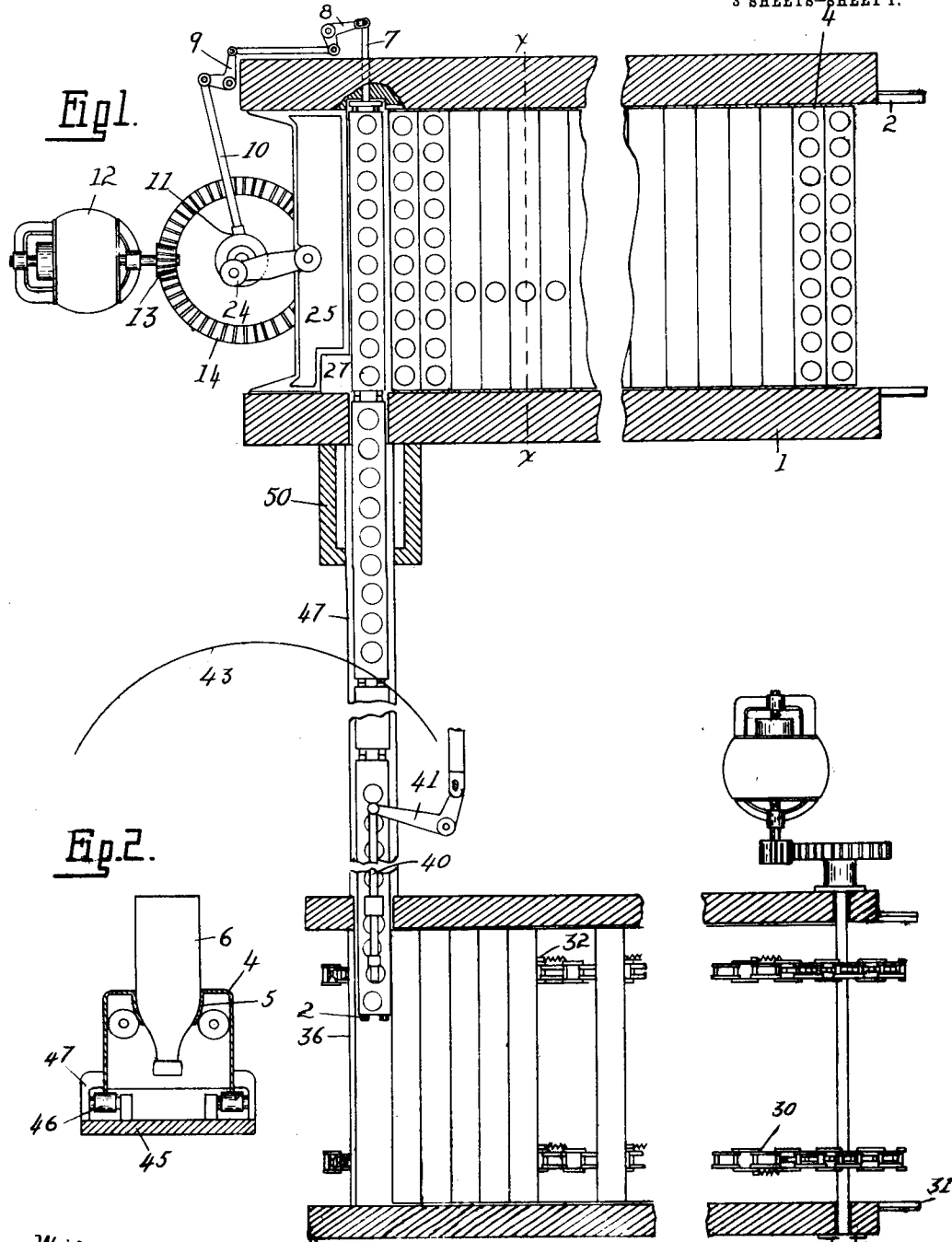


M. J. OWENS.
LEER AND LEER CHARGING MECHANISM.
APPLICATION FILED JAN. 18, 1909.

1,117,433.

Patented Nov. 17, 1914.

