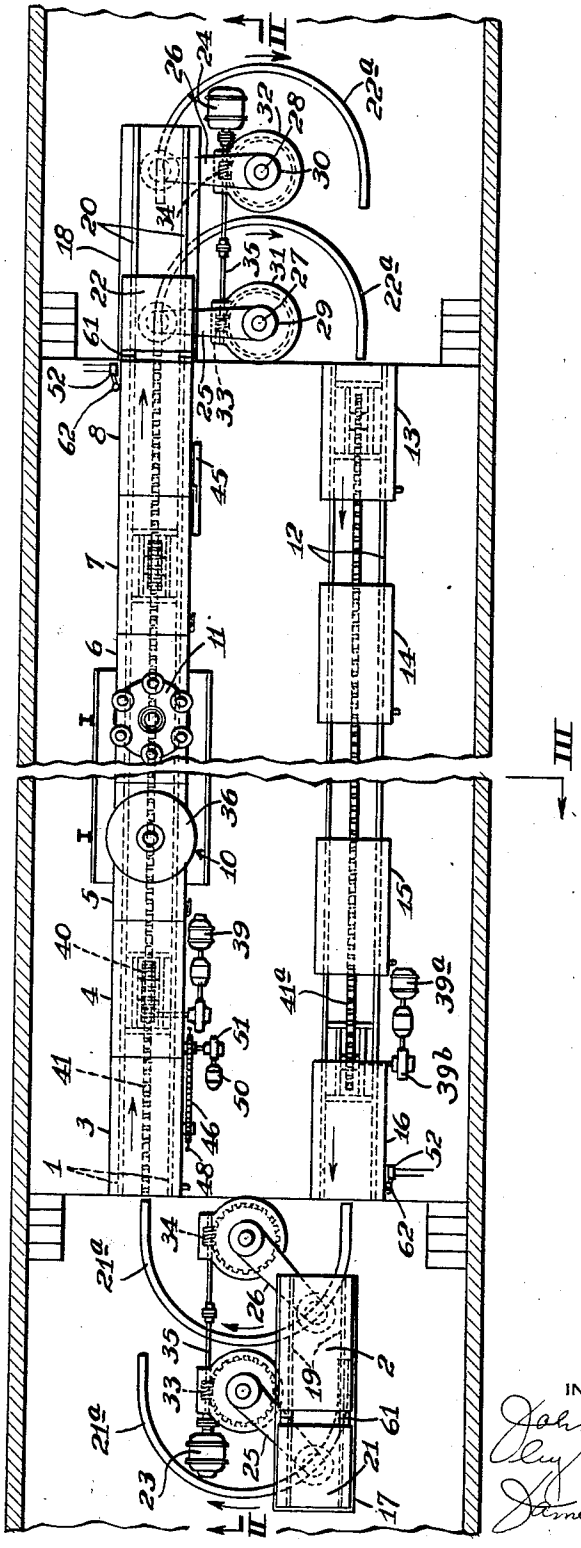
June 7, 1932. J. H. FOX 1,861,659

CAR TRANSFER APPARATUS

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Fig. 1.



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CAR TRANSFER APPARATUS

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Fig. 2.

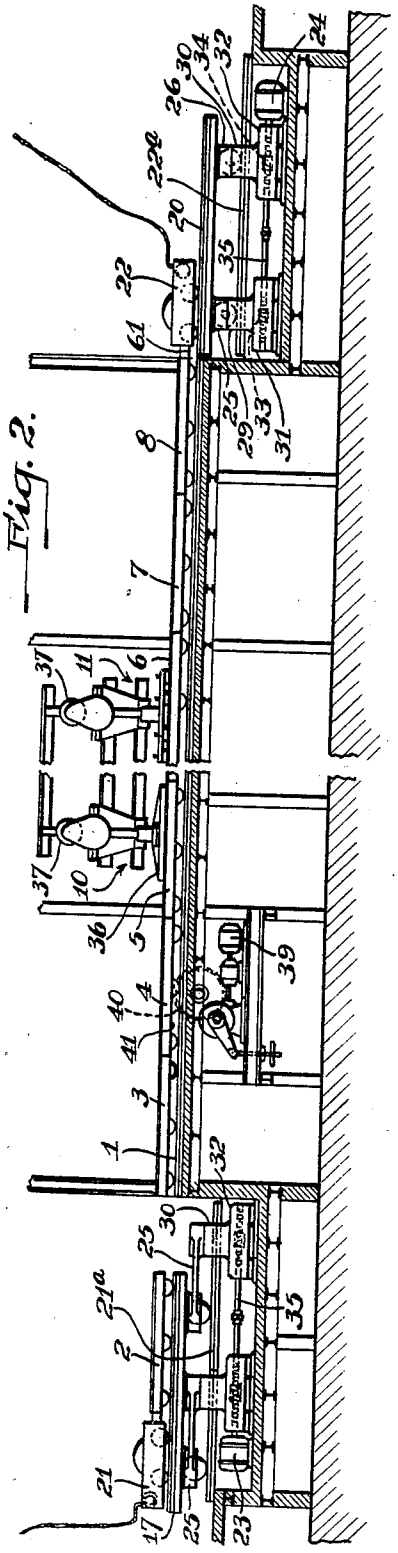
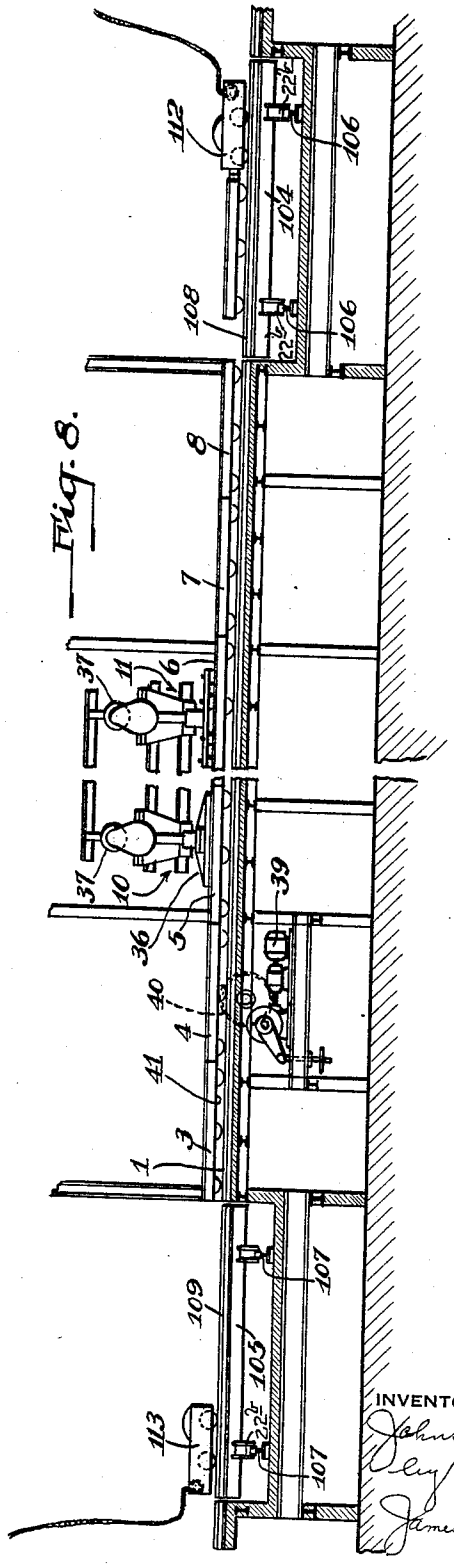


