

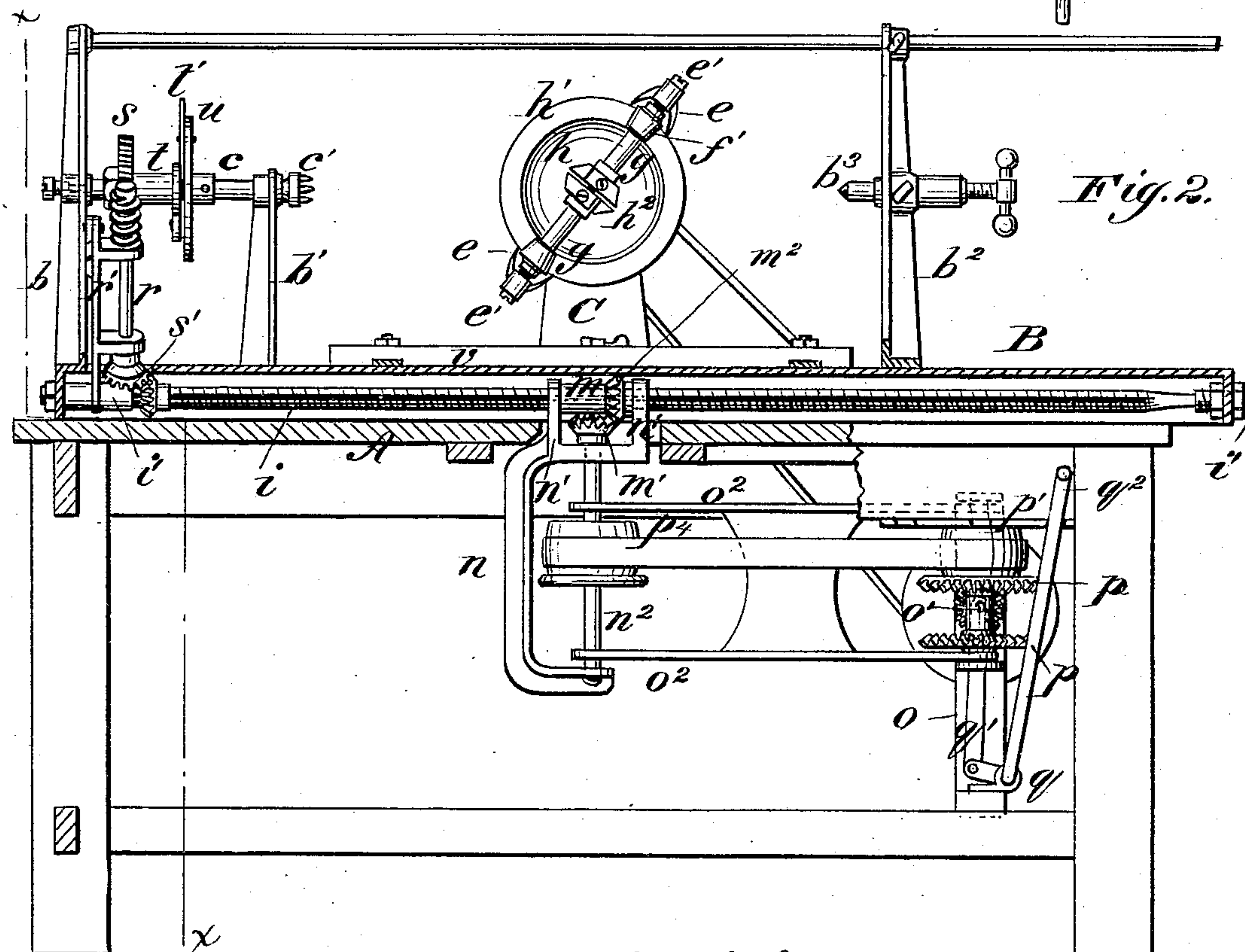
