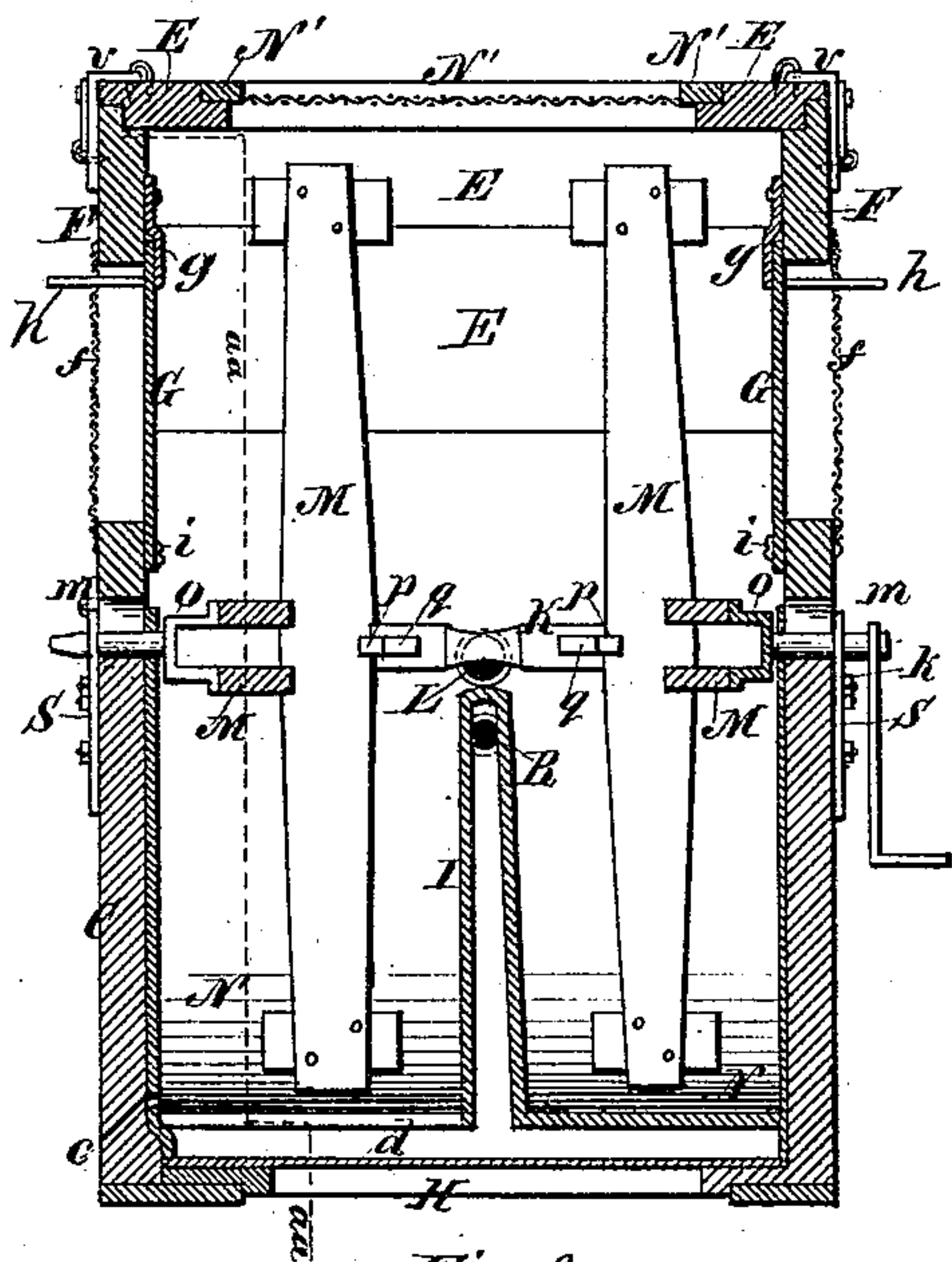


Fig. 2.

