2 Sheets—Sheet 1.

H. S. BARTHOLOMEW.

Machine for Polishing Varnished Surfaces.

No. 212,833. Patented Mar. 4, 1879.

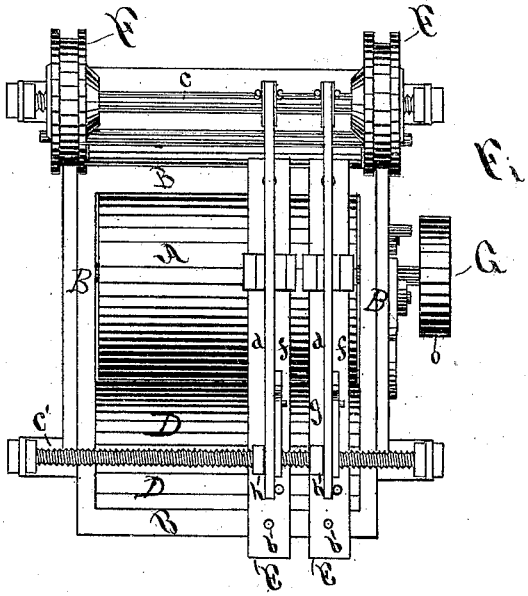

Fig. 1.

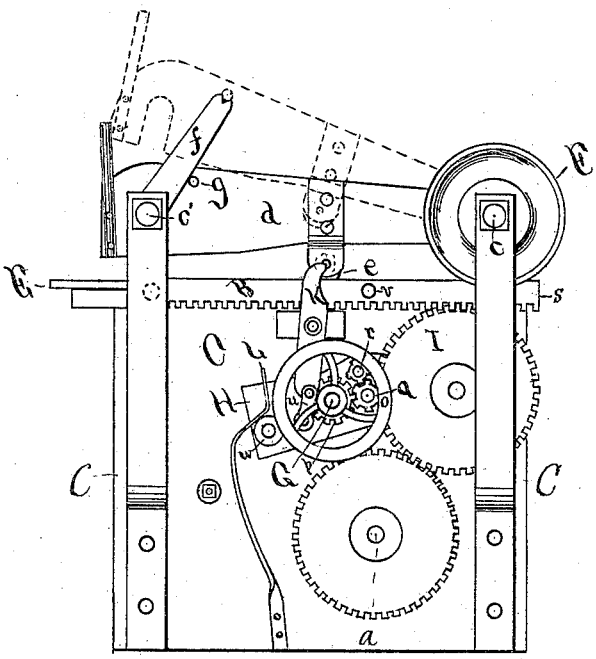

Fig. 2.

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2 Sheets—Sheet 2.

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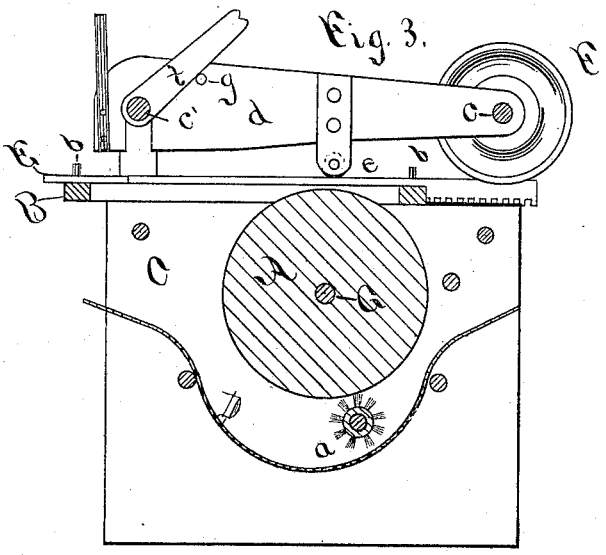
Fig. 3.



