

W. H. ELLIOT.  
Feather-Renovators.

No. 152,221.

Patented June 23, 1874.

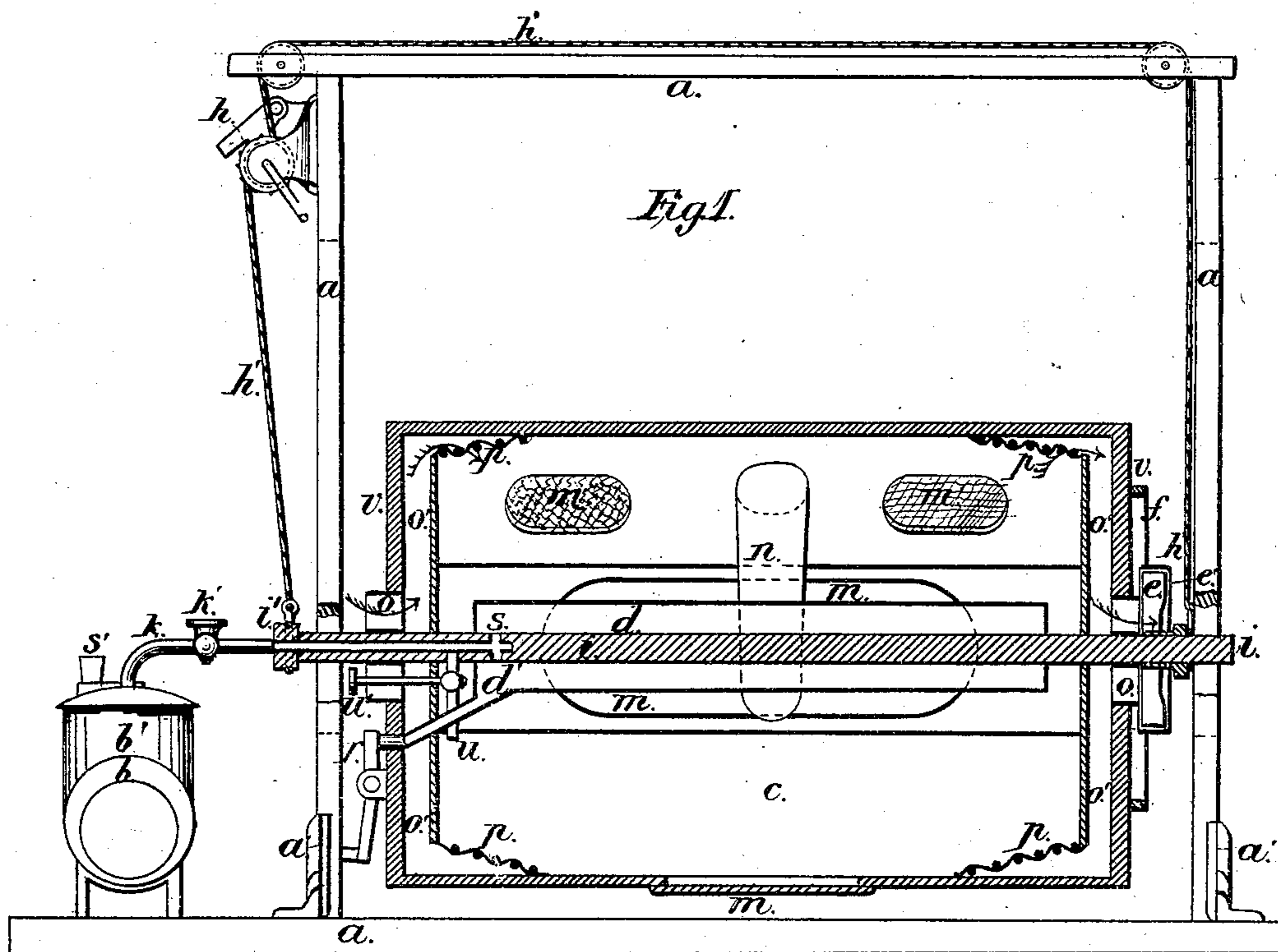


Fig. 2.

