

S. Shepherd & A. M. George.
Calendering & Polishing.
N^o 82,882. Patented Oct. 6, 1868.

Fig. 1.

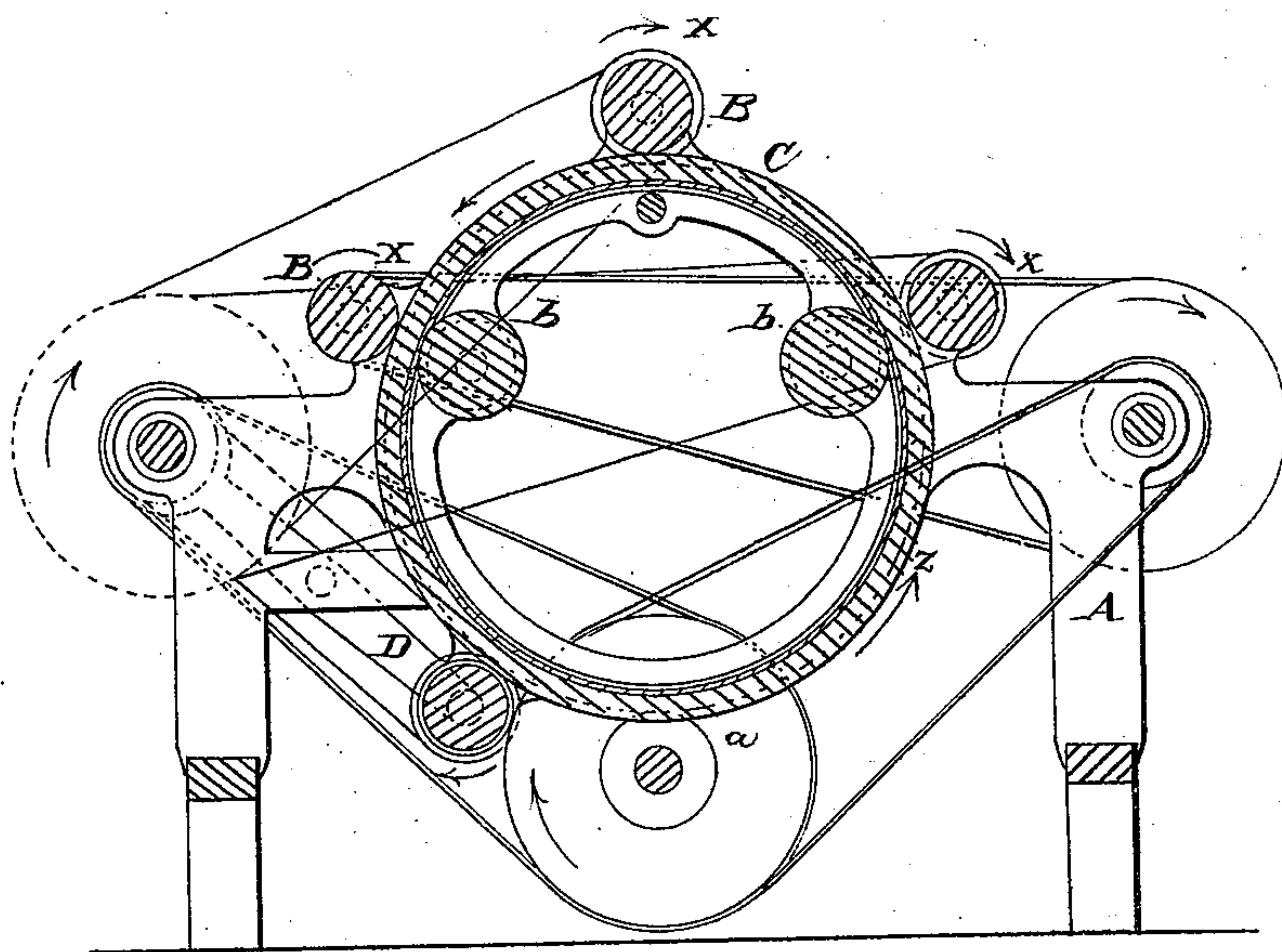
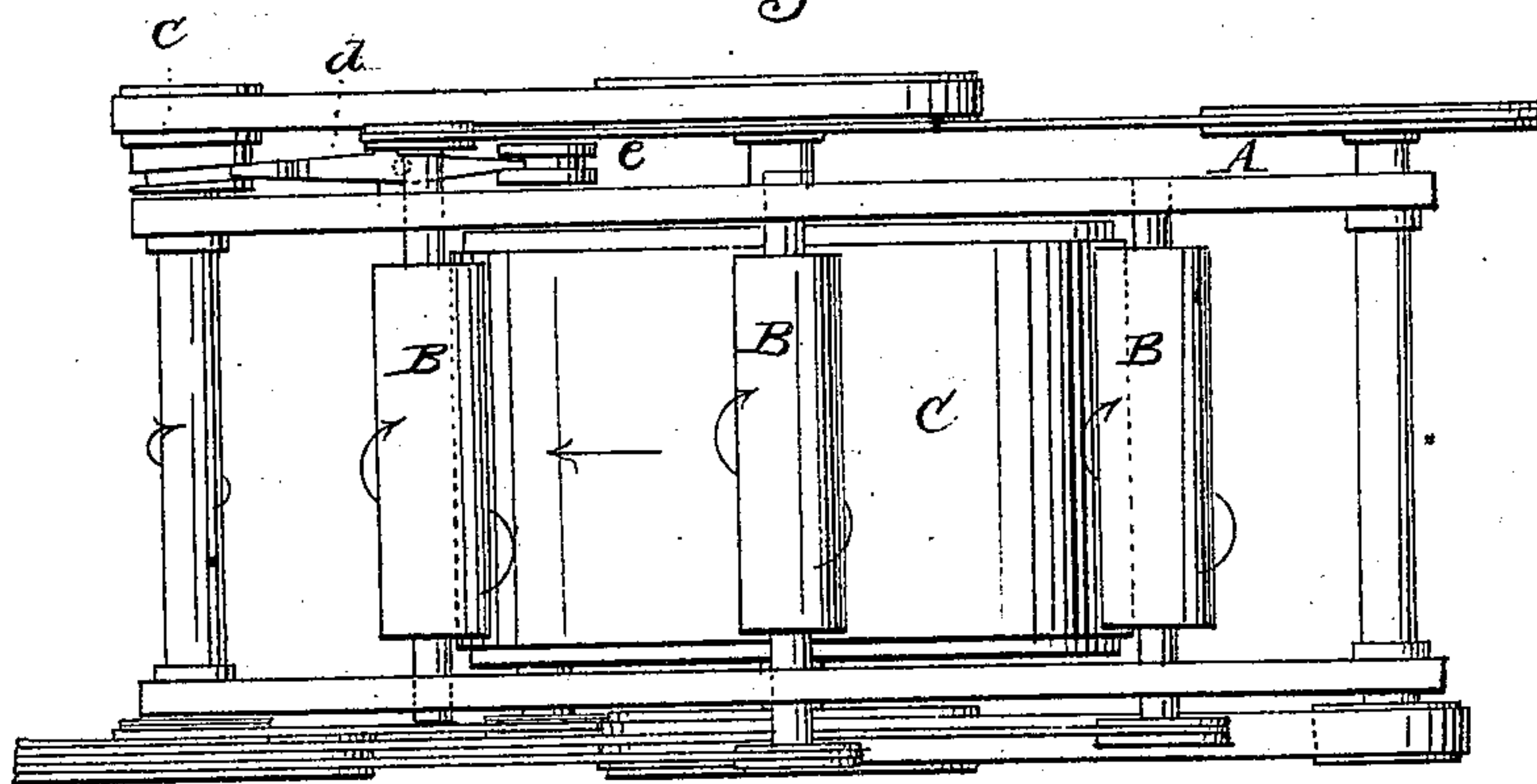