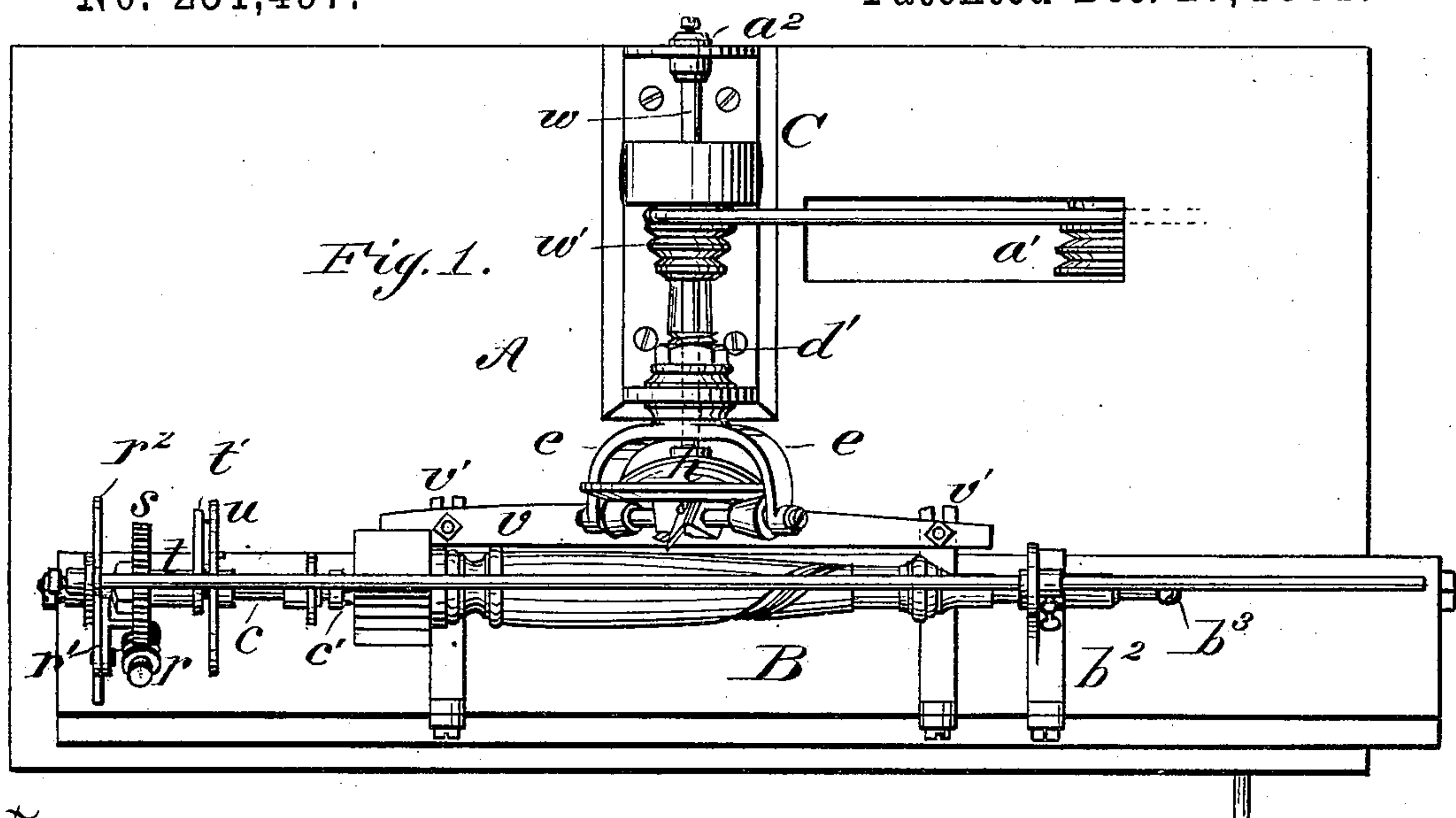
(No Model.)

