Nov. 12, 1929.

J. L. DRAKE

1,735,565

SHEET GLASS SURFACING APPARATUS

Filed Jan. 5, 1927

2 Sheets-Sheet 1

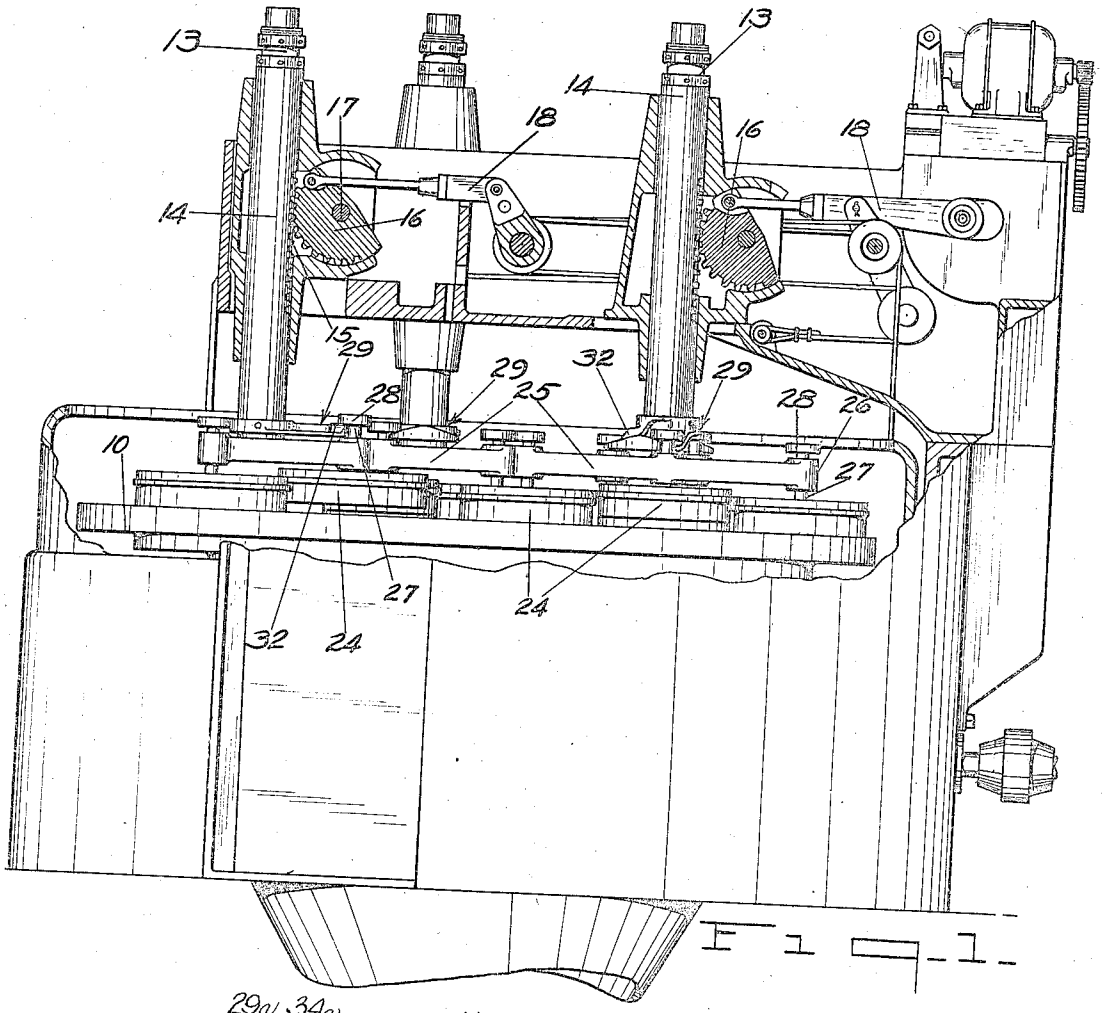


Fig. 1.

