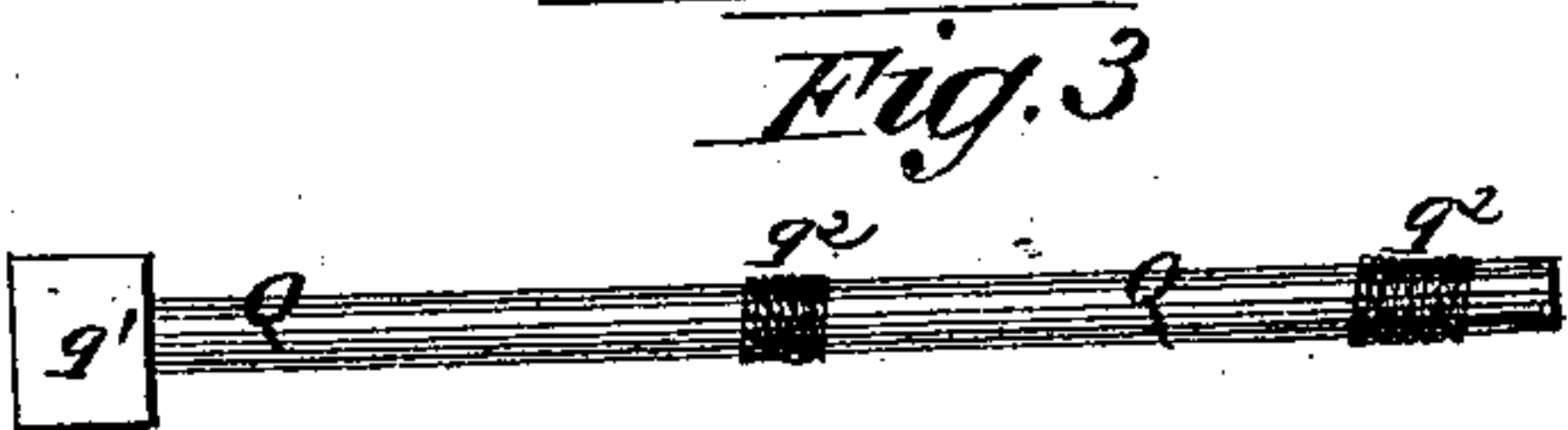
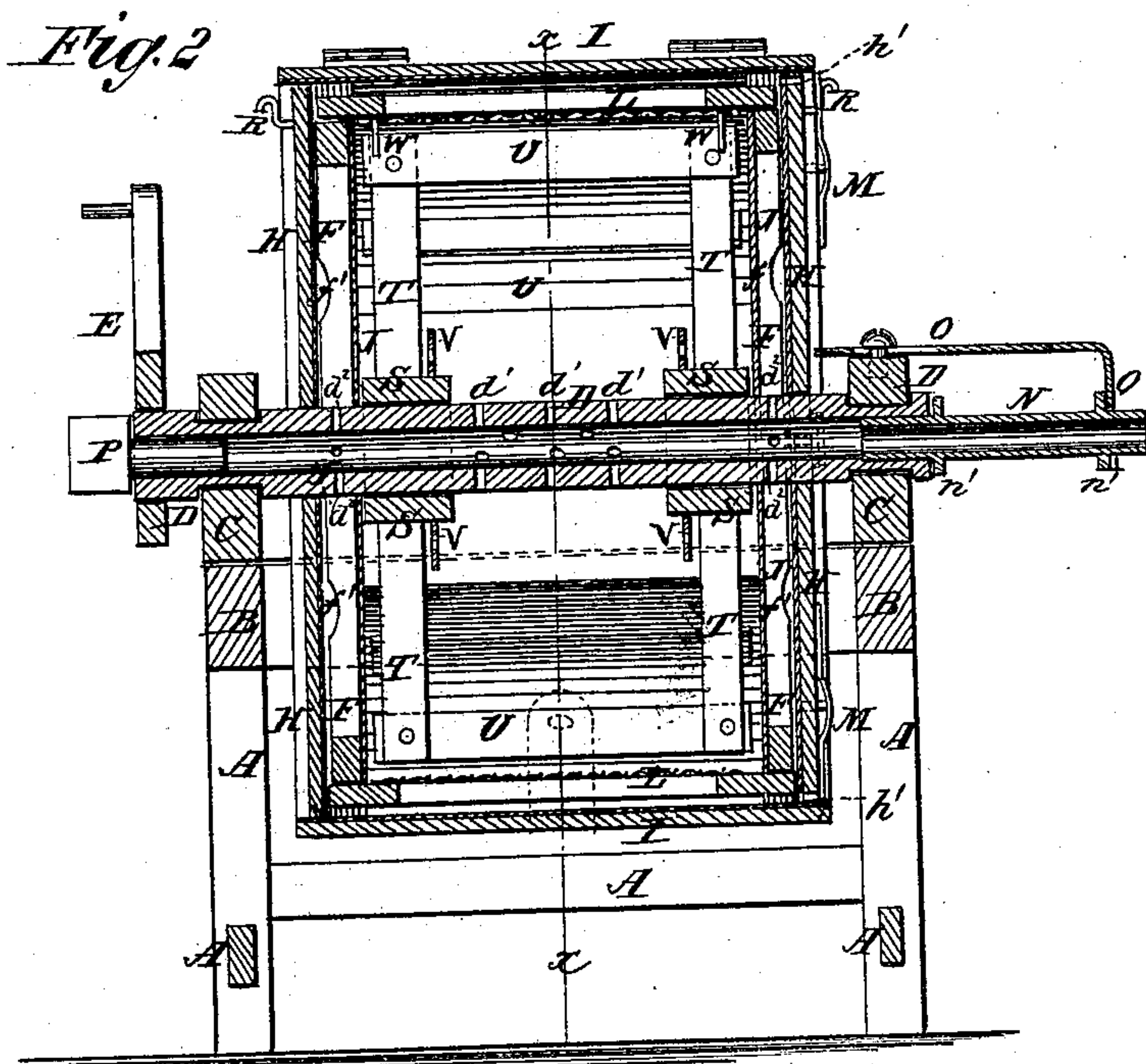
