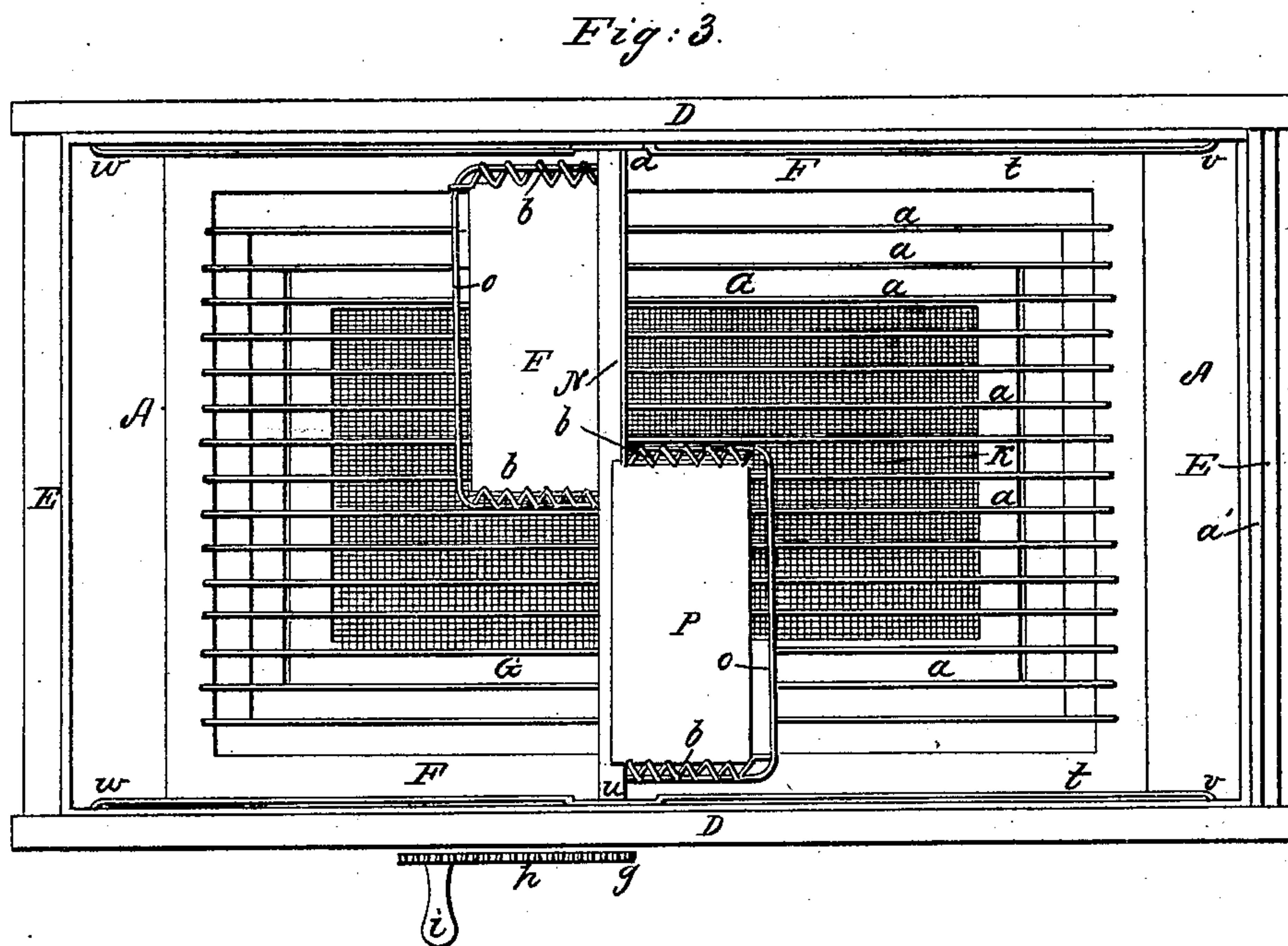
