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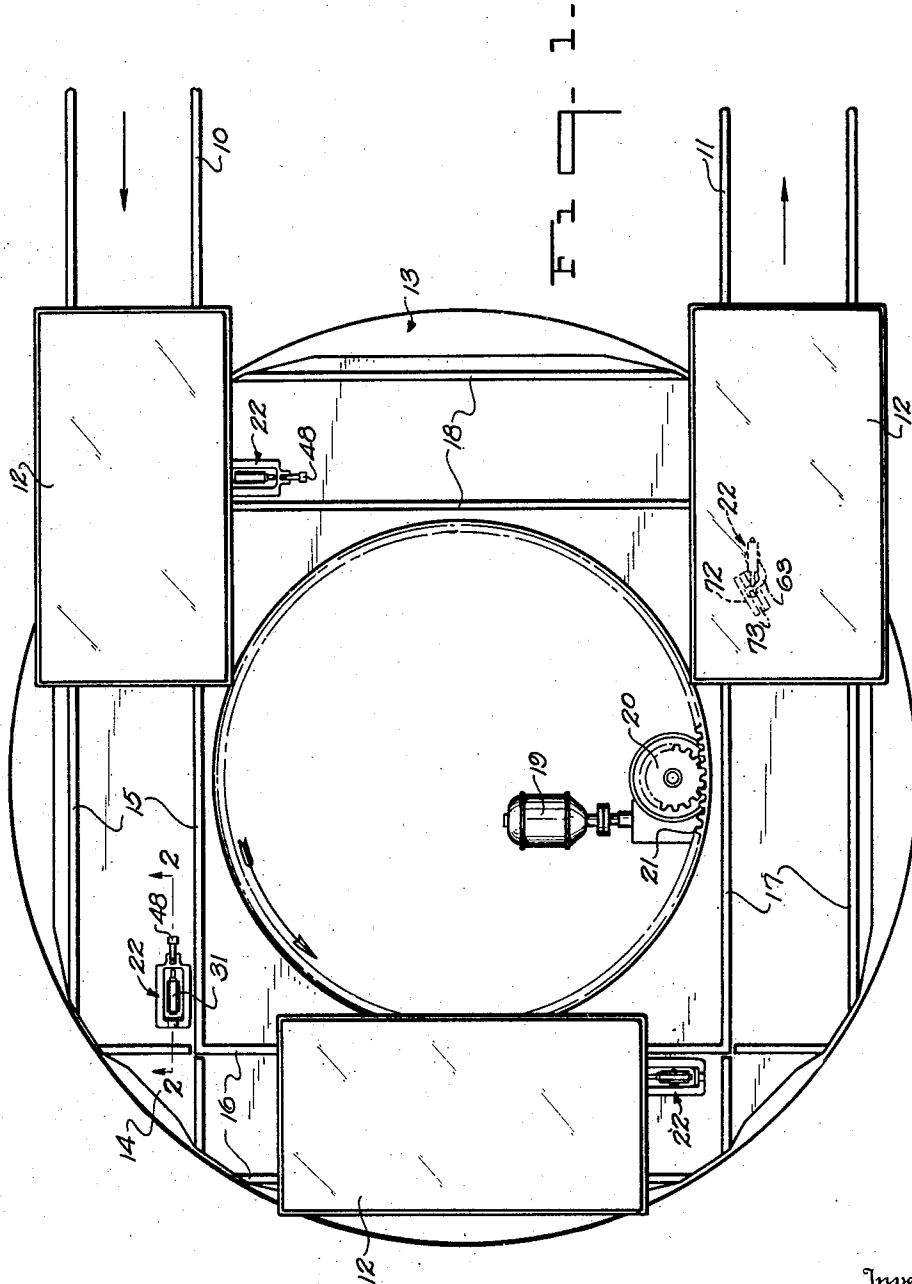
E. A. ROSIN ET AL

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BUMPER MEANS

Filed March 9, 1929

3 Sheets-Sheet 1



Inventor

Edwin A. Rosin.  
Karl Kupferschmid

By

Frank Frasci

Attorney

June 3, 1930.

