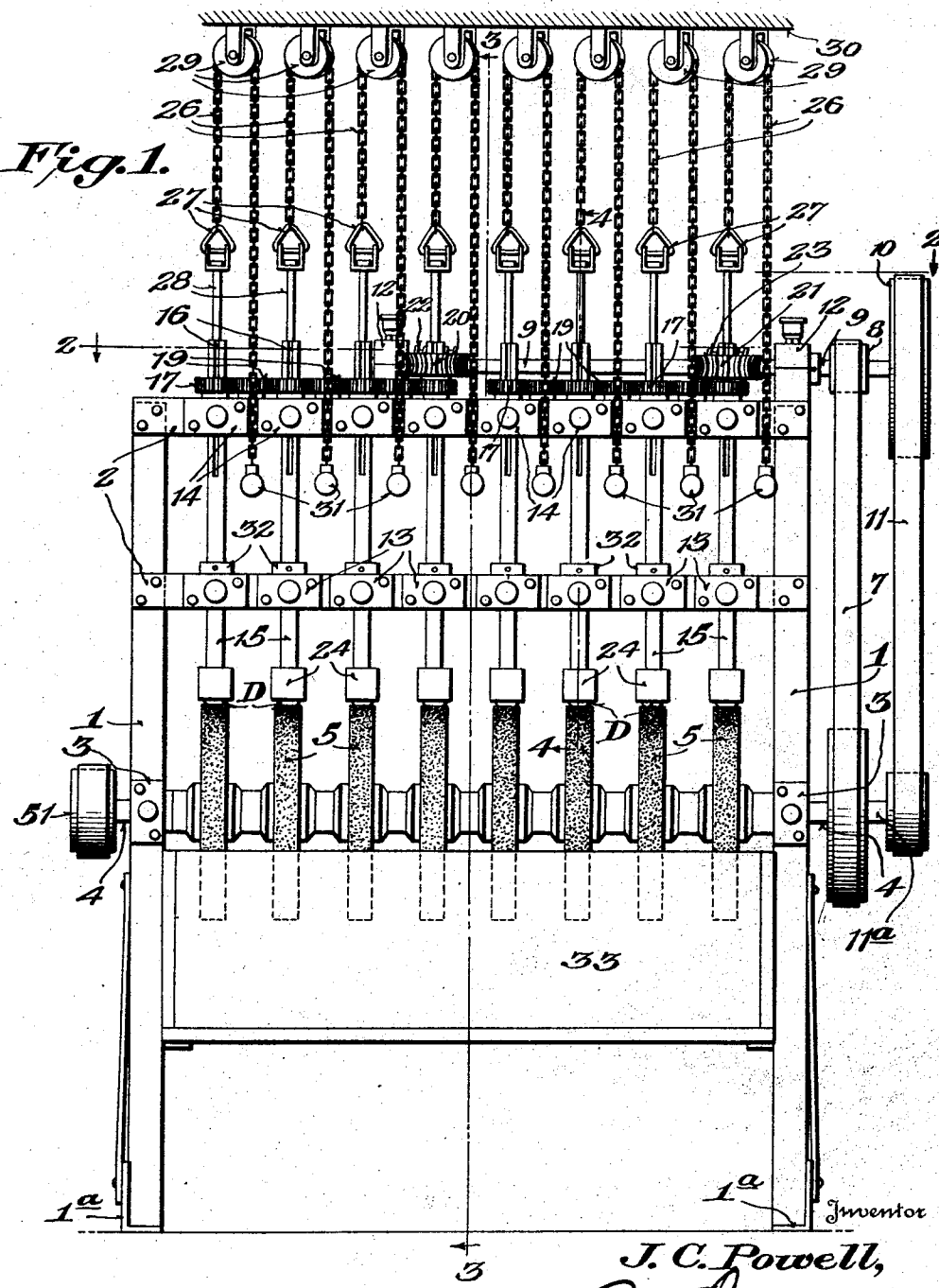
Nov. 3, 1925. 1,559,643

J. C. POWELL

MACHINE FOR POLISHING OR GRINDING GLASS KNOBS AND SIMILAR ARTICLES

Filed Dec. 7, 1922 3 Sheets-Sheet 1

Fig. 1.