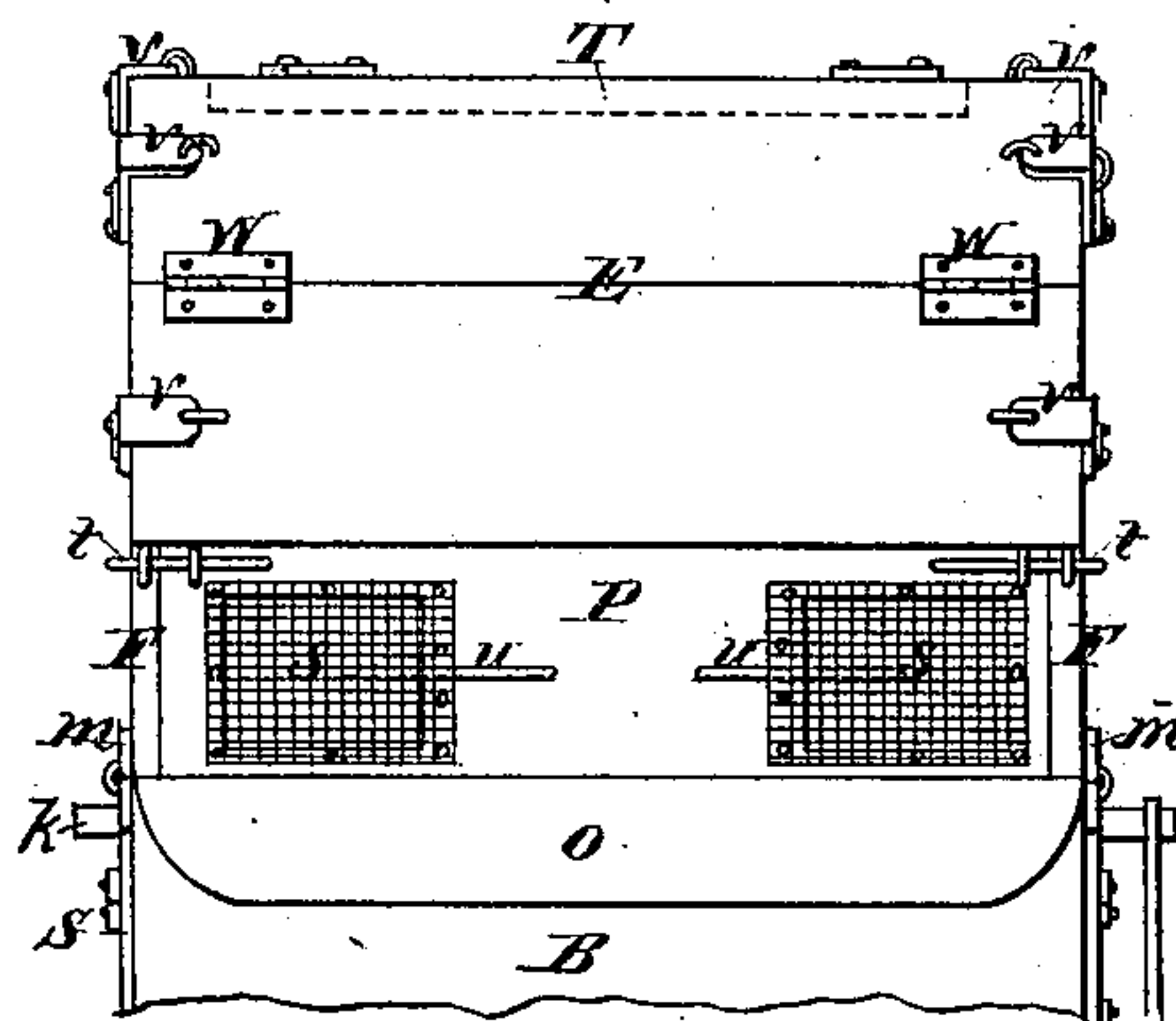


Fig. 3.