3 SHEETS—SHEET 1.



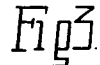
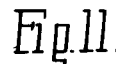
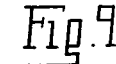
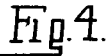
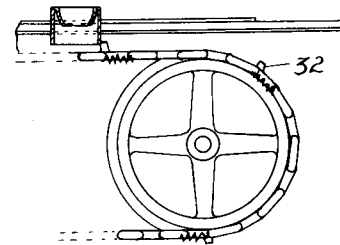
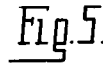
Witnesses
H. H. Fox
J. Belknap

Inventor
Michael J. Owens
By Whittmore Hulbert Whittmore

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3 SHEETS--SHEET 2.



Witnesses

Inventor

Michael J. Owens

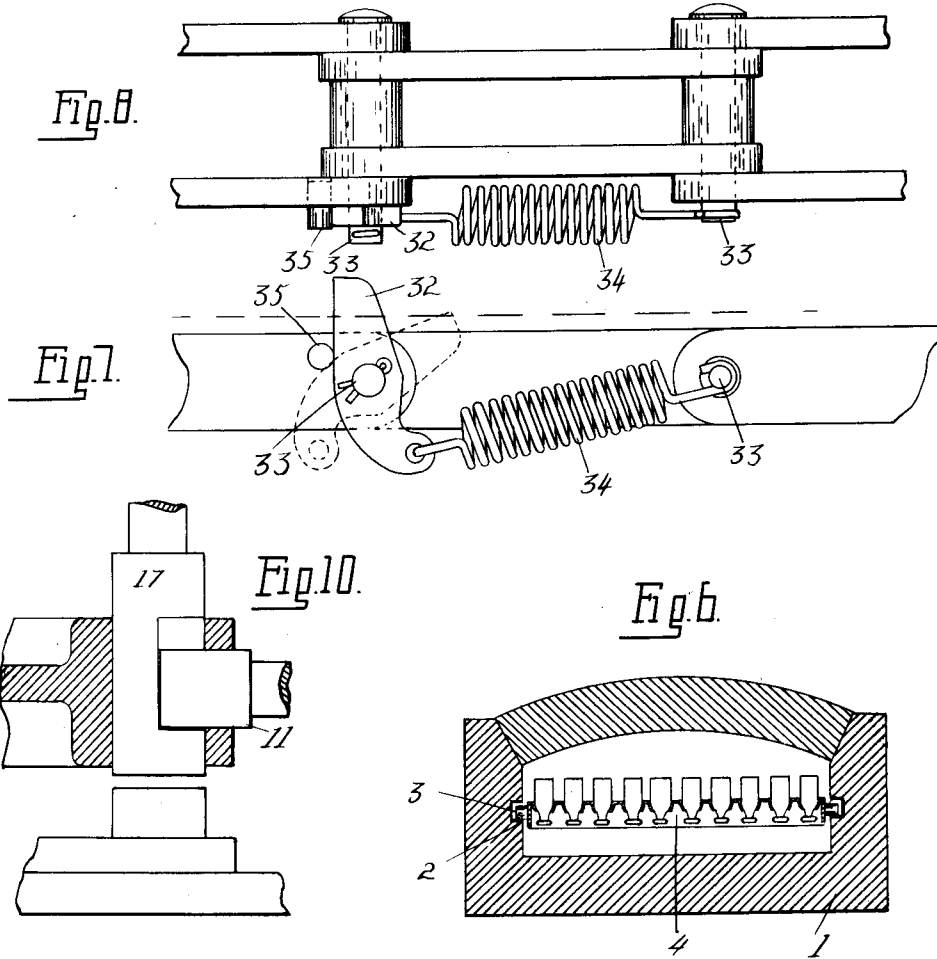
By Whitmore Hubert Whitmore
Atty's

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3 SHEETS-SHEET 3.



Witnesses
W. H. Ford
J. B. Belknap

Inventor
Michael J. Owens
By *Whittemore* *Hubert* *Whittemore*
attys

UNITED STATES PATENT OFFICE.