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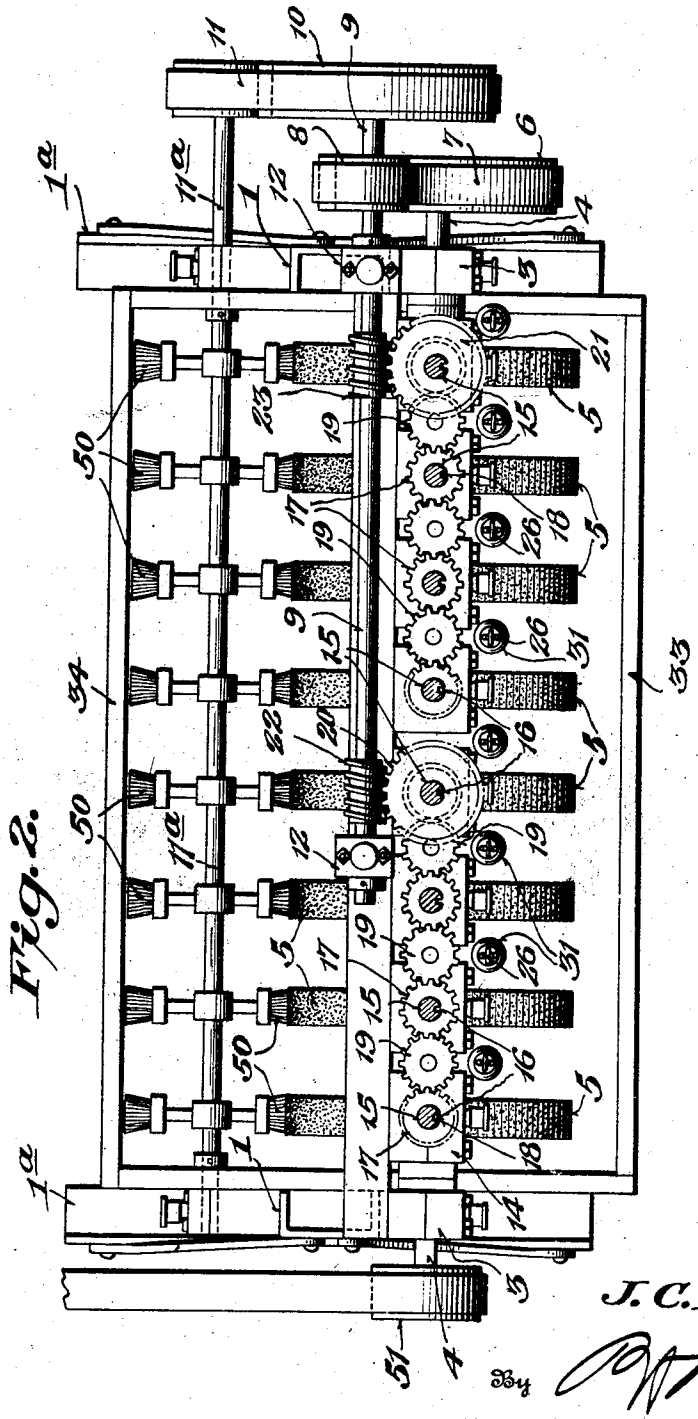


Fig. 2.

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Filed Dec. 7, 1922 3 Sheets-Sheet 3

Fig. 3.

