

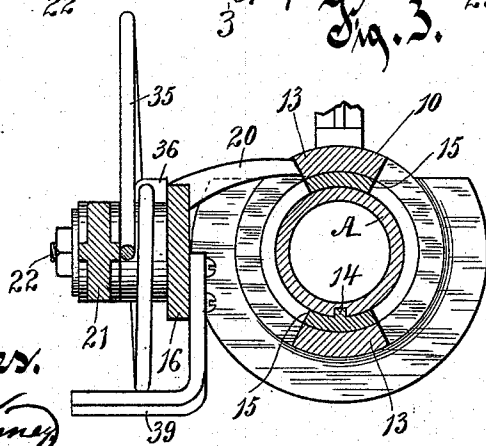
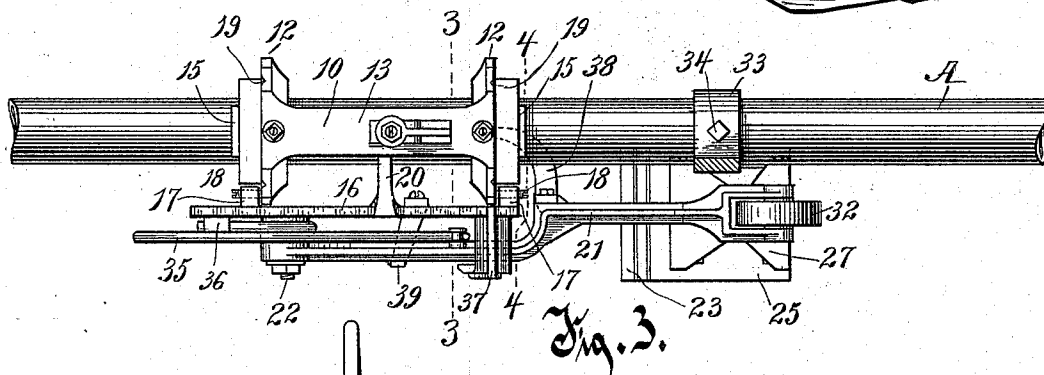
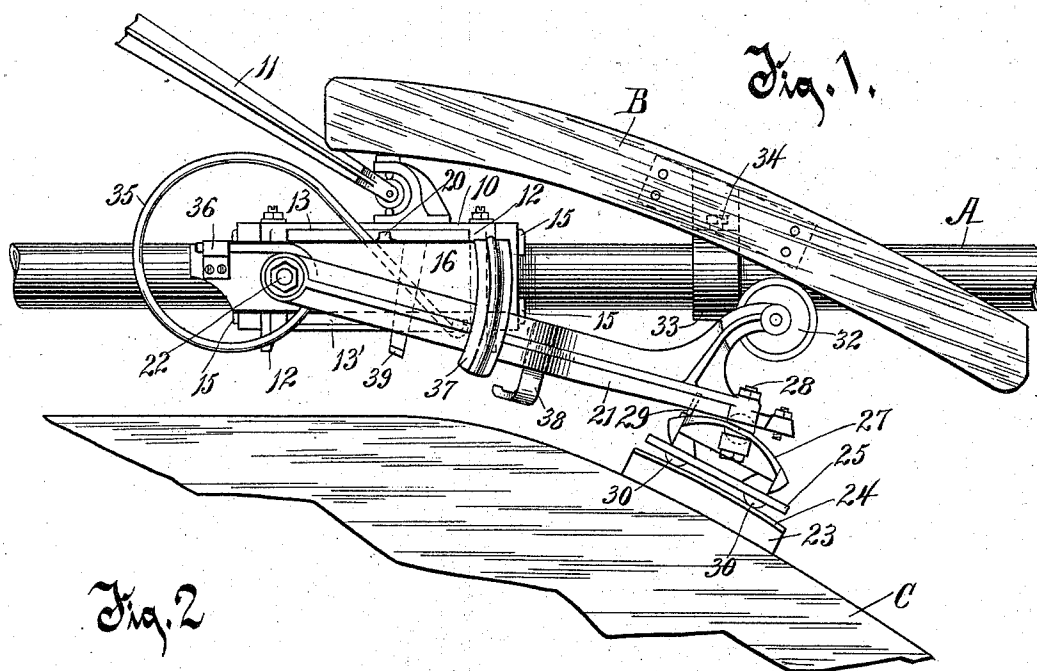
(No Model.)