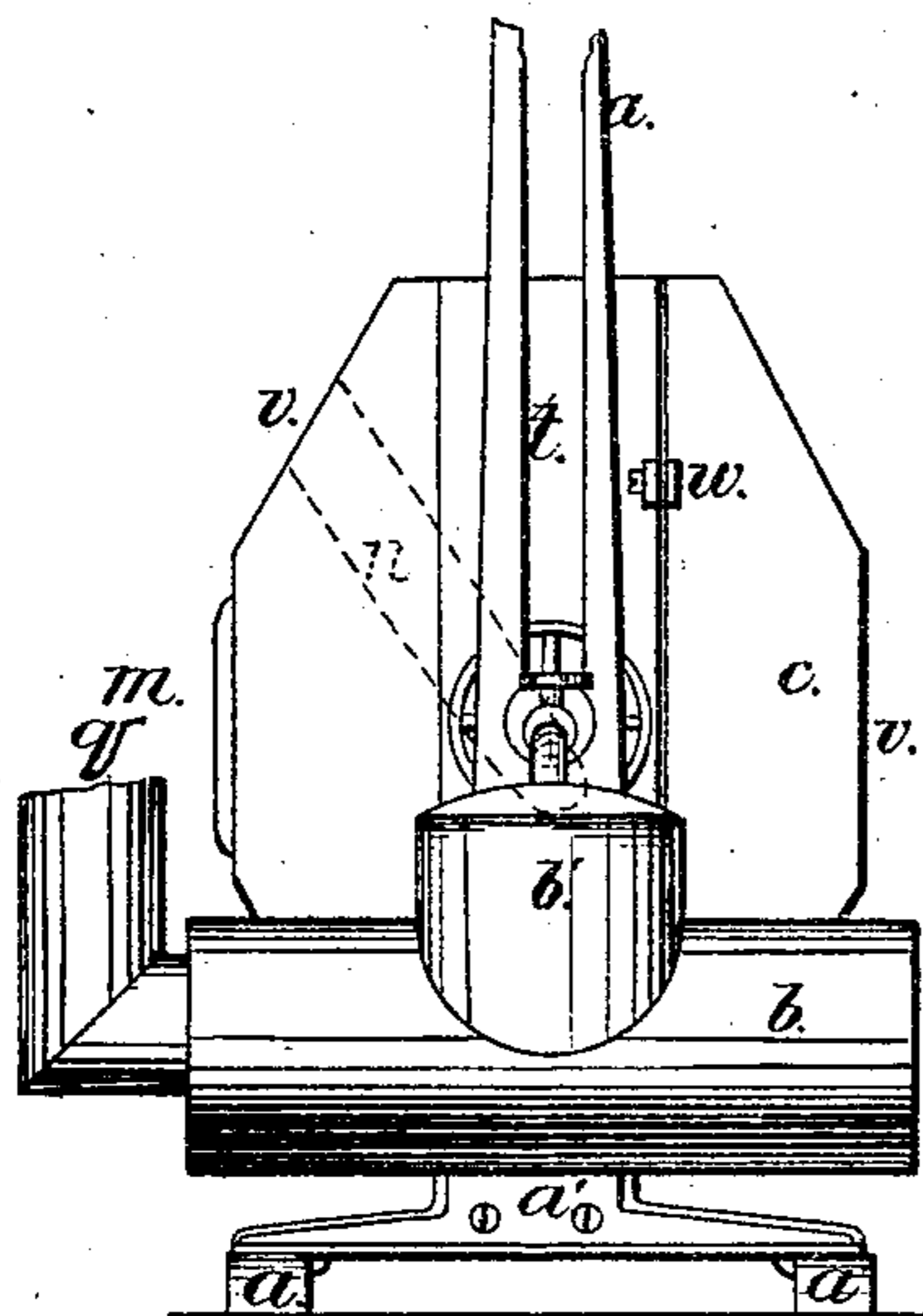