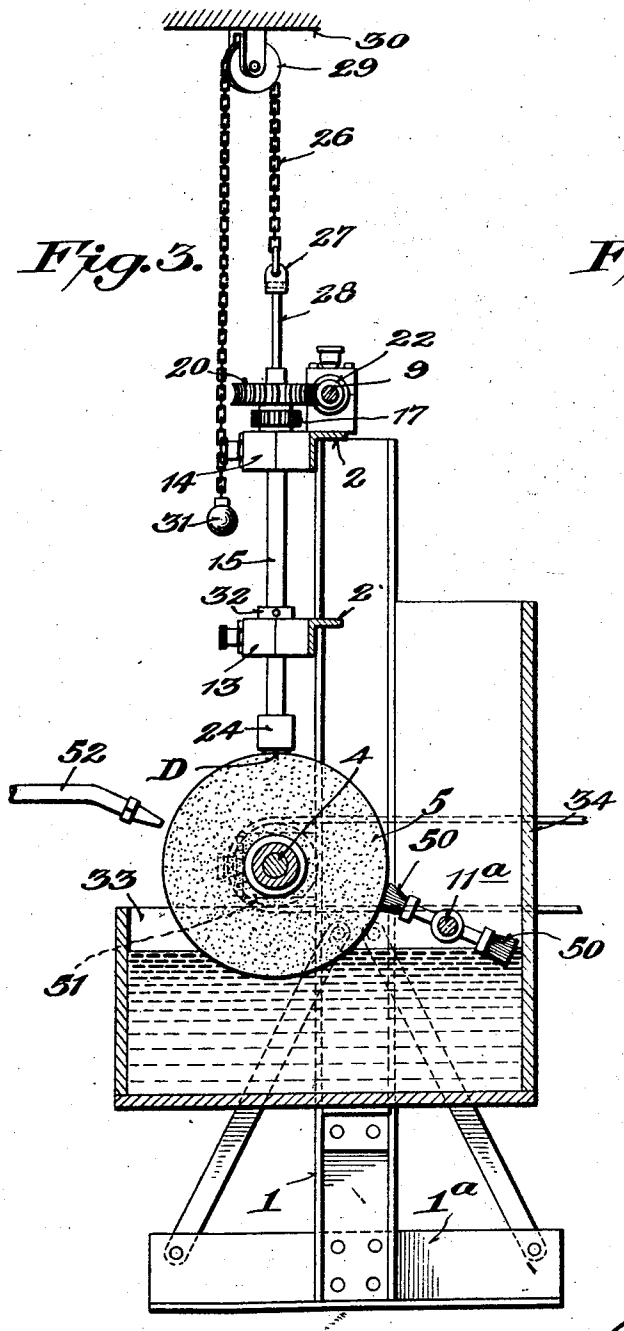
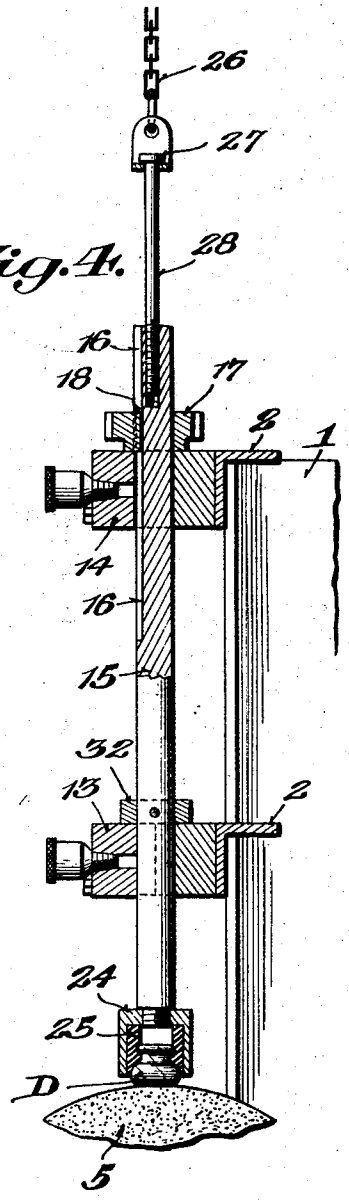


Fig. 4.



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Patented Nov. 3, 1925. 1,559,643

UNITED STATES PATENT OFFICE.

JAMES CHESTER POWELL, OF BYESVILLE, OHIO, ASSIGNOR TO CAMBRIDGE GLASS COMPANY, OF CAMBRIDGE, OHIO.

MACHINE FOR POLISHING OR GRINDING GLASS KNOBS AND SIMILAR ARTICLES.

Application filed December 7, 1922. Serial No. 605,422.

