

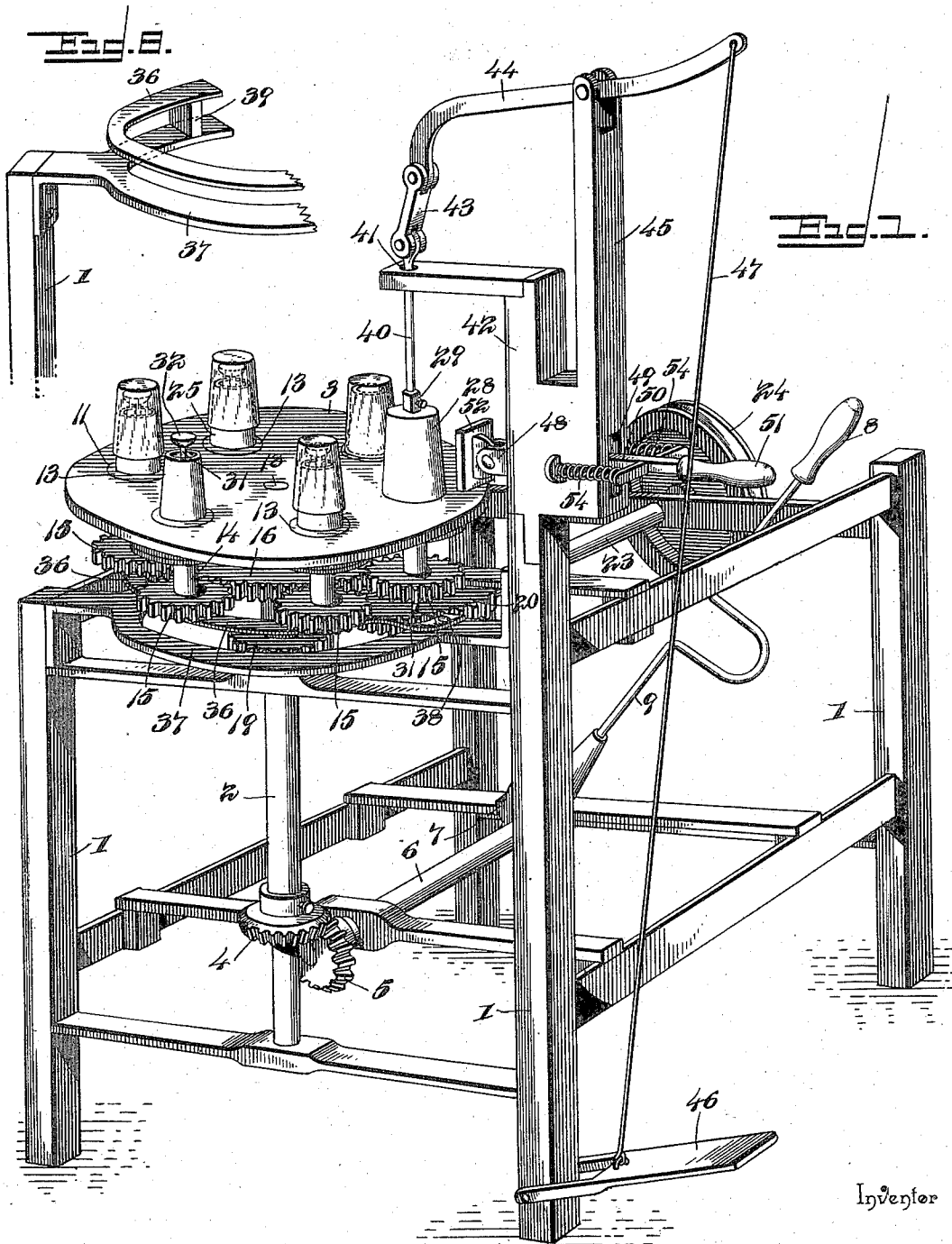
(No Model.)