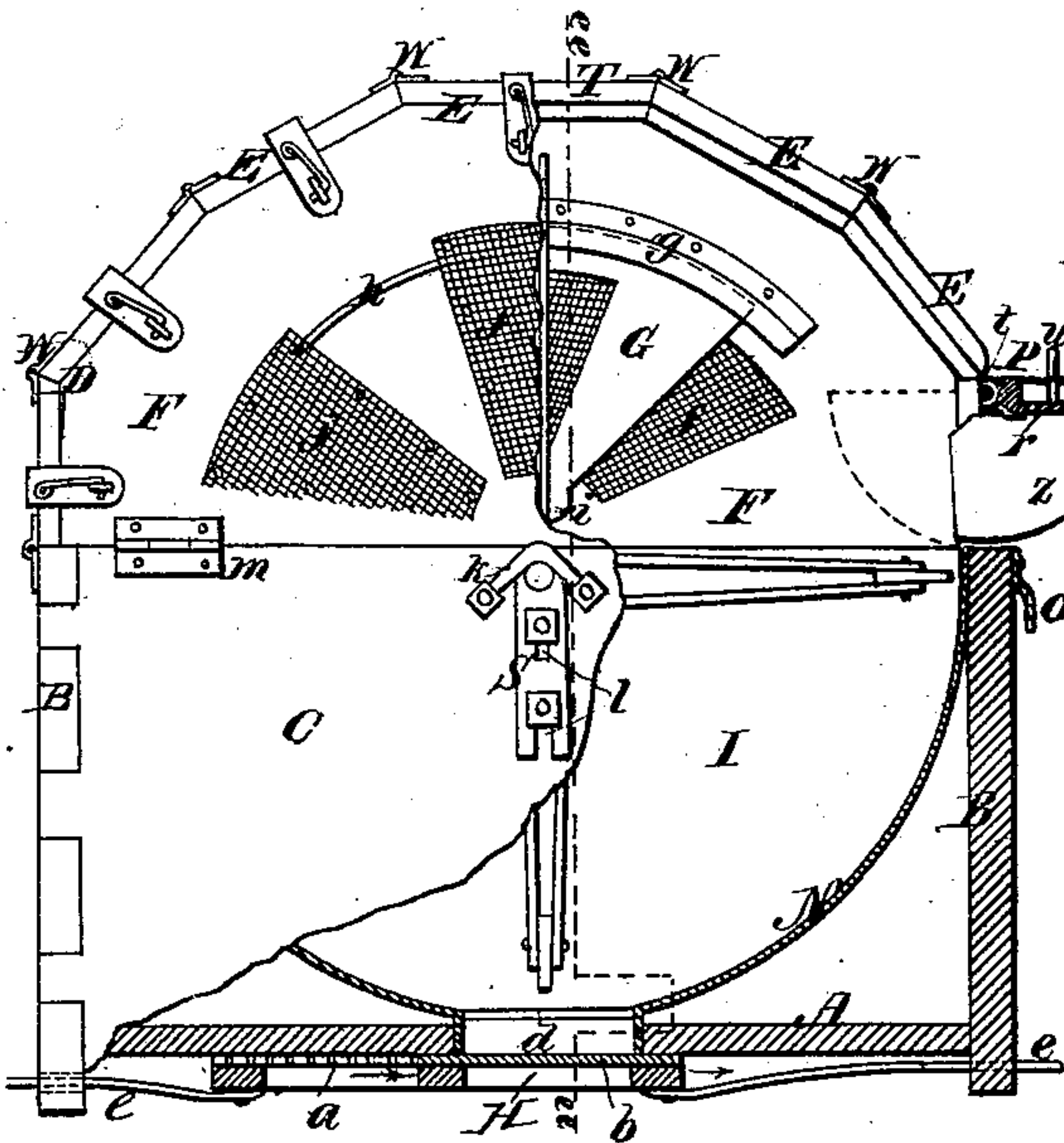


Fig. 4.

