Jan. 31, 1933. T. J. LEYLAND 1,895,934

MEANS FOR WASHING AND CLEANING GLASS SHEETS

Filed Feb. 28, 1929

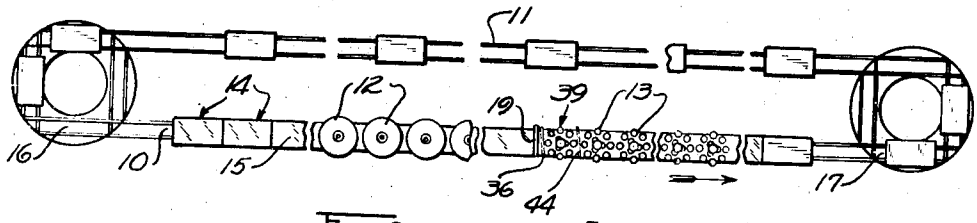


Fig. 1.

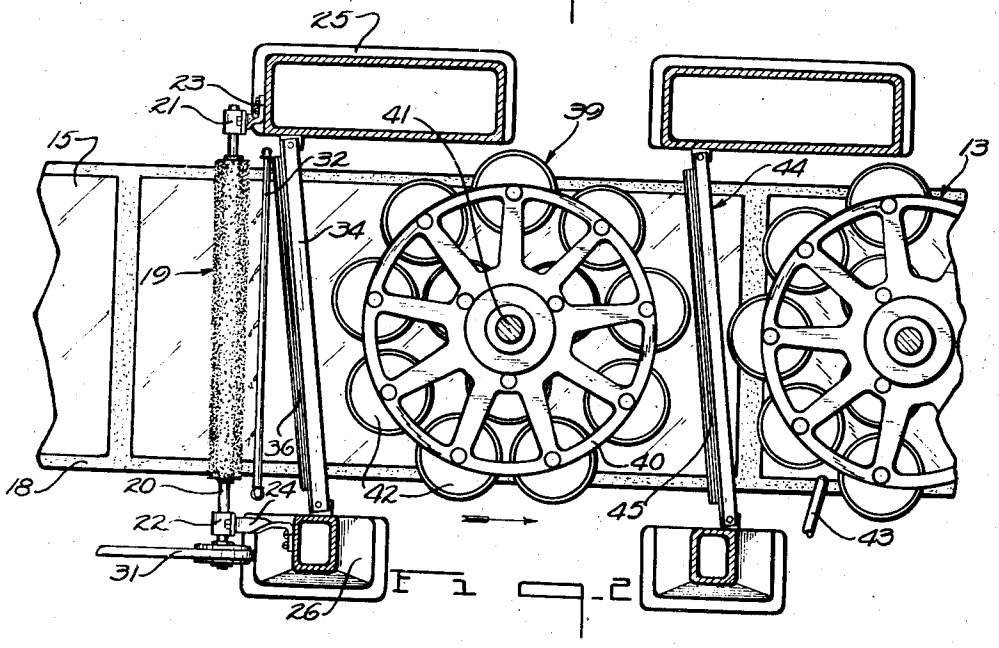


Fig. 2.

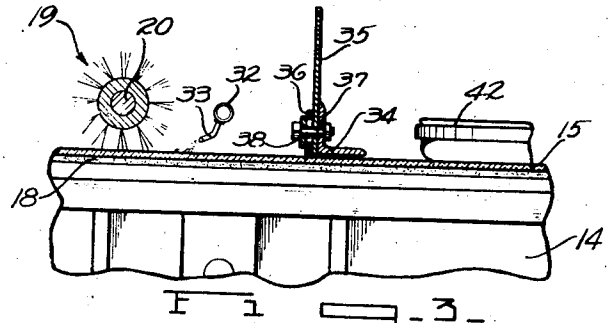


Fig. 3.

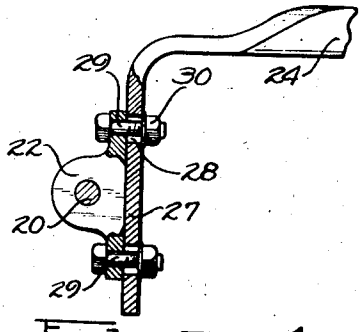


Fig. 4.

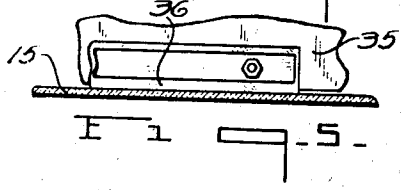


Fig. 5.

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UNITED STATES PATENT OFFICE

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MEANS FOR WASHING AND CLEANING GLASS SHEETS

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This invention relates broadly to improvements in washing and cleaning apparatus, and is primarily designed for use in the continuous system for surfacing sheet glass.

In the so-called continuous system, a plurality of tables are arranged end to end in a continuous line and are adapted to carry glass sheets mounted thereupon successively beneath and in engagement with a series of grinding and polishing tools. The glass sheets are ordinarily secured upon the tables by imbedding them within a layer of plaster of Paris or the like, one surface of the sheet being first ground and then polished, after which the sheet is removed from the table, turned over, again secured thereon, and the second surface then ground and polished. The glass sheets are usually spaced slightly from one another so that the plaster or other cement is also positioned between the adjacent edges of the adjoining sheets as well as at the side edges thereof whereby to more firmly secure them in position.