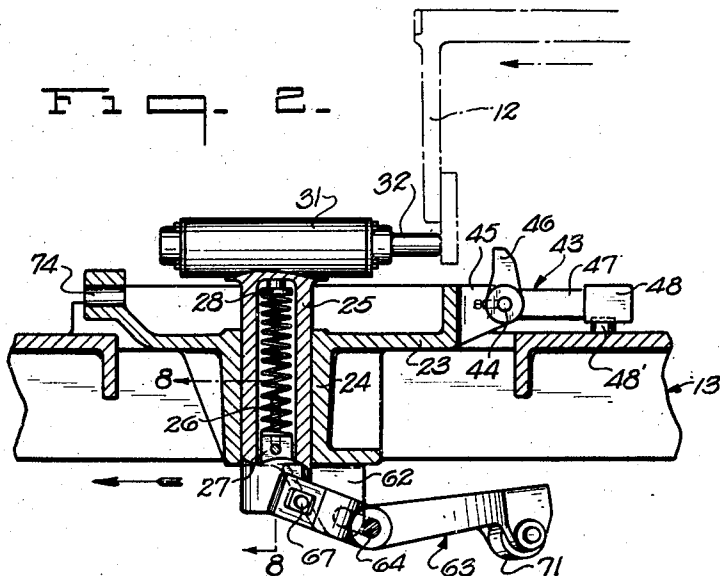
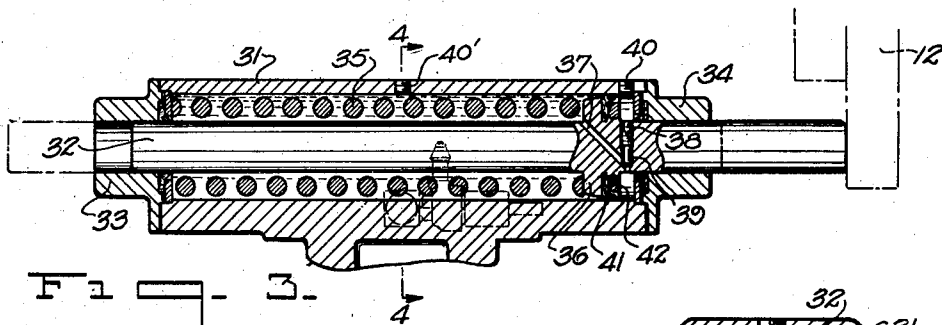
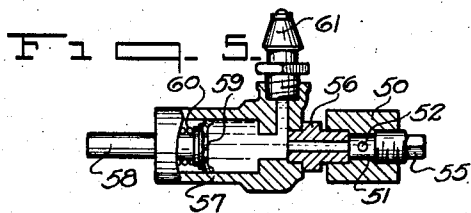
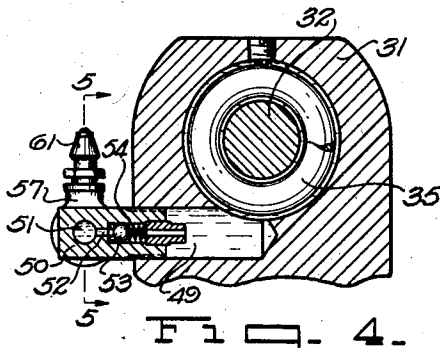
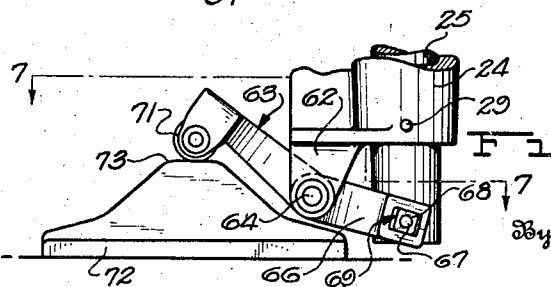
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3 Sheets-Sheet 2



Inventor

Edwin A. Rosin.  
Karl Kupferschmid

Frank Fraser

Attorney

June 3, 1930.