2 Sheets—Sheet 1.

C. S. YARNELL.
RUBBING OR POLISHING MACHINE.

No. 528,199.

Patented Oct. 30, 1894.



Witnesses.

A. H. Keane

Anna C. Faust.

Inventor.

Charles S. Garnell
By Benedict Morell
Attorneys.

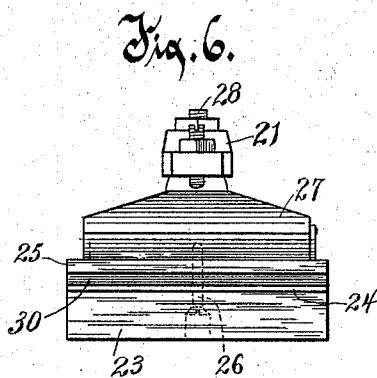
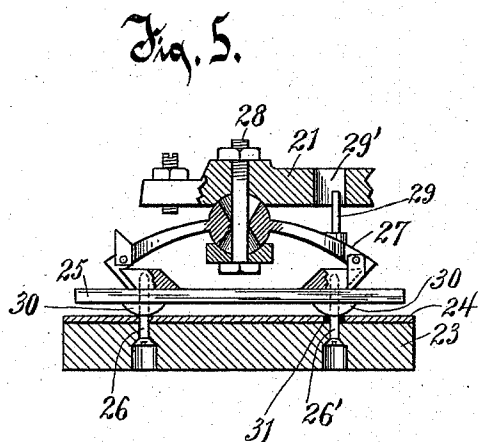
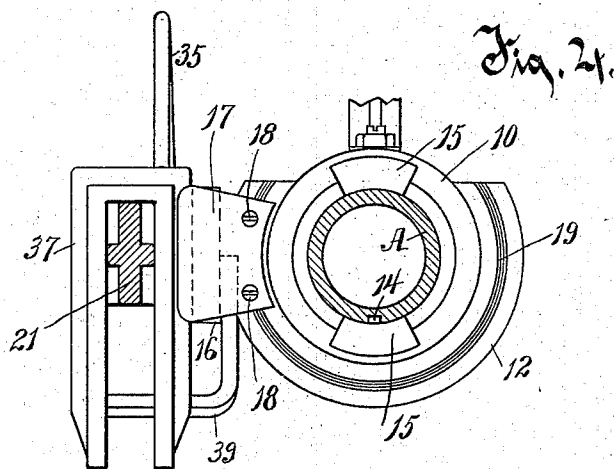
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Anna P. Faust

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Attorneys

UNITED STATES PATENT OFFICE.

CHARLES S. YARNELL, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE
MOORE CARVING MACHINE COMPANY, OF SAME PLACE.

RUBBING OR POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 528,199, dated October 30, 1894.

Application filed December 8, 1893. Serial No. 493,086. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. YARNELL, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Improvement in Rubbing or Polishing Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

The object of my invention is to provide means, in a polishing machine having a horizontally reciprocating buffer-carriage, for mounting and adapting thereto an attached buffer or polisher for buffing or polishing curved, oblique or undulating surfaces.

My improved devices are especially adapted for use in a polishing machine of the character illustrated and described in Patent No. 507,280, issued October 24, 1893.

The invention consists in the devices and their parts and combinations as herein described and claimed, or their equivalents.