Fig. 8.



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CAR TRANSFER APPARATUS

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Fig. 5.

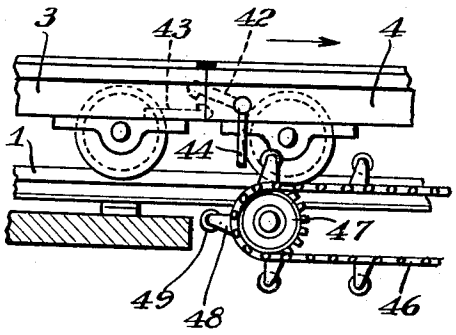


Fig. 6.

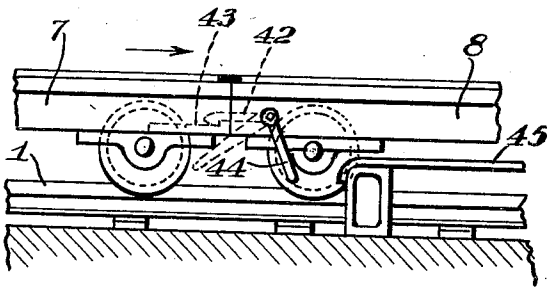
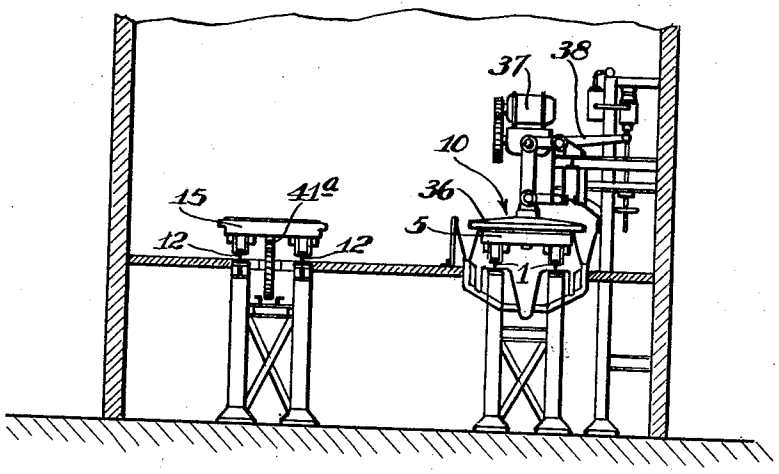


Fig. 3.