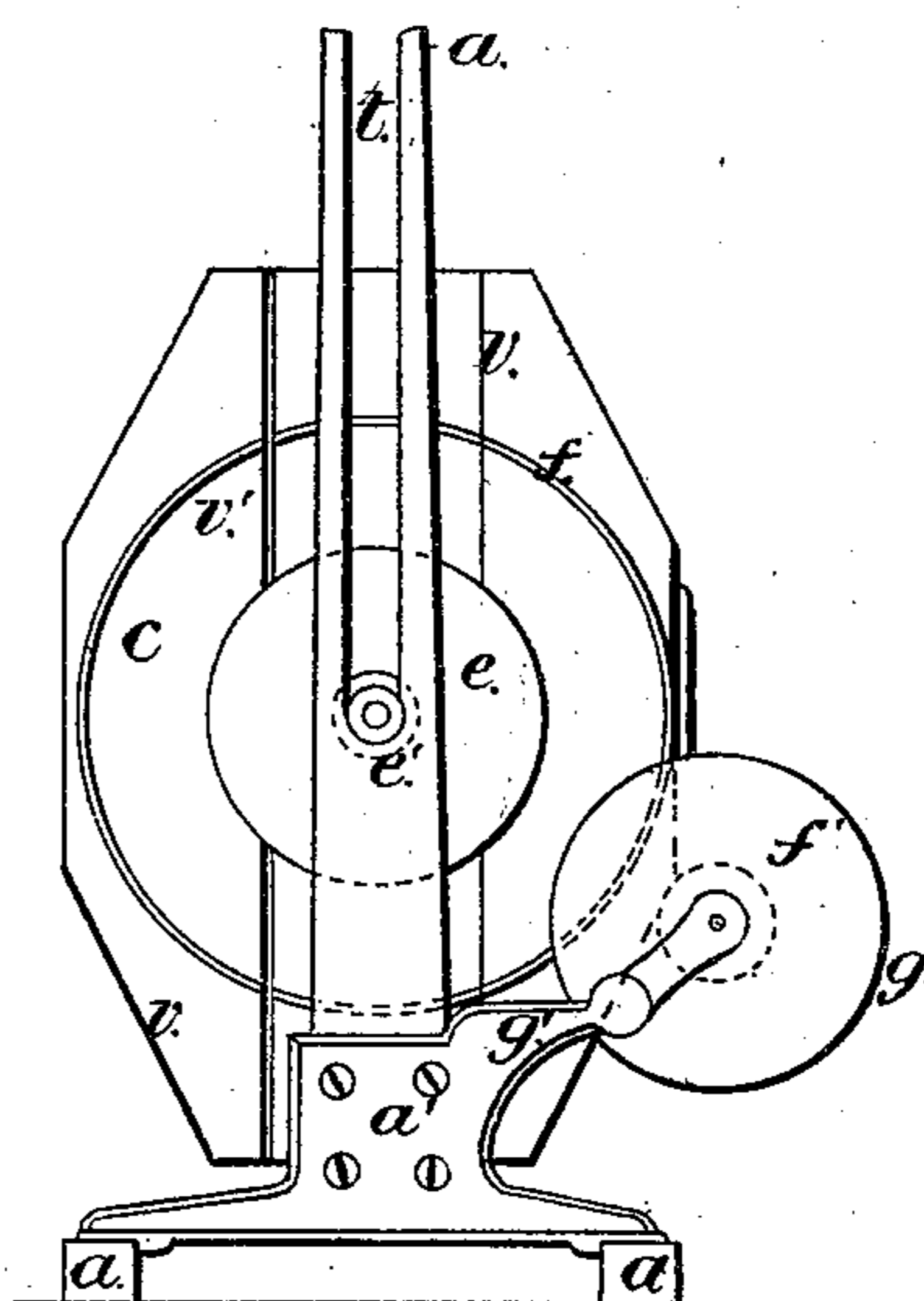