2 Sheets—Sheet 1.

J. ANDERSON.  
MOLDING MACHINE.

No. 251,497.

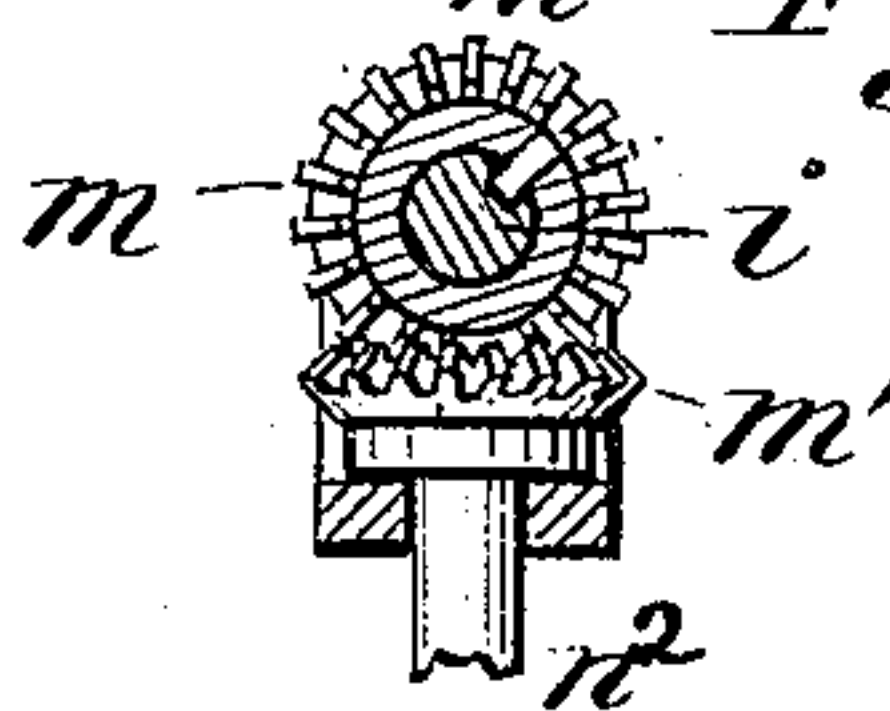
Patented Dec. 27, 1881.



WITNESSES:

Donn Twitchell.  
C. Sedgwick

*m² Fig. 6.*



INVENTOR:

J. Anderson  
BY *Alum Ho*  
ATTORNEYS.

(No Model.)