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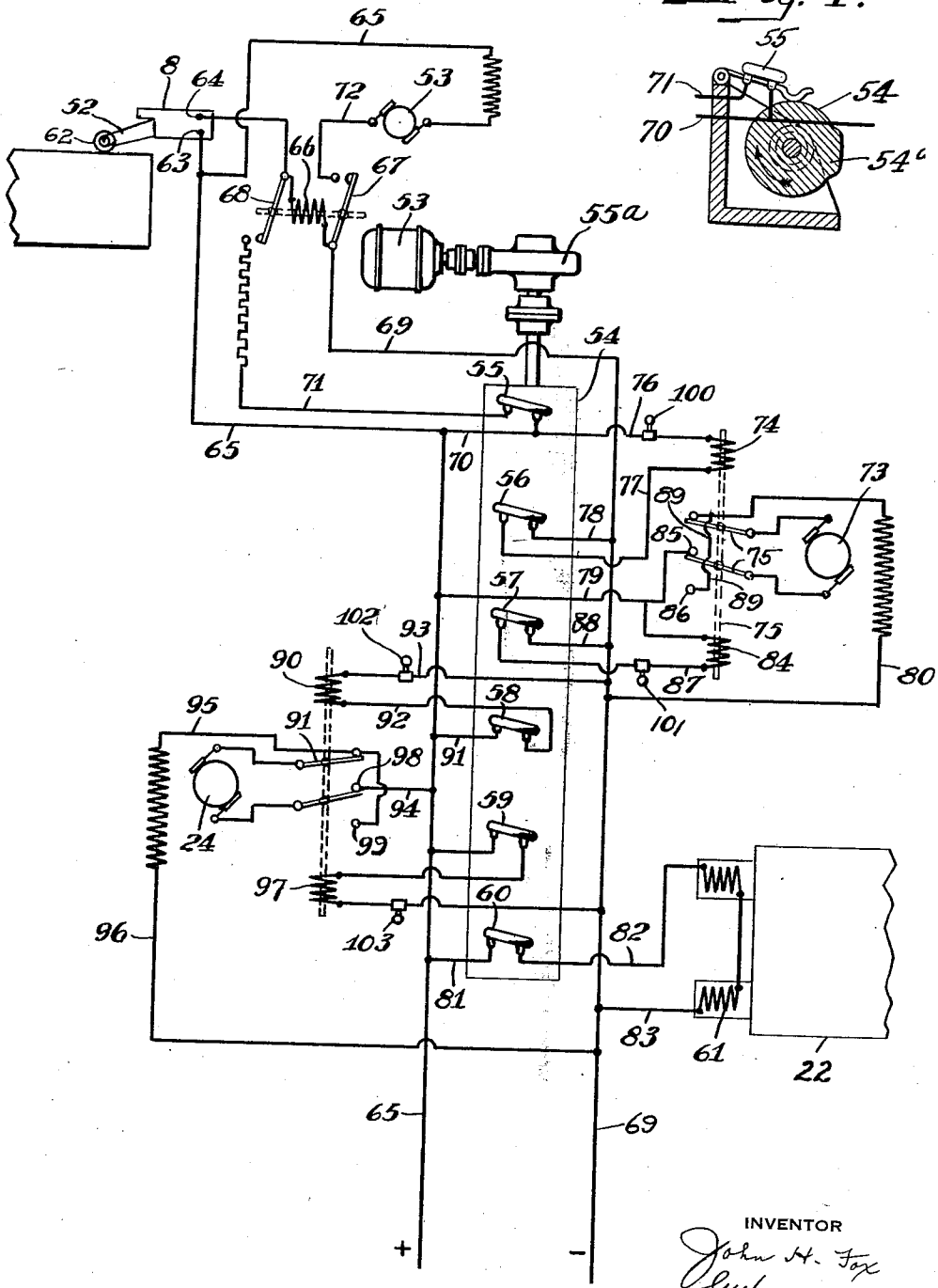
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CAR TRANSFER APPARATUS

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Fig. 4.

Fig. 4a



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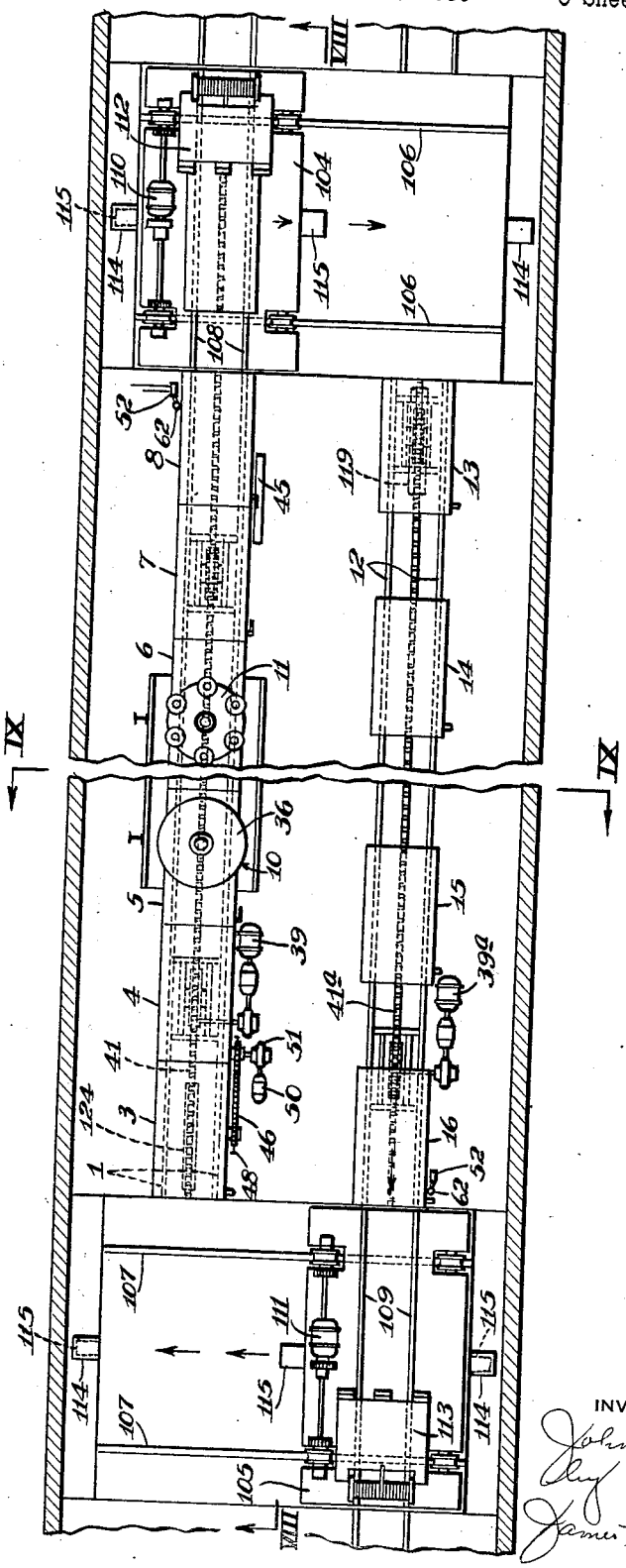
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CAR TRANSFER APPARATUS

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Fig. 7.