Fig. 3.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. **152,221**, dated June 23, 1874; application filed April 13, 1874.

*To all whom it may concern:*

Be it known that I, WM. H. ELLIOT, of the city, county, and State of New York, have invented a new and Improved Feather-Renovator; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Similar letters of reference indicate the same devices in all the figures.

To enable others skilled in the arts to comprehend, make, and use my invention, I will proceed to describe its nature, construction, and operation.

The nature of my invention consists in the combination, construction, and operation of certain devices to facilitate the handling and renovating of feathers, which are fully set forth in this specification.

Figure 1 is an elevation of the frame and boiler, and a section of the feather-cylinder and blower. Fig. 2 is an end elevation of the apparatus, showing the boiler. Fig. 3 is the same, showing the blower.

*a*, frame of the machine; *a'*, casting, which supports the upright upon the horizontal portion of the frame; *b*, boiler; *b'*, dome of the same; *c*, feather-cylinder; *d*, steam heating-cylinder; *d'*, outlet for condensed steam; *e*, fan bellows or blower; *e'*, pulley of the blower; *f*, pulley on the end of cylinder *c*, which drives pulley *f'* by a belt; *g*, pulley on the same shaft with pulley *f'*, both being supported on arm *g'*. Pulley *g* drives the blower by a belt-connection with pulley *e'* on the blower. *h*, windlass, composed of a cylinder for winding up cords *h'*, pawl, ratchet, and crank; *i*, central shaft, which is bored for the passage of steam into the cylinders; *i'*, coupling between the same and steam-pipe *k*; *k'*, stop-cock; *m*, openings in the side of the cylinder *c* for receiving and discharging feathers; *m'*, openings provided with wire-gauze and covers, through which the operator sees the inside of the cylinder *c*; *n*, sleeve of cloth closed at its inner end, and at its outer end fastened to an opening in the cylinder *c*; *o*, double or open hubs of the iron frame which forms the end of the cylinder; *o'*, air-passages; *p*, wire-gauze over the mouth of the air-passages; *q*, smoke-pipes;

*r*, valve over the outlet *d'*; *s*, opening for steam from central shaft to heating-cylinder; *s'*, safety-valve, which consists of a cone of wood weighted at its lower end; *t*, slots cut in the upright portion of the frame, the lower ends of which form bearings for the central shaft *i*; *u*, steam-pipe for passage of steam into the feather-cylinder *c*; *u'*, stop-cock on the same; *v*, iron frames of the cylinder-heads; *v'*, joints between the two parts of the same; *w*, screws.

My invention relates to machines for renovating feathers; and its object is to remedy certain defects which have developed themselves in the use of these machines. The usual way of discharging the feathers from these machines is to cut a hole through the floor and allow the feathers to pass through the hole into the room below, where they are caught in the bed-tick. To avoid this I employ windlass *h*, with cords *h'*, for raising the cylinder high enough to allow the tick to be placed under it, and the feathers to be discharged without cutting a hole through the floor.

These machines are generally carried around the country and set up and worked in many different places. Great inconvenience has been experienced in getting them into houses where they are to be used, in consequence of the size of the feather-cylinder. Those that have been made small enough in diameter to pass into an ordinary door must, to have sufficient capacity, be too long for convenience in transportation and in use. Those that are short enough for convenience and large enough to hold a full-sized feather-bed are too large in diameter to pass through a common doorway. To remedy this difficulty I make the cylinder oval, or larger in diameter one way than the other—in its short diameter small enough to go through a doorway and large enough in its large diameter to make up for loss of space by reducing it in the other direction.

To remove the fine dust from feathers before steaming them, I employ the blower *e*, which draws the air through the open hubs *o* of the cylinder, through the air-passages *o'*, through the feather-space, into the center of the blower, as indicated by the arrows. The

blower is carried by the pulley *f* on the end of the cylinder, which is belted to *f'*. As the cylinder is turned for the purpose of shaking up the feathers and liberating the dust, the blower is thereby caused to revolve with sufficient rapidity to produce a strong current of air through the cylinder.