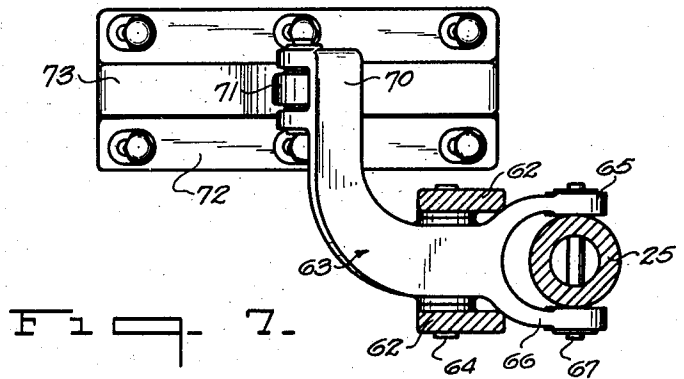
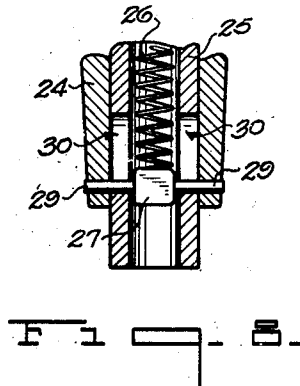
E. A. ROSIN ET AL

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BUMPER MEANS

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3 Sheets-Sheet 3



Inventor

Edwin A. Rosin.

Karl Kupferschmid

By

Frank Fraser.

Attorney

## UNITED STATES PATENT OFFICE

EDWIN A. ROSIN AND KARL KUPFERSCHMID, OF TOLEDO, OHIO, ASSIGNORS TO LIBBEY-OWENS GLASS COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO

## BUMPER MEANS

Application filed March 9, 1929. Serial No. 345,770.

This invention relates to apparatus for use in the surfacing of sheet glass and is of utility when incorporated in the continuous system wherein the grinding and polishing of the glass is accomplished in a straightaway operation.

In such system, a plurality of glass sheets to be surfaced are supported upon a train of cars or carriers and passed first beneath a series of grinding units and then beneath a series of polishing units. Ordinarily, at least two substantially parallel tracks are used and a series of grinding and polishing units may be mounted above either one or both tracks. When surfacing units are mounted above both tracks, it may be said that they constitute two working tracks, the sheets being carried along one track to surface one side thereof, after which the sheets are turned over and passed in the opposite direction along the second track to surface the second side.

However, when the surfacing units are mounted above only one track, this track is termed the working track, while the adjacent track is termed the return track. After the glass sheets are carried upon the cars along the working track to surface the upper sides thereof, the cars are transferred to the return track and carried rearwardly to the opposite end thereof where they are again transferred to the front end of the working track, the sheets being removed from the cars, turned over, and relaid thereon, after which the cars are again passed along the working track beneath the surfacing units to grind and polish the second side of the sheets.

According to the present invention, the means for transferring the cars from the working track to the return track and vice versa embodies a turn-table connecting the two tracks at their ends. The cars are adapted to be run upon the turn-table from one track, after which the said table is rotated to bring the car into alignment with the adjacent track so that it may be moved thereon from said turn-table.

An important object of this invention involves the provision of improved means carried by the turn-table for checking the movement of the cars whereby to bring the same

to a stop when they reach a substantially predetermined position thereupon and for effectively maintaining them in such position during rotation of said turn-table.

Another object of the invention involves the provision of novel bumper or buffing means carried by the turn-table and constructed and operable to check the movement of the cars as they are run thereupon in such a manner whereby the cars can be gradually brought to a stop without any undue jolting, violent shock, or sudden abruptness.

A further object of the invention involves the provision of substantially fixed means disposed in the course of travel of the bumper or buffing means for effecting automatic movement thereof out of operative position with respect to the cars when the turn-table is moved to bring said cars to a position where they are adapted to be run or moved therefrom onto the main tracks of the system.

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 plan view of apparatus provided by the present invention illustrated in association with a turn-table.

Fig. 2 is a section taken substantially on line 2—2 of Fig. 1 showing portions of the apparatus in elevation and the glass supporting car or carrier in broken lines.

Fig. 3 is a longitudinal vertical section through the hydraulic bumper per se.

Fig. 4 is a transverse section taken substantially on line 4—4 of Fig. 3.