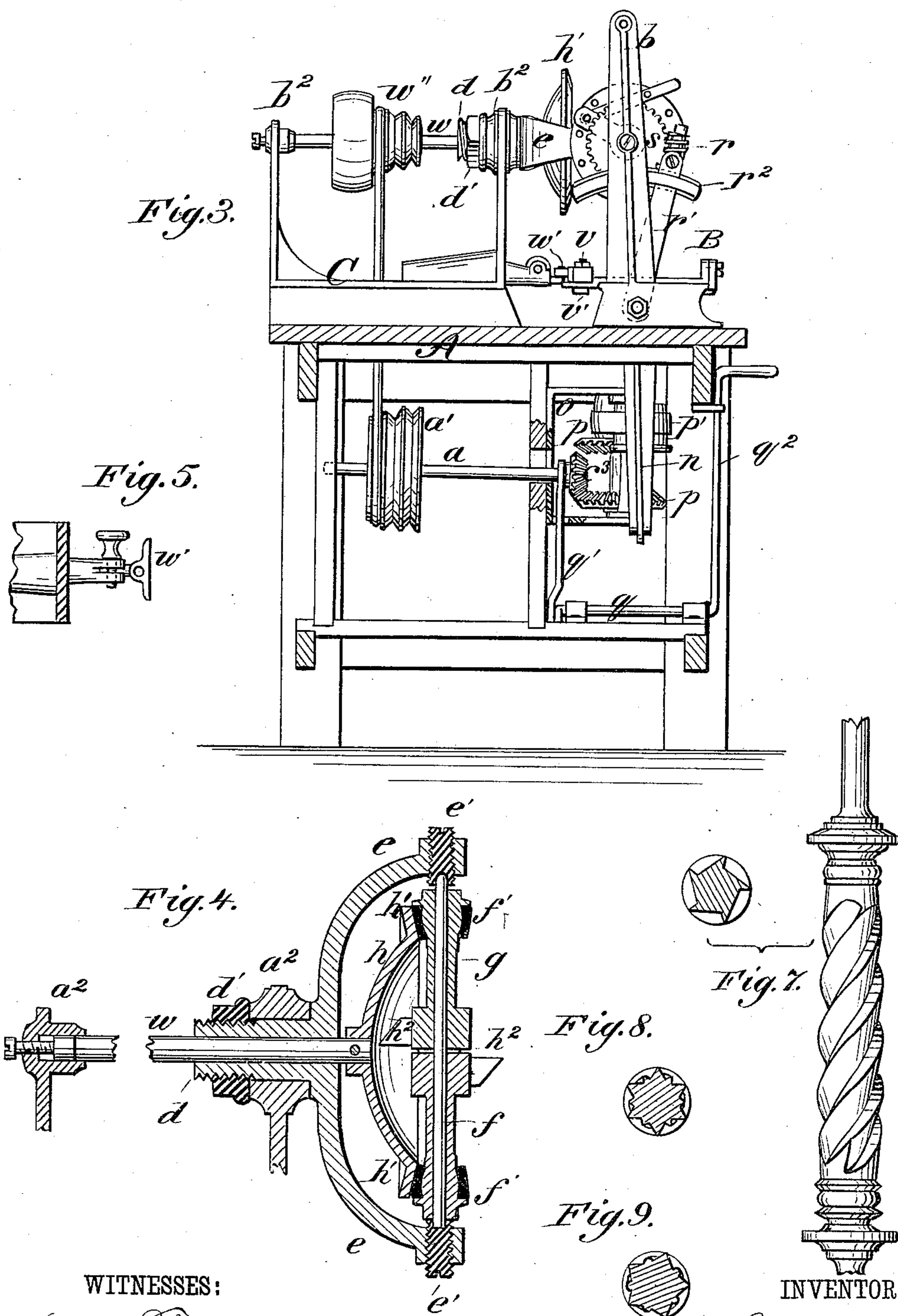
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# UNITED STATES PATENT OFFICE.

JAMES ANDERSON, OF BOSTON, MASSACHUSETTS.

## MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 251,497, dated December 27, 1881.

Application filed June 11, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES ANDERSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Molding-Machines, of which the following is a full, clear, and exact description.

My improvement relates to machines for forming spiral moldings upon stairway-posts and similar articles, which work has heretofore been generally done with a lathe by using a hand-tool.

The object of my invention is to accomplish such work by automatic mechanism and by devices which allow variations in the character of the ornamentation, to which ends I construct a lathe combining feed mechanism for giving spiral movement to the work and a revolving cutter-head, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of the machine. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a vertical transverse section on line  $xx$  of Fig. 2. Fig. 4 is a section of the cutter-head in the plane of its axis. Figs. 5 and 6 are detail views, and Figs. 7, 8, and 9 represent different forms of molding which can be made on the machine.

Similar letters of reference indicate corresponding parts.

A is the main bed or frame of the machine, fitted with a driving-shaft,  $a$ , to which power is to be applied.

B is the lathe or work-bed, resting loosely upon bed A, and provided with fixed posts  $b$   $b'$  at one end and an adjustable tail-post,  $b^2$ , at or near the other end. The posts  $b$   $b'$  carry an arbor,  $c$ , that is provided with a center or point,  $c'$ , and the tail-post  $b^2$  is fitted with a screw-point,  $b^3$ .

