Aug. 15, 1933. J. H. FOX 1,922,912

PLATE GLASS POLISHING BLOCK

Filed Oct. 24, 1929 2 Sheets-Sheet 1

Fig. 2.

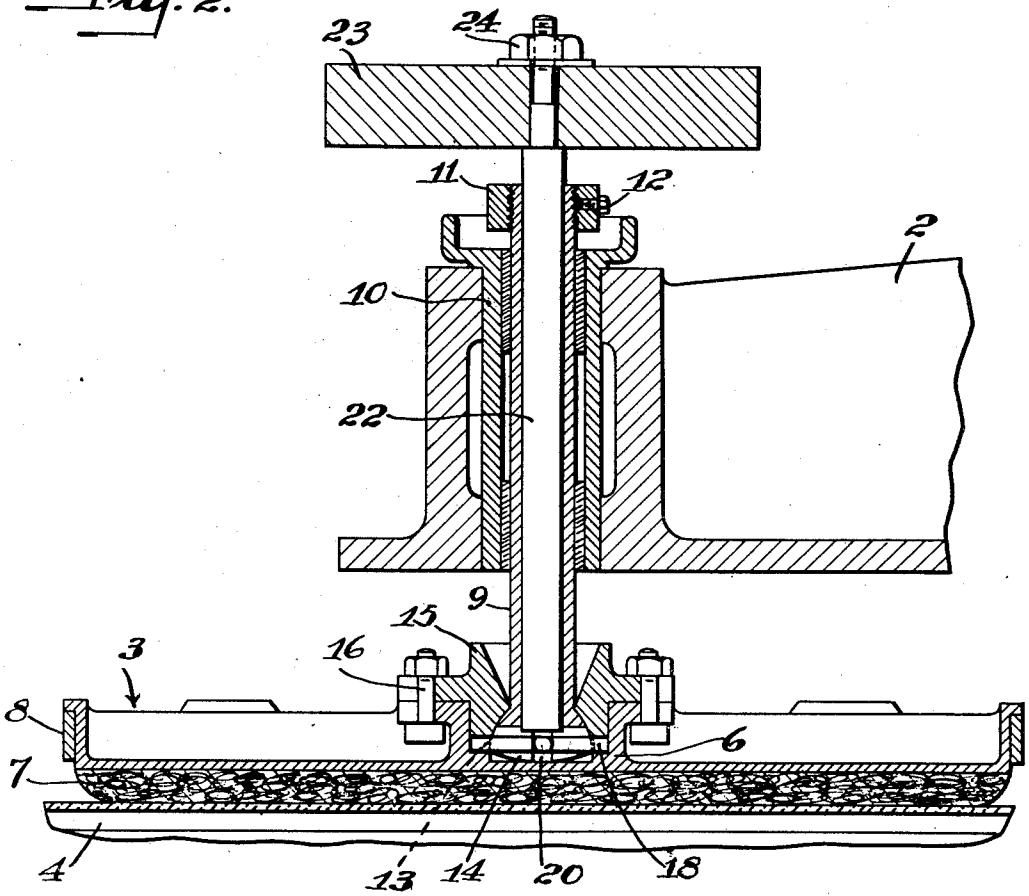
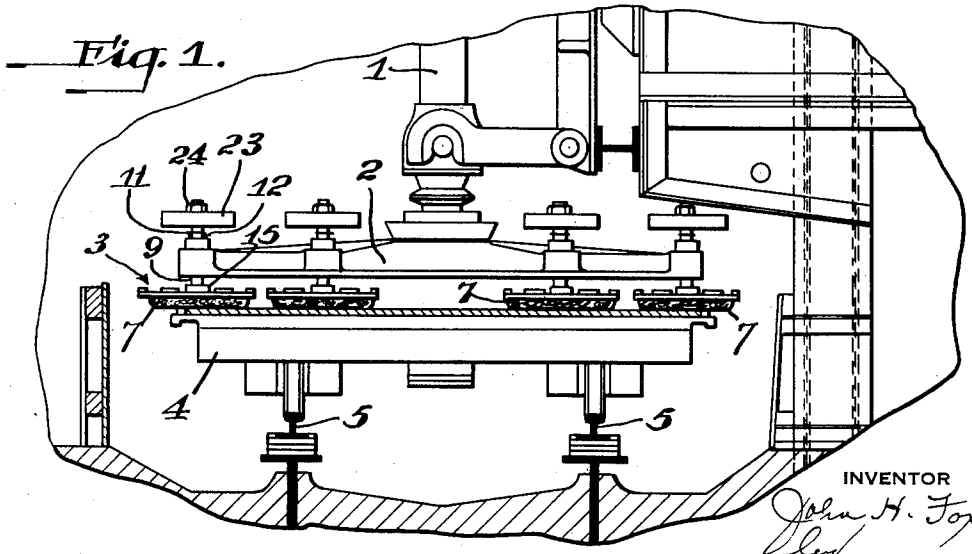