3 Sheets—Sheet 1.

A. D. BUSAM.
GLASS POLISHING MACHINE.

No. 579,127

Patented Mar. 23, 1897.



Inventor

Witnesses

E. H. Stewart
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Alphonse D. Busam
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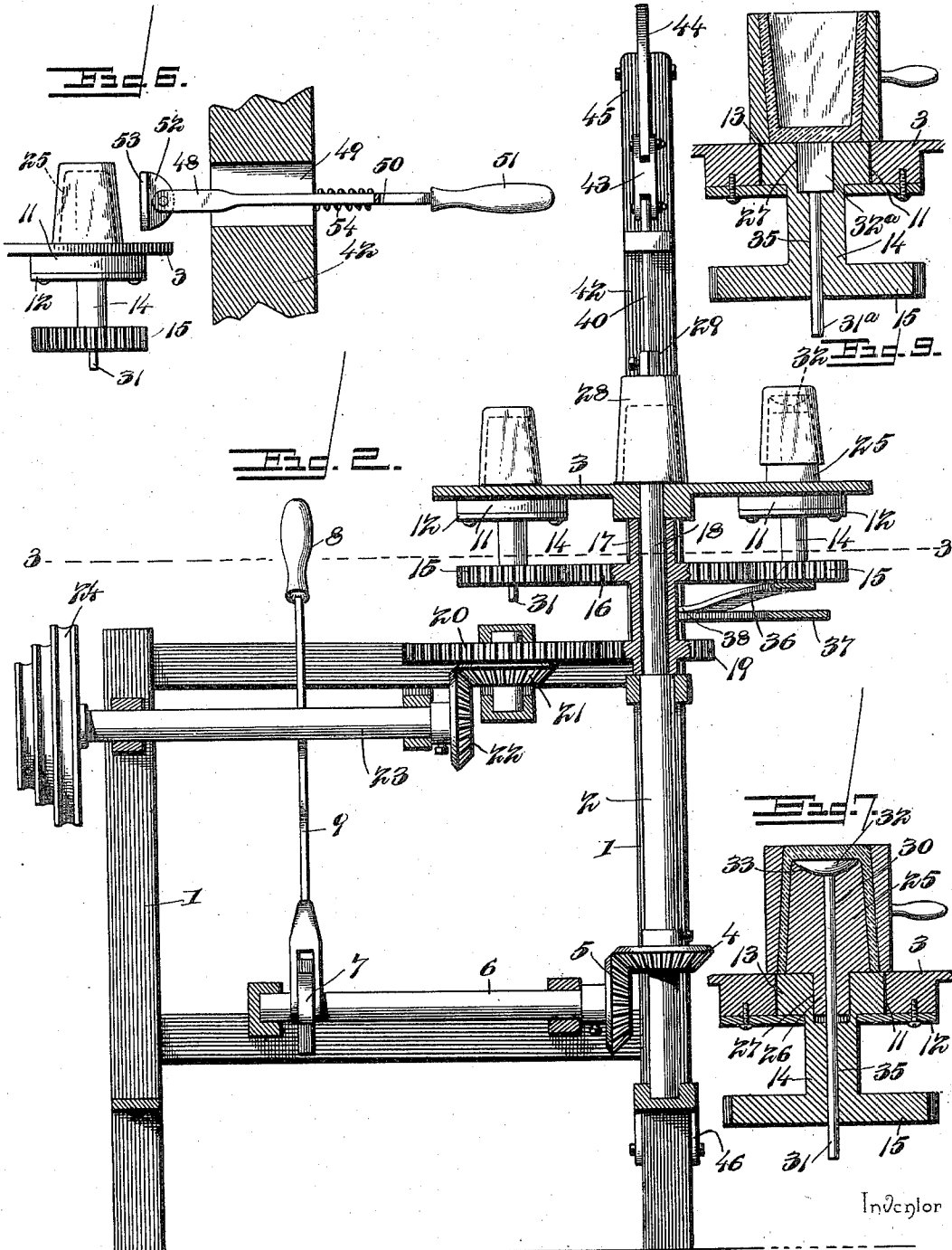
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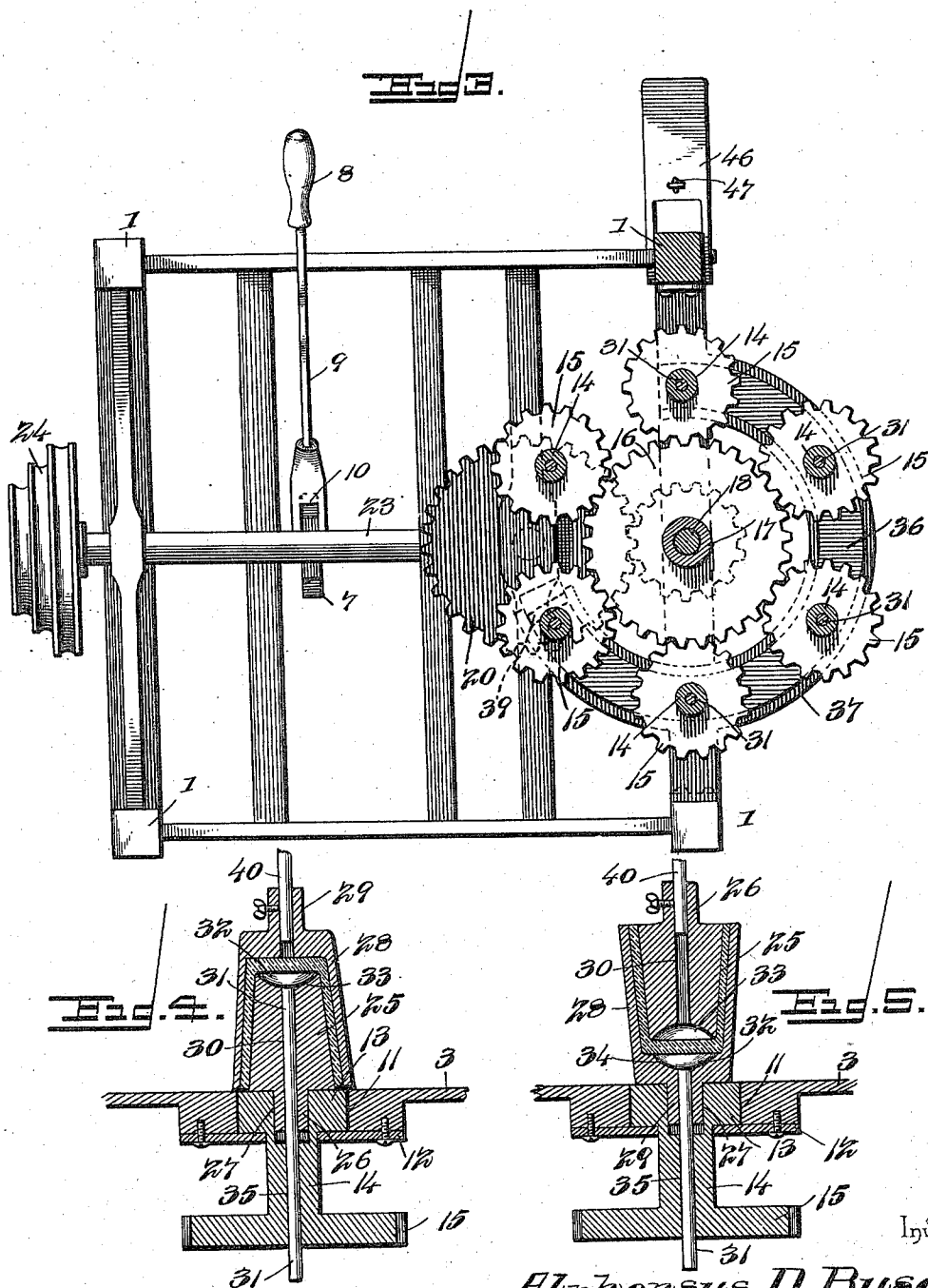
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UNITED STATES PATENT OFFICE.