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CAR TRANSFER APPARATUS

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Fig. 11.

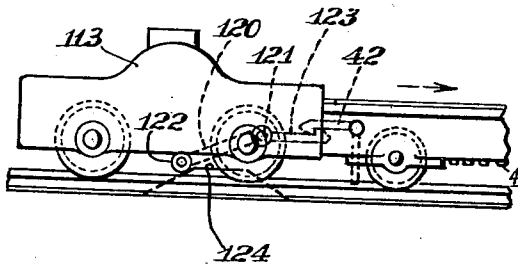


Fig. 10.

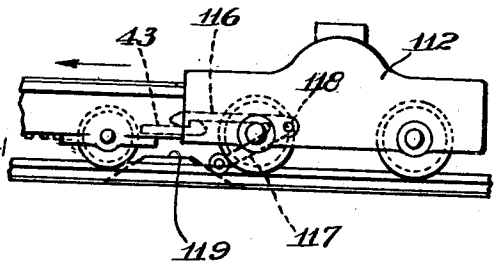
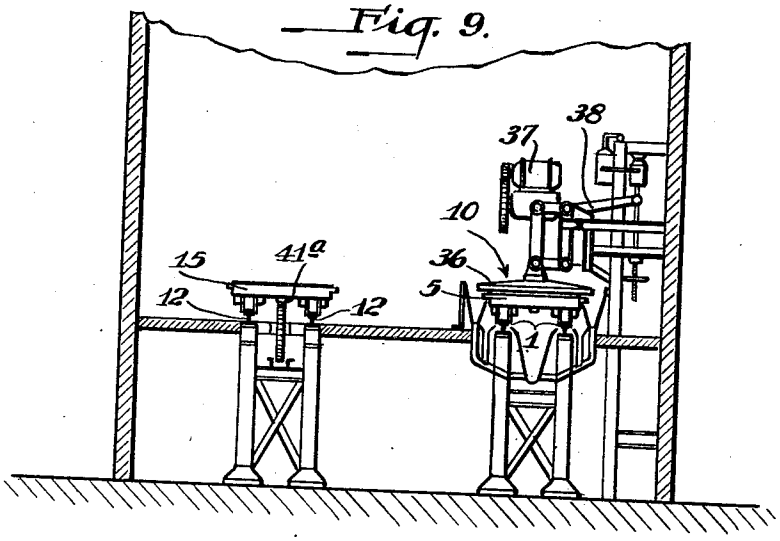


Fig. 9.



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Patented June 7, 1932 1,861,659

UNITED STATES PATENT OFFICE

JOHN H. FOX, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO PITTSBURGH PLATE GLASS COMPANY, A CORPORATION OF PENNSYLVANIA

CAR TRANSFER APPARATUS

Application filed January 21, 1930. Serial No. 422,432.

The invention relates to a car transfer system designed particularly for handling the cars or tables in what is known as a straight-away plate glass grinding and polishing operation. It has for its objects the provision of improved means for facilitating the shifting of the cars between a plurality of parallel tracks and for making the shifting automatic, so that the cars, as they arrive at the end of one track, will be transferred to the next track and started back along such track. Certain embodiments of the invention are illustrated in the accompanying drawings, wherein:

Figure 1 is a plan view. Fig. 2 is a longitudinal section on the line II—II of Fig. 1. Fig. 3 is a section on the line III—III of Fig. 1. Fig. 4 is a diagrammatic view showing the automatic controlling means. Fig. 4*a* is a section through the switch drum. Figs. 5 and 6 are enlarged detail views illustrating the means employed for coupling and uncoupling the cars. Fig. 7 is a plan view of a modification. Fig. 8 is a longitudinal section on the line VIII—VIII of Fig. 7. Fig. 9 is a section on the line IX—IX of Fig. 7. And Figs. 10 and 11 are detail views showing the means for coupling and uncoupling the cars and locomotives shown in the construction of Figs. 7 to 9.

Referring to Figs. 1 to 6, 1 is the work track over which pass the series of cars or tables 2 to 8, etc. carrying the glass sheet to be surfaced beneath the series of grinders and polishers 10 and 11; 12 is the return track for conducting the cars 13, 14, 15, 16, etc. back to starting position during which movement the surfaced glass sheets are removed and new unsurfaced sheets are applied; 17 and 18 are transfer cars at the ends of the tracks 1 and 12, such cars being provided with tracks 19 and 20 and being mounted for movement back and forth between the ends of the tracks 1 and 12; and 21 and 22 are electric locomotives mounted on the transfer car tracks 19 and 20 for pulling the work cars onto the transfer cars and discharging them therefrom.