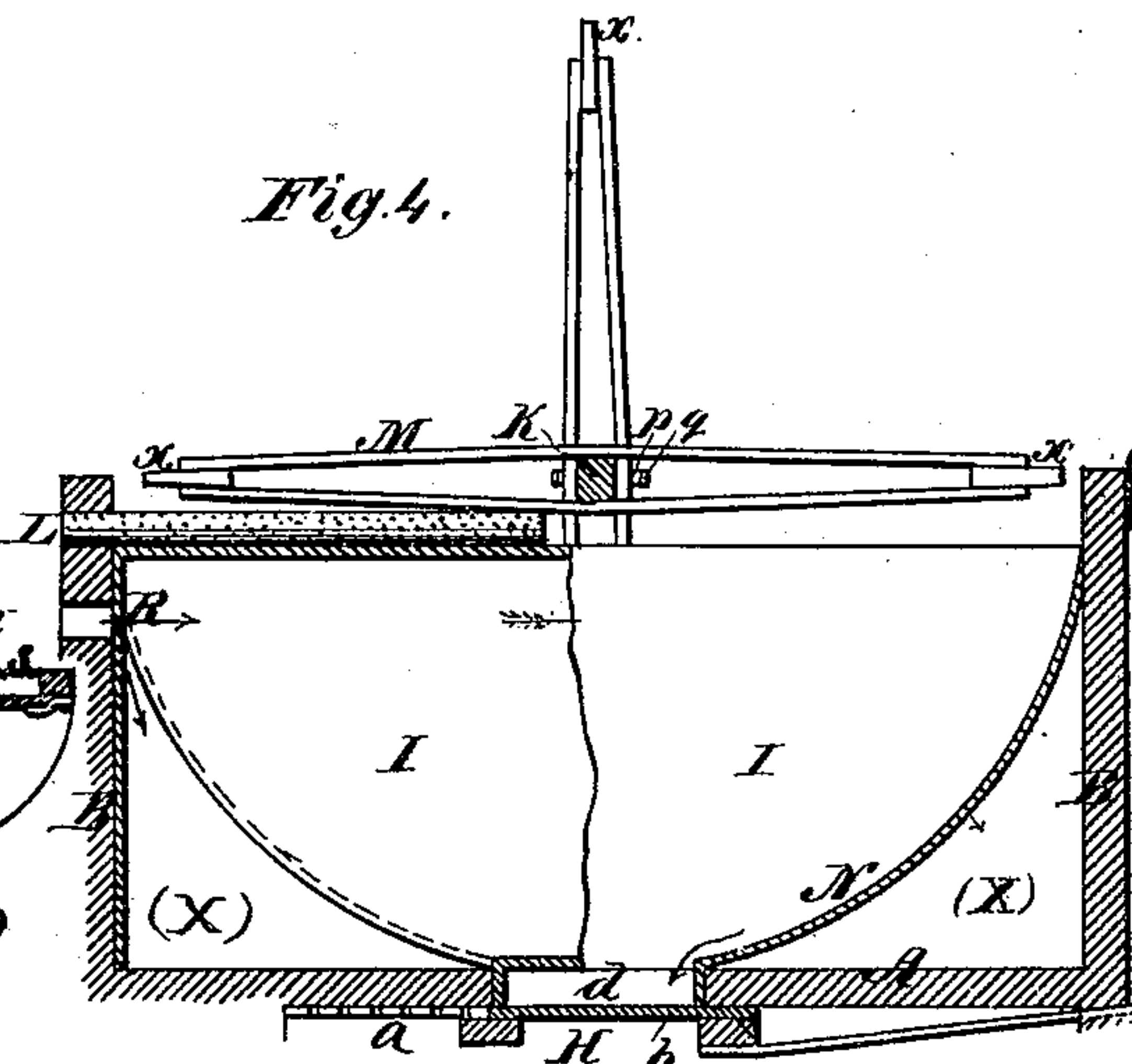
