2 Sheets—Sheet 1.

P. M. HAAS.

MACHINE FOR MAKING BALUSTERS.

No. 188,126. Patented March 6, 1377.

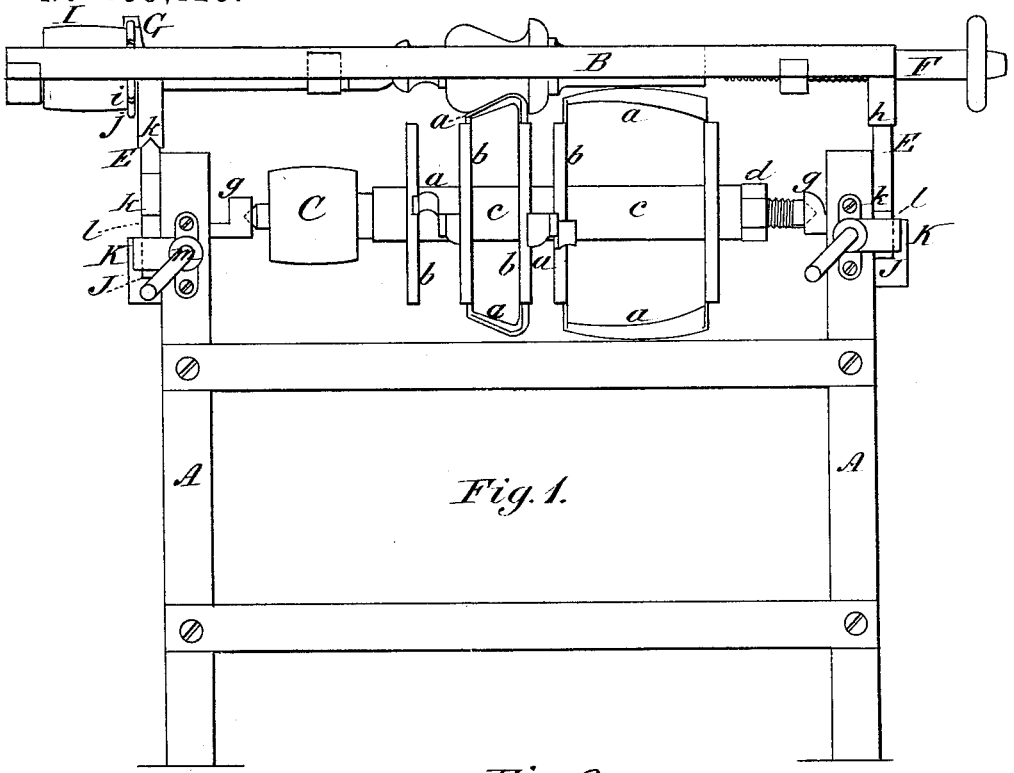

Fig. 1.

