July 22, 1924. 1,502,136

C. W. DAKE

GLASS POLISHING MACHINE

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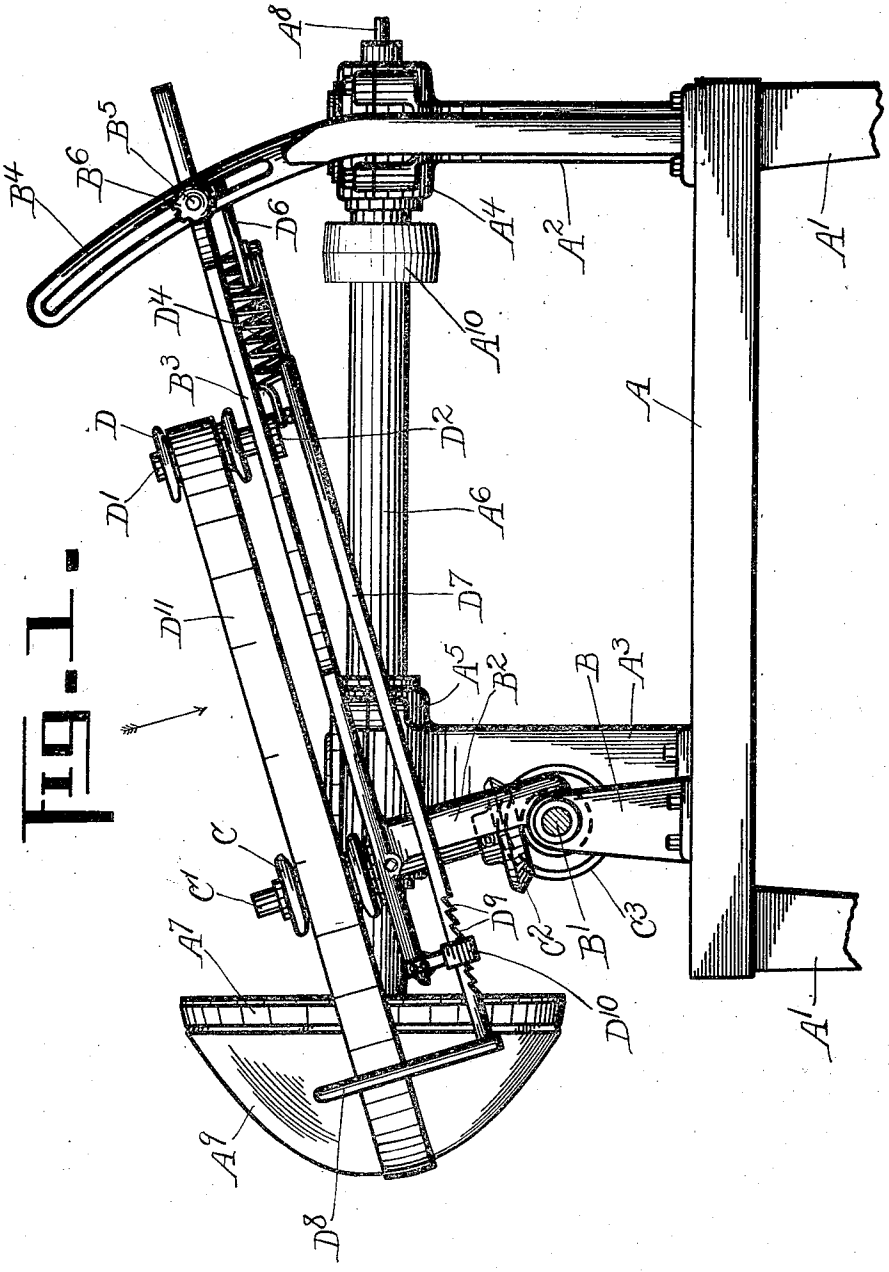



Fig. 1.