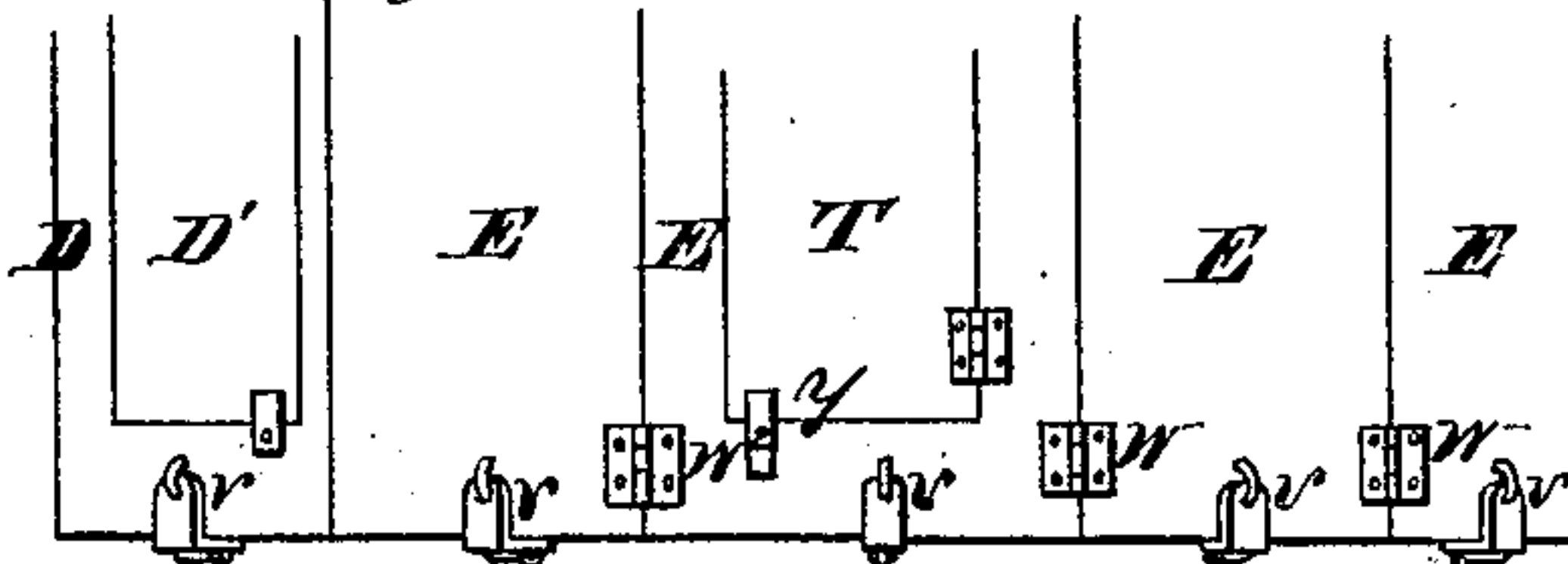