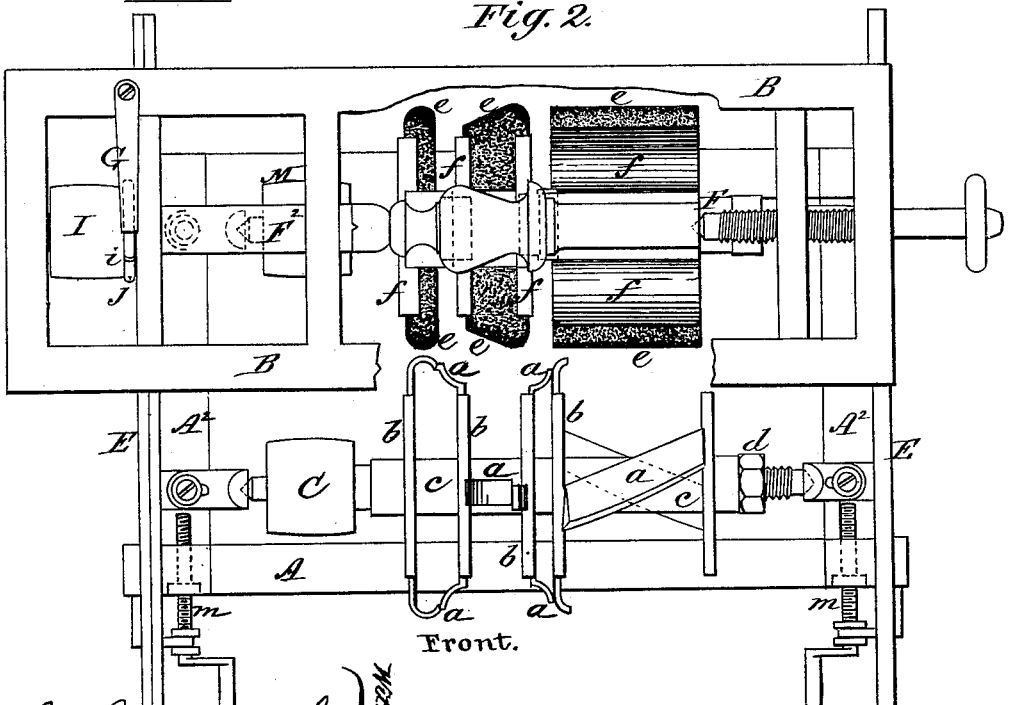

Fig. 2.

Front.

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2 Sheets—Sheet 2.

P. M. HAAS.

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Fig. 3.

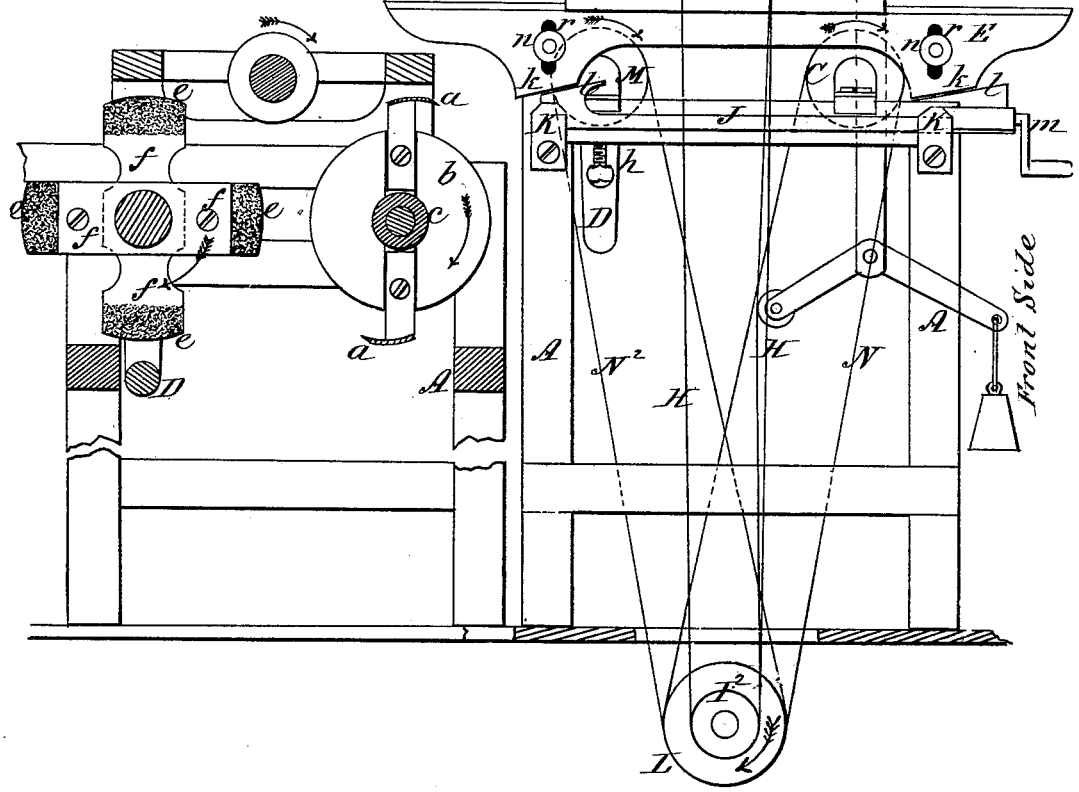
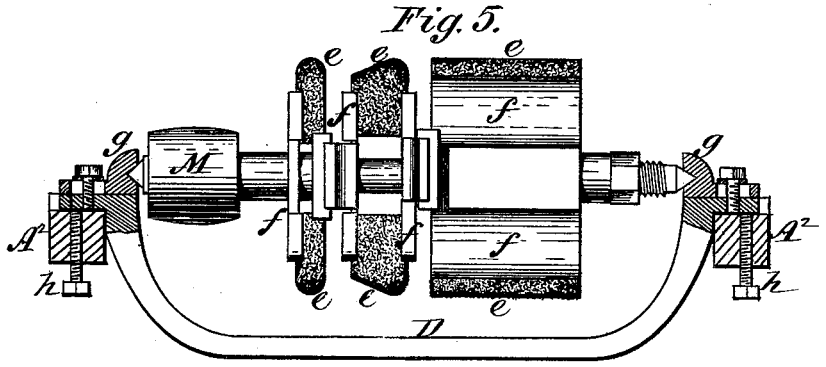


Fig. 4.