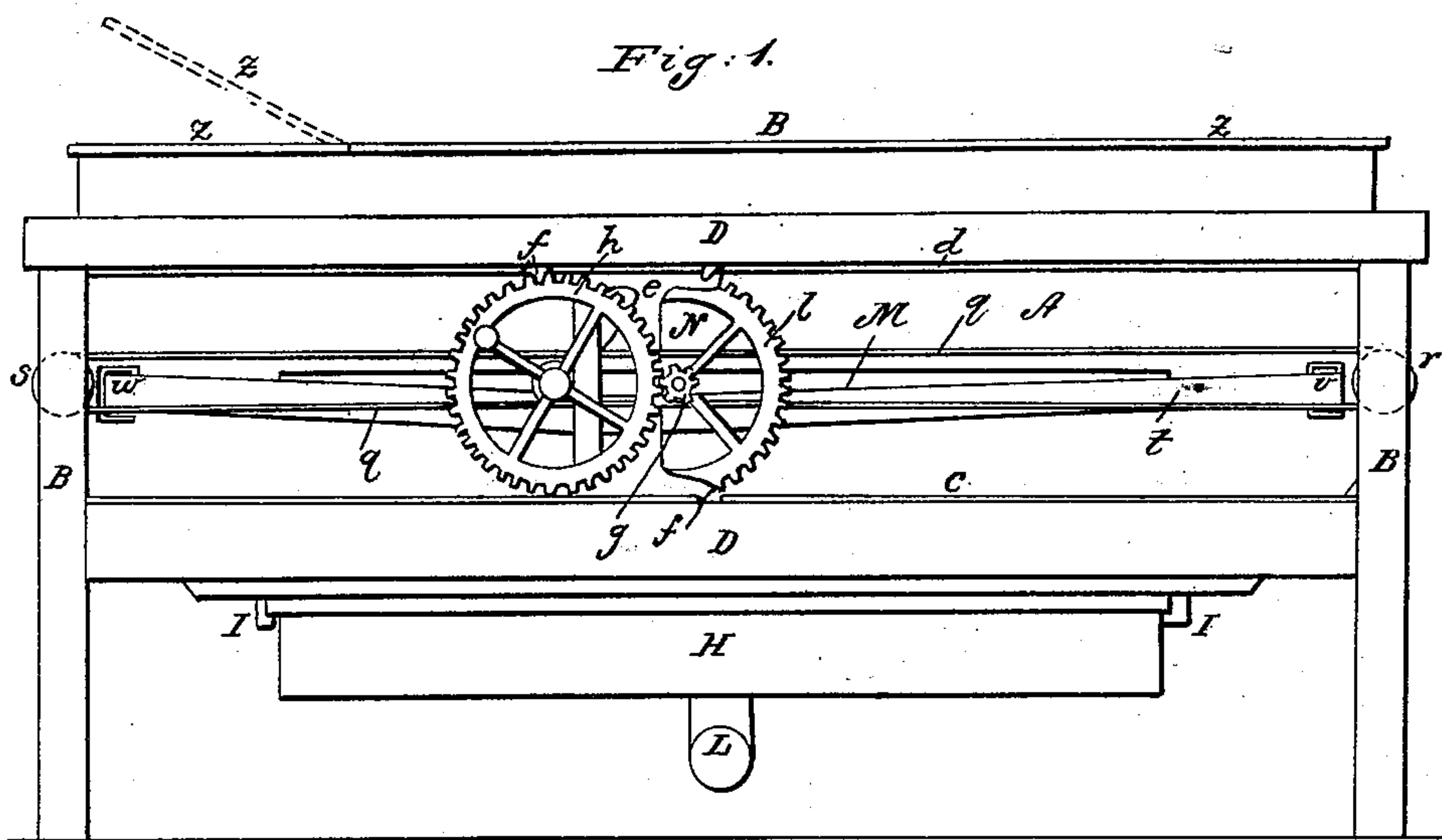