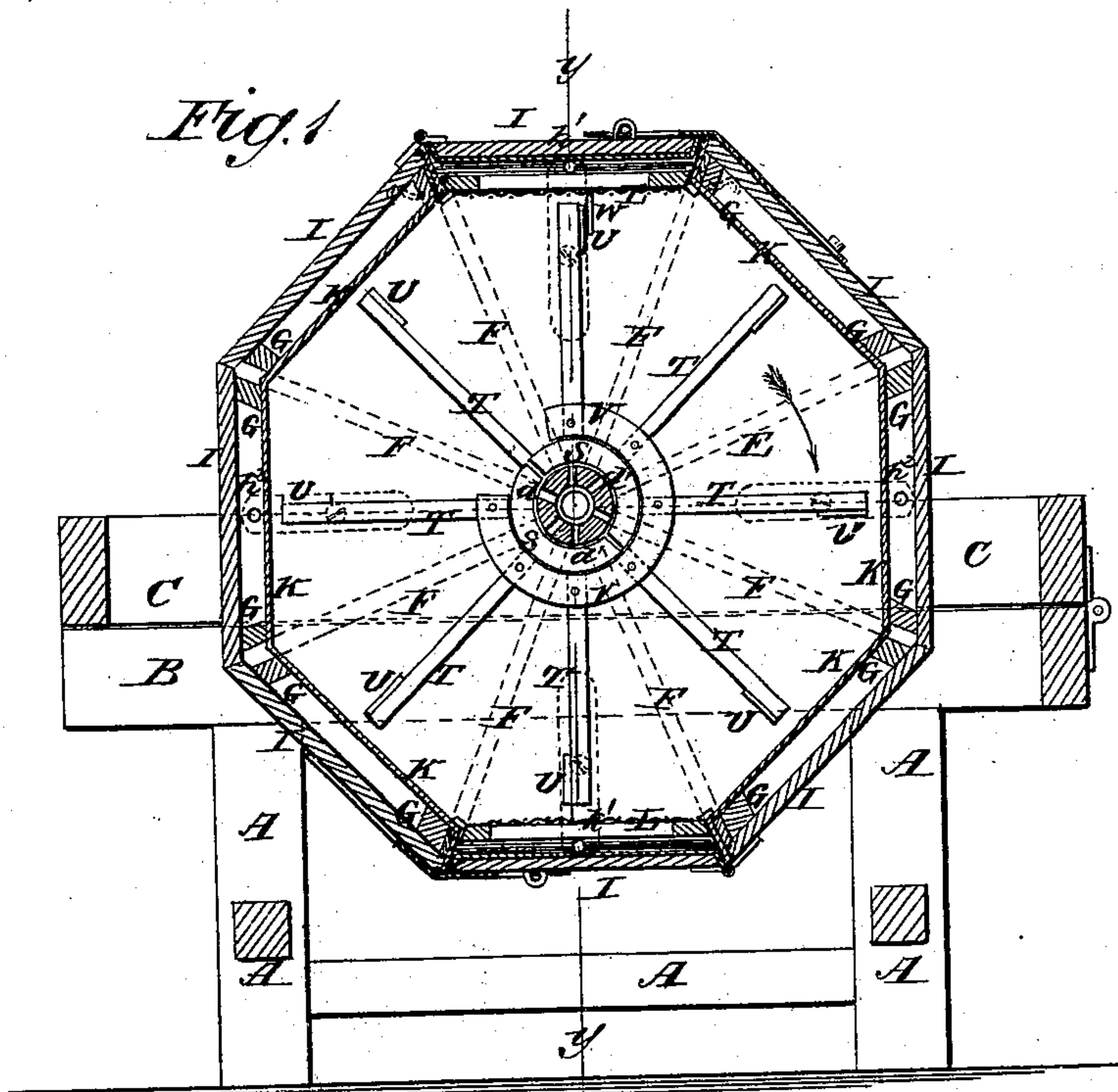


