

(No Model.)

3 Sheets—Sheet 1.

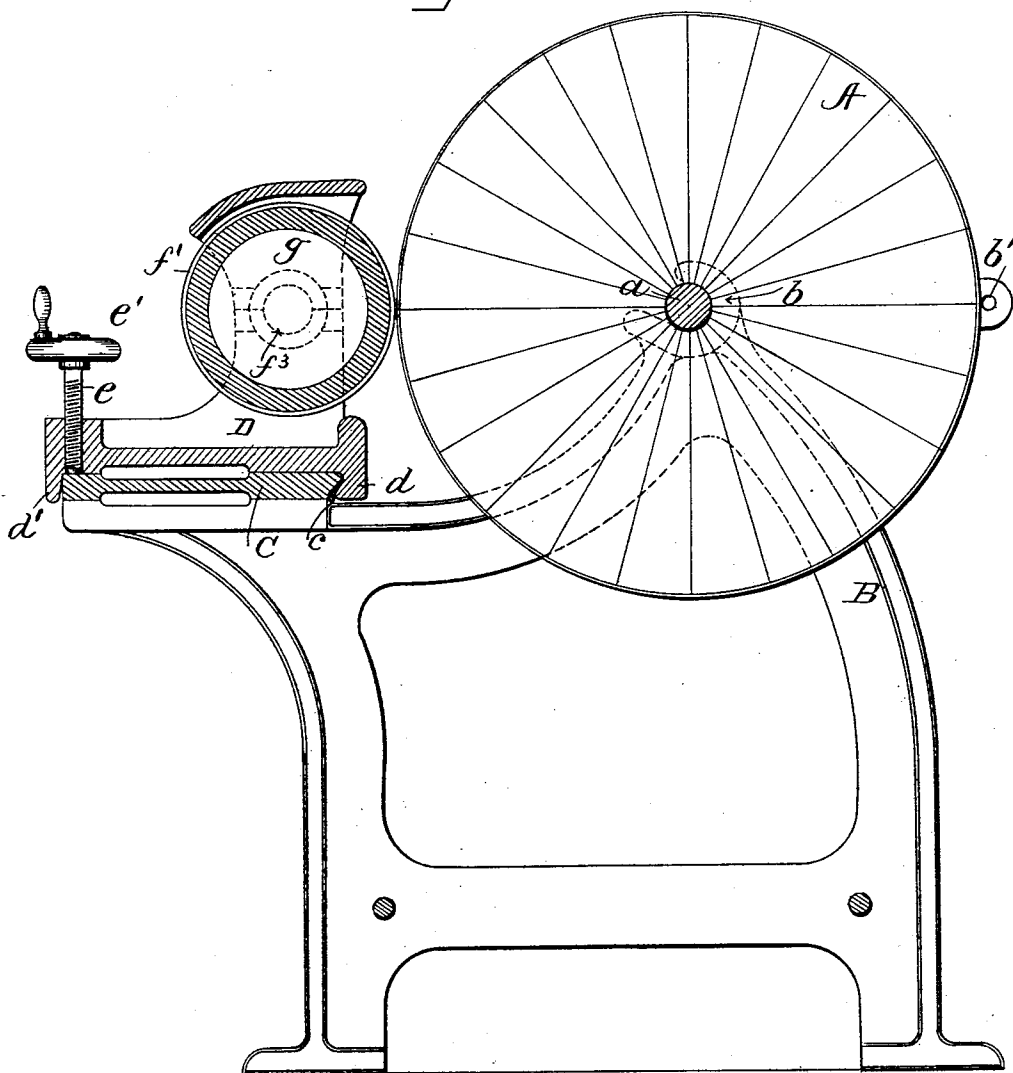
A. JOHNSTON.

PROCESS OF AND APPARATUS FOR MANUFACTURING POLISHING WHEELS.

No. 588,068.

Patented Aug. 10, 1897.

Fig. 1.



Witnesses.
W. R. Edlin.
Geo. Lewis.

Inventor.
Allen Johnston
by Edward Mauro
his attorney

(No Model.)