N. L. MANNING.
Feather Renovator.

No. 2,053.

Patented April 16, 1841.



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Fig: 5.

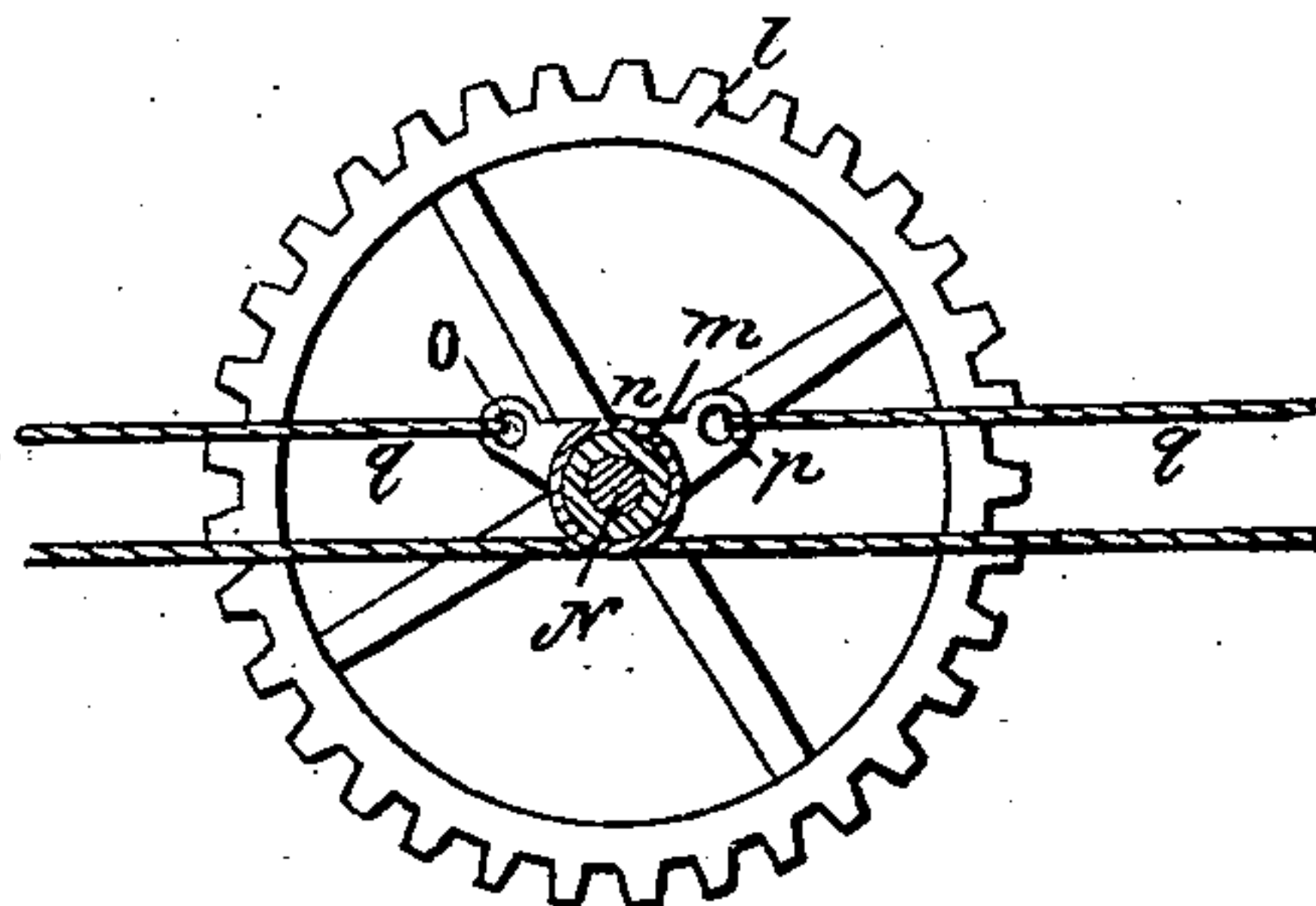


Fig: 4.