Fig. 5.



Witnesses:

J. M. Rutherford
Lloyd Norris.

Philip M. Haas,
by Johnson & Johnson
Attys

UNITED STATES PATENT OFFICE.

PHILIP M. HAAS, OF YOUNGSTOWN, OHIO, ASSIGNOR OF ONE-FOURTH HIS RIGHT TO LYDIA NOLD, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR MAKING BALUSTERS.

Specification forming part of Letters Patent No. **188,126**, dated March 6, 1877; application filed September 21, 1876.

To all whom it may concern:

Be it known that I, PHILIP M. HAAS, of Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Machines for Making Balusters, of which the following is a specification:

In improving the machine for cutting balusters I have adapted it for work of polygonal or circular form, and for polishing the article. For this purpose the blank piece of wood is secured in a carriage so that it may be either held fast or revolved, and subjected to the action of revolving cutters and polishing devices mounted in the same plane upon a fixed supporting-frame, so that the sliding carriage is moved from the action of the cutters to that of the polishers, said cutters and polishers having a form corresponding to that of the baluster or other article to be cut or turned; and the cutters are constructed to operate with a paring cut, to avoid clipping. The carriage for presenting the piece to be formed is mounted upon ways which are made adjustable, to raise and lower the carriage, as may be desired, by means of inclined planes moved by set-screws; the ways, being clamped when the carriage is properly adjusted, regulate the diameter of the baluster. The polishing devices are mounted in an under yoke-frame, with adjustable bearings, so that it may be adjusted to bring the polishing-surface into proper action. By this construction and arrangement the piece to be cut or turned is moved over the cutters and polishers, which are arranged in the same plane for successive action upon the article, which may either be stationary or revolving.

In the accompanying drawings, Figure 1 represents a front elevation of a machine for cutting balusters, embracing my invention; Fig. 2, a top view thereof; Fig. 3, a vertical transverse section; Fig. 4, an end elevation; and Fig. 5, the yoke-frame and revolving polishing devices, detached.

Upon a suitable frame, A, are mounted in bearing-boxes the mandrels which carry the revolving cutters and polishers; and above these the carriage B, for the piece to be cut or turned into shape. The cutters *a* are the counterpart in their cutting outline of the baluster or other article to be made, and they are adjustably secured to disks *b*, which are suitably arranged and braced upon the mandrel by sleeves *c*, clamped together by a nut, *d*, screwed upon the mandrel at one end. By having the sleeve *c* interchangeable the cutters can be interchanged and arranged for different forms. They may be adjusted to increase or diminish the size of the article; and their cutting-edges are oblique or slanting to the axis of the mandrel, so as to cause them to cut with a paring action or gradual cut. This mandrel of cutters is arranged near the front side of the machine, and is revolved by a belt from the pulley C on its end. The polishing or emery surfaces *e* are secured to arms *f* upon a mandrel, in the same manner as the cutter-disks, and clamped in the same way by a screw-nut. They are arranged in the same plane with the cutter, so that the carriage can be moved from one operating-surface to the other. Their acting-surfaces are the counterpart of the cutters, and they conform to the shape of the article. They are made adjustable by slots in the arms and clamped by screws. The mandrel which carries them is mounted in an under yoke, D, the ends of which are fitted in recesses in the top rails A^2 of the main frame, so as to bring the yoke against the inner side of said frame. The bearing-boxes T are separate from the yoke and bolted to its ends, which fit in their recesses upon adjusting screws *h*, Fig. 5, passing upward through the rails, by which to adjust the yoke of polishers at either end, as may be desired, for different sized balusters, and for other reasons.

The carriage B is mounted upon end ways E at each end of the frame, and the blank or piece is secured in it upon centers or mandrels F F^2, one of which forms a clamp-screw, to hold the piece fast, in connection with a spring-dog, G, which takes into notches *i*, Fig. 2, in a collar, *j*, on the center or mandrel F^2, so that the work is held firm while being moved over the cutters and polishers.