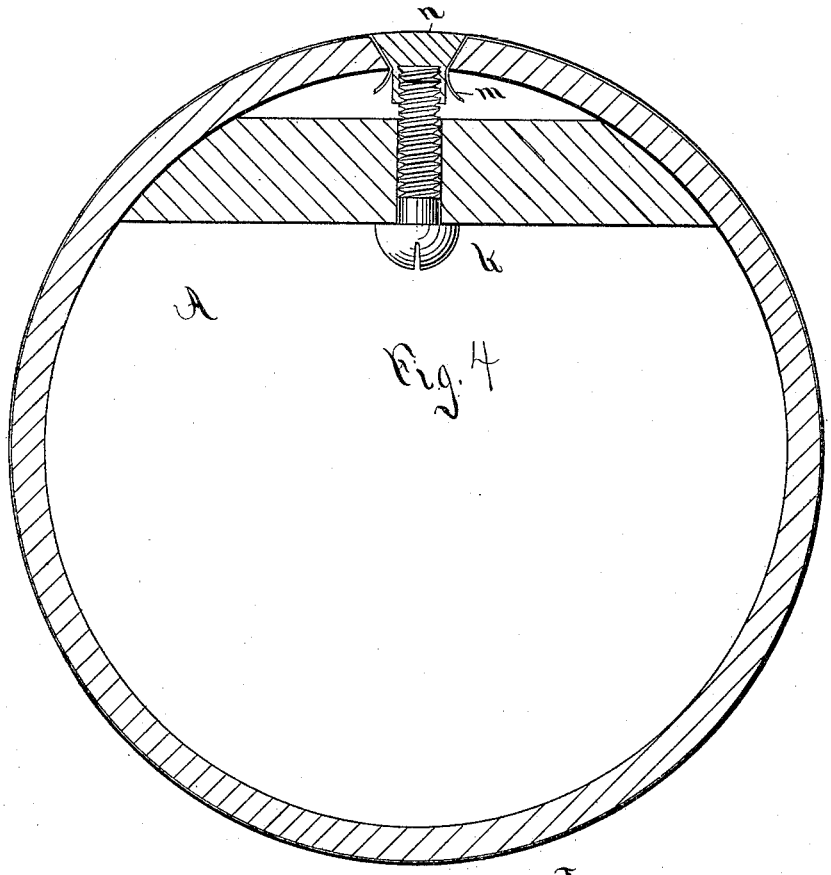


Fig. 4.

Witnesses.
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UNITED STATES PATENT OFFICE.

HARRY S. BARTHOLOMEW, OF BRISTOL, CONNECTICUT.

IMPROVEMENT IN MACHINES FOR POLISHING VARNISHED SURFACES.

Specification forming part of Letters Patent No. **212,833**, dated March 4, 1879; application filed July 12, 1878.

To all whom it may concern:

Be it known that I, HARRY S. BARTHOLOMEW, of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Polishing Varnished Surfaces, of which the following is a specification:

My invention relates to machines for polishing wood or other varnished surfaces in the manufacture of clock-cases and other articles; and it consists in the novel construction of devices, and in their combination, as hereinafter described.

In the accompanying drawings, Figure 1 is a plan view of a polishing-machine which embodies my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section of Fig. 1; and Fig. 4 is an enlarged transverse section of the cylinder of said machine.

The main features of the machine consist of the revolving cylinder A and reciprocating frame B, the latter provided with suitable devices for holding the work.

The cylinder A is mounted on the main frame C of the machine, and of itself is non-abrasive. Underneath the cylinder is a box or trough, D, Fig. 3, for holding any suitable abrading material, and a rotating brush, *a*, for taking up said material and distributing it upon the periphery of the cylinder.

The reciprocating frame B, which carries the work, has a series of vertical pins, *b*, on its cross-bars, and the work to be polished is secured by small pins or screws to the under side of plates E, having holes in each end, through which the pins *b* extend, thereby securing the plates to the frame B, so that they will reciprocate with it, and also so that either end may rise or fall on the vertical pins. These plates can be readily attached to and detached from the frame B, even when the same is in motion, for the purpose of taking off and putting on work.

Across the ends of the main frame and above the reciprocating frame there are rods or shafts *c c'*. Presser-bars *d*, having a friction-roller, *e*, directly over the highest point of the cylinder, are hung to the shaft *c*, while their opposite ends are slotted to hook over or upon the shaft *c'*. This latter shaft *c'* is threaded, and on one side of each presser-bar is a swinging arm, *f*, which, when the bars *d* are depressed, is held in position by the stop *g*, as shown most clearly in Fig. 3.

The ends of the swinging arms *f* are slotted, so that they may, when the bars *d* are elevated, take under the same stop *g* and hold them in an elevated position, as indicated in broken lines in Fig. 2. The shaft *c'* is also provided with nuts *h* for the purpose of retaining the presser-bars in proper position over the plates E. Weights may be hung on the presser-bars to bear upon the work more or less, as may be desired. If desired, the bars may, after being pressed down with their rollers firmly on the holding-plates, be secured in place by turning up the nuts and pinching the bars between the nuts and swinging arms. The rollers F hold the frame B down, so as to prevent the driving-gear and rack from being disengaged.

The cylinder is mounted on the main shaft G, provided with suitable driving mechanism, and having a continuous rotating motion.

In Fig. 2 the mechanism for imparting a reciprocating motion from the main shaft to the frame B is shown; but any ordinary mechanism for shifting the motion may be substituted therefor—as, for instance, that employed in iron-planing machines; but in order to describe one way to reciprocate the frame B, I will briefly describe said mechanism.

Upon the shaft G there is a driving-pulley, *o*, and a gear-wheel, *p*, by the side of which there is an oscillating plate, H, one end of which carries two gear-wheels, *q* and *r*, meshing into each other, and the largest one of which, *q*, meshes into the wheel *p* on the shaft G. By the side of these wheels *q r* there is a larger wheel, I, attached to the frame of the machine and gearing into the rack *s* upon the under side of the reciprocating frame B. A lever, K, is also pivoted to the main frame, and the lower end is connected to the oscillating plate H by means of a jointed link, *u*. When the parts are in the position shown in Fig. 2, the motion of the main shaft through the gears *p*, *q*, *r*, and I throws the reciprocating frame B toward the left until the pin *v* on said frame comes in contact with the upper end of lever K, which engagement trips said lever and oscillating plate H, so as to throw