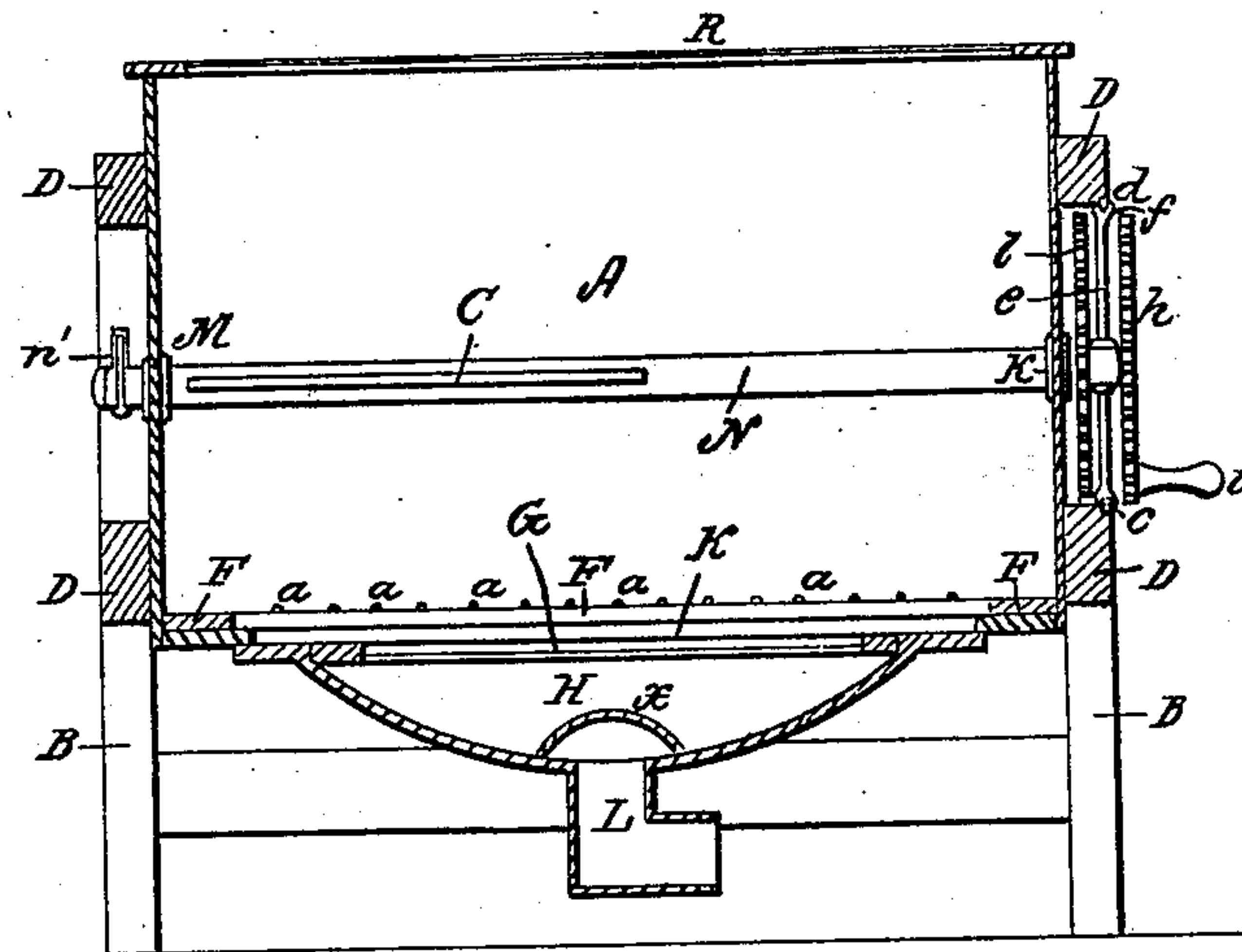
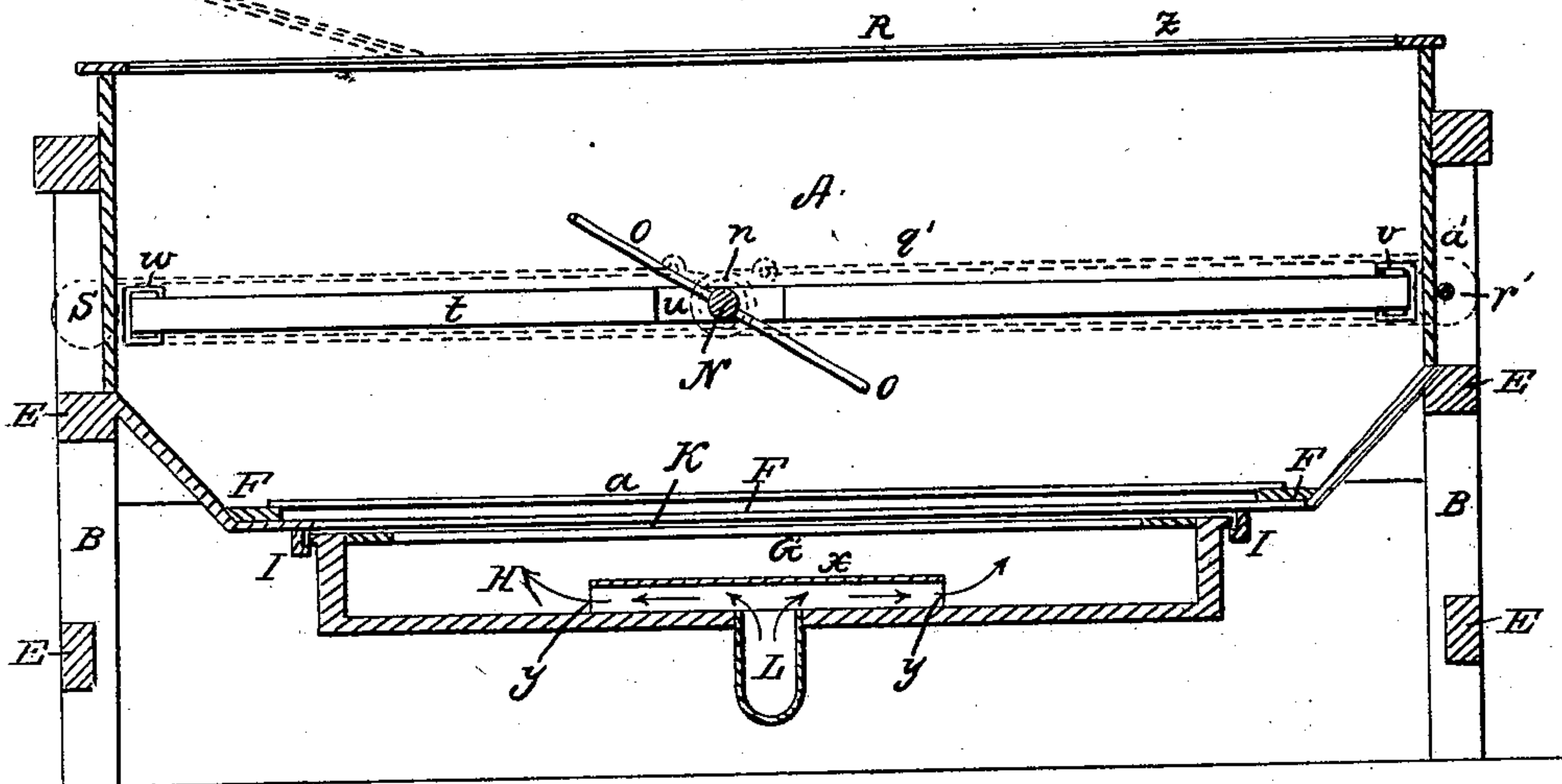