ALPHONSUS D. BUSAM, OF TIFFIN, OHIO.

GLASS-POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 579,127, dated March 23, 1897.

Application filed August 3, 1896. Serial No. 601,544. (No model.)

To all whom it may concern:

Be it known that I, ALPHONSUS D. BUSAM, a citizen of the United States, residing at Tiffin, in the county of Seneca and State of Ohio, have invented a new and useful Glass Finishing or Polishing Machine, of which the following is a specification.

My invention relates to glass finishing or polishing machines, and has for its object to provide a simple and efficient construction and arrangement of parts whereby a glass or tumbler may be interiorly and exteriorly polished.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a machine constructed in accordance with my invention. Fig. 2 is a vertical central section of the same. Fig. 3 is a horizontal section on the line 3 3 of Fig. 2 to show the gearing by which motion is communicated to the spindles of the supporting-disks. Fig. 4 is a detail vertical section of one of the supporting-disks and the core supported thereby, the mold being shown in operative relation therewith. Fig. 5 is a detail sectional view of the same, showing the mold attached to the supporting-disk and the core to the stem of the operating-lever. Fig. 6 is a detail vertical section showing the auxiliary polisher and the contiguous parts. Fig. 7 is a sectional view of a pair of cooperating polishing-shoes wherein the exterior shoe is adapted to be manually operated. Fig. 8 is a detail view in perspective of a portion of the incline or cam employed for operating the detaching-plungers. Fig. 9 is a sectional view showing the manually-operated polishing-shoe arranged in an inverted position, wherein the glass is adapted to be arranged in an upright or normal position.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The framework of the machine embodying my invention includes standards 1, connected by cross-bars, and in vertically-alined bearings in two of said cross-bars is mounted a

main shaft 2, supporting a table 3, said shaft being connected by intermeshing bevel-gears 4 and 5 with a feed-shaft 6, which forms the spindle of a feed-ratchet 7. Coöperating with the feed-ratchet is a feeding-lever 8, provided with a foot 9, which is mounted for oscillation upon the feed-shaft and is provided with a tooth 10 to engage the teeth of the ratchet.

The table is provided with a plurality of seats or bearings 11, arranged in a series concentric with the table, and in said bearings, which are closed at their lower ends by cap-plates 12, are mounted supporting-disks 13, which are preferably made of a diameter sufficient to support a glass of any size. The spindle or stem 14 of each disk extends downwardly through a central opening in the cap-plate 12 and terminates in a pinion 15, with which meshes a central gear 16, having a hub 17, which is mounted upon a reduced portion 18 of the main shaft 2. Said hub or sleeve also carries a pinion 19, with which meshes a driving-gear 20, which receives motion by means of intermeshing bevel-pinions 21 and 22 from a driving-shaft 23, carrying a cone-pulley 24.

In connection with the above-described mechanism I employ polishing-shoes of different constructions for contact, respectively, with the interior and exterior surfaces of the glasses, the interior polishing-shoe consisting of a core 25 of conical construction, having an angular extension 26 to fit in a socket 27, formed centrally in each supporting-disk 13, and the exterior polishing-shoe consisting of a mold 28, constructed interiorly to correspond with the shape of the glass and provided with an angular extension 29, also adapted, as illustrated in Fig. 5, to fit in said socket 27.

Each polishing-shoe is provided with an axial bore or guide-opening 30 for the reception of the stem 31 of a plunger 32, said plunger being adapted, after the completion of the polishing operation, to lift a glass from the shoe and thus facilitate its removal without entirely dismounting it, as will be seen by reference to Fig. 1. The plunger is normally arranged in a seat or cavity provided in the shoe for its reception, the core 25 being provided with such a seat or cavity 33 in its up-

per or smaller extremity, while the mold 28 is provided with a similar seat or cavity 34 in its lower or reduced end.