Fig. 2.



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UNITED STATES PATENT OFFICE.

SAMUEL SHEPHERD AND AMMI M. GEORGE, OF NASHUA, N. H., ASSIGNORS
TO SAMUEL SHEPHERD AND JOSEPH GREELEY, OF SAME PLACE.

MACHINE FOR POLISHING PAPER.

Specification forming part of Letters Patent No. **82,882**, dated October 6, 1868.

To all whom it may concern:

Be it known that we, SAMUEL SHEPHERD and AMMI M. GEORGE, both of Nashua, in the county of Hillsborough and State of New Hampshire, have invented a new and useful Improvement in Polishing Enameled Paper and other Materials, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a sectional elevation of a machine constructed according to our improvement, and Fig. 2 a plan of the same.

Similar letters of reference indicate corresponding parts.

This our invention consists in a combination of a rotating ring or traveling bed of a slow curvature or enlarged diameter, preferably made of or faced with wood of a close grain, and capable of receiving a polish or glaze, and constructed so as to leave an open space through it or at its center, and rotating burnishing-rolls traveling at a quicker velocity than the ring or annular bed, and which should have a reciprocating longitudinal motion in addition, and may be made of glass, stone, highly-polished metal, or other suitable material, the same being so arranged relatively to the annular bed that the paper is polished as it is passed in between them; and the invention further consists in a combination, with the bed that carries the material to be polished, or that serves, in conjunction with burnishing-rolls, to effect the polishing as required, of a reducing or facing roll having a roughened flint, emery, or other like surface, and rotating as well as having a longitudinal reciprocating motion in contact with the bed, for the purpose of securing a true and smooth surface to the bed.

Referring to the accompanying drawing, A is the frame of the machine. B are the burnishing-rolls, arranged in any number on, over, or around an annular bed, C, with their shafts parallel to the axis of the annular bed, and made of glass, polished stone, stoneware, metal, or other suitable material. These rolls, in addition to having a rotary motion given to them, as indicated by their respective arrows *x* in Fig. 1, and which may be effected by belts and pulleys, as represented in the drawing, or

in any other suitable manner, should also have a longitudinal reciprocating movement, to secure a more perfect polishing action, as in the case of their application to a traveling apron or straight-bed arrangement, described in Letters Patent of the United States issued to us on the 17th day of July, 1866, but which action it is not deemed necessary to show or more fully describe here, nor yet to refer to details for their adjustment relatively to the bed.

The annular bed C is made to revolve, at a suitably slower velocity than the burnishing-rolls, in the direction indicated by the arrows *z*, and may be driven through the belt and pulley, or otherwise, by pinions or wheels *a*, gearing with or biting against the annular bed on either side of it. This circular bed C, of ring form, may be made of metal, covered on its periphery with holly or box wood, or otherwise be constructed to present a hard and smooth or polished surface, and may either run on rollers *b*, or be hung to travel in circular grooves, or on circular V-shaped flanges, fitting grooves made in it. It should be of a diameter sufficiently large to accommodate around it, at suitable distances apart, any desired number of burnishing-rolls B, and in this respect and the open construction of it at its center, being carried neither by shaft nor arms to interfere with its open character, is essentially a traveling solid bed of circular character, in contradistinction to a mere wheel or roller, and presents a bed-surface for the material in passing from one burnishing-roll to another. It is preferable, however, in many respects to a mere endless apron traveling over a straight bed. Furthermore, by its open character or mere ring shape, it may not only be made light, but is supported from undue springing at or near the periphery, where the pressure, as produced by the work, is felt, and offers a special advantage in providing for the arrangement within it of the necessary mechanism for giving to the burnishing-rolls their longitudinal reciprocating motion hereinbefore referred to. For some descriptions of work it may be faced on its periphery with a moderately soft or elastic material; but, in a general way, a comparatively hard and polished surface is preferred.

In the operation, the enameled paper to be

polished is fed from a roll or otherwise, by any suitable means, under the burnishing-roll, say on the right-hand side, between it and the revolving bed, and from thence passes on and partly round the bed under the other burnishing-rolls, and is finally delivered on the opposite side of the machine. It is all-important, however, for a proper performance of its work relatively to or in connection with the burnishing-rolls, that the bed C, however constructed in respect to detail, should, when made to present a hard and polished periphery, have such surface constantly or repeatedly dressed, in order to preserve its smoothness or level character and to free it from lines or marks calculated to affect the material being polished. For this purpose we arrange, at a suitable point or place, say beneath it on the one side, to cross the outer periphery of the bed, a reducing and leveling roll, D, that may be covered with flint, emery, or be otherwise suitably roughened on its exterior to form a scouring or reducing surface, and that, when pressed by appropriate means up against the revolving bed, will serve to reduce and level it, by said roll not only having a rotary motion at a suitable velocity given it, through belt and pulley, or otherwise, either in the same or reverse direction of travel to the bed, but also a longitudinal reciprocating movement, to more

effectually remove all lines or marks and give a proper finish or true level or smoothness to the bed. This may be done by a revolving cam, *c*, operating a lever, *d*, in gear with a clutch, *e*, on the shaft of the roll D, or it may be done in any other suitable manner. In this way the bed, as it revolves, is being constantly, it may be, leveled, and its periphery kept in working order.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination, with any number of burnishing-rolls B, operating substantially as described, of a revolving annular bed, C, supported at or near its periphery, and of open character or construction at its center, or within its interior periphery, for operation, relatively to each other, essentially as and for the purpose or purposes herein set forth.

2. The combination, with a circular traveling bed, C, of a reducing emery or other equivalent roll, D, having a rotary and longitudinal reciprocating action on or against and in contact with said bed, substantially as and for the purpose specified.

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