Fig: 2.



UNITED STATES PATENT OFFICE.

NATHANIEL L. MANNING, OF BOSTON, MASSACHUSETTS.

MACHINERY FOR DRYING, WHIPPING, AND CLEANSING FEATHERS.

Specification of Letters Patent No. 2,053, dated April 16, 1841.

To all whom it may concern:

Be it known that I, NATHANIEL L. MANNING, of Boston, in the county of Suffolk and State of Massachusetts, have invented
5 new and useful Improvements in Machinery for Drying, Whipping, and Cleansing Feathers, and that the following is a full and exact description of the same.

The said description taken in connection
10 with the accompanying drawings herein-after referred to composes my specification, setting forth the principles of my improvements (by which they may be distinguished from other inventions of a like character)
15 and such parts or combinations therein as I claim to be my invention and for which I solicit Letters Patent.

In the drawings Figure 1 represents a side view, Fig. 2 a vertical longitudinal section, Fig. 3 a top view with the cover removed, and Fig. 4, a transverse vertical section of the aforesaid machinery for drying, whipping and cleansing feathers.

The feathers to be operated are put in a
25 rectangular or other proper shaped box A, Figs. 1, 2, 3, 4, resting in a suitable frame which is so arranged as to support the same and the other parts of the machinery. In the machine herein described, this frame
30 consists of four posts B, B, B, B, two of which in each side are connected together by longitudinal rails D D, and the opposite posts by transverse rails E E as exhibited in the drawings. A rectangular frame F is
35 placed in the bottom of the box A and wires *a, a, a*, are to be extended upon this frame from one end to the opposite, parallel to each other and at one inch apart more or less as seen in Figs. 2, 3, 4. The feathers
40 when thrown into the box fall and rest upon this grating. Directly under the wires *a a* is another rectangular frame G which is fitted into the top of a draw or box H, which latter is so arranged upon cleats I I screwed
45 to the underside of the box A, like a common draw, as to be easily drawn out or removed from its position, at pleasure. The frame G has a sieve or wire netting K Figs. 2, 3, 4, extended over the same, which when in
50 place, will be a short distance under and parallel with the wires *a, a*. A pipe or funnel L Figs. 1, 2, 4 is introduced in a suitable manner into the bottom of the draw or box H, the said pipe communicating with
55 a close stove in which charcoal or other

carbonic-acid and other gases escape and pass through the pipe L into the box H and thence circulate upward and through the feathers, thus acting upon and drying and
60 neutralizing any of the decaying animal matter of the feathers, which produces the unpleasant effluvia that usually escapes therefrom.