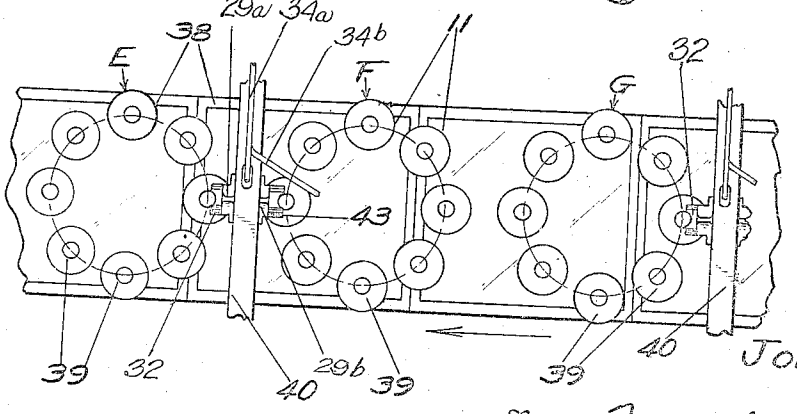


Fig. 5.

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SHEET GLASS SURFACING APPARATUS

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2 Sheets-Sheet 2

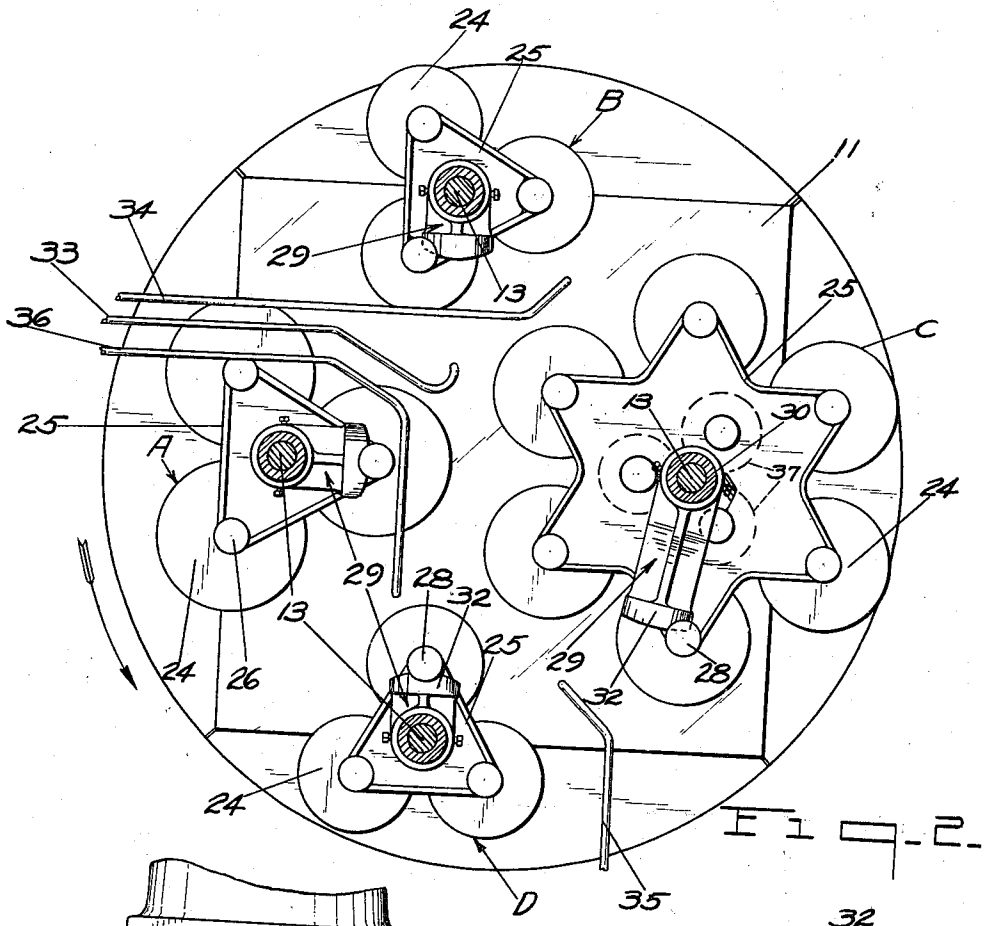


Fig. 2.

