

LeRoy S. White,
Burnishing Machine.
N^o 25,783. Patented Oct. 11, 1859.

Fig. 2

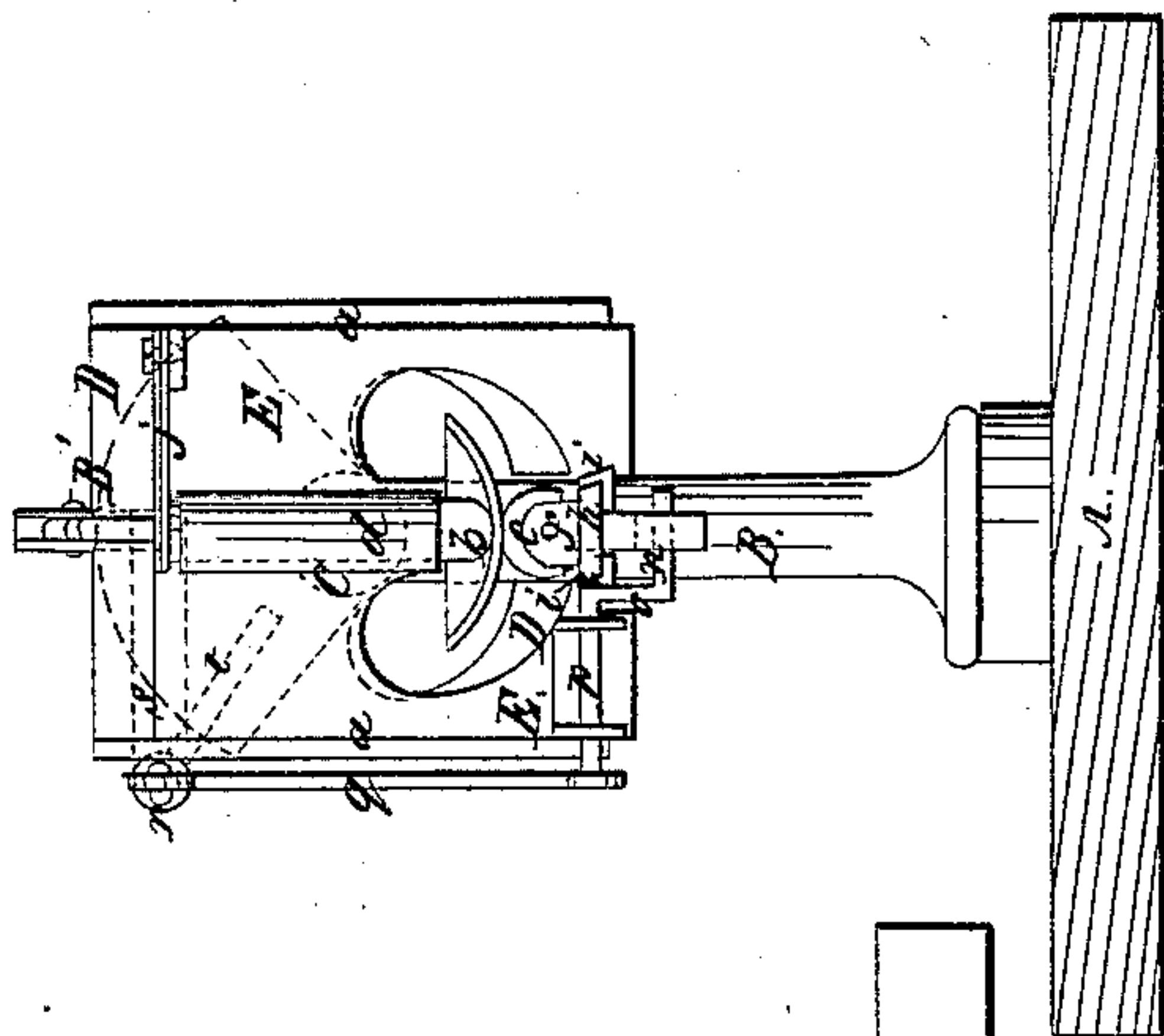
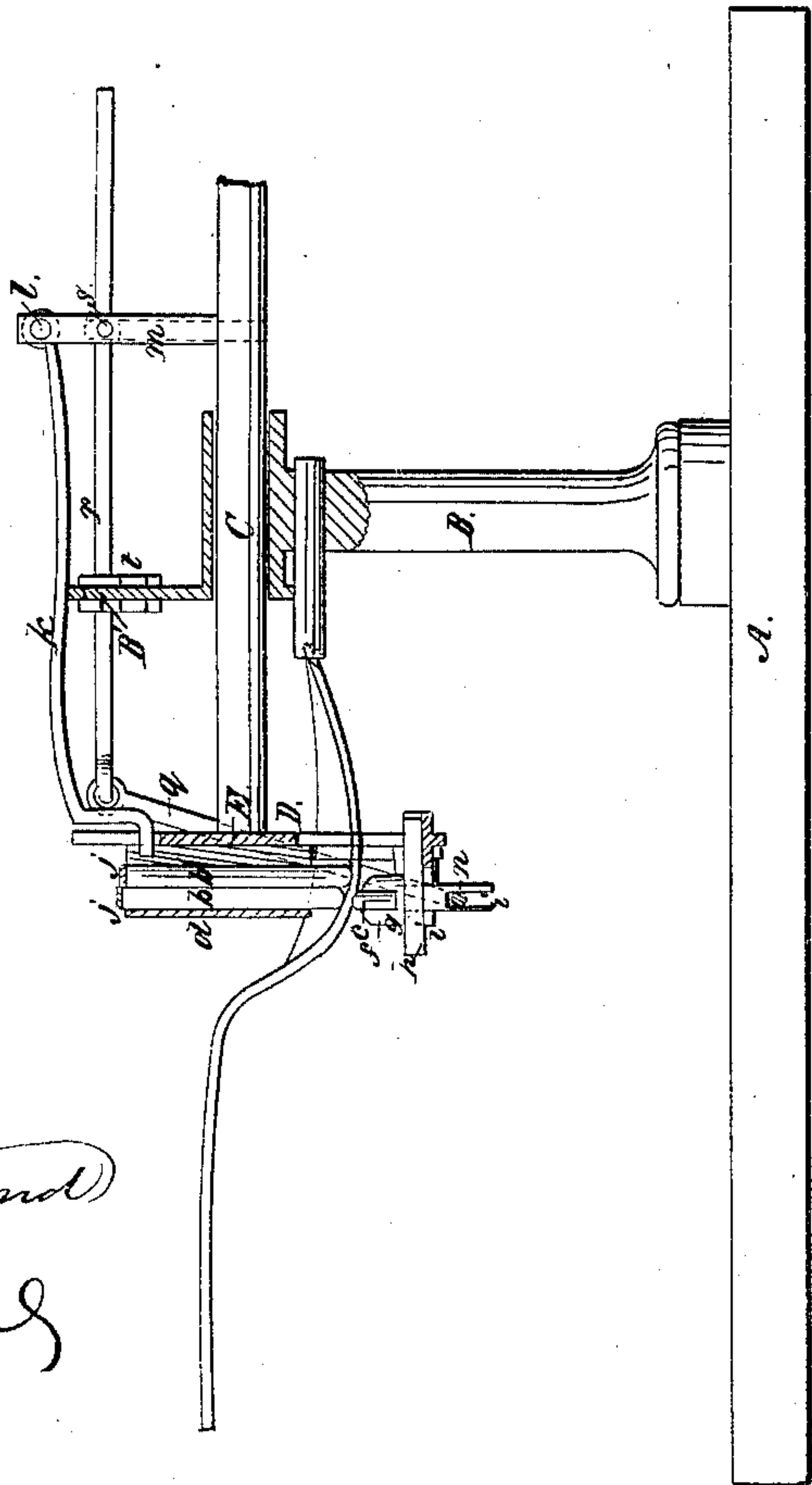