3 Sheets—Sheet 2.

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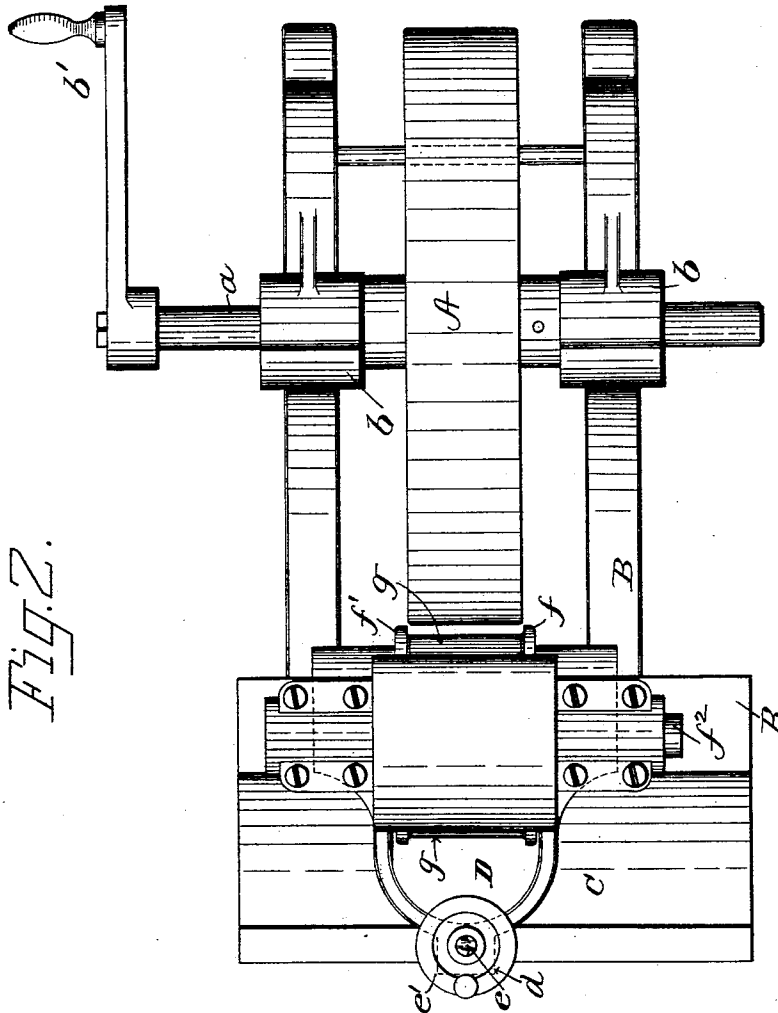


Fig. 2.

Witnesses

W. B. Edglin.
J. W. Lewis.

Inventor.

Allen Johnston
by Tolson Mauro
his attorney.

(No Model.)

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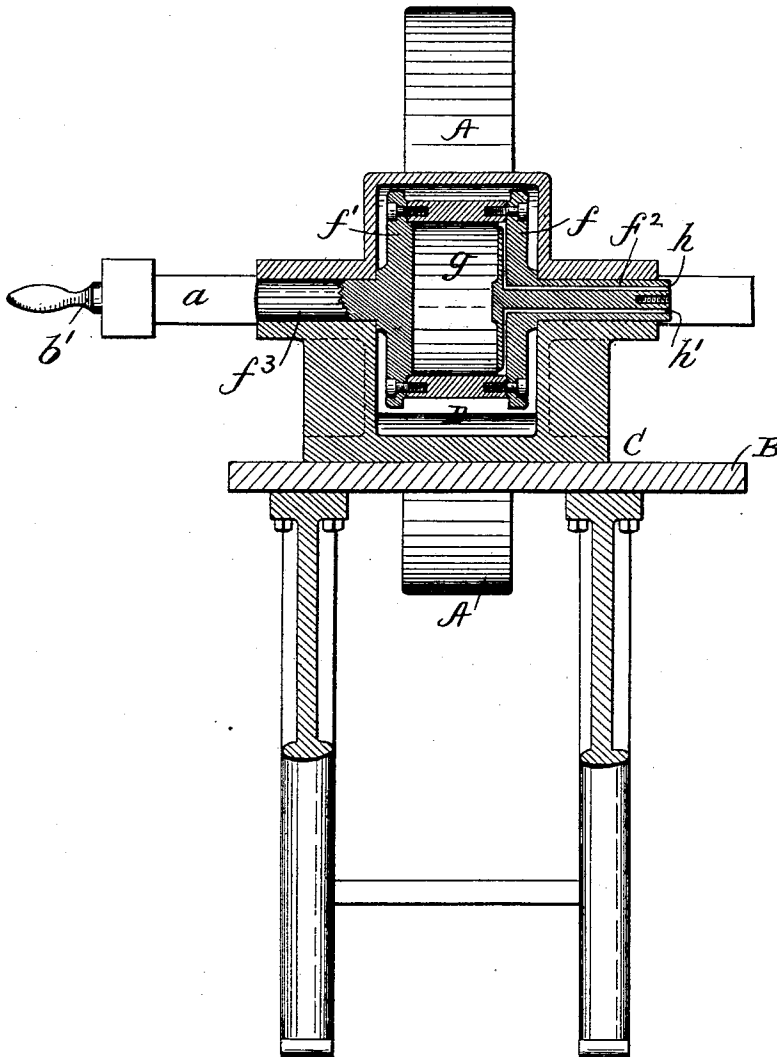
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Fig. 3.