MICHAEL J. OWENS, OF TOLEDO, OHIO, ASSIGNOR TO THE TOLEDO GLASS COMPANY,
OF TOLEDO, OHIO, A CORPORATION OF OHIO.

LEER AND LEER-CHARGING MECHANISM.

1,117,433.

Specification of Letters Patent.

Patented Nov. 17, 1914.

Application filed January 18, 1909. Serial No. 472,937.

To all whom it may concern:

Be it known that I, MICHAEL J. OWENS, a citizen of the United States of America, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Leers and Leer-Charging Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to new and useful improvements in leers and leer-charging mechanism, and consists, first, in the construction of the leer whereby it may be automatically charged with ware; second, providing the leer carrier with holders so that it will hold the bottles, these holders serving to prevent the tipping of narrow-bottomed bottles and also permit the charging of the leer sections by bottles which may be delivered into the holders directly from the glass-forming machine; and third, in the construction of the carrier so that the same may be charged, fed through the leer, returned to charging position, and re-charged, as a continuous operation.

25 In the construction shown, all of these operations are automatic except the transfer of the carrier sections from the discharge end of the leer to the return mechanism; and the devices consist in the construction, arrangement and combination of the various parts, all hereinafter more fully set forth and particularly pointed out in the claims.

30 In the drawings: Figure 1 is a plan view, partly in section, showing the leer, the return mechanism, the intermediate transfer mechanism, and diagrammatically illustrating the position of the glass-forming machine and fire-finishing machine; Fig. 2 is a vertical section through the intermediate transfer carrier; Fig. 3 is a side elevation of a portion of that carrier illustrative of the construction of the feed-pawl therefor; Fig. 4 is a section through a portion of the carrier and the fire-finisher adjacent to the leer; Fig. 5 is a longitudinal section through the return carrier; Fig. 6 is a vertical section on line $x-x$ of Fig. 1; Fig. 7 is a side elevation of a portion of the return carrier; Fig. 8 is a plan of a portion of the return carrier illustrating the construction of the feed-trigger; Fig. 9 is a vertical section through the actuating mechanism for the feed device or pusher for the leer

sections; Fig. 10 is an enlarged section through the clutch pin of the feed device; and Fig. 11 is an elevation of the clutch-pin.

1 is the leer. In the side of each side-wall is a recessed track 2 on which runs rollers 3 at the ends of the pan sections 4, as will be seen in Fig. 6. There are two of these rollers at each end so as to support the carrier sections against tipping.

The pan sections 4 may be of any desired shape, but I preferably make them of sheet metal of substantially inverted U-shape in cross-section, as shown in Fig. 2, having formed in the connecting or horizontal portion a longitudinal series of tapering sockets 5. These sockets as shown are of a shape fitting the tapering shoulder of the bottle when the bottle is in an inverted position, or neck downward, the bottle being numbered 6. It is obvious that if all the sockets be filled in a single carrier section there will be a row thereof suspended therein, as plainly shown in Fig. 4.

The carrier sections are intended, with the construction shown, to be fed longitudinally across the end of the leer, as shown at the left-hand of Fig. 1. This is preferably done automatically by mechanism to be hereinafter described. When a carrier section is thus fed in, it strikes the end of the push-rod 7, sliding to the guides in the side-wall of the leer and in the path of a communicating carrier-section. The push-rod 7 is connected to a bell-crank 8 which in turn connects to the bell-crank 9 which is connected to the rod 10, having at its end a block 11; these parts being fully shown in Figs. 1 and 9.

12 is a motor driving the pinion 13 meshing with the gear-wheel 14 which constantly revolves. The wheel 14 is loose on the shaft 15 upon which is secured the wheel 16. On the wheel 16 is a clutch-pin 17 sliding in vertical guides therein.

18 is a spring acting to push the pin 17 downward whenever the same is released by the block 11. The pin 17 has a notch 19 therein and a beveled face 20 at the top of the notch. The block 11 has a complementary beveled face.

21 is a bracket in which the block 11 is slidingly supported, and 22 is a spring tending to normally hold the block 11 in the notch 19.