In order to break up the bunches and
65 effectually separate the feathers, so as to cleanse them of foreign matters, during the process of drying them, by the products of the combustion of charcoal or fuel, burning without any injurious quantity of smoke,
70 I make use of a whipping apparatus, which I now proceed to describe. Each side of the box A has a long horizontal groove M cut therein, through which the end of a cross
75 shaft N is inserted. The shaft N has two or more bows O, O, Figs. 2, 3, 4, affixed to it, the said bows being metallic rods, having a portion of each of their ends bent at right angles, and inserted in the shaft N as exhibited in Fig. 3. A piece of cloth P is at-
80 tached at one edge to the shaft N, the three remaining edges having eyelet holes, formed through the same, through which lacings *b b* Fig. 3, like those of a bed sacking, are passed, so as to connect the cloths or sails
85 P, P, to the rods O, O. The sails or cloths P, P, are to be of such size, or are to be let out or taken up, according to the quantity of wind required to be produced or set in motion among the feathers, to assist in throw-
90 ing or blowing them out of the box A, one end of which is capable of being removed; and thus after the feathers are beaten by the bows, the sails are spread, and when re-
95 volved create such a wind as blows all the finer qualities of the feathers out of the end of the box, and in this manner, the coarse kind may be separated from the finer. The shaft N is to be put in rapid revolution and moved longitudinally to and fro in the
100 grooves M, from one end of the box toward the other so as to cause the bows O O to pass entirely through the whole mass of feathers, whipping and blowing them about in the box, thereby causing the dust and ex-
105 traneous matters, separated by this process to fall through or between the wires *a, a, a*, and upon or through the sieve or netting K into the draw H from which they can be easily removed by withdrawing the same. 110

The method of causing the shaft N to traverse throughout the box is thus de-

scribed. Two rails or rods *c, d*, Figs. 1, 4, are arranged parallel to each other on one side of the frame. The former is applied to the upper edge of the lower bar *D*, and the latter to the lower edge of the upper bar *D*. They serve to support a frame *e*, whose top and bottom have projections *f, f*, *f, f*, grooved so as to rest and slide upon the rails *c, d*. One end of the shaft *N* passes through and turns in a box upon the side of the frame *e*, the said end of the shaft having a cogged pinion *g* affixed thereon, which engages with a cogged wheel *h* fitted on the end of a short shaft moving in suitable bearings, applied to the other side of the frame, *e*. The cogged wheel *h*, has a crank *i* upon the same, to the handle of which, the workman applies his hands and turns the cogged wheel, thereby putting the shaft *N* and bows *O O* in rapid revolution. A small pinion *k* Fig. 4, is placed on the opposite or inner end of the shaft of the wheel *h*, in rear of said wheel and frame *e*, the said pinion engaging with a cogged wheel *l*, placed, playing loosely or turning upon the shaft *N*. A small pulley *m* Fig. 5 is attached to the rear side of the wheel *l*, so as to move with the wheel *l*, and also in rear of the said pulley *m*, and playing loosely in the shaft *N*, is a small piece of metal *n*, having two holes or eyes *o, p*, to one of which the extremity of a cord or band *q*, Fig. 1, is attached, the said cord passing thence to and around a pulley or sheave *r*, in the post *B* of the frame, thence to and turns once entirely about the pulley *m*, continuing from thence to and over the pulley *s*, and is drawn tight and joined to the other eye, *o*, of the piece *n*. In lieu of the pulley *m*, a small pinion having a suitable number of teeth may be substituted, the said pinion to operate in a chain belt used instead of the band *q*. Another piece *n'*, band *q'*, and pulleys *r', s'*, are similarly arranged on the opposite side of the box *A*, the same being seen by dotted lines in Fig. 2, and to insure their action, the two opposite pulleys at one end of the machine, are connected together by a cross shaft *a'* Fig. 3.