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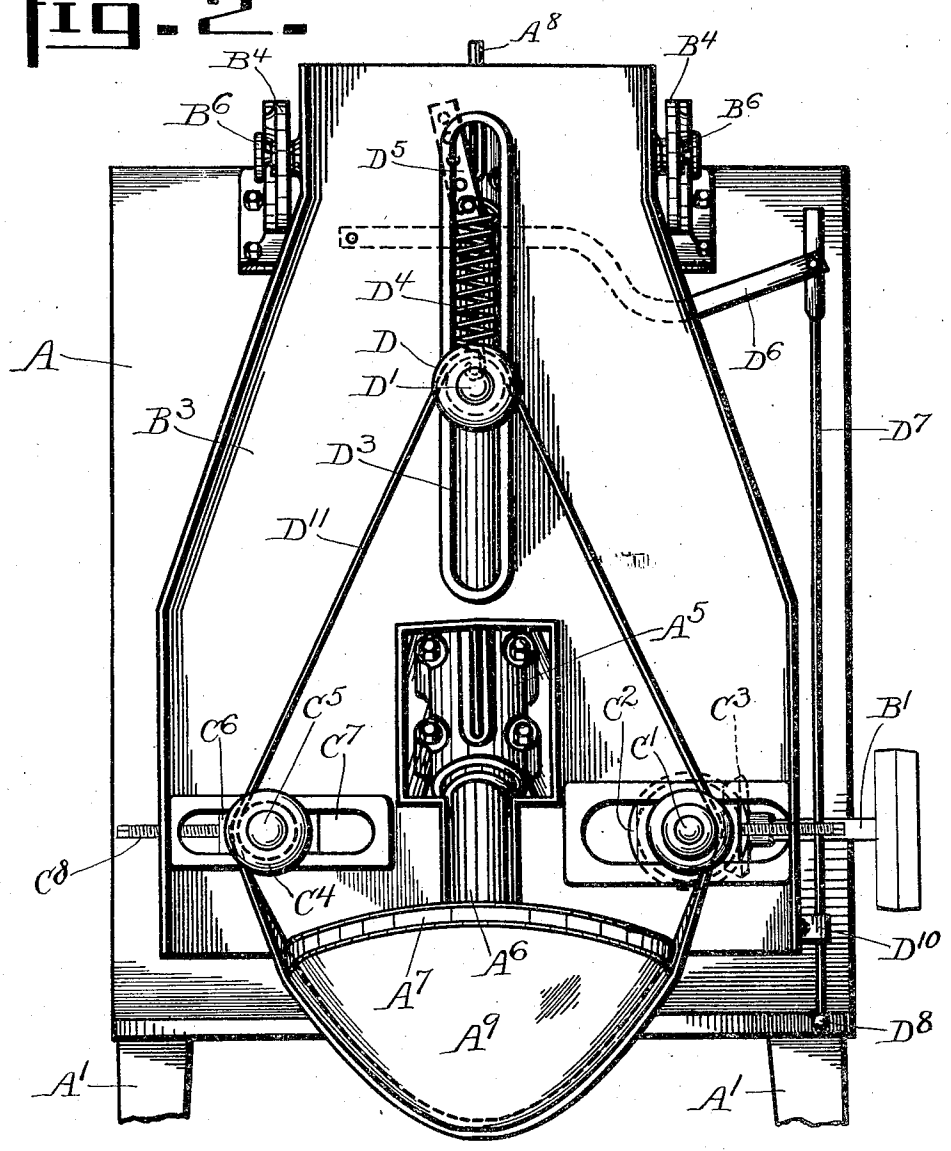
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Fig. 2.




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Patented July 22, 1924. 1,502,136

# UNITED STATES PATENT OFFICE.

CHARLES W. DAKE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE PYLE-NATIONAL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

## GLASS-POLISHING MACHINE.

Application filed October 2, 1922. Serial No. 591,783.

*To all whom it may concern:*

Be it known that I, CHARLES W. DAKE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Glass-Polishing Machines, of which the following is a specification.

My invention relates to an improved type of polishing machine for polishing the outside of bowl-shaped solids, as for instance, the reflector bowl for an electric headlight or searchlight. It has for one object to provide a new and improved form of automatic machine polisher which will polish the bowl without changing its shape. Another object is to provide a polishing device which will polish the bowl without any tendency toward opening up or enlarging the tool marks which may be present. Other objects will appear from time to time in the specification.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a side elevation;

Figure 2 is a view looking in the direction of the arrow shown in Figure 1;

Like parts are indicated by like characters in the drawings.

A is the bed plate mounted on legs A′. $A^2$ and $A^3$ are bearing brackets. $A^4$ and $A^5$ are bearings supporting the spindle $A^6$ upon which is mounted a chuck plate $A^7$. $A^8$ is an exhaust pipe through which air may be sucked through the hollow shaft $A^6$ from the interior of the bowl or work $A^9$ on the chuck plate $A^7$ so that the work can be held against the plate by air pressure. $A^{10}$ is a belt pulley on the shaft $A^6$ by which the shaft or spindle may be rotated from any suitable source of power not here shown.

B B are polishing frame brackets projecting upwardly from the main frame A. They carry a drive shaft B′ driven from any suitable source of power not here shown. Pivoted on this drive shaft are grinding frame legs $B^2$ which legs project downwardly from the flat grinding frame $B^3$, the rear end of which frame is supported on the quadrant arms $B^4$ which are slotted to engage a pin $B^5$ and locking wheel $B^6$ so that the inclination of the grinding frame may be varied by the operator.

C is a driving pulley mounted on the pulley shaft C′, the lower end of which shaft carries a miter gear $C^2$ in mesh with a miter gear $C^3$ on the drive shaft B′. $C^4$ is an idler pulley mounted on idler shaft $C^5$. This shaft projects upwardly from an adjustable block $C^6$ slidably mounted in the slot $C^7$ and adapted to be adjusted in said slot by means of an adjusting screw $C^8$. The drive shaft C′ is mounted in a similar block, the miter gear $C^3$ being feathered to slide along the drive shaft B′ to maintain contact.