Fig. 5.



Witnesses.

Henry Vincent.  
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Inventor.

Philip R. Miller (by E. Thurston)  
his atty-in-fact  
Cornelius D. Elder (by E. Thurston)  
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# UNITED STATES PATENT OFFICE.

PHILIP R. MILLER AND CORNELIUS D. ELDER, OF GIBSON, ILLINOIS.

## IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. **179,422**, dated July 4, 1876; application filed April 20, 1876.

*To all whom it may concern:*

Be it known that we, PHILIP R. MILLER and CORNELIUS D. ELDER, of Gibson, in the county of Knox, in the State of Illinois, have invented an Improvement in Machines or Apparatus for Renovating Feathers; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a vertical section near the center of machine; Fig. 2, an end view, showing discharge-door; Fig. 3, side elevation, with partial ideal section, on line *a a*, Fig. 1; Fig. 4, a longitudinal vertical section through part of the central wall I, and through chamber N; Fig. 5, superficial or plan view of covers E D.

Our improvement consists as follows: First, an end door, side doors, and screens, for the purpose of making the stirring-wheel discharge the feathers by means of a side centripetal current of air to said "stirrer," which is diverted to a centrifugal current to discharge the renovated feathers from the end door; second, the provision of a combination of perforated and impervious screens, made movable on the sides for admission of a cleansing, cooling current of air, to be drawn in by the revolution of the stirrer, to pass through the steamed feathers and carry off decayed matter or bad smell; third, a movable perforated screen at the dirt-discharging hole at the bottom of the chambers, in combination with the usual sliding trap for admitting air in the drying process; fourth, the division of the interior of the machine into two chambers by means of a hollow wall for the admission of steam therein to furnish extra heating-surface in the drying stage of the process; fifth, in improving the feather-discharging aperture by pivoting the door in the side pieces of the machine, providing it with side cheeks, and with perforated screen for the escape of air above the discharging-current of feathers into the tick to allow the feathers to fall by leading off the current upward; sixth, in combination with the door

or delivering aperture, a device for retaining the edge of the tick (or bag) next to the machine, the better to receive the feathers; seventh, in the means of introducing steam at one end and conducting it at once to the center of the machine between the chambers and stirring-wheels, and not through the sides, thus leaving the remaining three sides of the machine free from obstruction; eighth, in the provision of adjustable axle-bearings to raise or lower the wheels.

One of the forms in which this machine is made is as follows: The casing is a square box (preferably about five feet and ten inches long, three feet wide, and two feet eleven inches deep, for the purpose of admitting the whole through a three-foot door.) The bottom A is of wood, above which is a semicircular metal bottom, N, (of a common form,) provided with usual opening below, but now made recessed above, the sliding door H, which closes it below, to form a dirt-catcher or depression to collect coarse dirt. The door H (sliding) is now combined with a perforated screen, *a*, on the same plane, and in the same frame as the door, either usable at pleasure and managed by a strap or handle, *e*, from either end of machine. This box is divided longitudinally by a (metallic) hollow wall, I, (for the induction of steam in the drying process,) which is provided with the steam-opening R at the end of the box, below the perforated steam-pipe L, running along the wall I. The upper part of the box is formed by hinging the flaps F F to either side of the same, and which are semicircular in general outline, to which are attached cross-boards D E, which close the top of the machine. Said sides or flaps F are so attached for the purpose of being folded down against their respective sides C C to occupy less room in shipping or storing the machine. These are further provided each with one or more openings covered on the outside by perforated screens *f f*, and on the inside by a sliding or swinging door, *g*, (or register,) which are each managed from the outside by means of a handle or rod, *h*. These flaps are arched or covered with several transverse boards, D E E, each recessed at the edge to fit a correspond-



ing recess in the edge of the flap F, some of which are hinged together. Two of the outer boards D at one end are hinged to the end of the machine above the steam-passages L R. The other boards E, &c., are hinged together so as to form one piece by exterior hinges *w w*, each of the boards or component parts being attached by each of its ends by the hasps *v* and staples to the side pieces F F. The last board, F, of this series, ends over the feather-discharge, which is covered by the flap P, which is pivoted at *i* at either of its upper corners in the side flaps F F. Said flap-door P is fitted with segmental cheeks *z z* at each end, and with an opening or openings, each covered on the outside with perforated screens *s s*, closable at pleasure by means of a sliding door, *r*, managed from the outside of the machine by a handle, *u*. Beneath this is a thin strip of metal or wood, *o*, attached to the lower edge of the discharge-passage, (covered by said flap P,) forming a narrow chink in which to wedge the edge of the bag or tick, the opposite edge of which is passed over and held by the flap-door P, when in a horizontal position.

The shaft K of the stirrers M is supported on adjustable sliding journals *s*, each pierced with vertical slots *l*, through which pass bolts, provided with nuts, to raise or adjust the stirrer M. A bridge, *k*, is placed above each gudgeon and journal.

The stirrers are two in number, M M, on a common spindle—one in the middle of each chamber, each having four arms, formed by attaching two flat strips of wood together at their extremities, between the ends of which is fastened a small slat, to form a feather-beater. Each two of said strips form a double arm, each of its component strips passing on opposite sides of the spindle K, crossing the adjoining arms, at their middle, at a right angle, where they are locked together by means of meeting notches cut in their edges, (in a common form of making a similar union,) the exterior arms abutting against the gudgeon-plate *o* or its shoulder, the arms on the inside being held against those abutting on said plate by a gib, *p*, and key *q*, set in a slot in the axle.