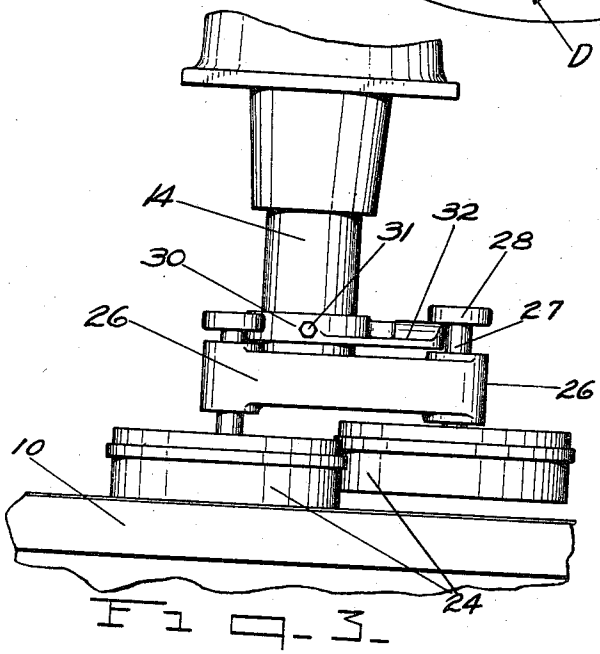


Fig. 3.

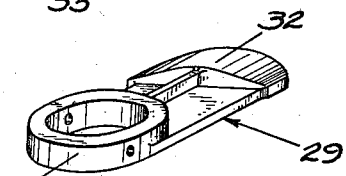


Fig. 4.

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UNITED STATES PATENT OFFICE

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SHEET-GLASS-SURFACING APPARATUS

Application filed January 5, 1927. Serial No. 159,059.

This invention relates broadly to surfacing apparatus and more particularly to polishing machines for surfacing sheet glass.

In certain processes for surfacing sheet glass, the sheet is supported upon a rotatable table which is positively driven and a plurality of polishing members or runners mounted above the table rest upon the glass sheet and are adapted to be rotated through frictional contact therewith. In the so-called continuous process, a plurality of sheets of glass mounted upon a series of trucks or tables are moved beneath a plurality of groups of polishing members rotatably arranged thereabove. In both of these processes, the polishing members or runners rest directly upon the glass sheet at all times with the result that it is difficult for the polishing material used to satisfactorily get under the said members which naturally proves detrimental to the satisfactory, efficient polishing of the glass.

It is, therefore, an important object of the present invention to provide improved means whereby the polishing material used will be better able to get under the polishing members or runners during the surfacing of the glass.

Another object of the invention is the provision of means for raising and lowering the polishing members relative to the glass in such a manner that the polishing material will be carried under said members while they are in their raised positions.

Another object of the invention is to provide in sheet glass surfacing apparatus, a plurality of polishing members, and means engageable by the members for successively raising and lowering said members relative to the glass.

A further object of the invention is to provide in sheet glass surfacing apparatus, a plurality of groups of polishing members, and separate means for individually and successively raising and lowering the members of each group relative to the glass.

A still further object of the invention is to provide in sheet glass surfacing apparatus, a plurality of polishing members, means for raising and lowering said members relative to the glass, means for feeding a polishing material onto the glass, and means for supporting the glass and carrying the polishing material beneath the polishing members while said members are in their raised positions.

Still another object of the present invention is to provide in sheet glass surfacing apparatus, a plurality of groups of polishing members, means for feeding a polishing material to each group, means for raising and lowering the members of each group relative to the glass, and means for supporting the glass and carrying the polishing material beneath the members of each group while said members are in their raised positions.

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 drawings.

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

Fig. 1 is a side elevation, partially in section, of sheet glass surfacing apparatus showing the present invention in use therewith.

Fig. 2 is a diagrammatic plan view thereof.

Fig. 3 is an enlarged detail elevation showing the manner in which the polishing runners are successively raised and lowered.