Fig. 1.



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Filed Oct. 24, 1929 2 Sheets-Sheet 2

Fig. 9.

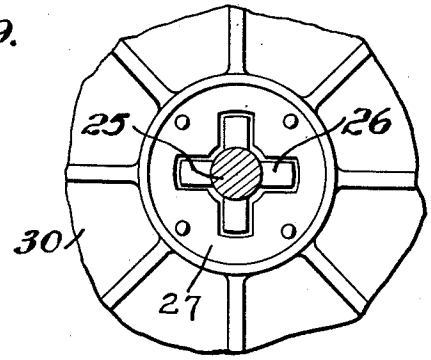
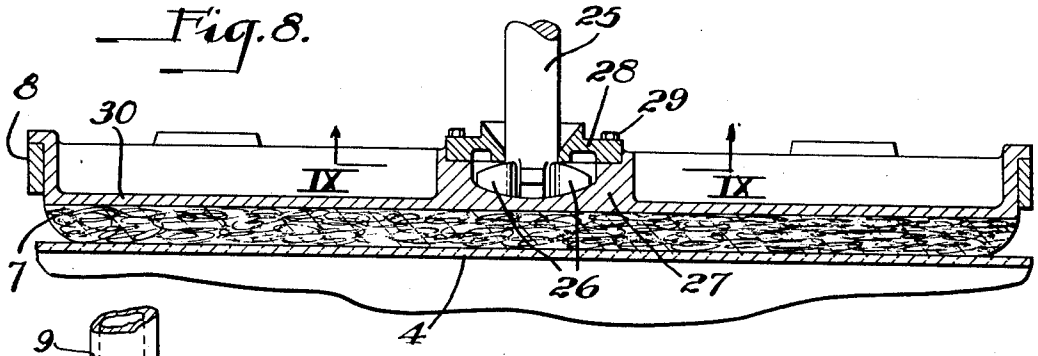


Fig. 8.



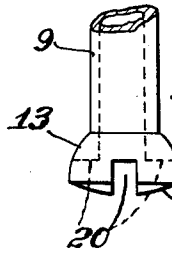
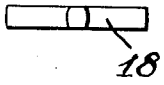


Fig. 3.

Fig. 5.



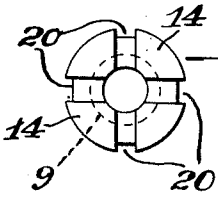


Fig. 4.

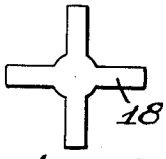


Fig. 6.

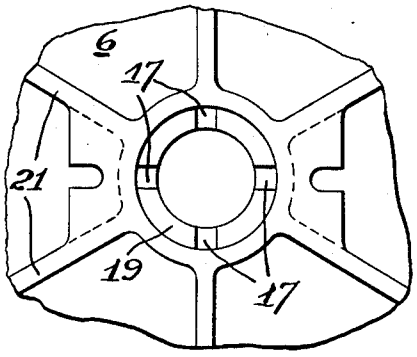


Fig. 7.