The gudgeon-plates *o o* hold the gudgeons fast in the wooden axle K, and each laps round one end of the spindle, and presents on the two opposite sides of same a shoulder or abutment for the respective outer arms of the stirrer.

The operation of this machine is as follows: The feathers are introduced through either of the doors D' T in the cover D E. These are then closed and buttoned, as well as all the other doors H P G. The steam is then admitted through the pipe L, which runs to the center of the machine. At the same time the stirrer M is turned, stirring the feathers in either chamber. Then steam is admitted into the bottom of the box below the metal bottom N

N, which communicates with the hollow wall I. After this the upper and lower doors are opened and replaced by the perforated screens to let out the steam from the upper part of the box at the same time that the side doors G are opened to supply cooling, purifying air, (during the rotation of the stirrers,) to purify and deodorize the feathers, in conjunction with the steam. The feathers being now renovated, the end flap P is opened to a horizontal position, and so held, supporting, at the same time, the edge of the tick, the other edge being drawn under the cleat O below the flap and discharge-hole. The upper and lower perforated screens N' *a* are now removed and replaced with their respective doors to close the draft, the side doors G G being left open, as well as the sliding doors *r r*, covering the inside of the screens *s s* in the flap P. The stirrer is now rotated upward toward said flap, so as to create a current outward, drawn in through the side doors G G, which, escaping through the screens *s s*, leaves the feathers to fall into the tick, placed as before described.

To pack the machine, the covers D E are removed, and the side flaps F F lowered against their respective sides C C vertically; the gibs *p p* removed to allow the inside arms M to be placed horizontally parallel with the others without removing them from the axle. The covers D E are then laid flat over all, thus throwing the machine into a square form, and the best shape for transportation.

What we claim as our invention is—

1. In a feather-renovator, the swivel-doors G G, in combination with the perforated screen *f*, and the sides F F, substantially as and for the purposes described.

2. In a feather-renovator, a recess, *d*, above the sliding door, at the bottom, to catch coarse dirt, in combination with the usual door, combined with an attached perforated screen, *a*, substantially as and for the purposes described.

3. In a feather-renovator, a longitudinal, divisional, hollow wall, I, (between two revolving stirrers,) for the purpose of receiving steam and furnishing extra drying-surface, in combination with the steam-space below the metal bottom N, substantially as and for the purposes described.

4. The pipe R, for inducting steam to the hollow central wall I, and in combination therewith, as and for the purposes described.

5. The combination, with the flaps F, of openings, covered with sliding door G and screens *f*, as and for the purposes described.

6. The cover, composed of the hinged pieces E D, attachable to the side flaps F by the hasps *w*, as described.

7. In combination with the hinged covers E D, a door, D' T, with a movable, perforated screen, N', as described.

8. The combination of the box A B C and combined door and screen H, with central hollow wall or division I, provided with steam-



passage R, substantially as and for the purposes described.

9. In combination with the box A B C, the hinged side flaps F F, provided with side drafts or doors and screens f G, as described.

10. The combination, with the hinged covers E D and box A B C, of the hinged flap P, pivoted at the upper corners in the flaps F F, and provided with the outer screens s s, and inner sliding doors r r, and cheeks z, as described.

11. The combination, with the box A B C, and the feather - discharge opening and flap-door P, of the bag or tick retainer O, as described.

12. The stirrers M, as constructed, with gibs p, keys q, and clamps o, so as to be loosened and laid horizontally without removal from the axle, as described.

In testimony that we claim the foregoing feather - renovator, we have hereunto set our hands this 7th day of April, 1876.

PHILIP R. MILLER.  
CORNELIUS D. ELDER.

Witnesses:

HENRY W. WELLS,  
JAMES M. MORSE.