Witnesses.

W. B. Odell.
Geo. Lewis.

Inventor.

Allen Johnston
by J. H. Mearns
his attorney.

UNITED STATES PATENT OFFICE.

ALLEN JOHNSTON, OF OTTUMWA, IOWA.

PROCESS OF AND APPARATUS FOR MANUFACTURING POLISHING-WHEELS.

SPECIFICATION forming part of Letters Patent No. 588,068, dated August 10, 1897.

Application filed November 7, 1896. Serial No. 611,418. (No model.)

To all whom it may concern:

Be it known that I, ALLEN JOHNSTON, of Ottumwa, Iowa, have invented new and useful Improvements in Processes of and Apparatus for the Manufacture of Polishing-Wheels, which improvements are fully set forth in the following specification.

This invention has reference to an improved process of and apparatus for the manufacture of polishing-wheels. It specially concerns polishing-wheels wherein the polishing material, ordinarily a mixture of beeswax and emery, but sometimes tallow or paraffin, or both, are also added, is spread upon the surface of the wheel, made of wood, metal, or any suitable material. As heretofore generally applied the surface of the wheel has been roughened and the polishing mixture rubbed and worked on by hand, with the result that it is put on unevenly—that is, the layer of polishing material is of variable thickness. To remedy this latter objection, it has been necessary to turn off a portion of the material, so as to reduce the layer to a uniform thickness, which of course involves a waste of material. Furthermore, these operations require the services of a skilled operator.

According to my present invention the polishing material, of such character as to be softened by heat, is evenly and smoothly applied or laid over the surface of the wheel by the use of a heated roller. In effecting this result the wheel to be coated is slowly rotated in contact with the heated roller, mounted to rotate therewith and to exert a positive and unyielding pressure against the surface thereof, during which time the polishing material, in a somewhat plastic state, is held against the wheel, and portions thereof adhere to the wheel at each rotation. Contact of the roller against the material adhering to the wheel softens said material to some extent and permits it to be compactly, evenly, and smoothly rolled down by reason of the pressure of the roller, and whether the material be softened or not by the heated roller the heat of the latter prevents the polishing mixture from adhering thereto when pressed between its surface and the cold surface of the wheel, to which it adheres in a compact and uniform layer. A few rotations are sufficient to com-

plete the polishing-wheel, which as thus produced is more quickly manufactured, much cheaper, and more durable than wheels to which the polishing material is applied by the methods heretofore practiced.

Suitable means are provided for changing the position of the roller, whereby it can, when desired, be moved into and out of contact with the wheel and also adjusted in operation to maintain proper contact of its surface with that of the wheel.

Any suitable means may be employed for heating the surface of the roller, that preferred being to make the roller hollow and to admit steam to the interior thereof.