There may be any number of notches, to suit the number of sides or angles of the piece desired to be formed; and, as each side

or angle is finished, the dog G is raised, and the mandrel turned to engage the proper notch, and again secured.

This device is adapted for angular work; but for round work the dog is turned aside, and the mandrel F^2 revolved to turn the piece against the revolving cutters by means of a belt, H, passing over a pulley, I, on said mandrel, and a pulley below. This gives the advantage of a double machine for turning out different kinds of work.

As the carriage traverses over the cutters and polishers, arranged at opposite sides of the frame, it is necessary that it should have means for raising and lowering it with respect to the cutters and polishers, for different diameters of balusters, and to hold the frame when so adjusted. For this purpose the ways E are adjustable by means of inclined planes *k k*, Fig. 4, thereon, with which similar inclined planes *l l* on slide-bars J act by adjusting said bars from one side of the frame to the other by set-screws *m*, which, being carried by said slide-bars J, are screwed into the posts of the frame. In this way the proper adjustment can be given to the carriage, after which the ways are clamped fast by screws *n*, passing through slots *r* in them, into the posts.

To adjust the carriage, the ways E must be first unclamped, and, by turning the set-screws *m* to the right or left, the ways will be raised or lowered the desired degree.

The slide-bars J are fitted to move in guides K at each end of the frame, and one or both ends of the carriage may be adjusted, as stated, to suit the diameter of the article to be turned.

The driving-pulley L is long enough to receive the belts from the cutters and emery devices. This pulley is under the floor, and the pulleys C M of the cutters and polishers are arranged to allow the belts N N^2 to pass each other.

The belt H leads from the carriage-pulley I outside of the main frame to a pulley, I^2, on the driving-shaft; and the cutting and polishing mandrels, as well as the article being formed, are turned in the same direction toward the front, so that the work is operated upon from the under side, and the work, in revolving, is brought directly in opposition to the motion of the cutters, so that their action is direct across the grain of the wood, each cutter being arranged to act in succession, and upon a particular part of the work.

As the carriage is moved across the cutters and polishers the driving-belt H of the carriage-pulley would become loose; and, to prevent this, I combine, with the carriage B and its mandrel-driving belt, an automatic-acting take-up, consisting of an arm, P, pivoted to a hanger, Q, and provided with a pulley, S, on one end, to act upon said belt, and a weight, T, on the other, so that the belt will be always kept taut as the carriage is moved from back to front. The carriage-pulley and take-up device are arranged outside of the frame of the machine.

The carriage is moved over the ways by hand; but it may be operated by lever or otherwise.

I claim—

1. In a machine for turning or cutting balusters, the over-traversing frame B, carrying the piece to be formed, in combination with under-revolving cutters and polishers, constructed and operating substantially as herein set forth.

2. The combination, with the over-traversing frame B, carrying the piece to be formed, arranged and operating as described, of the cutters and polishers, adjustably arranged at opposite sides of the frame A, for operation as herein set forth.

3. The over-traversing frame B, provided with the screw and mandrel centers F F^2, the notched collar *j*, spring-dog G, and pulley I, in combination with the revolving cutters and polishers, whereby the blank may be either cut into polygonal or round form, as herein set forth.

4. The polishing-surfaces *e* and their mandrel, in combination with the horizontal adjustable bearing-boxes *g*, the vertical adjusting-screws *h*, and the yoke D, whereby said yoke and polishers are adjusted, in relation to the cutters and the over-traversing frame, as and for the purpose herein set forth.

5. The combination, with the over-traversing frame B, carrying the piece to be formed, and the under-revolving cutters and polishers, arranged to operate as described, of the adjustable ways E, provided with inclines *k k*, the slide-bars J J, having coincident inclines *l l*, and the adjusting-screws *m m*, as herein set forth.

6. The combination, with the over-traversing frame B, carrying the article to be turned, the mandrel-driving belt H, and the under-revolving cutters and polishers, of the automatic take-up carried by said over-traversing frame, all constructed and operated as and for the purpose herein set forth.

In testimony whereof I have affixed my signature in the presence of two witnesses.

PHILIP M. HAAS.

Witnesses:

WILBUR A. REEVES,

ROBERT T. IZANT.