## FEATHER RENOVATOR.

No. 188,504.

Patented March 20, 1877.



**WITNESSES:**

W. M. Ardle  
A. F. Terry

**INVENTOR:**

*J. C. Divers.*

BY

*mmml*

**ATTORNEYS.**



# UNITED STATES PATENT OFFICE.

JOSEPH C. DIVERS, OF NEW HAVEN, MISSOURI.

## IMPROVEMENT IN FEATHER-RENOVATORS.

Specification forming part of Letters Patent No. 188,504, dated March 20, 1877; application filed January 13, 1877.

*To all whom it may concern:*

Be it known that I, JOSEPH C. DIVERS, of New Haven, in the county of Franklin and State of Missouri, have invented a new and useful Improvement in Feather-Renovator, of which the following is a specification:

Figure 1 is a vertical longitudinal section of my improved machine, taken through the line *x x*, Fig. 2. Fig. 2 is a vertical cross-section of the same, taken through the line *y y*, Fig. 1. Fig. 3 is a detail view of the rod and its packings.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved machine for renovating feathers, which shall be simple in construction, convenient in use, and effective in operation, thoroughly renovating and cleansing the feathers, taking out all dirt and refuse, restoring their elasticity, and increasing their bulk, making them as good as new.

The invention consists in the combination of the flanged pipe and the adjustable holder with the hollow perforated shaft of the double-walled wheel; and in the combination of the rod, provided with the head and the packings, with the hollow perforated shaft of the double-walled wheel, as hereinafter fully described.

A is the upright frame of the machine, to the top of which is attached a horizontal frame, B. To one end of the frame B is hinged the end of the frame C, which rests upon the said frame B; and to the middle part of its side bars are attached the bearings, in which revolve the journals of the hollow shaft D, one end of which projects to receive the crank E, by which it is turned.

To the shaft D, near its journals, are attached two sets of radial arms, F, the corresponding arms of the two sets being parallel with each other, and connected at their outer ends by two cross-bars, G. To the outer sides of the arms F are attached side boards or a wooden casing, H, and to the cross-bars G are attached casing-boards I, thus forming a hollow polygonal wheel. The casing H I should be lined with heavy tin or galvanized sheet-iron. Two of the casing-boards I are left loose, are hinged at one edge to the adjacent board I, and are secured in place, when closed, by

hasps or other suitable fastening, to adapt them to serve as doors. The doors I may be arranged to slide, if desired.