During the grinding operation, however, portions of the plaster at the edges of the sheets quite often become loose and the glass sheets are sometimes cracked. It is therefore desirable, after the glass sheets pass from beneath the grinders and before they are passed to the polishers, that a relatively thin coating or film of plaster of Paris or other suitable cement be again spread over the surfaces thereof. This additional plaster is provided to fill in any spaces between the sheets or at the side edges of the sheets which may result from the working loose of the plaster during grinding and to also fill in the cracks where the sheet may have become broken, the net result being that this additional plaster spread upon the sheets after the grinding operation will act to again firmly secure the sheets in position prior to polishing.

The general object of this invention is the provision of improved apparatus for washing and cleaning the upper surfaces of the glass sheets in a thorough and efficient manner and preferably at a point intermediate the grinding and polishing units so as to remove all of the surplus plaster remaining thereupon and thus prepare the sheets for polishing. The washing and cleaning apparatus herein provided is adapted to be disposed in a fixed position and to treat the surfaces of the sheets as they are carried therebeneath. It is also desirable that the sheets be washed and cleaned prior to polishing in order to remove therefrom any abrasive material, glass dust or splinters remaining thereon from the grinding operation since should this glass dust, etc. be picked up bv the polishing members, the glass is very apt to be scratched and the quality of polish greatly impaired.

Other objects and advantages of the invention will become more apparent during the course of the following description when taken in connection with the accompanying drawing.

In the drawing forming a part of this application and wherein like numerals are employed to designate like parts throughout the same,

Fig. 1 is a plan view showing the general layout of one continuous system for surfacing sheet glass.

Fig. 2 is a plan view of the washing and cleaning apparatus provided by the present invention.

Fig. 3 is a longitudinal section through a portion thereof.

Fig. 4 is a detail section showing the adjusting means for the washing brush, and

Fig. 5 is a detail front view of one of the scraping members.

Referring first to Fig. 1, there is ordinarily provided in the continuous system for surfacing sheet glass, a working track 10 and a return track 11 arranged substantially parallel with one another. Mounted above the working track 10 are a series of grinding units 12 followed by a series of polishing units 13 spaced from said grinding units. A plurality of glass supporting tables 14 are adapted to run along the tracks 10 and 11 and to carry the glass sheets to be surfaced first beneath the grinding units and then beneath the polishing units. Arranged at one end of the working and return tracks 10 and 11 respectively is a turn table 16 and a similar turn

table 17 is arranged at the opposite end of said tracks.

In practice, the glass sheets 15 to be surfaced are preferably secured upon the tables after they pass from the turntable 16 onto the forward end of working track 10. The tables are then moved to the right along the working track to carry the glass sheets beneath the grinding and polishing units. After the upper surfaces of the sheets have been ground and polished, the sheets are removed from the tables, turned over, again secured to the tables at the forward end of the working track and passed beneath the grinding and polishing units to surface the second side. After the sheets are removed from the tables, the said tables are moved onto the turn table 17 and transferred to the return track 11, the tables passing to the left along the return track and onto the turntable 16 by means of which they are again transferred to the working track 10.

As above stated, the aim of the present invention is the provision of improved means whereby the washing and cleaning of the upper surfaces of the glass sheets subsequent to the grinding and prior to the polishing thereof may be effected in a thorough and efficient manner. To this end, there is positioned in advance of the polishing units 13 a rotary washing brush 19 extending transversely of the tables and mounted upon a shaft 20 journaled at its opposite ends in bearings 21 and 22 carried by brackets 23 and 24 respectively secured to supporting standards or the like 25 and 26. The brackets 23 and 24 are provided with downwardly depending portions 27 (Fig. 4) having vertical slots 28 therein through which are received the bolts 29 carried by the bearings 21 and 22. Threaded upon the bolts 29 at the rear of portions 27 are nuts 30. By the provision of such a construction, it will be readily apparent that the brush 19 can be raised and lowered as desired with respect to the tables and the glass sheets carried thereby. This brush may be driven through a belt drive or the like 31 from any suitable source of power.

Also extending transversely above the tables and arranged in the rear of the brush 19 is a transverse water supply pipe 32 having a series of downwardly projected outlet nozzles 33 for directing the water or other cleaning fluid supplied to the pipe downwardly upon the glass sheets beneath the brush 19.

Arranged at the rear of the water supply pipe 32 and carried by the standards 25 and 26 is a stationary angle member 34 carrying a vertical shield 35 and scraping member or plate 36 secured thereto by means of bolts 37. These bolts pass through vertical slots 38 in scraping member 36, whereby said member may be raised and lowered relative to the glass sheets. The shield 35 is provided to prevent any of the water, etc. from being thrown rearwardly by the brush 19 beyond scraping member 36.