In operation the series of work cars 2 to 9, etc. move along the track 1 from left to right as indicated by the arrows in Fig. 1, passing successively beneath a series of grinders 10 and a series of polishers 11. Arriving at the end of the track 1, the end car is pulled onto the transfer car 18 by the locomotive 22, and the transfer car is shifted so that its track is aligned with the return track 12, at which time the locomotive pushes the car onto the track 12 and the transfer car returns to starting position for another car. The cars are thus successively shifted from the work track to the return track 12 where they are engaged by an endless drag chain which moves them to the left (Fig. 1). During the movement of the cars over the return track the surfaced sheets are removed and carried away, if both sides have been surfaced or turned upside down and relaid on the tables if only one side has been surfaced. When the tables reach the left hand end of the return track, they are transferred to the work track 1 by means of the transfer car 17 and locomotive 21, the transfer operation at this end of the tracks being the same as that at the other end as already described. The invention here involved relates primarily to the transfer apparatus and to the means whereby the transfer apparatus is made, either wholly or partially automatic instead of requiring the services of an operator for the electric locomotive at each end of the system, as has heretofore been the practice.

The transfer cars 17 and 18 are similarly supported and are shifted in the same manner from the electric motors 23 and 24, so that a description of one will apply to both. The body of the car 18 is of sufficient length to carry the locomotive and one car, as indicated in Fig. 1. The car is engaged pivotally upon a pair of parallel arms 25 and 26 carried at their inner ends by a pair of vertical shafts 27 and 28 mounted for rotation in the pedestals 29 and 30. These shafts are provided with worm wheels lying in the casings 31 and 32 and these wheels are driven from worms 33 and 34 on the shaft 35 of the motor 24. The axes of rotation of the shafts 27 and 28 lie upon a line midway between the tracks 1 and 12 and since the arms 25 and 26 are equal in length and parallel,

the transfer car is maintained in all its positions, in parallel with the original position. Wheels 22*b* are journalled in the ends of the arms 25 and 26 and engage the curved tracks 22*a*, thus giving support to the transfer cars.

The grinding and polishing machines 10 and 11 may be of any approved type and the number of each will vary depending on requirements, for simplicity of showing, only one member of each group being shown. The grinders have the usual iron runner bars, while the polishers have spiders carrying a plurality of discs faced with felt. The machines are preferably of the type shown in which the runner 36 with its drive motor 37 constitute a removable unit mounted on the counterbalanced arm 38.

The series of tables on the track 1 constitute a train which is continuously moved to the right (Fig. 1) under the grinding and polishing machines by a motor 39 operating through suitable reduction gearing, including the spur gear 40 which engages the racks 41 on the lower sides of the tables. The cars on the return track 12 are moved along by an endless chain 41*a* driven by a motor 39*a* operating through reduction gearing in the casings 39*b* and including a sprocket around which the chain passes. The chain is provided with means for engaging the cars and moving them along after they are pushed off of the transfer car and over such chain by the locomotive 22. The tables are preferably coupled together, as indicated in Fig. 6, a swinging coupler hook 42 on the end of one car engaging a fixed hook 43 on the next car. The handle 44, which swings the hook 42, is shown in locked position in full lines in Fig. 6 and in unlocked position in dotted lines. The cars are automatically uncoupled when they reach the right hand end of the tracks 1 by means of a cam rail 45 located at the side of the tracks (Figs. 1 and 7) and serving to swing the handle 44 from locked position to unlocked position as the car moves to the right.

The automatic coupling of the cars together, as they are added to the train by the transfer apparatus at the left end of the track 1 is accomplished by the apparatus shown in Figs. 1 and 5. An endless chain 46 is provided at the side of the track working around a pair of sprockets 47, and provided with the arms 48 carrying rollers 49, such chains being driven from the motor 50 operating through the reducing gearing in the casing 51 (Fig. 1). As the cars move past or along the chain, one of the arms engages the handle 44 and swings it to the right, thus moving the swinging coupler hook 42 to locked position.

The means for automatically controlling the operation of the transfer car 17 and its locomotive 18 at the right end of the tracks 1 and 12 are shown diagrammatically in Fig. 4, it being understood at this point that the control means at the other ends of the tracks is similar, so that a description of the one will suffice for both. The parts may, at this time, be assumed to occupy the positions shown in Figs. 1 and 4 with the track of the transfer car 18 in alignment with the track 1 in position to receive the end car 8. The control apparatus includes a switch 52, which initiates the transfer operation; a control motor 53, which is started by the movement of the switch 52; a cam drum 54 driven by the control motor through suitable reduction gearing in the casing 55*a*; a series of switches 55 to 60 preferably of the tilting mercury type as shown in Fig. 4*a* adapted to be operated by cams 54*a* on the drum 54; and the magnetic clutch 61 carried by the locomotive 22 for coupling the locomotive to the end car of the train.

The arm of the switch 52 is provided with a roller 62 adapted to be engaged by the end of the table 8 and swung in a clockwise direction. The switch is of the type which opens and closes during the movement of its arm, so that during the movement referred to the contacts 63 and 64 of the switch are connected momentarily and then disconnected. The closing movement puts current from the line 65 through the operating coil 66 of the switches 67 and 68 to the return line 69, causing such switches to close. The circuit between the contacts 63 and 64 is immediately broken by the switch arm 52, but the switch arms 67 and 68 are held closed by the coil 66 due to a flow of current therethrough from the line 65 via the connection 70, the switch 55, the connection 71, the switch 68 and line 69. The control motor is now operated due to a flow of current through its armature via the line 65, the line 72, switch 67 and line 69, and this operation continues until the transfer operation, which will now be described, is completed, at which time a cam on the switch drum 54 opens the switch 55.