When the leer section strikes the head of the push-rod 7 through the connection as shown, it will withdraw the block 11 from the notch 19, the engagement therein of which has held the pin 17 out of engagement with the lugs 23 on the wheel 14. As soon as released, the spring 18 will force the pin 17 into the path of these blocks and the wheel 17 and the shaft 15 will be given a single revolution. During this single revolution of the shaft 15, a crank 24 at the upper end thereof will move the pusher-head 25 forward, impinging against the last section fed in, thus pushing that carrier section, and any that may be ahead of it, along the guide-way 2 the width of one carrier-section, and it will then be withdrawn so as to leave a place for an incoming carrier section. At the outermost point of travel of the pusher 25 the block 11 having been projected by the spring 22 back into the path of the pin 17, the incline 20 and the incline on the block 11 will engage and lift the pin 17 out of the path of the lugs 23 and thus stop the rotation of the shaft 15. At that end of the pusher 25 beside which the pans enter, I cut away the portion 27 so that a partial entering of a new pan during the pushing operation will not be interfered with. When the leer sections completely fill the leer and the ware is annealed at the delivery end thereof, the operator in the packing-room takes out the end-pan with its contents, discharges the bottles therefrom for packing and delivers the carrier section by any suitable means upon the carrier 30—which is shown as arranged parallel with the leer 1 but separated therefrom. This carrier is provided with tracks 31 upon which the rollers 2 may run in the return of the leer sections. The leer sections are pushed along on the carrier by means of the triggers 32 (shown in detail in Figs. 7 and 8). These triggers are shown as pivoted upon the pivot pins 33 of the chain, connected at the lower ends to a spring 34 which may be connected to the adjoining pin 33. The springs tend normally to hold the triggers in upright position against a stop 35, and as they travel they strike the leer section placed upon the track 31 and move it along until that section strikes the accumulated sections or the stop 36 at the end of the carrier. As soon as this occurs the triggers turn on their pivots, expanding the springs 34, and thus pass along beneath the accumulated sections without moving the same. From this carrier 30 the leer sections are automatically fed back to the leer, which may be done by the following mechanism:

40 is a rod secured to the end of the bell-crank 41 which is intermittently rocked from any suitable source of power. On this rod 40 is a pivoted pawl 42 adapted to engage into the sockets in the leer sections, as

plainly shown in Fig. 3. This rod 40 is pushed back so as to engage in a new socket and then pulled forward a distance between the adjoining sockets,—thus feeding the leer sections longitudinally out of the return carrier and longitudinally toward the leer entrance that distance.

I have indicated by the circle 43 a glass-shaping machine. This particular detail design of my leer is designed to be used in connection with the machine shown in my previous Patent No. 766,768, dated August 2, 1904; and the circle indicates substantially the path which the molds take in passing from the tank where the glass is gathered, to the blowing stage, discharging point, and back to the gathering point. The discharge point of the machine is substantially over the path of travel which the leer sections take in traveling from the return carrier to the leer, and the bottles made in the machine when discharged may fall into a funnel 44 which will direct them, mouth downward, successively into the sockets, as shown at Fig. 4. In traveling from the return carrier to the leer, the leer sections travel on a guideway 45 having rollers 46 upon which the lower edges of the sections run, and guides 47 to prevent side-displacement.

Between the point at which the bottles enter the leer sections and the leer, I preferably arrange a fire-finisher 50 to fire-finish the neck of the bottle and take off any sharp edges that may be formed by the machines in the process of manufacture. This consists of simply a small furnace 48 having apertures 49 through which heat can be directed upon the necks of the bottles, as the same approach the leer. This furnace may be provided with gas burners, as is usual, or may be of any of the known or usual constructions for the purpose.

The device being thus constructed, the operation as a whole is as follows: A glass-shaping machine, if used to manufacture bottles, drops out a bottle during its rotation at the same point each time, and this bottle falls into the funnel 44, and is directed, neck downward, into the socket 5 in the leer section which is beneath the mouth of the funnel. Before another bottle is delivered into the leer section the bell crank 41 which is preferably driven from some part of the glass-shaping machine, suitably timed in connection therewith, is rocked, and its pawl 42 engages the socket 5 of one of the leer sections and shoves the entire line of leer sections which form the transverse carrier one step forward. This moves the bottle already delivered beyond the funnel 44 and brings a new socket in position to receive the bottle.