Fig. 4 is a perspective view of the improved runner lifting member, and

Fig. 5 is a diagrammatic plan of a modified type of apparatus.

Referring now to the drawings and especially to Figs. 1 to 4 inclusive, the numeral 10 designates a rotatable table which may be provided with a suitable recess within which the glass sheet 11 to be surfaced can be either secured or freely supported as desired. The table 10 is adapted to be preferably positively driven.

Arranged above the rotatable table 10 are a plurality of rotatable shafts 13, each of the shafts operating through a sleeve 14 having a racked portion 15. Engageable with the racked portion 15 of each sleeve 14 is a segmental gear 16 rockable about a shaft 17 by means of a pitman 18. In Fig. 1, the shafts 13 are shown in their lowered or operative po-

sition and by rocking the segmental gears 16 as described, the sleeves 14 can be raised, causing the shafts 13 to be also raised.

In Fig. 2 are shown four shafts 13, each shaft having associated therewith a series of polishing members 24, the groups of polishing members being designated by the letters A, B, C and D. Each group is carried by a spider frame 25 provided with a plurality of bearings 26, through which the stub shafts 27 carrying the polishing members 24 are rotatably received. The upper ends of the stub shafts 27 are provided with enlargements 28 to prevent accidental displacement of the polishing members when they are raised into an inoperative position and to also aid in the raising of said members out of contact with the glass, as will be more clearly hereinafter apparent.

The present invention relates particularly to improved means for individually and successively raising and lowering the polishing members 24 of each group A, B, C and D relative to the glass sheet 11 together with means for feeding a polishing material onto the glass in such a manner that a film of polishing material will be carried beneath the polishing runners while they are in their raised positions so that when the polishing members are lowered, they will be lowered directly onto the said film.

In accordance with the present invention, there is secured to each of the sleeves 14 adjacent the lower end thereof, a horizontally arranged lifting member shown in Fig. 4 and designated in its entirety by the numeral 29. This lifting member 29 is formed at one end thereof with a collar portion 30 adapted to receive the sleeve 14 therethrough and being keyed thereto by means of suitable set screws or the like 31 which pass through the said collar and bind against said sleeve. The other end of the lifting member 29 is provided with a horizontal cam face 32 which extends transversely thereof and which is highest at its center and gradually tapers towards its opposite ends.

In carrying the present invention into practice, one of the lifting members 29 is keyed to each of the sleeves 14 as clearly shown in the drawings and is so arranged that upon rotation of the spider 25 carrying the polishing members 24, the upper enlarged ends 28 of the stud shafts 27 will ride upon the cam face 32 whereby to first raise and then lower the polishing member relative to the glass sheet 11. Due to the fact that the lifting members 29 are stationary, the polishing members will be successively raised out of contact with the glass and then again lowered onto the glass prior to the raising of the next member.

Arranged for feeding the polishing material upon the glass sheet 11 are four feed pipes 33, 34, 35 and 36, said pipes being provided for feeding the polishing material to the groups of polishing members A, B, C and D respectively. These pipes are so positioned that the polishing material fed thereby onto the glass sheet 11 will be carried, upon rotation of the table, beneath the polishing members of the group with which it is associated while the said members are in their raised position. For instance, the pipe 33, is adapted to supply the polishing material to the group A. This polishing material is fed onto the glass sheet 11 somewhat in advance of the polishing members 24 of the said group A and upon rotation of the table 10 in a counter-clockwise direction, the polishing material will be carried under the members 24 of group A just as the said members are raised out of contact with the glass by their engagement with the lifting member 29. Consequently when the polishing members are lowered, they will be lowered directly upon a film of polishing material on the glass sheet 11. The manner of supplying the polishing material to the other groups of polishing members is exactly the same. The carrying of the polishing material beneath the polishing members while the said members are in their raised positions will result in the more efficient satisfactory surfacing of the glass.

Arranged within the polishing members 24 of group C are a plurality of smaller polishing members 37 and a separate lifting device 29 can, if desired, be provided for raising and lowering these members relative to the glass. These smaller polishing members 37 will also be supplied with polishing material from the feed pipe 35.