Fig. 5 is a section taken substantially on line 5—5 of Fig. 4.

Fig. 6 is a detail elevation of the apparatus for effecting movement of the bumper out of operative position with respect to the cars.

Fig. 7 is a section taken substantially on line 7—7 of Fig. 6, and

Fig. 8 is a section taken substantially on line 8—8 of Fig. 2.

Referring to the drawings and particularly to Fig. 1, the numerals 10 and 11 designate the two substantially parallel main tracks such as are used in the continuous system for surfacing sheet glass. A series of grinding and polishing units (not shown) may be mounted above either one or both of these tracks, as desired. However, for the purpose of illustration, let us assume that the grinding and polishing units are arranged above only the track 10 which will therefore be termed the "working" track, while the track 11 will be termed the "return" track. Mounted to run upon the tracks 10 and 11 are a plurality of cars or carriers 12. These cars are usually arranged in a continuous line and are adapted to carry a plurality of glass sheets secured upon the upper surfaces thereof, along the working track first beneath a series of grinding units and then beneath a series of polishing units. The cars are then transferred from the working track 10 to the return track 11, and passed rearwardly to the opposite end thereof where they are again transferred to the front end of the working track. Before the cars are again passed along the working track, however, the glass sheets are removed therefrom, turned over again secured thereto so as to present their unground and unpolished sides uppermost. The transfer means herein provided for effecting the transfer of the cars or carriers 12 from the working track 10 to the return track 11 at one end of said tracks and vice versa at the opposite end of said tracks, embodies a turntable extending between and connecting the tracks at their corresponding ends. The turn-table at opposite ends of the tracks are preferably the same so that only one of them will be shown and described. The turn-table is designated in its entirety by the numeral 13 and comprises an annular ring plate 14 supporting thereupon the four relatively short track sections 15, 16, 17 and 18, said track sections adapted to be successively brought into alignment with the working track 10 and return track 11 upon rotation of the turntable.

As shown in Fig. 1, one of the cars 12 is being moved from the working track 10 onto the turn-table and upon track section 15 while another car is being simultaneously moved from track section 17 of the turntable onto the return track 11. A third car is mounted upon track section 16 and will be brought to a discharge position in alignment with the return track upon a quarter turn of the turntable in the direction indicated by the arrow. Thus, upon each quarter turn of the turntable, one of the track sections thereon will be brought into alignment with each main track 10 and 11 so that the cars can be removed from one main track and moved onto the opposite main track.

The rotation of the turn-table may be ef-

fectured in any preferred manner such as by means of a motor or other prime mover 19 having operative connections with and driving the drive pinion 20 meshing with a ring gear 21 carried by said turn-table at the inner edge thereof.

As above brought out, the present invention embodies novel and improved means for checking the movement of the cars or carriers as they are moved onto the turn-table so that the cars will be brought to a stop when they reach a predetermined position thereon and be prevented from being accidentally discharged from either end thereof during the rotation of said turn-table. To this end, there is associated with each turn-table track section 15 to 18 a novel bumper or buffing means designated in its entirety by the numeral 22. As illustrated in Fig. 2, each buffing means comprises a substantially horizontal recessed platform or plate 23 carried by or formed integral with the turn-table and having a depending bearing portion 24 within which is slidably mounted the vertical supporting stem 25. This stem is preferably hollow and has arranged therein a compression spring 26 secured at its lower end to a block 27 and at its upper end to a plate or cap 28. The block 27 is secured in fixed position by oppositely directed trunnions 29 passing through vertical slots 30 in stem 25 and secured within the bearing portion 24. Thus, the compression spring 26 will normally tend to urge the stem 25 upwardly but the said stem will also be permitted vertical downward movement by reason of the vertical slots 30.

Carried upon the upper end of supporting stem 25 is a horizontally disposed cylinder 31 within which is mounted the horizontal plunger 32 slidable through the end plates 33 and 34 of said cylinder. Arranged within the cylinder 31 and encircling the plunger 32 is a compression spring 35 retained at one end against the end plate 33 and bearing at its opposite end against an annular flange 36 formed on plunger 32 intermediate its ends. The right hand end of plunger 32 is adapted to normally project forwardly beyond the cylinder and to engage the adjacent end of car 12 when said car is moved upon the turntable.