The rotation of the drum 54 now closes the switch 56 so that current is supplied to the locomotive motor 73, to cause the locomotive to advance and couple to the car 8 preliminary to pulling it onto the transfer car. When the switch 56 is closed, current is supplied through the coil 74 which operates the switch 75 via the line 65, connection 76, connection 77, switch 56, connection 78 and line 69. This causes the switch 75 to close, so that current flows through the locomotive motor 73 from the line 65 via the connection 79, switch 75, line 80 and line 69. The motor is thus driven, causing the locomotive to advance and engage the end car 8 to which it is coupled by the magnetic coupling indicated diagrammatically at 61. The coils of this coupling are energized at this time due to the closing by the drum 54 of switch 60,

so that current flows through the coupling coils from the line 65 via the connection 81, switch 60 and connections 82 and 83 leading to the line 69. At this time the car 8 has been uncoupled at its other end from the car 7 due to the handle 44 of the coupling engaging the cam rail 45, as heretofore described.

The locomotive motor 73 must now be reversed in order to pull the car 8 onto the transfer car and this reverse movement is accomplished by the further rotation of the drum 54, one of whose cams opens the switch 56 and at the same time closes the switch 57. The opening of the switch 56 interrupts the circuit through the coil 74, while the closing of the switch 57 causes current to flow through the coil 84, thus shifting the switch 75 from the position shown to its other position in engagement with the contacts 85 and 86. Current flows through the coil 84 from the line 65 via the connection 79, connection 87, switch 57, connection 88, and line 69. After the switch 75 is shifted, as above described, current flows through the motor in a reverse direction via the line 79, switch 75, connection 89, connection 80, and line 69. The motor 73 now runs backward until the car 8 is pulled onto the transfer car 18, at which time the further rotation of the drum causes the switch 57 to open, so that current through the coil 84 is interrupted, permitting the switch 75 to move to neutral position, this being accomplished by spring means, not shown, which serves to hold the switch out of engagement with its various contact members when neither of the coils 74 or 84 are energized.

It is now necessary to move the transfer car from the position shown to one in which it is in alignment with the return track 12. This is accomplished by means of the motor 24 operating through the shaft 35 and through drive connections as heretofore described. This swinging movement is initiated by the closing of the switch 58 by the drum 54, thus causing current to flow through the operating coil 90, which moves the switch 91 to the position shown. This switch, like the switch 75, is normally held in neutral position by spring means, not shown. Current is supplied through the coil 90 from the line 65 via the connection 91, switch 58, connection 92, connection 93, and line 69. When the switch 91 is moved to the position shown, current is supplied to the motor 24 via the connection 94, switch 91, connections 95 and 96, and line 69. The movement of the transfer car is continued until it is brought into alignment with the track 12, at which time the movement is stopped by reason of the interruption of the circuit through the motor due to the opening of the switch 58, which interrupts the circuit through the coil 90 and permits the switch 91 to move to neutral position.

The next operation is the movement of the locomotive forward to push the car 8 onto the track 12 where it is engaged by the endless transfer chain 41*a*. This forward movement is accomplished by another cam on the drum 54, which is located at 180 degrees from the cam which operates the switch 56. This cam closes the switch 56 again, so that the coil 74 again closes the switch 75 and the motor 73 operates to cause the movement of the locomotive and car 8 forward onto the track 12. When the car 8 is pushed onto the track 12, the magnetic coupling 61 is released due to a cam on the drum 54 engaging the switch 60 and opening it, thus interrupting the flow of current through the coils of the coupler.

The next movement of the apparatus is the backward movement of the locomotive onto the transfer car which is brought about by the actuation of the switches 56 and 57 by a pair of cams on the drum 54, the switch 56 being opened and the switch 57 being closed, so that the flow of current through the motor 73 is reversed and the locomotive moved back onto the transfer car. At the conclusion of this movement, a cam on the drum 54 causes the opening of the switch 57 so that the switch 75 moves to neutral position and the operation of the locomotive motor stops.

The concluding movement of the cycle is the return of the transfer car to its position in alignment with the track 8 preliminary to the next transfer of another car from the track 1 to the track 12. This is accomplished by a cam on the drum 54, which closes the switch 59, thus supplying current through the coil 97 causing the switch 91 to move from neutral position to position in engagement with the contacts 98 and 99, which causes a reverse flow of current through the motor 24 to move the car 18 back to starting position in alignment with the track 1. When the transfer car reaches this position, the drum 54 permits the switch 59 to open, so that the flow of current through the coil 97 is interrupted and the switch 91 moves back to neutral position. This completes the cycle of operations, which cycle is repeated as soon as another car, such as the car 7 arrives at the end of the track 1 and engages the arm of the switch 52.

The control as above described relies entirely upon the drum 54 as a controlling means for the movements of the locomotive and transfer car, but if desired, limit switches may be used in connection with the apparatus described in order to assist in the control or to make the stopping of the motors more definite and accurate than can be accomplished where a rotating control drum is relied upon. Such limit switches may also be employed as safety devices in case the

travel of the locomotive or the transfer car should for any reason become too great. Limit switches for the purpose above indicated are shown at 100 and 101 in the connections 76 and 87 which lead to the coils 74 and 84, such switches serving to control the movements of the locomotive. Similarly, the limit switches 102 and 103 are shown in the lines leading to the coils 90 and 97 for controlling the movement of the transfer car.

The transfer operation and the means for controlling it have been described as applied to the right-hand end of the apparatus. The transfer apparatus at the other end of the tracks and the method of control is substantially the same as the one already described, the cars being taken from the track 12 as they arrive at the left-hand end thereof and transferred to the track 1 by means of the transfer car 19 and locomotive 21. No operator is required at either end, although if desired, a part of the automatic operation may be dispensed with and push buttons employed to start the transfer of each car. A push button could thus be employed instead of the automatic switch 52 to initiate the transfer operation.