D is a spring held idler pulley mounted on the shaft D′ which is carried by the sliding block $D^2$ which block slides in the slot $D^3$. $D^4$ is a spring anchored at one end on the block $D^2$ and at the other end on plate $D^5$ which plate is associated with the lever $D^6$. The lever $D^6$ may be rotated by means of the lever rod $D^7$ and handle $D^8$, the rod $D^7$ being notched at $D^9$ to engage the stop $D^{10}$ so that the tension on the spring may be adjusted. $D^{11}$ is a polishing belt passing around the three pulleys and around the work, the pulleys being so positioned as to insure that this belt will be in contact with all parts of the work.

I have used in the claims language having to do with the line of approach of the belt with respect to the work. By this it will be understood that I mean the line in the plane of the belt along which the belt approaches it or recedes from the work and the term line of approach is therefore used as a generally descriptive term indicating the direction in which the two sides of the belt approach or recede from the work.

The use and operation of my invention are as follows:

The bowl or the work to be polished is brought into engagement with the chuck, air is exhausted from between the work and the chuck to hold the work in position, the tension on the spring withheld pulley is released, the drive pulley and the idler pulley are properly positioned, the belt is put in place guided by the three pulleys and extending around the work, the tension on the spring is properly adjusted and the angle of inclination of the polishing frame is adjusted until the belt properly engages the work, the driving means are then thrown into operation to rotate the work and drive the belt. Preferably the work is rotated at something like one hundred and ten revolutions in a minute and the belt is fed at a rate of approximately thirty feet per minute, though these speeds

might be radically varied depending on the rate of polishing desired and the character of the material being polished, its shape and the character of the polishing abrasive being used.

Because the only thing that positions the belt on the work is the work itself and because the tension in the belt is substantially constant throughout its length, the pressure of the belt against the work is also constant and therefore there is no tendency to change the shape of the work as polishing proceeds.

I claim:

1. In a polishing machine, means for rotating the work, a polishing belt adapted to be looped about the work, and means for driving it across the face of the work in a plane inclined to the axis of rotation thereof.

2. In a polishing machine, means for rotating the work, a polishing belt adapted to be looped about the work and means for driving it across the face of the work in a plane inclined to the axis of rotation thereof, and means for adjusting the inclination of the plane of the belt with respect to the axis of rotation of the work.

3. In a polishing machine, means for rotating the work, a polishing belt adapted to be looped about the work, and means for driving it across the face of the work in a plane inclined to the axis of rotation thereof, and means for adjusting the tension of the belt and its pressure upon the work.

4. In a polishing machine, means for rotating the work, a polishing belt adapted to be looped about the work and means for driving it across the face of the work, in a plane inclined to the axis of rotation thereof, and means for angularly adjusting the line of approach of the belt with respect to the work.

5. In a polishing machine, means for rotating the work, a polishing frame mounted for angular adjustment with respect to the axis of rotation of the work, a belt passing about the work and means on the polishing frame whose angular position with respect to the frame is fixed for guiding and positioning the belt.

6. In a polishing machine, means for rotating the work, a polishing frame mounted for angular adjustment with respect to the axis of rotation of the work, a belt passing about the work and means on the polishing frame whose angular position with respect to the frame is fixed for guiding and positioning the belt, said means comprising a plurality of belt pulleys, the polishing frame being slotted, bearing blocks slidable in said slots and adapted to support said pulleys, and means for adjustably positioning said blocks in said slots.

7. In a polishing machine, means for rotating the work, a polishing frame mounted for angular adjustment with respect to the axis of rotation of the work, a belt passing about the work and means on the polishing frame whose angular position with respect to the frame is fixed for guiding and positioning the belt, said means comprising a plurality of belt pulleys, the polishing frame being slotted, bearing blocks slidable in said slots and adapted to support said pulleys, and means for adjustably positioning said blocks in said slots, a drive shaft and a driving connection between such shaft and one of said pulleys, the continuity of such connection being independent of the adjusting movement of the block.

8. A polishing machine comprising a work supporting spindle and means for rotating it, a separate drive shaft below it and perpendicular thereto, a polishing frame inclined to the spindle, slotted where they intersect and pivoted on the drive shaft, an adjusting quadrant at the rear end of the frame to permit angular adjustment, the frame being penetrated by adjusting slots parallel with the drive shaft and perpendicular to it, blocks slidable therein and pulleys mounted for rotation on said blocks, means for positively adjusting one of said blocks, a spring adapted to displace one of the blocks along its slot and means for varying the tension of the spring, a driving connection between the drive shaft and one of said pulleys and a polishing belt passing about said pulleys and across the face of the work.

9. In a polishing machine a spindle and means for rotating it, a work carrying chuck thereon, a polishing frame inclined to and intersecting the spindle and a polishing belt carried thereon, and means for driving the belt across the face of the work.

Signed at Chicago, county of Cook, and State of Illinois, this 28th day of September, 1922.

CHARLES W. DAKE.