The plunger 32 is provided with a diagonally extending duct 37 communicating at one end with the cylinder at the rear or inwardly of flange 36 and in communication at its opposite end with the cylinder forwardly of said flange. The duct 37 is intersected by a transverse duct 38 internally threaded to receive the needle valve stem 39 therein and which valve stem may be placed in position through the opening 40 in cylinder 31. After the needle valve has been placed in position, the opening 40 is of course plugged up to prevent the entrance of air into the cylinder or the discharge of fluid

therefrom. It will be noted upon reference to Fig. 3, that the diameter of the flange 36 is slightly less than the internal diameter of cylinder 31 so that a small clearance space is provided between the periphery of the flange and the wall of said cylinder. Carried by the flange forwardly thereof is a packing ring 41 held in place by nut 42 and adapted to engage the inner surface of the cylinder.

In the operation of the apparatus thus far described, the cylinder 31 is adapted to be filled with a suitable fluid such as oil, water, etc. and the compression spring 35 is adapted to normally force and yieldably maintain the plunger in its forward position as indicated by the full lines in Fig. 3. The car 12 is then drawn onto the turntable from the working track 10 and when it reaches a predetermined position thereupon, the forward end of the car abuts the plunger 32 and forces the same rearwardly against the action of spring 35 and in so doing places this spring under compression. Upon rearward movement of plunger 32, the fluid within the cylinder passes forwardly of flange 36 through the clearance space around the periphery thereof and also past the packing ring 41. As the plunger recoils due to the action of the compression spring, the fluid at the front of the flange 36 passes rearwardly through the duct 37. The packing ring 41 is so arranged that it will permit the forward passage of the fluid but will prevent rearward passage thereof. By properly adjusting the needle valve 39, the recoil of the plunger can be effectively regulated and controlled, the plunger being adapted to move forwardly much slower than it is compressed whereby to prevent or minimize rebound of the car. With such a construction, it will be apparent that the car can be effectively brought to a stop when it reaches a predetermined position upon the turntable without any undue jolting or violent shock which might tend to injure the same.

To prevent the car 12 from moving rearwardly after it has been brought into position upon the turntable, there may be provided a latch member 43 having a pivotal mounting as at 44 between spaced ears 45 on platform 23. This latch member comprises preferably the car engaging and retaining element 46 pivoted at 44 and carrying a rearwardly extending arm 47 having a weight 48 at its outer end. When the car is moved onto the turntable, the said car engaging element 46 will be permitted to rock to the left about its pivot 44 so as to allow the forward end of the car to pass thereby but is prevented from moving to the right so that it will hold the car against movement in that direction upon rotation of the turntable or should any rebound of the car occur. A rub-

ber or spring cushion 48' may be provided to absorb the shock of the weight 48.

Formed in the cylinder 31 intermediate its ends is a transverse passage 49 within the outer end of which is secured a block 50 having a transverse opening 51 communicating with passage 49 through an intermediate duct 52. The duct 52 is normally closed by means of a ball valve or the like 53 normally urged to and maintained in closed position by a spring 54. The valve 53 seals the fluid within the cylinder and prevents the same from passing outwardly thereof through duct 52 upon operation of plunger 32. As shown in Fig. 5, one end of opening 51 is closed by means of a plug 55 while secured within the opposite end thereof is a coupling 56 carrying the housing 57.

