(No Model.) 2 Sheets—Sheet 1.

O. B. OSBORN & E. G. RICHARDS.

WOOD POLISHING MACHINE.

No. 416,801. Patented Dec. 10, 1889.

Fig. 1.

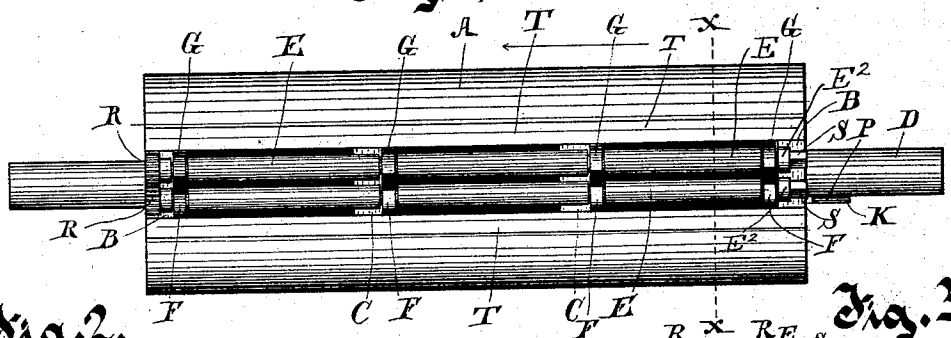


Fig. 2.

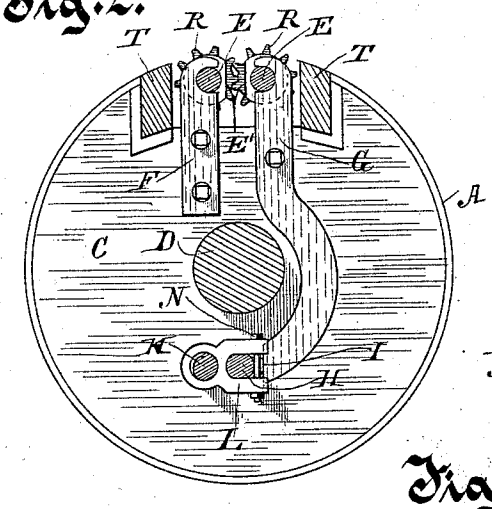


Fig. 3.

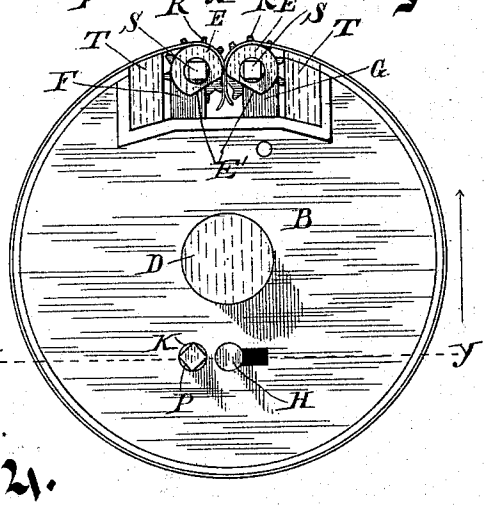
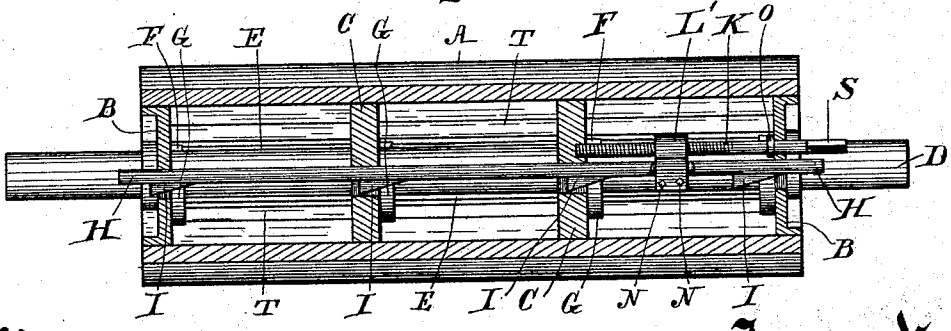


Fig. 4.



Witnesses.

H. E. Whitaker.

Jesse M. Smith

Inventors

Orra Burr Osborn

Edgar G. Richards

By R. Mason

Attorney.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

O. B. OSBORN & E. G. RICHARDS.

WOOD POLISHING MACHINE.

No. 416,801. Patented Dec. 10, 1889.