C is a head-block, fixed on bed A about its mid-length, behind the work-bed B, and sustaining, in suitable boxes,  $a^2$ , an arbor,  $w$ , which is thus held at right angles to the bed B and in the same plane horizontally, or nearly so, as the centers  $c'$   $b^3$ . The arbor carries a cone-pulley,  $w^2$ , that may connect by a belt to a similar pulley,  $a'$ , on shaft  $a$ , or the pulley may connect with power independently. The shaft  $w$  also carries the cutter-head, which, as shown

most clearly in Fig. 4, is constructed as follows:

$d$  is a sleeve or hub, fitted in the inner box,  $a^2$ , of shaft  $w$  around the shaft, and fitted with a set-nut,  $d'$ , at the side of the box, by which the hub is held from being turned.

$e$   $e$  are radial arms, formed on hub  $d$  at opposite sides, and curved outward, so as to receive the cutter, arbor, and gearing between their ends.

$f$  is the cutter-arbor, fixed between screws  $e'$  at its ends, that are tapped through the ends of arms  $e$ .

$g$   $g$  are sleeves, loose on arbor  $f$ , and formed at their outer ends with enlargements  $f'$ , of bevel form.

$h$  is a friction-driver, fixed on the end of shaft  $w$ , its beveled edge or flange  $h'$  bearing on the beveled ends of sleeves  $g$ . The inner ends of sleeves  $g$  are formed with plain faces, to which the cutters  $h^2$  are fastened. Two or more cutters may be used on each sleeve, and their edges will be beveled more or less, according to the shape that is to be cut.

The work-bed B is fitted with a screw-shaft,  $i$ , extending longitudinally and held at the ends by boxes  $i'$ . At the mid-length of the screw is a sleeve,  $m$ , that is between arms  $n'$  of a bracket,  $n$ , that is suspended from the screw by the arms, one or both of which arms are threaded to engage the screw. A vertical shaft,  $n^2$ , fitted in bracket  $n$ , has at its upper end a pinion,  $m'$ , engaging a similar pinion,  $m^2$ , on the nut  $m$ .

A fixed bracket,  $o$ , at the end of driving-shaft  $a$  sustains a vertical shaft,  $o'$ , on which are loose arms  $o^2$   $o^2$ , fixed bevel-gears  $p$   $p$ , and a fixed pulley,  $p'$ . The shaft  $n^2$  on bracket  $n$  passes through the outer ends of arms  $o^2$ , and the arms, being connected together, constitute a swing-frame for the bracket, screw, and bed B.

The driving-shaft  $a$  has on its end a bevel-pinion,  $c^3$ , engaging with one gear-wheel,  $p$ , on shaft  $o$ , and a belt from pulley  $p'$  on said shaft passes to a pulley,  $p^4$ , on shaft  $n^2$ . The sleeve  $m$  and screw are thus turned and an endwise movement given to bed B by engagement of the screw with the threaded arm  $n'$ . The bed can be turned on shaft  $n^2$  as a center, and also be swung to and from the cutter-head.



A rock-shaft,  $q$ , fitted beneath the bed B, is formed with a crank-arm, from which extends a rod,  $q'$ , that sustains one end of driving-shaft  $a$ . The shaft  $q$  has a handle-arm,  $q^2$ , by which it can be rocked to move rod  $q'$  up and down, and thus, by moving shaft  $a$ , engage the pinion  $c^3$  with either gear-wheel  $p$  or  $p'$ , according to the direction it is desired to move bed B by the screw.

At the end of bed B, carrying the head center, is a worm-shaft,  $r$ , carried by a bracket,  $r'$ , that is hung on the box  $i'$  of the screw. The upper end of this bracket engages a curved plate,  $r^2$ , and is clamped by a screw, so that the shaft can be placed at either side for engagement of the worm with a pinion,  $s$ , on the arbor  $c$ , and the work thus turned in either direction as desired.

On the lower end of shaft  $r$  is a bevel-pinion,  $s'$ , engaging a similar pinion on the screw  $i$ . By these connections the work placed between the centers is turned at the same time it is carried forward with the bed.