The successive feed forward by the bell crank 41 and the pawl 42 will move the leer section over the fire finisher where the

heat will be caused to impinge upon the neck of the bottle to fire-finish the same, and then move the bottles in that section into the leer, as shown at the left-hand of Fig. 1.

- 5 When the section is pushed into the leer to the limit of its motion, it operates the rod 7 and through the connection described, the pusher 25 pushes this section, with those which may be in front of it, forward into the leer and withdraws to permit the next section to come in.

The furnace is provided with suitable heating devices (not shown) for annealing. At the delivery end of the leer, the operator takes out the leer sections, discharges the bottles therefrom, which can be done by tipping it over, and thus delivering them into an upright position, and then feeds, by any suitable means, or carries, the section to the return carrier where it is returned again to the feeding point, as above described. In this way it will be seen that the bottle is fire-finished and annealed, is automatically taken from the machine and carried through these operations; and that this operation may be continuous without the employment or the necessity of any labor as ordinarily employed to carry the material to the leer. It will also be seen that the device is extremely simple and can be manufactured at an expense not exceeding the present cost of the leer alone.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with a charging station for glassware comprising a chute in which the ware is fed, of a leer carrier element comprising detached movable pans constructed to receive a series of formed glassware, means for moving the pans beneath the said chute to receive the ware and for presenting the pans to a leer feeding mechanism, and a leer feeding mechanism for feeding the pans through the leer.

2. The combination with a charging chute, of a leer tunnel, a series of leer pans, means for moving the pans outside the leer beneath the charging chute step by step and into the leer, means on the leer pans for holding articles in a row, and means for moving the aligned pans laterally through the leer.

3. The combination with a leer, of a series of leer pans, each pan having a row of ware-holding sockets, of means for feeding the pans to a ware-charging station and endwise therefrom into the leer, and means for feeding the pans side by side through the leer.

4. The combination with a leer tunnel, of means for moving ware-carrying pans through the tunnel, a series of leer pans, a

charging station, means for moving the pans to the charging station and into the leer, whereby the pans are positioned to be moved through the leer by the said pan moving means.

5. The combination with a leer tunnel, of means for moving the leer pans through the tunnel, a series of detachable leer pans, means for feeding the pans endwise and end to end across the leer, and means for returning the pans to the feeding device.

6. The combination with a leer tunnel, of a series of separate ware-carrying pans, means for moving the pans through a leer tunnel, and a feed carrier for feeding the pans endwise into the leer in position to be acted upon by the said pan moving means.

7. The combination with a leer tunnel, detachable ware supporting devices therefor, means for feeding the devices into the tunnel, means for feeding the devices through the tunnel, and means operated by the incoming ware supporting device for causing the said tunnel feeding device to operate.

8. In a leer, a carrier bed made up of transverse sections, each section comprising a U-shaped sheet metal plate having a row of sockets in the connecting member of the U.

9. The combination with the leer tunnel, of a series of ware-supporting devices therein and means for automatically filling the devices with ware outside the tunnel, a carrier for delivering the filled ware supporting devices into the leer, and means for moving the filled devices through the leer chamber.

10. In combination with a ware-charging device, detached carrier devices adapted to receive the articles from the charging device, means for feeding the carrier devices through the leer, and means for moving the carrier devices from the charging device and automatically delivering them in feeding relation to the leer feeding device.

11. In an annealing apparatus, a leer, a ware charger, means for transferring the ware from the charger to and through the leer comprising a series of ware carriers, a ware carrier return mechanism, and means for moving the ware carriers from the return mechanism to the charger and from the charger to the leer for movement there-through, said means comprising a device for engaging the ware carriers at their returned position.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL J. OWENS.

Witnesses:

MABEL O. MILLER,
T. H. MILLER.