In the accompanying drawings I have shown a convenient form of apparatus for carrying out my improved process, but I do not, of course, limit myself thereto, as a suitable roller and means for heating the same can be applied to various machines wherein a polishing-wheel of the kind described is employed, and, if desirable, be so mounted that without disturbing the wheel it can be thrown into contact therewith for carrying out the process.

In said drawings, Figure 1 is a vertical sectional view, parts being in elevation. Fig. 2 is a top plan view; and Fig. 3 is a sectional view at right angles to Fig. 1, taken through the pressure-roller.

Referring to the drawings, A represents a wheel the periphery of which is to be coated with a layer of polishing material mounted to rotate on its axle *a*, which rests in bearings *b* of framework B.

b' is a crank on the axle *a* for rotating the wheel.

C is a table supported on said framework, its edge *c* adjacent to the polishing-wheel being undercut.

D is a frame resting upon the table C and having flanges *d d'* depending along the front edge *c* and rear edge of the table, respectively. The flange *d* is slightly dovetailed under the undercut edge *c*, which latter acts as a pivot-point against which the frame D is tilted by means of a screw-threaded bolt *e* passing therethrough and bearing against the top of table C. Bolt *e* is rotated by a hand-wheel *e'*.

The pressure-roller is composed of two end disks *f f'*, each having, respectively, a trunnion *f² f³* bearing in the frame D. Between

the disks $f f'$ is clamped a ring g , the edges of the disks extending slightly beyond the ring, so that in effect the roller has a peripheral groove of a contour corresponding to that to be imparted to the polishing material of the finished wheel. Passages $h h'$ extend through trunnion f^2 to the interior of the drum, one serving as a steam-inlet and the other as an exhaust. Any suitable connections may be made with a source of steam-supply.

In operation the frame D is tilted so that the heated roller presses against the periphery of wheel A, which latter is then rotated by crank b' . During its rotation the polishing material is held against the periphery thereof, (by hand and by other suitable means not shown,) and that which adheres to the wheel is rolled down into a compact and even coating of uniform thickness, as already described.

I am aware that it has heretofore been proposed to employ heated rollers for the purpose of smoothing and drying or hardening a polishing material composed of glue and emery upon the surface of a grinding-wheel, the polishing-wheel in such apparatus being mounted to rest by its own weight upon the heated rollers, no other power being employed for pressing the wheel and rollers together and the driving power being applied to the rollers. According to my invention the heating-roller is held against the surface of the wheel by positive and unyielding pressure, and the wheel itself is positively rotated in contact with said roller instead of resting loosely thereon and receiving motion by friction.

By my invention the polishing material (such as paraffin and emery) is softened and spread by the action of the heated roller, whereas the old operation above referred to consisted in hardening and drying the polishing material.

What I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described process of applying to the surface of a wheel a coating of pol-

ishing material which will soften by heat, said process consisting in preparing a mixture, such as beeswax and emery, rotating the wheel, applying said mixture to the wheel while rotating, and softening and spreading the mixture upon the surface of the wheel as the former is applied to the latter, by the pressure of a rotating heated body, substantially as described.

2. In an apparatus for applying polishing material consisting of a mixture of abrading and binding material that will soften by heat to a polishing-wheel, the combination of a frame in which the polishing-wheel is mounted, and a heated roller mounted in a separate frame, said frames being adjustably connected, so that the polishing-wheel and roller can be brought into contact during the application of the polishing material, and removed from contact when the apparatus is not in operation, substantially as described.

3. Apparatus for applying a polishing material—such as a mixture of beeswax and emery—to the surface of a wheel in a compact and uniform manner, consisting of a rigidly-mounted roller adapted to be pressed against the wheel, bearings in which said wheel is rigidly mounted, means for heating the surface of the roller, means for adjusting the presser-roller and wheel relatively to each other, and driving means for rotating the wheel, substantially as described.

4. In apparatus for applying polishing material to the surface of a wheel, a roller mounted in a suitable frame, bearings for rigidly holding the wheel, means for rotating the wheel, and means—such as a screw—for tilting the frame to adjust the roller with reference to the polishing-surface, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALLEN JOHNSTON.

Witnesses:

J. T. HACKWORTH,
G. BINKS.