The lifting member 29 is in the form of an attachment and can be easily and quickly incorporated with those types of polishing machines hereinabove set forth or with polishing machines of similar types. The members 29 can also be readily moved into or out of operative position by simply sliding them along the sleeves 14 and subsequently securing them in the desired position by means of the set screws 31.

In Fig. 5 a somewhat modified form of the present invention is shown in connection with the so-called continuous process wherein a series of glass sheets 11 to be surfaced are mounted upon a plurality of tables 38 and carried beneath a plurality of groups of rotatable polishing members 39 constructed and arranged in substantially the same manner as the members 24 disclosed in Fig. 1. The groups of polishing members are designated by the letters E, F and G and extending transversely between two of the groups of polishing members such as groups E and F is a supporting beam or the like 40 carrying at its opposite sides the lifting members 29^a and 29^b which function to raise and lower the polishing members 39 relative to the glass sheets in substantially the same manner as the lifting members 29. Each of the lifting members

29ª and 29ᵇ is provided with a cam face 32 upon which the upper enlarged ends of the stub shafts which carry the polishing members 39 are adapted to ride in order to raise the said members out of contact with the glass. The polishing material is supplied to the groups E and F through the pipes 34ª and 35ª respectively. The polishing material will be fed onto the glass slightly in advance of the polishing members 29 and the tables moving to the left will carry this material beneath the said members of the groups E and F as the said members are raised by their engagement with the lifting members 29ª and 29ᵇ. The number of groups of polishing members which can be used is of course unlimited.

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.

Claims:

1. In a machine for surfacing sheets of glass, a plurality of traveling surfacing tools, a work table carrying the sheets to be surfaced and movable so that the same parts of the same piece of work are presented successively to different tools, a stationary source of supply of abradant at a fixed point in the course of travel of the work, and a fixed means adjacent such point of supply and in the path of travel of the tools for raising each tool as it is brought by its travel to such fixed means, permitting the abradant to enter between the tool and work, and when the tool passes such means permitting said tool to again descend and treat the work with the abradant.

2. In a machine for surfacing sheets of glass, a plurality of traveling surfacing tools, a work table carrying the sheets to be surfaced and movable so that the same parts of the same piece of work are presented successively to different tools, a stationary source of supply of abradant at a fixed point in the course of travel of the work, and a fixed cam member adjacent such point of supply, said member having a horizontal cam face in the path of travel of the tools for raising each tool as it is brought by its travel to such cam member, permitting the abradant to enter between the tool and work and when the tool passes said member permitting the tool to again descend and treat the work with the abradant.

3. In a machine for surfacing sheets of glass, a plurality of traveling surfacing tools, a work table carrying the sheets to be surfaced and movable so that the same parts of the same piece of work are presented successively to different tools, a rotatable supporting member mounted above the table, stub shafts carried by the surfacing tools and extending vertically through and projecting above said supporting member, said stub shafts being provided with enlarged portions at their upper ends, a stationary source of supply of abradant at a fixed point in the course of travel of the work, and a fixed cam member adjacent such point of supply, said cam member having a horizontal cam face in the path of travel of the tools, the enlarged portions of said stub shafts being adapted to ride up and over the cam face to raise the tools as each tool is brought by its travel to said cam member, permitting the abradant to enter between the tool and work, and when the tool passes said member permitting the tool to again descend and treat the work with the abradant.

4. In apparatus for surfacing sheet glass, a table for supporting the sheet to be surfaced, a supporting member positioned above the glass and rotatable about a vertical axis, a series of surfacing members carried by said supporting member, stub-shafts carried by the surfacing members and extending vertically through and projecting above the supporting member, said stub-shafts being provided with enlarged portions at their upper ends, a stationary cam member associated with and common to all of said surfacing members and having a horizontal cam face, the enlarged portions of said stub-shafts being adapted to ride up and over this face upon rotation of said supporting member to cause the surfacing members to be individually and successively raised and then lowered relative to the glass, and means for supplying an abrasive material between the members and glass when said members are raised.

Signed at Toledo, in the county of Lucas and State of Ohio, this 3rd day of Jan., 1927.

JOHN L. DRAKE.