Mounted in the rear of the scraping member 36 is the glass wiping unit, designated in its entirety by the numeral 39 and comprising a substantially horizontal supporting frame 40 secured at the lower end of the vertical drive spindle 41 and carrying a plurality of rotatable wiping members 42. This wiping unit may be of the same construction as the polishing units 13, and in fact, the first polishing unit may be used as a wiping unit by not supplying any rouge or other polishing medium thereto. The rouge may be supplied to each of the following polishing units, however, through a supply pipe or the like 43. Any preferred number of wiping members 42 may be used.

If found desirable, a second or auxiliary wiping means designated in its entirety by the numeral 44 may be arranged transversely of the tables to engage the glass at the rear of the wiping unit 39. The auxiliary wiping means preferably includes stationary wiping member or plate 45 of substantially the same construction and arrangement as the scraping member 36 above described. Further, an auxiliary wiping member 45 may be positioned between as many adjacent polishing units as desired such as between the first and second polishing units, second and third units, etc.

In operation, as the glass sheets are carried upon the tables beneath the washing and cleaning apparatus herein provided, the sheets will first be subjected to the action of the rotary brush 19 and thoroughly washed or scrubbed thereby with the aid of the water or other cleaning fluid supplied thereto from pipe 32. The scraping member 36 will then function to remove the majority of the water, loose plaster, etc. from the sheets and prevent the same from being carried beneath the wiping members 42. The wiping members then acting upon the sheets are adapted to wipe substantially clean the surfaces thereof after which the auxiliary wiping means 44 will effect a final wiping of the sheets before they are passed to the polishing units.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of rotatable means for washing the sheets, and rotatable means for subsequently dry wiping the same,

said washing means and wiping means being mounted in a fixed position and adapted to engage said sheets as they are carried therebeneath.

2. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of means rotatable about a substantially horizontal axis for washing the sheets, and means rotatable about a substantially vertical axis for subsequently dry wiping the same, said washing means and wiping means being mounted in a fixed position and adapted to engage said sheets as they are carried therebeneath.

3. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of means for washing the sheets, means for subsequently dry wiping the same, and scraping means for the sheets interposed between the washing means and wiping means, said washing means, wiping means and scraping means being mounted in a fixed position and adapted to engage said sheets as they are carried therebeneath.

4. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of rotatable means for washing the sheets, rotatable means for subsequently wiping the same, and scraping means for the sheets interposed between the washing means and dry wiping means, said washing means, wiping means and scraping means being mounted in a fixed position and adapted to engage said sheets as they are carried therebeneath.

5. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of means rotatable about a substantially horizontal axis for washing the sheets, means rotatable about a substantially vertical axis for subsequently dry wiping the same, and stationary scraping means for the sheets interposed between the washing means and wiping means, said washing means, wiping means and scraping means being mounted in a fixed position and adapted to engage said sheets as they are carried therebeneath.

6. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of rotatable means for washing the sheets, rotatable means for subsequently dry wiping the same, and auxiliary dry wiping means for the sheets arranged at the rear of the first named wiping means, said washing means and first and second mentioned wiping means being mounted in a fixed position and adapted to engage said sheets as they are carried therebeneath.

7. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of rotatable means for washing the sheets, rotatable means for subsequently dry wiping the same, scraping means for the sheets interposed between the washing means and wiping means, and auxiliary dry wiping means for the sheets arranged at the rear of the first named wiping means, said washing means, scraping means and first and second mentioned wiping means being mounted in a fixed position and adapted to engage said sheets as they are carried therebeneath.

8. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of a rotatable brush mounted transversely above the tables and adapted to engage the glass sheets, means for supplying a cleaning fluid to the brush, and a plurality of members rotatable about a substantially vertical axis and arranged at the rear of said brush for subsequently dry wiping said sheets.

9. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of a rotatable brush mounted transversely above the tables and adapted to engage the glass sheets, means for supplying a cleaning fluid to the brush, a plurality of members rotatable about a substantially vertical axis and arranged at the rear of said brush for subsequently dry wiping said sheets, and a stationary scraping member arranged transversely of the tables and adapted to engage the sheets between said brush and wiping members.

10. In washing and cleaning apparatus of the character described, the combination with a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of a rotatable brush mounted transversely above the tables and adapted to engage the glass sheets, means for supplying a cleaning fluid to the brush, a plurality of members rotatable about a substantially vertical axis and arranged at the rear of said brush for subsequently dry wiping said sheets, and an auxiliary dry wiping member arranged transversely of the tables and adapted to engage the sheets at the rear of said first mentioned wiping members.

11. In washing and cleaning apparatus of the character described, the combination with

a plurality of movable tables adapted to carry a series of glass sheets in a definite substantially horizontal path, of a rotatable brush mounted transversely above the tables and adapted to engage the glass sheets, means for supplying a cleaning fluid to the brush, a plurality of members rotatable about a substantially vertical axis and arranged at the rear of said brush for subsequently dry wiping said sheets, a stationary scraping member arranged transversely of the tables and adapted to engage the sheets between said brush and wiping members, and an auxiliary stationary dry wiping member arranged to engage said sheets at the rear of said first mentioned wiping members.

Signed at Toledo, in the county of Lucas and State of Ohio, this 19th day of February 1929.

THOMAS J. LEYLAND.