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UNITED STATES PATENT OFFICE

1,922,912

PLATE GLASS POLISHING BLOCK

John H. Fox, Pittsburgh, Pa., assignor to Pittsburgh Plate Glass Company, a Corporation of Pennsylvania

Application October 24, 1929. Serial No. 402,086

3 Claims. (Cl. 51—195)

The invention relates to polishing blocks for use in surfacing plate glass. In a continuous polishing operation, the plates to be polished are carried on tables beneath driven runners. These runners comprise frames in the form of spiders having vertical bearings or journals through which the spindles of the polisher blocks extend such blocks being mounted for universal movement on the lower ends of the spindles. The polishing blocks are heavy discs of cast iron or steel faced with felt, considerable weight being required in order to get the necessary polishing effect on the glass. The block is supported on its spindle at a point above its center of gravity and when the runner is rotated at a high rate of speed, it tends to cause the block to tilt about its center of support, so that the block, under these conditions, no longer bears with uniform pressure upon the glass. Its polishing efficiency is reduced by this condition of uneven pressure and the outer edges of the glass sheets over which the runner passes are liable to be under-polished.

The object of the present invention is to overcome the tendency of the polishing block to tilt, and to secure a substantially uniform pressure of the felt upon the glass. This is preferably accomplished (1) by using a block of very thin, light construction (so that the effect of centrifugal force tending to tilt the block is reduced to a minimum) and (2) by getting the necessary pressure of the felt on the glass by mounting a weight upon the spindle of the block to compensate for the reduction of weight in the block, itself. This preferred construction and a modification are shown in the drawings, wherein:

Figure 1 is a partial section and partial side elevation showing a runner equipped with the improved blocks. Fig. 2 is a section on an enlarged scale through one of the blocks. Figs. 3 and 4 are detail views of the lower end of the hollow spindle, Fig. 3 being a side elevation and Fig. 4 a bottom plan view. Figs. 5 and 6 are detail views of the locking elements interposed between the polisher block and the lower end of the spindle, Fig. 5 being a side elevation and Fig. 6 being a plan view. Fig. 7 is an enlarged plan view of the central portion of the polisher block. And Figs. 8 and 9 are detail views showing a modification, Fig. 8 being a vertical section and Fig. 9 being a section on the line IX—IX of Fig. 8.

Referring to the drawings, 1 is the casing of the runner spindle, driven by means not shown, and carrying at its lower end the runner 2 in the form of a spider. This spider carries a plurality of runner blocks 3, to which the present invention is particularly directed and is mounted above the table 4 carrying the glass to be polished which is one of a number mounted for movement beneath a series of runners similar to the runner 2. The table is mounted upon the track 5 and is moved along beneath the runners 2 by any suitable means.

The polishing block employed is shown in its preferred form in Figs. 2 to 7, wherein 6 is the body of the block carrying on its lower face the square felt 7 held in position at its corners by means of a clamping ring 8, the section of Figs. 2 and 8 being taken intermediate such corners. The block 6 is carried by a hollow spindle 9 mounted for rotation in the bearing sleeve 10 and also for free vertical movement through such bearing, the bearing being carried by one of the arms of the runner spider 2. The sleeve is provided at its upper end with a collar 11 which is threaded to the sleeve and held against rotation by means of a set screw 12. This collar prevents the sleeve from being withdrawn by gravity from the spider arm 2 when such arm is lifted to carry the runner block away from the glass.