Slidably mounted through the end wall of housing 57 is a plunger 58 carrying at its inner end the leather or fiber disk or washer 59 and normally urged inwardly by a compression spring 60. Also carried by housing 57 is a ball valve fitting 61 preferably of a conventional type to permit the introduction of fluid therethrough into the housing but which will prevent the passage of the fluid outwardly thereof. The arrangement above described is provided so that the desired amount of fluid will at all times be maintained within the cylinder 31 and further, so that as any fluid leaks therefrom more fluid will be automatically forced therein to take its place. When it is desired to fill the cylinder 31, the fluid may be forced through the fitting 61 into housing 57 and thence through coupling 56, opening 51, duct 52 and passage 49 into the cylinder proper in surrounding relation to plunger 32. Sufficient fluid is also introduced into the housing 57 to force the plunger 58 rearwardly against the action of spring 60 and place this spring under compression. Upon continued operation of the bumper, a small amount of fluid may gradually seep along the plunger 32 and leak from the cylinder through the end plates 33 and 34. As this fluid leaks from the cylinder, the pressure of plunger 58 will be sufficient to force additional fluid therein so that a desired amount of fluid will at all times be maintained within the cylinder. In other words, the fluid contained within housing 57 may be termed a reserve supply to compensate for any fluid lost from cylinder 31. If desired, in order to facilitate and expedite the initial filling of the cylinder, the fluid may be introduced therein through an opening 40', the opening being then closed by means of a suitable plug. In all events, when the cylinder is being filled, the plugs should be removed from the opening 40' to allow for the exhaust of the air from said cylinder.

After the turntable 13 has been rotated

and it is desired to discharge the glass supporting car 12 therefrom onto the return track 11, it will be apparent that the bumper means must first be moved out of operative position with respect to said car so that the car can be moved past the same. This is herein accomplished by effecting the lowering of the cylinder 31 and associated parts and this can be easily done since the same is carried at the upper end of the vertically moving supporting stem 25. The means provided by the present invention for serving this purpose is entirely automatic in its operation and to this end, the bearing portion 24 is provided at its lower end with spaced depending ears 62 between which is received the rocker arm 63 pivotally secured thereto intermediate its ends by means of the pin 64. The inner end of arm 63 is bifurcated to provide the spaced legs 65 and 66 which embrace the lower end of supporting stem 25 and are secured thereto by the transverse pin 67. The pin 67 loosely carries at either end a substantially square bushing or the like 68 slidably received within the slot 69 formed in the legs 65 and 66. The slots 69 are preferably somewhat larger lengthwise than bushings 68 so as to permit the proper sliding action between the bushings and the arms when the latter are rocked about their pivot point 64 to move the supporting stem vertically. The arm 63 is curved as shown in Fig. 7 and the outer end 70 thereof projects at substantially right angles to the inner end. Carried at the outer end 70 of the arm is a roller 71.

Mounted beneath the turn-table 13 and preferably in the position indicated by the broken lines in Fig. 1 is the cam member 72 having the raised cam face 73 upon which the roller 71 carried by arm 63 is adapted to ride. Thus, as the turn-table is rotated to bring the track section carrying the car 12 into alignment with the return track so that the car upon the turn-table track section may be moved therefrom, the roller 71 riding up on the cam face 73 will act to rock the arm 63 about its pivot 64 and effect a lowering of the supporting stem 25 and bumper carried thereby. The rotation of the turn-table is so timed that it will be brought to a stop when the roller is at the highest point of the cam face as indicated in Fig. 6. The car can then be moved from the turn-table after which the said turn-table is again rotated. As the roller 71 rides down the opposite side of the cam face, the supporting stem will be forced upwardly by the action of spring 26 to project the bumper into operative position. The arm 63 is curved and the cam member 72 placed at the angle indicated in Fig. 1 so that the roller 71 will ride upon the latter during the rotation of the turn-table.

At times, it may be found desirable to hold the bumper in its lowered position and the

platform 23 is therefore provided with a horizontal opening 74 adapted to register with the opening in end plate 33 of cylinder 31 when the said cylinder is lowered. Thus, when it is desired to hold the bumper down, a suitable pin or retaining element may be passed through the opening 74 and into the opening in end plate 33.

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.

We claim—

1. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of means carried by the turntable for arresting the movement of the cars and bringing such cars to a stop when they reach a substantially predetermined position thereupon.

2. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of means carried by the turn-table for bringing the cars to a stop and preventing their further movement in one direction when said cars reach a substantially predetermined position thereupon, and separate means also carried by the turn-table for preventing movement of the cars in the opposite direction.

3. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of means carried by the turn-table for arresting the movement of the cars and bringing such cars to a stop when they reach a substantially predetermined position thereupon, and means acting automatically to move the first named means out of operative position with respect to the cars upon movement of the turn-table to bring said cars to a discharge position.

4. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of means carried by the turn-table for bringing the cars to a

stop and preventing their further movement in one direction when said cars reach a substantially predetermined position thereupon, separate means also carried by the turn-table for preventing movement of the cars in the opposite direction, and means acting automatically to move the first named means out of operative position with respect to the cars upon movement of the turn-table to bring said cars to a discharge position.

5. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of a yieldable bumper means carried by the turntable and arranged in the path of the cars and adapted to stop the same when they are moved to a substantially predetermined position thereupon.

6. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of a yieldable bumper means carried by the turntable and arranged in the path of the cars and adapted to stop the same when they are moved to a predetermined position thereupon, and means for automatically moving the bumper means vertically out of operative position with respect to the cars upon movement of the turn-table to bring said cars to a discharge position.

7. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of a yieldable bumper means carried by the turn-table and arranged in the path of the cars and adapted to stop the same and prevent further movement thereof in one direction when they are moved to a substantially predetermined position thereupon, and separate means also carried by the turn-table for preventing movement of the cars in the opposite direction.

8. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of a yieldable bumper means carried by the turn-table and arranged in the path of the cars and adapted to stop the same and prevent further movement thereof in one direction when they are moved to a substantially predetermined position thereupon, separate means also carried by the turntable for preventing movement of the

cars in the opposite direction, means for automatically moving the bumper means vertically out of operative position with respect to the cars upon movement of the turn-table to bring said cars to a discharge position.

9. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of yieldable bumper means carried by the turn-table and located in the path of travel of the cars for engaging the same and stopping the movement thereof as said cars are moved to a predetermined position thereupon, means for supporting said yieldable bumper means, and means for moving said supporting means vertically to raise and lower the bumper means into and out of the path of said cars.

10. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of yieldable bumper means carried by the turn-table and located in the path of travel of the cars for engaging the same and stopping the movement thereof as said cars are moved to a predetermined position thereupon, means for supporting said bumper means, and means acting automatically to actuate the supporting means to lower the bumper means out of the path of the cars upon movement of the turn-table to a predetermined position, said means including a rocker arm connected at one end with the supporting means, and a cam member upon which said rocker arm is adapted to ride.

11. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of a yieldable bumper means carried by the turn-table and arranged in the path of the cars and adapted to stop the same when they are moved to a predetermined position thereupon, means for automatically lowering the bumper means out of the path of the cars upon movement of the turn-table to bring said cars to a discharge position, and means for again projecting the bumper means upwardly into the path of the cars upon further rotation of the turn-table.

12. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turn-table connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of a vertical supporting

stem slidably carried by the turn-table, a hydraulic bumper supported at the upper end of the stem and located in the path of travel of the cars for engaging the same and stopping the movement thereof as said cars are brought to a predetermined position upon said turn-table, a rocker arm pivoted to the turn-table intermediate its ends and also connected at its inner end to said supporting stem, and a fixed cam member disposed in the path of travel of the arm as the turn-table is rotated and having a cam face upon which the outer end of said arm is adapted to ride to effect a lowering of the supporting stem and bumper out of the path of the cars.

13. In the continuous system for surfacing sheet glass, the combination with two substantially parallel tracks, glass supporting cars adapted to run along said tracks, and a turntable connecting the tracks at their ends and for effecting the transfer of the cars from one track to the other, of a vertical supporting stem slidably carried by the turn-table, a hydraulic bumper supported at the upper end of the stem and located in the path of travel of the cars for engaging the same and stopping the movement thereof as said cars are brought to a predetermined position upon said turn-table, a rocker arm pivoted to the turntable intermediate its ends and also connected at its inner end to said supporting stem, a fixed cam member disposed in the path of travel of the arm as the turntable is rotated and having a cam face upon which the outer end of said arm is adapted to ride to effect a lowering of the supporting stem and bumper out of the path of the cars, and means for again projecting the supporting stem and bumper upwardly into the path of the cars when the arm passes out of engagement with the cam member.

Signed at Toledo, in the county of Lucas, and State of Ohio, this 2nd day of March, 1929.

EDWIN A. ROSIN.  
KARL KUPFERSCHMID.