Fig. 1.



Witnesses:

Geo. L. Townsend
Theodore S. Beech

Inventor:

LeRoy S. White

UNITED STATES PATENT OFFICE.

LE ROY S. WHITE, OF WATERBURY, CONNECTICUT.

IMPROVED BURNISHING-MACHINE.

Specification forming part of Letters Patent No. 25,783, dated October 11, 1859.

To all whom it may concern:

Be it known that I, LE ROY S. WHITE, of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Burnishing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of part of a burnishing-machine illustrating my invention. Fig. 2 is a front view of the same.

Similar letters of reference indicate corresponding parts in both figures

My invention consists in a novel mode of applying and operating the burnishers in a burnishing-machine, whereby some important advantages are obtained in burnishing curved surfaces, as will be hereinafter specified.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

The drawings only represent those parts of the machine which are involved in my improvement. The parts not represented—viz., the mere holding and driving mechanism—may be the same as in the machine described in the schedule of my Letters Patent dated April 5, 1859, or constructed and arranged in any other suitable manner.

A represents part of the bed-plate of the machine, and B one of the standards containing the bearings for the reciprocating and partly-rotating shaft C, which corresponds with the reciprocating and partly-rotating shaft of my above-mentioned machine. To the front end of this shaft there is rigidly attached a head-piece, D, in which are provided ways *aa*, perpendicular to the axis of the shaft C, to receive a sliding gate, E, which carries the burnishers *b b'*, which are on the upper surface of the spoon or other article to be burnished, and the burnisher *c*, which operates simultaneously on the lower surface thereof. The said gate E is connected with a long arm, *k*, which is connected by a pin, *l*, with an arm, *m*, that is rigidly attached to the shaft C. This arm rests upon the arc-shaped top B' of the standard B, and is so curved longitudinally that it will, during the reciprocating movement of the shaft C, cause the gate to receive such a move-