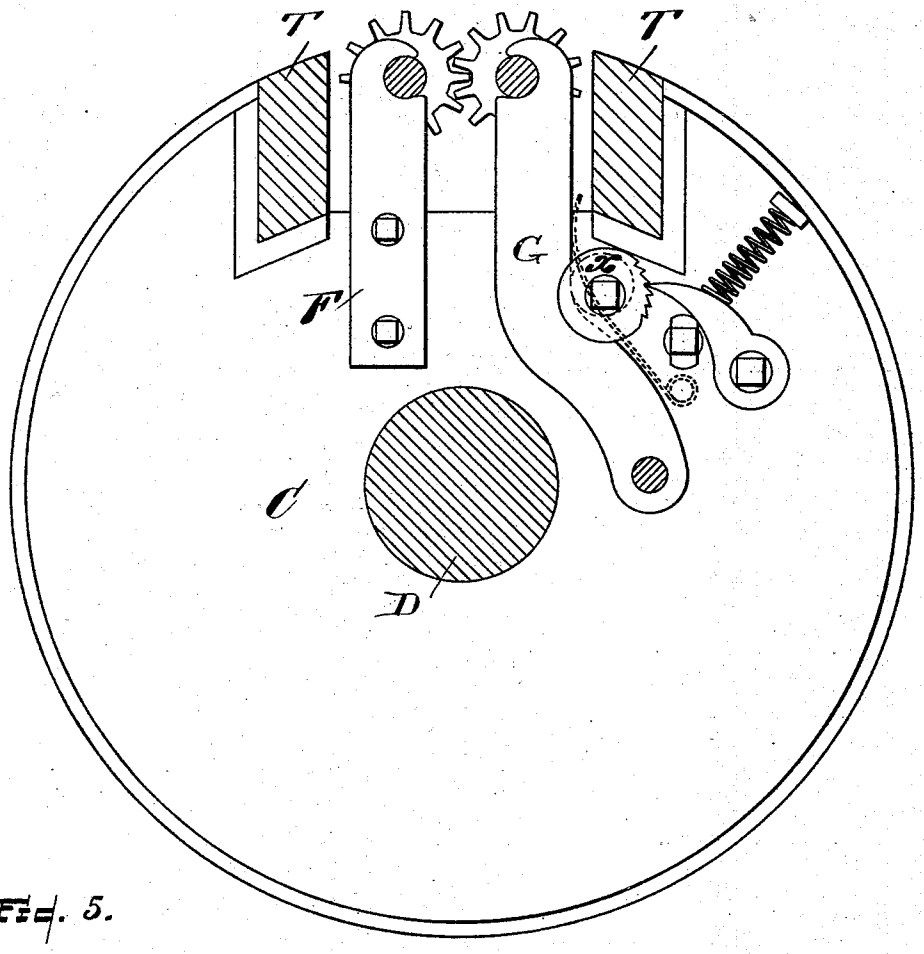


Fig. 5.

WITNESSES
W. S. Schuyler
H. Kohrig

INVENTOR
Ozra Burr Osborn
Edgar G. Richards
by
R. Mason
Attorney.

N. PETERS. Photo-Lithographer. Washington. D. C.

UNITED STATES PATENT OFFICE.

OZRA BURR OSBORN AND EDGAR G. RICHARDS, OF BELOIT, WISCONSIN, ASSIGNORS TO THE BERLIN MACHINE WORKS, OF SAME PLACE.

WOOD-POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 416,801, dated December 10, 1889.

Application filed May 18, 1889. Serial No. 311,333. (No model.)

To all whom it may concern:

Be it known that we, OZRA BURR OSBORN and EDGAR G. RICHARDS, citizens of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Devices for Securing Sand-Paper to Cylinders, of which the following is a description.

Our invention relates to the mechanism employed for attaching the sand-papers to the cylinder of an abrading or polishing machine.

In the annexed drawings, constituting a part of this specification, Figure 1 is a plan or top view of the abrading-cylinder with our improvements attached. Fig. 2 is a transverse section of the cylinder on the line *x x*, Fig. 1, looking in the direction of the arrow. Fig. 3 is an end view of the cylinder. Fig. 4 is a longitudinal section on the line *y y*, Fig. 3, looking in the direction of the arrow; and Fig. 5 is a partial section of a cylinder, showing a modification in the clamping device.

The same letters are employed in all the figures in the designation of identical parts.

The cylinder which carries the sand-paper is a hollow shell with solid heads B and intermediate partitions C, which are supported on the shaft D. The sand-paper is applied on the periphery of the cylinder, and in order that the ends of the sheet may be effectually secured a slot is cut in the periphery in the shell, heads, and partitions to receive two parallel clamping-rollers, between which the ends of the sheets are gripped. In order that sand-paper of differing thicknesses may be conveniently attached, the gripping-rolls must be adjustable; but it is sufficient if one of them only is so adjustable. We use one roll journaled in fixed jaws F, and one journaled in swinging jaws G. This swinging jaw is a lever, and may be a lever of the first order, as in Fig. 2, or it may be a lever of the second order, as shown in Fig. 5. We regard the arrangement shown in Fig. 2 as preferable. This is a lever of the first order, with a pivot or fulcrum between the resistance, which is the movable clamping-roller, and the power, which in this instance acts against the lever at its lower end, the long arm being bent around the shaft and terminating on the other side of it. These jaws are attached to the heads and partitions, and the movable ones are simultaneously and equally actuated by mechanism acting upon the end of the long arm. We prefer that shown in Figs. 2 and 4.