The detaching or lifting plunger is used in connection with the shoe which is carried by the table, and the stem thereof extends through the bore 35 of the spindle 14 and is adapted to project beyond the lower surface of the pinion carried by said spindle, and arranged in the path of the lower extremity of this spindle is an incline or cam 36, supported by a segmental bracket 37 and consisting in the construction illustrated of a plate-spring which is adapted to yield to avoid straining or disarranging any of the parts of the mechanism. One extremity of this spring-cam is attached, as shown at 38, to the bracket, and the other end rests upon a block 39, whereby it is adapted to yield between these terminal points of support.

The polishing-shoe which is not supported by the table is fitted upon the lower extremity of a stem 40, mounted for vertical sliding movement in a suitable guide-opening 41 in an arm 42, supported by one of the uprights or standards of the frame, and connected with the upper extremity of said stem by means of a suitable link 43 is an operating-lever 44, which is mounted at an intermediate point upon a contiguous arm 45, said operating-lever being adapted to be actuated by means of a foot-lever 46, which is mounted upon said upright or standard and is connected with the lever by means of a flexible pitman or similar connection 47.

In operation the glasses are placed, respectively, upon the supporting-disks of the table in engagement with the polishing-shoe which is mounted thereon, and motion is communicated to the table by means of the feed-lever 9 to bring the glasses successively under the vertically-movable complementary shoe which is carried by the operating-lever 44, it being understood from the foregoing description that when one (as, for instance, the core or interior polishing-shoe) is carried by the rotary supporting-disk of the table the other (as the mold or exterior polishing-shoe) is carried by the operating-lever. Before turning the table to bring the glass under said complementary shoe the foot-lever 46 is depressed to elevate said shoe, and when properly aligned the foot-lever is released to allow the elevated shoe to descend by gravity into operative contact with the glass. When the glass under treatment has been properly polished, the movable shoe is again elevated and the table is turned a distance corresponding with the interval between contiguous supporting-disks to bring the succeeding glass into operative relation with the movable shoe. As the glasses are carried around they are elevated by means of the plunger and cooperating cam to bring them within reach of those whose duty it is to remove them from the machine.

In connection with the above-described

mechanism I employ a side-polishing device consisting of a slide 48, mounted in a guide 49, which is formed in the bracket 42, said slide having a stem 50, terminating in a handle 51. The inner extremity of the slide carries a shoe 52, preferably made of cherry or similar hard wood and provided with a flat polishing-surface 53, which is adapted to be brought into contact with the exterior surface of the glass. Attached to the stem of the slide are returning-springs 54 to retract the slide and normally hold the polishing-surface of the shoe 52 out of contact with the surface of the glass.

In Fig. 7 I have shown a modified construction of exterior polishing-shoe consisting of a block provided with a suitable bore and adapted to be rested upon a suitable table out of contact with the rotary supporting-disk upon which the glass is mounted, the construction of the interior member or core being identical with that above described.

In Fig. 9 is shown the manually-operating polishing-shoe reversed in position from that illustrated in Fig. 7, whereby a glass is adapted to be disposed in an upright or normal position therein. With this arrangement of parts the detaching or lifting plunger 32^a is arranged in the socket 27 of the supporting-disk 13 and is provided with a stem 31^a, arranged and operating substantially in the same manner as those hereinbefore described. This disposition of the manually-operated polishing-shoe provides for the permanent arrangement thereof upon the table, inasmuch as it is unnecessary to raise the shoe, as in Fig. 7, to remove the glass.

The mechanism herein described is especially designed for use in polishing glass while hot and semiplastic, but it will be understood that I do not desire to limit myself to the use thereof in this capacity, for the reason that the essential features of the mechanism may be used as a "cold finisher," or for grinding and polishing glass while cold.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. A glass-finishing machine having a rotary table, and means for imparting motion thereto, a plurality of polishing-shoes carried by the table with their axes perpendicular to the plane thereof, a cooperating complementary polishing-shoe arranged with its axis perpendicular to the plane of the table, operating devices for imparting rotary motion to one of the polishing-shoes, means for moving said complementary polishing-shoe axially to bring it into operative relation with a glass fitted upon an aligned polishing-shoe on the table, and devices for raising the glasses successively from contact with the surfaces of the

polishing-shoes carried by the table after removal from alinement with the complemental polishing-shoe, substantially as specified.