ment in the ways *aa* as to cause the movement of the burnishers to conform nearly to the longitudinal profile of the spoon or other article to be burnished. The two burnishers *b b'*, which operate on the upper surface of the article, are arranged so close together that they may be very properly considered as parts of the same burnisher. They have their stems fitted to slide in the same socket *d*, which is secured rigidly to or formed in the same casting with the gate E, the said stems being parallel with the ways *aa*, and each of said burnishers has a separate spring, *j*, so applied to it as to press it toward the surface upon which it operates. The burnisher *c* is secured by a pin, *f*, in a holder, *g*, which is attached rigidly to a slide, *h*, which is fitted to slide in ways *ii* in the gate E, said ways being parallel with the shaft C. The said burnishers *b* are capable of oscillating upon the pin *f*, which is parallel with the ways *ii* and shaft C. The longitudinal reciprocating movement of the shaft C carries the burnishers *b b' c* along the opposite surface of the spoon or other article, and the springs *d d* operate both to press the burnishers *b b'* against the upper surface and to draw the burnisher *c* up the lower surface, and as the gate is perfectly free to slide in the ways *aa* the burnishers follow the longitudinal curve of the article without difficulty, and act with the same effect on the opposite surfaces. It is desirable, to obtain the full advantage of the use of burnishers acting simultaneously on opposite surfaces of any article, that they should operate, as nearly as possible, at exactly opposite points. In order to effect this with the rectilinear movements of the burnishers above described in operating on curved surfaces like the bowl of spoon, it is necessary that the burnisher operating on the convex surface, which is further from the focus or foci of the curves than the concave surface, should make a movement of greater length than that of those operating on the concave surface. Such difference in the movement of the burnishers may be effected by accelerating the movement of the one or retarding the movement of the other; but I consider the first-mentioned plan to be the best, and for that reason have illustrated in the drawings the mode of effecting it, which is as follows: The slide *h* is connected by a

slot, *i*, and pin *n* with the short arm *o* of a small rock-shaft, *p*, which works in bearings secured to the front of the gate E, and the said rock-shaft has a longer arm, *q*, which is connected with the front end of a bar, *r*, the rear portion of which rests in an eye in a rigid arm, *s*, which branches off from the arm *m*. The said bar *r* has rigidly attached to it a forked arm, *t*, which embraces the upper part, B', of the standard B, and which confines the said bar in a longitudinal direction, but permits it to move round with the shaft C as the latter turns on its axis to follow the lateral curvature of the spoon, bowl, or other article under operation, and permits it (the said bar *r*) to oscillate slightly, as required by the movement of the gate E. The longitudinal movement of the shaft C causes the rock-shaft *p* to oscillate in its bearings, and so to give the slide *h* a slight movement in the ways *i i*, always in the same direction as the motion of the shaft C, and thus, as will be readily understood, the burnisher *c* moves through a greater distance than *b b'* during every stroke of the shaft C in either direction, and so the burnisher *c* and those *b b'* are caused always to operate on the two surfaces at opposite points or nearly so.

The operation of the burnishers on curved surfaces with a compound reciprocating rectilinear motion as produced by the reciprocating shaft C and sliding gate E possesses the important advantage over their operation with a swinging movement from a center near the focus of the curved surface, as in the machine described in my former Letters Patent hereinbefore referred to, of presenting a more extensive burnishing surface to the work and changing the operating surface throughout the whole stroke, instead of always presenting the same point or line, hence obviating the necessity of so frequently repolishing the burnishers. The arrangement of a burnisher to oscillate like *c* on a pin, *f*, enables it to adapt itself to the varying lateral curvature that occurs throughout the length of a spoon-bowl.

The use of two burnishers, *b b'*, or, in other words, of a divided burnisher on one side, enables two operating-points to be presented effectively instead of one. It may be remarked that the burnisher *c*, at about the middle of the stroke, operates midway between the operating-points of *b* and *b'*; but at one end of the stroke it operates opposite to *b*, and at the other end opposite to *b'*.

Instead of having the shaft C turn to make the burnishers follow the lateral curvature of the spoon-bowl or other article, the holder may turn to present the several parts of the width in succession to the burnishers. Two or more pairs or sets of burnishers *b b' c* may be employed in the same gate E to operate upon the same article, or upon different articles.

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

1. The arrangement of the burnisher or burnishers in a burnishing-machine in a sliding gate, or its equivalent, carried by and working perpendicularly to a rectilinearly reciprocating shaft, or its equivalent, substantially as and for the purpose herein described.

2. Providing for the burnisher or burnishers employed on one side of the article to be burnished in a so applied gate or its equivalent such a movement independently of that or those employed on the opposite side, substantially herein described, as to produce the greater movement that is necessary or desirable, for the reason hereinbefore explained, on the convex side of any article of curved form.

3. Fitting a burnisher in a burnishing-machine to a suitable holder, *g*, or its equivalent, in which it is permitted a free vibration laterally to the movement it makes in the burnishing operation, substantially as and for the purpose herein specified.

LE ROY S. WHITE.

Witnesses:

GEO. L. TOWNSEND,
THEODORE S. BUEL.