H is a rod having its bearings in the heads and partitions and free to move longitudinally. This movement is communicated to it by an arm L′, clamped or otherwise fastened to the rod by bolts N and having through the other end a threaded hole, forming a nut traveling on the parallel threaded rod K, having its journals, in which it may revolve in bearings, formed in one head and one partition. This rod has exposed a square end S to receive a socket-wrench, by which it may be rotated, thus giving longitudinal movement to the rod H. The rod H is provided with wedge-formed keys I, which move with the rod and are arranged to bear one against the end of each jaw G and force the movable jaw at the outer end toward the stationary jaw. Instead of this rod and wedge, there may be used a rotating rod and cams, or springs may be mounted to press the movable jaw constantly toward the fixed jaw, or any other convenient and known mode of simultaneously applying force to the movable jaws.

In the outer ends of the fixed jaws F and movable jaws G we place two parallel rolls E, geared together at R, having their journals in bearings in the said jaws, so that they may be turned therein. These rolls are made from two cylinders of equal diameter, which are cut away so as to leave on each a flat face E′, extending, however, not quite the entire length of the roll, but leaving a short cylindrical portion of full diameter near the end of the roll at E^2. This unreduced portion forms a gage to prevent the flattened faces, when placed opposite to one another, from being brought nearer together than permitted by the full radius of the cylinder, because if permitted so to approach within that limit the rolls could not be turned so as to bring their convex surfaces in opposition to clamp the ends of the paper. At that end of the roll the point S is squared to receive a socket-wrench. At the other end of the rolls we

provide on each a spur-pinion, the teeth of which are long enough to permit the adjustment of the rolls to the thickness of the paper, be it thick or thin, the bottom of the teeth being at the radial distance from the axis of the roll, so that they may not approach any nearer at that end than they are permitted to do at the other by the gage-collars E^2. The collar E^2 forms a gage at one end of the roll and the pinions one at the other. The rolls are set in the slot in the cylinder, and they are placed in the line of the periphery of the cylinder at their outer surfaces. They have grooves cut around them adjoining the heads and partitions to receive the detents, by which they are held in place without the latter projecting beyond their surface and so interfering with the smoothness of the paper.

The operation of the device is as follows: The sand-paper is cut into proper lengths a little in excess of the circumference of the cylinder A. It is drawn nearly around the cylinder and the rolls so set that their flat faces shall be opposed to one another. The ends of the paper are then passed down between the rolls, the space being sufficient to permit this to be done readily, and the paper drawn so as to fit snugly to the cylinder without wrinkles. Then the wrench on S is turned and the rolls revolved, so that their convex surfaces are opposed, gripping the paper with a force regulated by the adjusting-wedges or their equivalent mechanism and carrying the ends inward with the continued movement of the rolls until it is drawn as tightly as desired around the surface of the cylinder.

T T are wooden bars, to which the cushion on the outside surface of the cylinder may be tacked.

It will be observed that we place the rods in the slot in the shell of the cylinder, which is wide enough to receive them, whereby they are within the immediate reach of the operator and draw the paper but little deflected from the curve of the cylinder, whereas in prior machines, when rollers have been used, they have been placed entirely inside of the cylinder with a narrow slot in front of them, so that they were not only out of reach, but when they did grip the paper they drew it over a corner which formed an acute angle. It will also be observed that both rolls are of the same size and are both flattened along nearly their entire extent, but the cylinders are not cut away at the ends, and thereby they can never approach so as to contract the open space left between their flattened faces nearer than the full cylinder-surfaces will permit, the latter acting as gages or stops to define the minimum approach of the rolls.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of a slotted abrading-cylinder A and a pair of clamping-rolls arranged immediately within the slot and near the periphery of the cylinder, one of said rollers being adjustable to or from the other, substantially as and for the purpose set forth.

2. In combination with the slotted cylinder, rollers arranged in said slot, bearings or jaws pivoted to the cylinder, one of which is adjustable, and mechanism for adjusting the jaw, substantially as set forth.

3. The combination of the slotted cylinders, rolls carried on jaws, one of which is adjustable, and adjustable wedges for regulating the position of the movable jaw, substantially as set forth.

4. The combination of the slotted cylinder, rolls carried on jaws, one of which is adjustable, and adjustable wedges acting on the movable jaw and attached to an adjustable rod, substantially as set forth.

5. The combination of the slotted cylinder, rolls carried on jaws, one of which is adjustable, adjustable wedges attached to an adjustable rod, and the arm or nut attached to said rod and made to travel upon a parallel threaded and rotary rod, substantially as set forth.

6. In combination with a slotted abrading-cylinder and clamping-rollers with flattened faces, mechanism for adjusting one of the rollers transversely to its axis, and a stop which regulates the minimum approach of the flattened surfaces, substantially as set forth.

7. The gripping-rollers formed with corresponding flattened convex surfaces along a part of their length only, so as to leave cylindrical portions at the ends to prevent their approach to one another when their flattened faces are opposed, substantially as set forth.

In testimony whereof we hereunto set our hands and seals in the presence of two subscribing witnesses.

OZRA BURR OSBORN. [L. S.]
EDGAR G. RICHARDS. [L. S.]

In presence of—
E. V. MUNN,
JOEL B. DOW.