It may be seen by reference to Fig. 1 that the blower is attached to, and has a common axis with, the revolving cylinder *c*. By this arrangement of its axis with the axis of the revolving cylinder, the air is made to pass through the cylinder without a jointed connection in the air-passage between the blower and cylinder; and, as the pulley *e'* on the blower is concentric with the pulley *f* on the cylinder, the belts are not deranged by the revolution of the cylinder, and the driving of the blower thereby.

In use, the feather-tick is ripped sufficiently to fasten into the opening an oval wood frame. This frame is then fastened to the cylinder over one of the openings *m*, and the cylinder rolled so as to bring the feather-bed on the top of it. The feathers are then shaken into the cylinder, and the tick removed, leaving the oval frame still attached to the tick, and the opening *m* closed by its cover. The cylinder may then be revolved to shake up the feathers and drive the blower. A minute or two is sufficient to free the feathers from dust. The stop-cocks *k'* and *u'* are then opened, and the steam allowed to pass into both the heating-cylinder and the feather-cylinder, while the cylinder is being turned with the blower disconnected. After the feathers have been sufficiently steamed, the stop-cock *u'* is closed, leaving the steam still on the heating-cylinder, the blower connected, and the machine turned rapidly, whereby the heat of cylinder *d* and the current of dry air, being drawn in among and through the feathers, will dry them perfectly in four or six minutes. The belts are then thrown off the pulleys *f'* and *g*, and the coupling *i'* disconnected, when the cylinder, by means of windlass *h* and cord *h'*, is drawn up to the top of the frame. The oval frame, which is still in the tick, is fastened over an opening on the under side of the cylinder. The operator then removes the covers from the openings *m'*, and puts his arm into the sleeve *n*, and, by means of a small broom which is always kept in the cylinder, he sweeps the feathers all down into the tick. The tick is then detached from the cylinder and closed up. The sleeve *n* hangs in the cylinder *c*, but is attached at its open end to an opening in the outer case. This enables the operator to put his arm into the cylinder to discharge the feathers without com-

ing in contact with them. A crank attached to the central shaft *i* would be a convenient means of turning the cylinder. The cords *h'* are attached to the ends of the central shaft *i*, and when the windlass is turned the cylinder is raised, the shaft *i* passing up the slots *t* in the frame. The air passes into the cylinder and out again through the open hubs *o*.

It may be seen that the principal discharge-opening *m* is on the flattened side of the cylinder. In discharging the feathers from the cylinder into the tick, this opening is turned down, so that, when the cylinder is raised to its highest position, its short diameter being vertical, it takes up considerably less vertical space than it would if the opening for discharging the feathers were on one of its prominent sides. In this way I get the necessary room under the cylinder to empty it, with a lower and less expensive frame, and carry on the operation in a lower, less expensive, and more easily procured room.

The iron frames *v* are fastened upon central shaft *i*, and form the supports of the outer case of the cylinder. These frames are divided at *v'* into two parts, which are fastened together by screws *w*. By removing these screws at both ends the cylinder will be divided, and three of its sides, with the smaller portions of the iron frames, separated from the rest of the cylinder, for convenience in repairing the parts within the cylinder, and also for the purpose of passing it through very narrow doorways.

Having described my improved feather-renovator, what I desire to have secured to me by Letters Patent of the United States is—

1. In combination with a feather-cylinder, a frame for supporting the lifting devices, a cord provided with suitable sheaves, and a windlass, for the purpose described.

2. In combination with a feather-cylinder of the form described, having the discharge-opening on its flattened side, the frame *a* and elevating apparatus *h*, substantially as and for the purpose specified.

3. The combination of a revolving feather-cylinder and revolving blower mounted upon a common axis, as and for the purpose specified.

4. In combination with the feather-renovator cylinder, the closed sleeve *n*, attached to said cylinder, substantially as described, for the purpose of manipulating the feathers, as set forth.

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Witnesses:

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