The groove *M*, through each side of the box is closed as the shaft *N*, progresses to and fro, so as to prevent the feathers from being blown out or through the same, by a band *D*, (see Figs. 1, 2, 3,) one of whose ends is attached to one end of a piece of metal *u*, arranged on the shaft *N*, and through which the shaft passes and turns, the said piece covering the groove, a distance equal to its length. From thence the band *D* passes to and around a vertical pulley *v*; thence continues on the outside of the box, to and around another and similar vertical pulley *w*, at its other end and from thence after being strained tight, it is attached to the other extremity of the piece

of metal *u*, as seen in Fig. 2. Therefore as the shaft *N* travels back and forth in the box, it drags upon the band *D*, at the same time moving it over the pulleys *v* and *w*, and consequently always keeps the inner side of the slot *M* covered so as to prevent the escape of any feathers, or the same from clogging in the slot, and thereby preventing the movement of the shaft *N*. After the shaft *N* has passed entirely throughout the length of the slots *M*, in each side of the box, so that the whole of the feathers have been whipped, and blown about, by the action of the bows *O O*, the attendant who operates the machine, turns the crank *i* in the opposite directions, and reverses the motion of the shaft *N*, which now travels back through the slots *M* toward the opposite end of the box *A*. I find that the method herein described of whipping and separating the feathers by means of the bows *O O*, attached to the shaft *N*, is far superior to the application to said shaft of arms projecting therefrom.

As the shaft *N* is put in rapid revolution, the bows successively and progressively pass through the mass of feathers acting on the whole of the same at each passage of the shaft throughout the box, and so effectual is their operations, that the dirt and extraneous matters are all blown through the wire netting, and sieve under the same into the box or draw *H*. The carbonic acid gas and other products resulting from the combustion of charcoal as before described, being admitted into the box through the pipe *L*, are completely circulated among the feathers by the bows, thus destroying all unpleasant effluvia, drying them, and restoring their necessary elasticity.

In order to disseminate the gases and hot air more generally upon the feathers, I place over the mouth of the pipe *L* or where it enters the bottom of the draw *H* a piece of sheet iron *x* (see Figs. 2 and 4), curved in its transverse section, and extending some considerable distance on each side of the mouth of the tube, as exhibited in Fig. 2, where the passage of the gases is denoted by arrows. Now as the carbonic acid is drawn through the pipe *L*, it impinges against the center of the curved piece of sheet iron *x*, and separates and escapes into the box, through the openings *v y* Fig. 2, at each end of the said piece *x*.

The box *A* has a suitable cover *R*, Figs. 1, 2, 3 a portion *z* of the end of which is hung on hinges, so as to be raised at pleasure in order to introduce the feathers, or to regulate the admission of the external air to the same.

Instead of causing the shaft and whipping bows to travel throughout the box, as before described, the former may be arranged so as to remain, in one position, dur-

ing its revolutions and the wires on which the feathers are deposited, and the sieves may be carried back and forth under the same by a somewhat similar disposition of the machinery, but as this would embody the application of principles already set forth, I do not deem it necessary to particularly describe the same, as it will be apparent to the generality of mechanics.

10 Having thus described my improvements I shall claim—

15 1. The mode hereinbefore described of drying and cleansing the feathers, by means of carbonic acid gas, hot air and other products of the combustion of charcoal or other suitable fuel, introduced among the feathers during the process of whipping and separating them from each other, substantially in manner as before set forth.

20 2. I claim, whipping and separating the feathers from each other, by means of bows and sails applied to a revolving shaft, which shaft shall remain in one position, while revolving, and the feathers be brought under
25 the action of the same in the box in which

said shaft revolves in any convenient manner, or said shaft may be moved over the mass of feathers and back and forth throughout the box, by means of a band and pulley, or a chain belt and cogged pinion 30 operated as above described.

3. I claim closing the elongated slots or apertures in the sides of the box, so that none of the feathers may escape or impede the operations of the machinery, as the revolving shaft is moved to and fro, by means 35 of the band laying over the same and traveling over drums or pulleys and operated by the revolving shaft as hereinbefore set forth. 40

In testimony that the above is a true description of my said invention and improvement I have hereto set my signature this thirteenth day of February in the year eighteen hundred and forty one.

NATHL. L. MANNING.

Witnesses:

R. H. EDDY,

EZRA LINCOLN, Jr.