the wheels *q r* downward, thereby throwing the wheel *q* out of gear with wheel I and the wheel *r* into gear with said wheel I, the wheels *p*, *q*, and *r* being still driven in the same direction, and bringing one more of them into action. The wheel I and the rack with which it is engaged are necessarily moved in the reverse direction. When the oscillating frame H is tripped the friction-roller *w* is raised above the angle of the spring L, so that the spring holds the frame in its shifted position with the wheel *r* engaged with wheel I. Another trip-pin on the reciprocating frame B (indicated by the small broken circle at the left-hand side of Fig. 2) comes into contact with the lever K, and trips the lever and oscillating plate H back into the position shown in Fig. 2, and the motion of the frame is again reversed, and so on repeatedly to keep up the reciprocating motion of the frame B.

The cylinder A, I prefer to cover with some soft material, like cloth or chamois-skin; and as the same will in time wear out, it is essential that means for ready attachment and detachment should be provided. These means are shown in Fig. 4.

The rim of the cylinder is slotted longitudinally, and within said slot is fitted a wedge-shaped piece of soft metal, *n*, the same provided with a fastening screw or screws, *k*, by means of which it may be drawn firmly into the slot.

m designates the cloth, the ends of which are drawn through the slot, and clamped firmly therein by means of the wedge-shaped piece and its screw, as shown in Fig. 4.

By slotting the rim of the cylinder completely through, the ends of the cloth can extend through to the inside of the rim, and then be conveniently grasped to draw the cloth tight, whereby it can be readily and smoothly attached to the periphery of the cylinder, and completely cover it, except the wedge *n*, which wedge, being convex on its outer surface, completely fills out the periphery of the cylinder, and prevents the work from coming directly against the corners over which the cloth is drawn, and protects the cloth from undue wear at that point. The wedge should be large enough so that when drawn firmly in, its outer edge will project fully as much as the rest of the periphery of the cylinder.

If desired, wood or any other suitable material may be substituted for soft metal, and perhaps hard metal would answer, or the wedge, like the rest of the cylinder, may be covered with cloth.

The brush *a*, hereinbefore described, acts as an agitator as well as a distributer.

The abrading material is put into the trough wet up in the form of paste, so that the brush agitates the mass, prevents it from precipitating, and thereby keeps it at the proper consistency. Other agitating and automatic distributing mechanism may be substituted for the brush, if desired.

From the foregoing description it will be seen that the cylinder revolves continuously, that the work reciprocates over the abrading surface, the abrading material is fed automatically, and the pressure continually bears upon the moving work at a point directly over the abrading surface.

The width of the machine may be such that any desired number of holding-plates may be employed.

I am aware that machines for grinding saws have been made with stationary guides and a reciprocating frame, which moved the saws back and forth between the stationary guides and over the stone; also, that a weighted lever having a limited movement, and provided with a presser-roller at one end, has been hung underneath a grindstone, to aid in putting in work and holding it against the stone; also, that feed-rollers on the two sides of a polishing-cylinder and presser-roller have been arranged with mechanism for holding them in an elevated position, the position of the presser-roller being positive, and regulated by a screw; also, that grindstones have been provided with a lever having a roller at one end resting in the water-trough under the stone, and so hung that by depressing the outer end of the lever the roller could be brought into contact with the stone, and feed the water to its periphery; also, that sand-paper wheels have been provided with shallow grooves, in which flat-faced wedges were clamped by screws running through from the outside, so that the ends of the sand-paper could be run under the wedges and clamped in place, all of which prior devices are hereby disclaimed.

I claim as my invention—

1. In a polishing-machine, the series of independent yielding and detachable work-holding plates, in combination with the reciprocating frame passing over the abrading surface and carrying said holding-plates, substantially as described, and for the purpose specified.

2. The reciprocating frame and its series of independent work-holding plates, in combination with the several presser-bars and their rollers, substantially as described, and for the purpose specified.

3. The detachable work-holding plates, in combination with the presser-bars having roller *e* and stop *g*, and the swinging arm *f* on the rod *c'*, adapted to hold each presser-roller out of contact with the holding-plates separately from the other presser-bars and rollers, substantially as described, and for the purpose specified.

4. The reciprocating frame having vertical pins, in combination with the holding-plates having holes which receive said pins, substantially as described, and for the purpose specified.

5. The combination of the main frame, cross-bar *c*, presser-bars *d*, threaded cross-rod *c'*, swinging arms *f*, and nuts *h*, substantially as described, and for the purpose specified.

6. The cylinder A, non-abrasive of itself, in

combination with the rotating brush *a*, set in stationary bearings, and connected by gearing to the cylinder-shaft, substantially as described, and for the purpose specified.

7. The hollow cylinder A, slotted longitudinally completely through its rim, in combination with the wedge *n*, bar or clamp inside of the rim, and a screw passing from the inside through said bar or clamp into the wedge *n*, substantially as described, and for the purpose specified.

HARRY S. BARTHOLOMEW.

Witnesses:
JAMES SHEPARD,
WILL. B. THOMSON.