The arbor  $c$  is fitted with a loose sleeve,  $t$ , which carries pinion  $s$  and a spring-arm,  $t'$ . At the end of the sleeve a disk,  $u$ , is fixed on the arbor, and is engaged by a lug or projection of arm  $t'$  entering one of numerous holes formed at regular intervals in the disk, so that the arbor and sleeve shall turn together. This arrangement is for adjusting the center and the work with reference to the number of spiral beads that are to be cut, so that they shall be at uniform distances apart. In Figs. 7, 8, and 9 the shapes shown are formed by five cuts, which are made in succession, and the arbor  $c$  adjusted between each operation by releasing the spring-arm  $t$ , turning the arbor, and then re-engaging the arm.

To secure uniform depth of cut, there is fitted on the bed B a pattern board or strip,  $v$ , which is attached upon plates  $v'$ , projecting from the inner edge of the board, by screws passing through slots in the plates so that the board can be adjusted. A stop-piece,  $w'$ , pivoted on the head-block C, is placed for the edge of board  $v$  to bear against, thus limiting the movement of the bed toward the cutters, and the edge of the board being shaped to conform to the surface of the work to be cut, the cut made will be of uniform depth.

In operation, the work being placed between the centers, the bed moved to bring the end of the post to the cutters, and the machine started, the work moves lengthwise, and at the same time revolves, so that the knives cut in a spiral path and form a continuous spiral groove or bead from end to end of the post. The operator, with his hands on the work-bed B, holds the work up to the cutters, and by retaining the bed more or less inclined variations in the form

of cut can be produced by the same cutters. The cutters will be changed to vary the pattern. To form a plain V-shaped groove they will be simply beveled, as shown in Fig. 2, so that each cutter forms half the groove. Variations of that form are shown in Figs. 8 and 9, wherein a bead is raised at the bottom of the groove. To produce the form shown in Fig. 7, the cutters are shaped and adjusted to cut at nearly right angles, so that one acts merely to shape one side of the groove. The pattern can be further modified by turning the hub  $d$  in the box  $a^2$  to position the cutter-arbor  $f$  more or less inclined.

The friction-surfaces of the driver  $h$  and the beveled portion of sleeves  $g$  will be fitted with elastic material applied to either or both surfaces to insure action. As shown in Fig. 4, the arbor  $w$ , carrying the driver, is fitted for endwise adjustment, so that the pressure upon the sleeves can be regulated.

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

1. In spiral-molding machines, the bed B, provided with revolving feed-screw  $i$ , and centers  $c'$   $b^3$ , the worm-shaft  $r$ , wheel  $s$ , arbor  $c$ , and connections to the feed-screw, combined for operation substantially as shown and described.

2. In spiral-molding machines, the revolving shaft  $n^2$ , bevel-pinions  $m'$   $m^2$ , the swinging bracket  $n$ , and threaded arm  $n'$ , in combination with the feed-screw  $i$  and work-carrying bed B, substantially as shown and described, for operation as set forth.

3. The suspended bracket  $n$ , provided with threaded arm  $n'$ , and the pivoted arms  $o^2$ , in combination with the bed B and feed-screw  $i$ , substantially as shown and described, for the purposes set forth.

4. The bracket  $n$ , provided with threaded arm  $n'$ , pinions  $m'$   $m^2$ , shaft  $n^2$ , pivoted arms  $o^2$ , revolving shaft  $o$ , and pulleys  $p'$   $p^4$ , connected by belt, substantially as shown and described, in combination with the work-bed B and feed-screw  $i$ , for operation as set forth.

5. In spiral-molding machines, the combination of the revolving shaft  $w$ , friction-driver  $h$ , hub  $d$ , provided with arms  $e$ , arbor  $f$ , and friction-sleeves  $g$ , carrying the cutters, substantially as shown and described, for operation as set forth.

6. In spiral-molding machines, the adjustable hub  $d$ , provided with arms  $e$ , and arbor  $f$ , carrying the cutter, in combination with the driving-shaft  $w$  and driver  $h$ , substantially as and for the purposes set forth.

JAMES ANDERSON.

Witnesses:

WILLIAM JAMES,  
JAMES G. LANDERS.