2. A glass-finishing machine having a rotary table and means for imparting motion thereto, a plurality of polishing-shoes carried by the table, plungers having their stems mounted in axial bores in said shoes and provided with projecting extremities, a yielding cam for imparting axial movement to the stems to elevate glasses from contact with the shoes, a coöperating polishing-shoe arranged with its axis perpendicular to the table, operating devices for imparting axial movement to said coöperating polishing-shoe, and means for imparting rotary motion to one of the shoes, substantially as specified.

3. A glass-finishing machine having a rotary table and means for imparting motion thereto, a plurality of supporting-disks mounted upon the table, means for rotating said disks independently of the movement of the table, polishing-shoes having extensions removably fitted in sockets in the supporting-disks, plungers having their stems mounted in axial bores in said shoes and disks and having projecting extremities, a cam for imparting axial movement to the stems to elevate the glasses upon said shoes, and a coöperating complemental polishing-shoe, and means for moving the same axially to bring it into operative relation with one of the glass-supporting shoes, substantially as specified.

4. A glass-finishing machine having a rotary table and means for communicating motion thereto, a plurality of supporting-disks mounted upon the table and provided with angular sockets, means for communicating rotary motion to the disks independently of the table, polishing-shoes having angular extensions fitted in said sockets and adapted to engage a glass to be polished, and a complemental polishing-shoe adapted to be fitted over one of the shoes carried by the table and provided with means whereby reciprocatory movement may be imparted thereto, substantially as specified.

5. A glass-finishing machine having a rotary table provided with a vertical main shaft, a plurality of supporting-disks mounted for rotation upon the table and having depending spindles terminating in pinions, a gear having its hub mounted upon a reduced portion of the main shaft and meshing with said pinions, means for communicating continuous rotary motion to said gear, feeding devices

for imparting a step-by-step movement to the main shaft, and complemental shoes, one of which is arranged upon each supporting-disk, substantially as specified.

6. A glass-finishing machine having a rotary table and means for imparting a step-by-step movement thereto, supporting-disks mounted upon the table, means for communicating continuous rotary motion to said disks, polishing-shoes carried respectively by the supporting-disks, complemental polishing-shoes mounted for vertical movement and adapted to be arranged in operative relation with the shoes carried by the table, and means for operating said complemental shoes, said means including an operating-lever, a stem fixed to said complemental shoe and mounted in a guide, and connections between said stem and the lever, substantially as specified.

7. A glass-finishing machine having a movable table and means for communicating step-by-step forward movement thereto, rotary disks having cross-sectionally angular sockets and means for imparting continuous motion thereto, a vertically-reciprocable stem and means for imparting movement thereto, complemental interchangeable polishing-shoes each provided with an axial bore and an angular extension, one of which is adapted to be fitted upon the extremity of said stem and the other of which is adapted to be seated in the socket of one of the supporting-disks, a plunger having its stem fitted in the axial bore of the shoe which is arranged upon the supporting-disk, and an incline or cam for engaging the extremity of said stem and dismounting the glass arranged upon the shoe, substantially as specified.

8. In a glass-finishing machine, the combination with rotary glass-supporting devices, of a side-polisher consisting of a spring-actuated slide fitted loosely in a guide for vertical vibration and provided with a pivotal polishing-shoe which is normally held out of contact with a glass carried by the glass-supporting devices and which is provided with a convexed face, said slide being fitted at its outer extremity with a handle, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALPHONSUS D. BUSAM.

Witnesses:

HARRY TAGGART,
GEO. F. WENTZ.