To all whom it may concern:

Be it known that I, JAMES CHESTER POWELL, citizen of the United States, residing at Byesville, in the county of Guernsey and State of Ohio, have invented certain new and useful Improvements in Machines for Polishing or Grinding Glass Knobs and Similar Articles, of which the following is a specification.

This invention relates to certain new and useful improvements in machines for polishing or grinding glass knobs or similar articles, and pertains more especially to a machine of this character which can be used to polish or grind knobs or similar articles by means of rotating wheels.

The primary object of the invention is to provide a machine of this type which enables the knobs to be expeditiously polished or ground, and more particularly by the employment of a series of holders which are continuously rotated and which through the action of gravity, maintain the work against the polishing or grinding wheel, the holders being independent of one another and being formed to allow the work to be easily and quickly applied to and removed therefrom during the operation of the machine.

A further object of the invention is to provide a machine of this character wherein a single operator is enabled to successively load and unload the work holders as the polishing of the individual pieces of the work is completed so that the entire machine may be maintained at full capacity throughout the operation thereof and without stopping.

A still further object of the invention is to provide a machine wherein the holders are mounted so as to be easily and quickly moved into and out of grinding position so as to permit loading and unloading thereof.

The invention also aims to provide means for attaining the foregoing objects, which is of simple character and efficient in operation.

Still further and other objects will be later set forth and manifested in the course of the following description.

In the drawings:

Figure 1, is a front elevation of the invention;

Figure 2, is a section on line 2—2 of Figure 1;

Figure 3, is a section on line 3—3 of Figure 1, and

Figure 4, is an enlarged sectional view on line 4—4 of Figure 1.

In proceeding in accordance with the present invention, a frame is employed which embodies bases 1^a having vertical standards 1 suitably secured thereto, and horizontal beams 2 secured to the standards 1, the latter having bearings 3, secured thereto in which a shaft 4 is journaled, the shaft carrying a series of grinding or polishing disks or wheels 5. The shaft 4 is provided with a pulley 6 which drives a belt 7, the latter being trained over a pulley 8 mounted on a shaft 9, the shaft being journaled in bearings 12 mounted on the upper beam 2 and being provided with a pulley 10 engaged by a belt 11, the belt 11 driving a shaft 11^a which latter is mounted in a tank 33, having a raised back 34. Shaft 11^a carries a series of brushes 50, which revolve and dip into a mixture of polishing material or agent contained in tank 33, and brush the material onto the cork wheel peripheries when cork wheels are employed, thus maintaining the wheels covered with the polishing agent. Shaft 4 is driven by a pulley 51 which latter is operated from any suitable source of power.

The beams 2 have two series of bearings 13 and 14 secured thereto, the bearings being vertically alined and spaced and slidably supporting a series of vertical shafts 15, which latter have key-ways 16 extending axially thereof. Gears 17 are freely slidable on the shafts 15 and have keys 18 engaging in the key-ways 16 so as to effect driving of the shafts 15, upon rotation of the gears. The gears 17 rotate upon the upper horizontal beam 2 and are held against downward movement thereby and are driven by means of interposed gears 19 which latter are journaled in the spaces between the journals 14.

In the present illustrated machine there are eight shafts disclosed, arranged in two groups of four each for convenience of operation. All of the shafts are rotated in unison and in the same direction and accordingly the first shaft of each group is equipped with a worm gear designated 20

and 21 respectively, and slidably keyed to the shafts 15. The shaft 9 has worms 22 and 23 fixedly secured thereto which are in mesh with and drive the worm gears 20 and 21.