The lower end of the spindle 9 is provided with a ball head having the rounded surfaces 13 and 14 to permit rocking movement of the runner block with respect to the spindle, and such head is held in position in the runner block by means of the cap 15 secured by a series of bolts 16. The central portion of the block 6 in opposition to the lower end of the spindle is provided with four slots 17 and in these slots is mounted the locking member 18 shown in Figs. 5 and 6, such locking member extending above the surface of the ring 19 in which the slots 17 are cut. The lower end of the spindle 9 is also provided with four slots 20, as indicated in Figs. 3 and 4 which are adapted to fit down over the arms of the member 18, so that when the parts are in assembled position, as shown in Fig. 2, the spindle is locked to the runner block 6 so that it rotates therewith. At the same time, the runner block is free to tilt with respect to the spindle 9 by reason of the rounded surfaces 13 and 14 on the lower end of the spindle 9, the surface 13 engaging a similar surface on the locking block 15 and the surface 14 coming in opposition to the flat upper surface of the polisher block. The polisher block 6 is preferably of relatively light cast construction provided with the ribs 21 for giving the necessary stiffness.

A block of relatively light construction, such as above described, has little tendency to tilt under

the influence of centrifugal force, but such a block does not exert sufficient pressure upon the glass to give the necessary polishing action, and in order to add this additional weight, the rod 22 provided at its upper end with a weight 23 is employed. This rod extends slidably through the hollow spindle 9 and bears at its lower end upon the locking member 18, such locking member in turn bearing against the top surface of the polisher block. The weight 23 may be made of any desired size in order to give the necessary pressure upon the polisher block and is held in position by means of the nut 24 threaded to the reduced upper end of the rod 22.

Due to its rotation in its bearing, the spindle 9 moves very freely in a vertical direction and so permits the block to exert uniform pressure upon the glass, the vertical movement of the spindle in its bearing being freer than is the case where the block is mounted for rotation on the lower end of the spindle. The pressure of the weight 23 is exerted more positively upon the block due to its mounting upon the rod 22 than is the case where the weight is mounted upon the spindle itself. This expedient also relieves the lower surface 14 of the spindle head of the wear which would be imposed upon it if the weight were mounted directly upon the spindle. With a polisher block thus weighted there is practically no tendency of the spindle to tilt in its bearing as is the case where a heavy polisher block is used and in which centrifugal force tends to throw the block outward from the center of rotation of the runner and thus tilt the spindle.

Figs. 8 and 9 illustrate a modification in which the spindle 25 is made solid instead of hollow. This spindle is mounted in the spider arm 2 the same as in Fig. 2 and carries at its upper end a weight corresponding to the weight 23 in the Fig. 2 construction. The head of the solid spindle 25 is formed in the shape of a cross with four arms 26 and such arms fit into corresponding recesses in the central portion 27 of the polisher block. A positive connection is thus provided between the polisher block and the spindle so that the spindle is rotated with the block the same as in the Fig. 2 construction. The upper and lower surfaces of the spindle head are rounded, as indicated in Fig. 8, and engage correspondingly curved surfaces on the parts 27 and 28 so that the block is free to tilt relative to the spindle. The cap 28 is held in position by means of the bolts 29. The body of the block 30 is the same in this construction as in the preferred construction.

What I claim is:

1. The combination with a driven runner having a vertical bearing, a polishing block, a spindle mounted in the bearing for free vertical and rotary movement and connected positively to the block so as to rotate therewith but with the block free to tilt universally with respect to the axis of rotation of the spindle, and a weight above the bearing mounted for rotation with the spindle and applying pressure axially thereof upon the center of the block.

2. The combination with a driven runner having a vertical bearing, a polishing block, a hollow spindle mounted in the bearing for free vertical and rotary movement and having rocking engagement with the block arranged so that the block positively rotates the spindle, and a rod extending slidably through the spindle and provided at its upper end with a weight.

3. The combination with a driven runner having a vertical bearing, a polishing block, a hollow spindle mounted in the bearing for free vertical and rotary movement and having rocking engagement with the block, a locking member interposed between the center of the block and the end of the spindle so that the rotation of the block is positively transmitted to rotate the spindle, a rod extending slidably through the spindle and bearing against the locking member, and a weight mounted upon the upper end of the rod.

JOHN H. FOX.