In the drawings, Figure 1, is an elevation of my improved devices, in connection with a fragment of the guide-bar of a polishing machine, on which the improved devices are mounted, and a pattern or guide, and a fragment of the article being polished. Fig. 2, is a top plan view of my improved devices and of a fragment of the guide-bar of a polishing machine. Fig. 3, is a transverse section of the devices on line 3—3 of Fig. 2 looking toward the left. Fig. 4, is a transverse section of the devices, taken on line 4—4 of Fig. 2 looking toward the left. Fig. 5, is a side view of the buffer and its connections to the arm on which it is mounted, parts being shown in section for convenience of illustration. Fig. 6, is an end view of the buffer and its connections to the arm on which it is mounted.

In the drawings, A is the horizontally disposed guide-bar of a polishing machine, which is preferably so attached to the machine as to be capable of being moved or swung vertically and horizontally limitedly. A buffer-carriage 10, loose on the guide-bar A is reciprocative thereon by suitable mechanism, to which it is connected by the rod 11. This carriage, is for the purposes of my improved devices, conveniently in the form of end rings 12, 12 connected together rigidly by top and

bottom bars 13, 13'. Brasses 15 in the carriage serve as bearings for the carriage on the guide-bar, and a feather 14 on one of the brasses, enters a longitudinal slot therefor in the bar, and prevents rotary motion of the carriage on the bar.

For mounting my improved devices for carrying the buffer, on the carriage 10, a plate 16 forming the body of a frame is secured adjustably to the carriage 10, advisably by means of lugs 17, projecting laterally therefrom, alongside the ends or outer faces of the rings 12, and holding screws 18 turning through the lugs into an annular groove 19 therefor in the end surfaces of the rings. By this construction the frame 16 may be adjusted circumferentially of the carriage, if desired, although such adjustment in practical use, will rarely if ever be required. A finger 20 projecting laterally from the plate 16 is adapted, when the frame is to be in the vertical normal position shown in the drawings (which is the one in which it is most commonly used), to bear against the carriage 10 medially, and thus serve as a gage to adjust the parts and thereafter to strengthen them relative to each other.

An arm 21 is pivoted at its extremity, conveniently by a pivot 22, to the plate 16, so as to swing from and toward the substantially horizontal plane of reciprocation of the carriage, and at its other extremity carries the buffer 23 mounted thereon. The buffer 23 may be of any suitable material, for the purpose of rubbing the article to be polished, and in the drawings is represented as, and must be understood to be a thick piece or block of felt secured to a steel or other elastic plate or back 24, which is secured detachably and movably limitedly, to the buffer block 25 by means of screws 26, 26'. The buffer-block 25 is secured detachably to the head-block 27 which in turn is attached to the arm 21 tiltably in the projection of the plan of the swinging movement of the arm, by a bolt 28. A pin 29 fixed in the head-block 27 enters a slot 29' in the arm 21, and prevents revoluble motion horizontally of the block 27 on the arm. To provide for a certain amount of bending or curving of the flexible block 23 and plate 24, by which it

conforms to the uneven, corrugated or irregular curve of a surface being polished, there are two rounded or conical bosses 30, 30 on the surface of the buffer-block 25, the outer 5 extremities of which serve for bearings for the buffer-block 24, and into and through which the screws 26, 26' pass. A slot 31 in the plate 24 through which the screw 26' passes, provides for the movement of the 10 plate 24, thereabout, when, in conforming to the irregular surface of the article being polished, the block 23 and plate 24 are forced into concave or convex form. On the free extremity of the arm 21, on which the buffer 15 is mounted, and substantially opposite thereto, I provide a bearing, preferably a wheel 32, mounted in the arm 21, which is adapted to bear against and be guided by a pattern B, which is of the same form, on this 20 bearing surface, and is disposed in a similar position as the surface opposite thereto of the article C to be polished. The pattern B is conveniently supported, by being attached to a collar 33 adjustable on the guide-bar A 25 and held thereto releasably by the set screw 34. The pattern or guide B is so located and arranged with reference to the article C, as by means of the bearing 32, to hold the buffer 23 constantly to its work on the surface of the article C, being polished. 30