The modification shown in Figs. 7 to 10 involves a departure from that of Figs. 1 to 6 primarily in that the transfer cars 104, 105 are mounted for movement on tracks 106, 107, which extend at right angles to the line of direction of the work and return tracks. The work track and the return track, as well as the grinding and polishing machines and the means for moving the tables along the tracks are precisely the same in the constructions of Figs. 1 to 6 and for that reason are given the same reference numerals throughout. The transfer cars 104 and 105 are provided with tracks 108, and 109, which are adapted to line up with the tracks 1 and 12 when the transfer cars are at their two extremes of movement. The cars are moved back and forth along the tracks 106, 107 by motors 110 and 111 operating through suitable connections to rotate the wheels of the car. The locomotives 112 and 113 which are mounted upon the tracks 108 and 109 are the same as those used in the construction of Figs. 1 to 6. In order to stop the transfer car when it reaches its two extremes of movement, a pair of dash pots 114, 114 are provided at the ends of the transverse tracks 106 and 107 in position to receive the plungers 115, 115 when the car reaches its end position, the parts 114, 114 acting in this manner to index the transfer car with respect to the tracks 1 and 12 and to cushion the shock due to any slide-over travel of the transfer car.

The method of automatically controlling the transfer of cars from one track to the other is the same as that heretofore described in connection with the apparatus of Figs. 1 to 6, except that the magnetic couplers of the construction of Figs. 1 to 6 are not used, their place being taken by mechanical couplers which operate automatically. As shown in Fig. 10, the locomotive 112 is provided with a coupler of V-form comprising arms 116 and 117 pivoted at 118, the arm 116 being provided with a hook, while the arm 117 is provided with a roller. An unlocking cam 119 is provided between the rails of the track 12 for cooperating with the roller on the arm 117. When a car is pushed from the track 108 onto the track 12 by the locomotive 112, the roller on the arm 117 rides up on the cam 119 and lifts the arm 116, thus releasing its hooked end from the coupler hook 43 on the car.

The locomotive 113 at the transfer car 105 at the left-hand end of the tracks 1 and 12 is provided with coupling device, as shown in Fig. 11, such device comprising a lever 120, pivoted at 121 and carrying at one end a roller 122 and at the other a hook 123. After a car has been coupled to the locomotive 113 and the transfer car brought into alignment with the track 1, the locomotive moves to the right to push the car against the last one of the train of cars on such track. It now becomes necessary to uncouple the locomotive from the car which is being transferred and this is accomplished by means of the cam 124 located between the rails of the track 1. When the roller 122 rides over the cam 124, the forward end of the lever 120 is depressed, thus releasing it from the end of the coupler member 42 at the end of the car. This leaves the locomotive free to be moved back onto the transfer car in order to perform another transferring operation.

The transfer car of Figs. 1 to 6 and the means for supporting it are shown in very simple form, and it will be understood that the design may be elaborated and may be extended, depending upon conditions. Additional tracks and supporting wheels may be supplied to meet requirements. No means are shown for locking the transfer cars in their abutting positions with respect to the tracks 1 and 12, but it will be understood that suitable devices for this purpose may be employed and that their operation may be made automatic, if desired. The shifting means on the transfer cars are shown and described as locomotives, but it will be understood that other shifting means might be employed to which the term "locomotive" may not be aptly applied, and that the invention contemplates any and all shifting members carried by the transfer cars and operated by electric motors so as to pull the work cars onto the transfer cars and push them off again. Suitable indexing devices may also be employed with the transfer cars of Fig. 7, if desired, in order to make the tracks on the transfer cars line up properly with the tracks

1 and 12, such devices being well-known in the art.

What I claim is:

1. The combination with a pair of parallel tracks adapted to carry a series of cars or tables, a transfer car at the ends of said tracks provided with a track and mounted for movement transversely of said parallel tracks, so that in one position the track on the transfer car is in alignment with one of said parallel tracks and in another position is in alignment with the other of said parallel tracks, an electric motor for moving the transfer car back and forth between said positions, a shifting member on the transfer car track, an electric motor for moving the shifting member back and forth, means for moving the cars on one of said parallel tracks continuously toward the end thereof adjacent the transfer car, and control means, including a control motor, a rotating switch device operated thereby, and a switch for starting the control motor when the end member of the moving cars approaches the end of its track, for automatically transferring said end car from the end of its track to the end of the other parallel track, said transfer including the forward movement of the shifting member to coupling engagement with the end car, the reverse movement of the shifting member to carry said end car onto the track of the transfer car, the movement of the transfer car to position with its track in alignment with the other parallel track, and the movement of the shifting member forward to push the end car onto such other track.

2. The combination with a pair of parallel tracks adapted to carry a series of cars or tables, a transfer car at the ends of said tracks provided with a track and mounted for movement transversely of said parallel tracks, so that in one position the track on the transfer car is in alignment with one of said parallel tracks and in another position is in alignment with the other of said parallel tracks, an electric motor for moving the transfer car back and forth between said positions, a shifting member on the transfer car track, an electric motor for moving the shifting member back and forth, means for moving the cars on one of said parallel tracks continuously toward the end thereof adjacent the transfer car, and control means, including a control motor, a rotating switch device operated thereby, and a switch for starting the control motor operated by one of said moving cars when the end one of said cars approaches the end of its track, for automatically transferring said end car from the end of its track to the end of the other parallel track, said transfer including the forward movement of the shifting member to coupling engagement with the end car, the reverse movement of the shifting member to carry said end car onto the track of the transfer car, the movement of the transfer car to position with its track in alignment with the other parallel track, and the movement of the shifting member forward to push the end car onto such other track.