To the inner sides of the radial arms F are attached plates J, of heavy tin or galvanized sheet-iron; and to the inner sides of the cross-bars G, except opposite the doors I, are attached plates K, of heavy tin or galvanized sheet-iron, thus forming a hollow-walled hollow wheel.

In the middle parts of the arms F are formed holes or notches *f'*, to allow the steam to pass from one of the hollow-wall compartments to another.

In the space within the doors I are placed screens L, which are secured in place by pins, buttons, or other suitable fastenings.

In the hollow shaft D, within the inner wall J, are formed numerous holes, *d*<sup>1</sup>, through which the steam escapes into the interior of the wheel. In the hollow shaft D, between the walls H J and the arms F, are formed holes *d*<sup>2</sup>, through which steam escapes into compartments of the hollow walls. In the outer shell H, between the doors I and the screens L, are formed holes *h*<sup>1</sup>, through which the steam may be allowed to escape from the interior of the wheel. In the outer shell H, between the boards I and plates K, are formed holes *h*<sup>2</sup>, through which the steam may be allowed to escape from the compartments of the hollow walls. The holes *h*<sup>1</sup> *h*<sup>2</sup> are closed and opened, partly or wholly, by spring-buttons M, pivoted to the walls H, or by other suitable means.

Steam is introduced into one end of the hollow shaft D through a short pipe, N, having flanges *n'* formed around it, near its ends, to prevent it from being pushed too far into the shaft D and into the steam-pipe. The pipe N is kept in place by the plate or bar O, the outer end of which is bent downward, and is notched to receive the pipe N, and the inner end of which is slotted to receive the screws or bolts by which it is secured to the frame C. The other end of the hollow shaft D is closed by a plug, P.

When the steam is to be shut off from the interior of the wheel the plug P is withdrawn, and the rod Q is inserted in the cavity of the shaft D. The rod Q has a head, *q*<sup>1</sup>, upon its



outer end, to close the end of the shaft D, and has packings  $q^2$  secured around it, in such positions as prevent steam from passing through the holes  $d^1$  into the interior of the wheel.

To the sides H, at the corners of one of the doors I, are attached hooks R, for the bed-tick to be hooked upon when removing the feathers from the machine.

Upon the shaft D, within the cavity of the wheel, are placed two hubs, S, to which are attached radial arms T, the outer ends of which extend nearly to the inner wall K of the wheel, and are connected in pairs by cross-bars U. The hubs S are made in the form of half-tubes, and are secured in place upon said shaft D by open rings V, slipped upon the inner ends of the said hubs.

The wheel is made to carry the agitator S T U V with it in its revolution by pins W, attached to one of the screens L, and against which one of the cross-bars U strike.

In using the machine, the feathers are introduced through one of the doors I, and the screen and door are again secured in place. The steam is then admitted, and the wheel is slowly revolved. The dirt from the feathers is sifted through the screens L, and is driven through them by the steam into the space between the screens and doors. When the feathers have been sufficiently steamed the plug P is removed and the rod Q is inserted, shutting off the steam from the interior of the wheel,

and allowing it to pass only through the compartments of the double walls of said wheel. At the same time the doors I are opened, so that cold air may be allowed to pass through the wheel, while the moisture is driven off by its heated walls. When this process has been continued a sufficient time the steam is cut off, and a few more turns of the wheel makes the feathers perfectly dry.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the half-tube hubs S, the radial arms T, the cross-bars U, and the open rings V with the hollow perforated shaft D and the double-walled wheel F G H I J K, substantially as herein shown and described.

2. The combination of the flanged pipe N  $n'$  and the adjustable holder O with the hollow perforated shaft D  $d^1$   $d^2$  of the double-walled wheel F G H I J K, substantially as herein shown and described.

3. The combination of the rod Q, provided with the head  $q^1$  and the packings  $q^2$ , with the hollow perforated shaft D  $d^1$   $d^2$  of the double-walled wheel F G H I J K, substantially as herein shown and described.

JOSEPH CHATWELL DIVERS.

Witnesses:

JULIAN BAGBY,  
MAX EIMBECK.