A spring 35 fixed at one extremity to the frame 16, conveniently by a block 36, in which the end of the spring is inserted, is attached at its other extremity to the arm 21, 35 and is adapted to counterpoise or support the arm 21 substantially horizontally. An inverted substantially U-shaped yoke 37 rigid on the frame 16 serves as a guide for the arm 21, permitting vertical movement thereof 40 but preventing lateral movement. A stop 38 projecting from the arm 21 under the end of the carriage 10, is adapted to engage therewith and prevent the further upward movement of the arm. This stop 38 is so constructed and arranged as to engage the carriage 10 at the same moment that the arm 21, 45 moving upwardly, comes to the upper limit of its travel in the yoke 37. A stop 39 fixed on the frame 16 and projecting therefrom beneath and across the path of the arm 21 prevents undue downward movement thereof. 50

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

55 1. In a polishing machine, the combination with a straight guide bar, of a carriage reciprocative on the guide bar, a single swinging arm pivoted on the carriage so as to swing toward and from a plane through the axis of 60 the guide bar, and a buffer pivoted on the free extremity of the swinging arm in such manner as to be tiltable to oblique positions with reference to the arm and to the guide bar in or parallel to the projection of the 65 swinging movement of the arm, whereby the

buffer is adapted when reciprocated by the reciprocation of the carriage to follow and polish the surface of material diverging or curving from the line of reciprocation of the carriage, substantially as described. 70

2. In a polishing machine, the combination with a carriage reciprocative on a guide-bar, of a swinging arm pivoted on the carriage, a buffer mounted on the free extremity of the swinging arm, a bearing also on the free extremity of the buffer-carrying arm, and a pattern or guide of substantially the same form 75 as and disposed opposite and in a similar position to the article to be polished and so as by controlling the movement of the arm by its bearing, to hold the buffer up to its work 80 on the surface of the article being polished, substantially as described.

3. In a polishing machine, the combination with a carriage reciprocative on a guide-bar, 85 of a swinging arm pivoted on the carriage, a buffer mounted on the free extremity of the swinging arm, and a spring secured to the carriage and attached to the arm, adapted to counterpoise the arm, substantially as described. 90

4. In a polishing machine, the combination, with a carriage reciprocative on the guide-bar, of a swinging arm pivoted on the carriage, a buffer mounted on the free extremity of the swinging arm, and a guide secured to the carriage, in which the swinging arm moves 95 vertically, adapted to prevent lateral movement of the arm, substantially as described.

5. In a polishing machine, the combination 100 with a carriage reciprocative on a guide-bar, of a swinging arm pivoted on the carriage, a buffer mounted on the free extremity of the swinging arm, and stops adapted to limit the movement of the swinging arm vertically, 105 substantially as described.

6. In a polishing machine, the combination of a carriage reciprocative but non-revoluble on a guide-bar, a frame 16 secured adjustably circumferentially on the carriage, 110 and a swinging buffer-carrying arm pivoted on the frame, substantially as described.

7. In a polishing machine, the combination with a carriage reciprocative on a guide bar, a swinging arm pivoted on the carriage, and 115 a buffer-block mounted on the swinging arm, said buffer-block being provided with bosses, of an elastic buffer bearing against the bosses and secured thereto and to the buffer-block with limited freedom so as to be capable of 120 bending into concave or convex positions in conformity to the article being polished, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES S. YARNELL.

Witnesses:

CHARLES G. VAN WERT,
L. A. CONDIT.

It is hereby certified that in Letters Patent No. 528,199, granted October 30, 1894, upon the application of Charles S. Yarnell, of Minneapolis, Minnesota, for an improvement in "Rubbing or Polishing Machines," an error appears in the printed specification requiring the following correction, viz: In line 96, page 1, the word "plan" should read *plane*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 13th day of November, A. D. 1894.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.