The lower ends of the shafts 15 are equipped with work holders or chucks 24, which are in the form of inverted cups, or sockets. The work holders or chucks are threadedly connected to the shafts and are interiorly provided or lined with sleeves 25 preferably of rubber, or other flexible means capable of frictionally gripping and holding the glass door or other knobs D during polishing thereof. The nature of the lining or work gripping means 25 is such that the glass knobs may be easily and quickly inserted in and removed from the chucks by the expenditure of relatively slight force. For the purpose of enabling the work holders or chucks to be individually or independently loaded and unloaded and without disturbing the grinding or polishing action of the wheels on the work in the remaining holders or chucks and to thus enable the machine to continuously and uninterruptedly function, means is provided to enable the work holders to be raised upwardly from the various grinding wheels which embodies chains 26 swivelly connected at 27 to rods 28 that are threadedly connected to the shafts 15. The chains are trained over pulleys 29 affixed to a suitable overhead support 30 and are equipped with hand grips 31, and by grasping the latter, the operator may raise the shafts 15 and thereby the work holders 24 up from the grinding wheels to permit of loading and unloading of the holders. In order to limit downward movement of the shafts and also the extent of grinding of the outer faces of the door knobs, the shafts are provided with fixed collars 32 which engage the bearings 13.

In operation, power applied to the pulley 51 drives belt 7 and belt 11 and thereby brushes 50, coating the polishing wheels with the polishing agent. The shaft 9 through worms 22 and 23 drives worm gears 20 and 21 respectively and through the gears 17 and 19 all of the shafts 15 and the work holders 24 of the latter. The work holders are raised to be loaded by downward pull upon the handles 31 and upon release gravitate downwardly until arrested by the stops 32 or the engagement of the knobs D with the grinding wheels 5. When the outer faces of the knobs are completely ground or polished, the stops 32 will engage the bearings 13, and prevent further grinding or polishing, by holding the shafts against further downward movement. From the foregoing it will be seen that the operator can readily observe the completion of the polishing action on all of the knobs and upon the completion of such action on any one knob, can remove or unload the knob from its holder and replace same with another knob ad infinitum to thereby continuously and uninterruptedly maintain the machine in operation and at substantially full capacity.

The work holders are continuously rotated so that the entire areas of the outer faces of the knobs are ground or polished, the holders not only being selectively and independently movable to permit loading and unloading thereof, but are also automatically restored to grinding position upon loading and release of the handles 31.

The wheels 5 when used for polishing are of cork, and for grinding purposes are replaced by stone wheels, so that the same machine can be used for either purpose by changing the wheels. When stone wheels are used, belt 11 is disconnected from the shaft 11^a, and water nozzles 52 as indicated in Figure 3 are employed to wet the stone wheels. The drawings illustrate grinding or stone wheels.

What is claimed is:—

1. In a polishing machine, a frame, a series of rotatable abrasive members carried by the frame, two series of vertical slidable and spaced shafts carried by the frame, means to slide the shafts, work holders carried by the shafts, a gear on each shaft, gears mounted on the frame in the spaces between the shafts of each series and meshed with the gears of the shafts, a second gear on one shaft of each series of shafts, a horizontal shaft, a pair of gears on the horizontal shaft meshed with the respective second gears of the said two shafts, and means to drive the horizontal shaft.

2. In a polishing machine, a frame, a series of abrasive members rotatably carried by the frame, an upper and a lower horizontal member on the frame disposed above the abrasive members, two series of vertical shafts, journaled in the horizontal members, work holders carried by the shafts, a stop on each shaft engageable with the upper face of the journals of the lower horizontal member to limit downward movement of the shafts, a gear slidably keyed on each shaft and rotatably seated upon the upper face of the journals of the upper horizontal member, gears journaled between the journals of the upper horizontal member and interposed in the spaces between adjacent shafts and intermeshing with the adjacent gears of the shafts of each series, a horizontal shaft journaled on the upper horizontal member and having a pair of worms thereon meshing with one of the gears on the respective series of shafts, and means to effect sliding of the shafts.

3. In a polishing machine, a frame, a series of abrasive members, rotatably carried

by the frame, an upper and a lower horizontal member on the frame disposed above the abrasive members, vertical shafts journalled in the horizontal members, work holders carried by the shafts, a stop on each shaft engageable with the upper face of the journal of the lower horizontal member to limit downward movement of the shafts, a gear slidably keyed on each shaft and rotatably seated upon the upper face of the journals of the upper horizontal member, gears journaled on the journals of the upper horizontal member and being interposed between and intermeshing with the shaft gears, driving means for one of the shafts, and means to effect sliding of the shafts.

In testimony whereof I affix my signature.

JAMES CHESTER POWELL.