3. The combination with a pair of parallel tracks adapted to carry a series of cars or tables, a transfer car at the ends of said tracks provided with a track and mounted for movement transversely of said parallel tracks, so that in one position the track on the transfer car is in alignment with one of said parallel tracks and in another position is in alignment with the other of said parallel tracks, an electric motor for moving the transfer car back and forth between said positions, a shifting member on the transfer car track, an electric motor for moving the shifting member back and forth, means for moving the cars on one of said parallel tracks continuously toward the end thereof adjacent the transfer car, and control means, including a control motor, a rotating switch device operated thereby, and a switch for starting the control motor when the end member of the moving cars approaches the end of its track, for automatically transferring said end car from the end of its track to the end of the other parallel track, said transfer including the forward movement of the shifting member to coupling engagement with the end car, the reverse movement of the shifting member to carry said end car onto the track of the transfer car, the movement of the transfer car to position with its track in alignment with the other parallel track, the movement of the shifting member forward to push the end car onto such other track, and the movement of the transfer car back to starting position with its track in alignment with the first of said parallel tracks.

4. The combination with a pair of parallel tracks adapted to carry a series of cars or tables, a transfer car at the ends of said tracks provided with a track and mounted for movement transversely of said parallel tracks, so that in one position the track on the transfer car is in alignment with one of said parallel tracks and in another position is in alignment with the other parallel track, a locomotive on the transfer track provided with an electric motor for moving it, means for moving the cars on one of said parallel tracks continuously toward the end thereof adjacent the transfer car, a rotatable switch device and control motor for turning it, a switch operated by the movement of the cars as the end car approaches the end of its track for causing the starting of the control motor, means brought into play by the movement of the rotatable switch device causing the actuation of the locomotive motor to advance the locomotive into abutting relation with the end car, automatic coupling means for coupling the locomotive to the end

car when they are brought into abutting relation, means operated by the rotating switch device to reverse the locomotive motor after the locomotive is coupled to the end car and cause it to move the end car onto the transfer car, an electric motor for moving the transfer car, means operated by the rotating switch device for causing the actuation of the transfer car motor to cause it to move the transfer car to position in alignment with the other parallel track after the locomotive has moved said end car onto the transfer track, and means operated by the rotating switch device for reversing the locomotive motor and causing it to move the end car onto said other parallel track after the transfer car has reached its position with its track in alignment with said parallel track.

5. The combination with a pair of parallel tracks adapted to carry a series of cars or tables, a transfer car at the ends of said tracks provided with a track and mounted for movement transversely of said parallel tracks, so that in one position the track on the transfer car is in alignment with one of said parallel tracks and in another position is in alignment with the other parallel track, a locomotive on the transfer track provided with an electric motor for moving it, means for moving the cars on one of said parallel tracks continuously toward the end thereof adjacent the transfer car, a rotatable switch device and control motor for turning it, a switch operated by the movement of the cars as the end car approaches the end of its track for causing the starting of the control motor, means brought into play by the movement of the rotatable switch device causing the actuation of the locomotive motor to advance the locomotive into abutting relation with the end car, automatic coupling means for coupling the locomotive to the end car when they are brought into abutting relation, means operated by the rotating switch device to reverse the locomotive motor after the locomotive is coupled to the end car and cause it to move the end car onto the transfer car, an electric motor for moving the transfer car, means operated by the rotating switch device for causing the actuation of the transfer car motor to cause it to move the transfer car to position in alignment with the other parallel track after the locomotive has moved said end car onto the transfer track, means operated by the rotating switch device for reversing the locomotive motor and causing it to move the end car onto said other parallel track after the transfer car has reached its position in alignment with said parallel track, automatic means for uncoupling the locomotive from the end car, means operated by the rotating switch device for causing the movement of the locomotive back onto the transfer car, and for moving the transfer car back to starting position with its track in alignment with the first parallel track.

6. The combination with a pair of parallel tracks adapted to carry a series of cars or tables, and means for transferring said cars from one track to the other comprising a pair of parallel arms mounted for swinging movement upon spaced supports intermediate the tracks at the ends thereof, a transfer car to which the arms are pivoted at their outer ends, and a track extending longitudinally of the transfer car and adapted to align with one of said parallel tracks when the arms are in one extreme of swinging movement, and to align with the other of said parallel tracks when in the other extreme of swinging movement.

7. The combination with a pair of parallel tracks adapted to carry a series of cars or tables, and means for transferring said cars from one track to the other comprising a transfer car at the ends of the tracks provided with a track extending longitudinally thereof, and a pair of parallel arms engaging the transfer car and moving it back and forth between the two parallel tracks, said arms being of equal length, pivoted to the car at their outer ends and pivotally supported at their inner ends on a line extending midway between the two parallel tracks parallel thereto.

8. The combination with a pair of parallel tracks adapted to carry a series of cars or tables, and means for transferring said cars from one track to the other comprising a transfer car at the ends of the tracks provided with a track extending longitudinally thereof, a pair of parallel arms engaging the car as it moves back and forth between the two parallel tracks, and power means for swinging the arms, said arms being of equal length, pivoted to the car at their outer ends and pivotally supported at their inner ends on a line extending midway between the two parallel tracks parallel thereto.

In testimony whereof, I have hereunto subscribed my name this 26th day of December, 1929.

JOHN H. FOX.