H. G. SLINGLUFF & H. S. HEICHERT.

APPARATUS FOR HANDLING CYLINDERS.

APPLICATION FILED DEC. 13, 1907.

1,263,341.

Patented Apr. 16, 1918.

4 SHEETS—SHEET 1.

FIG. 1.

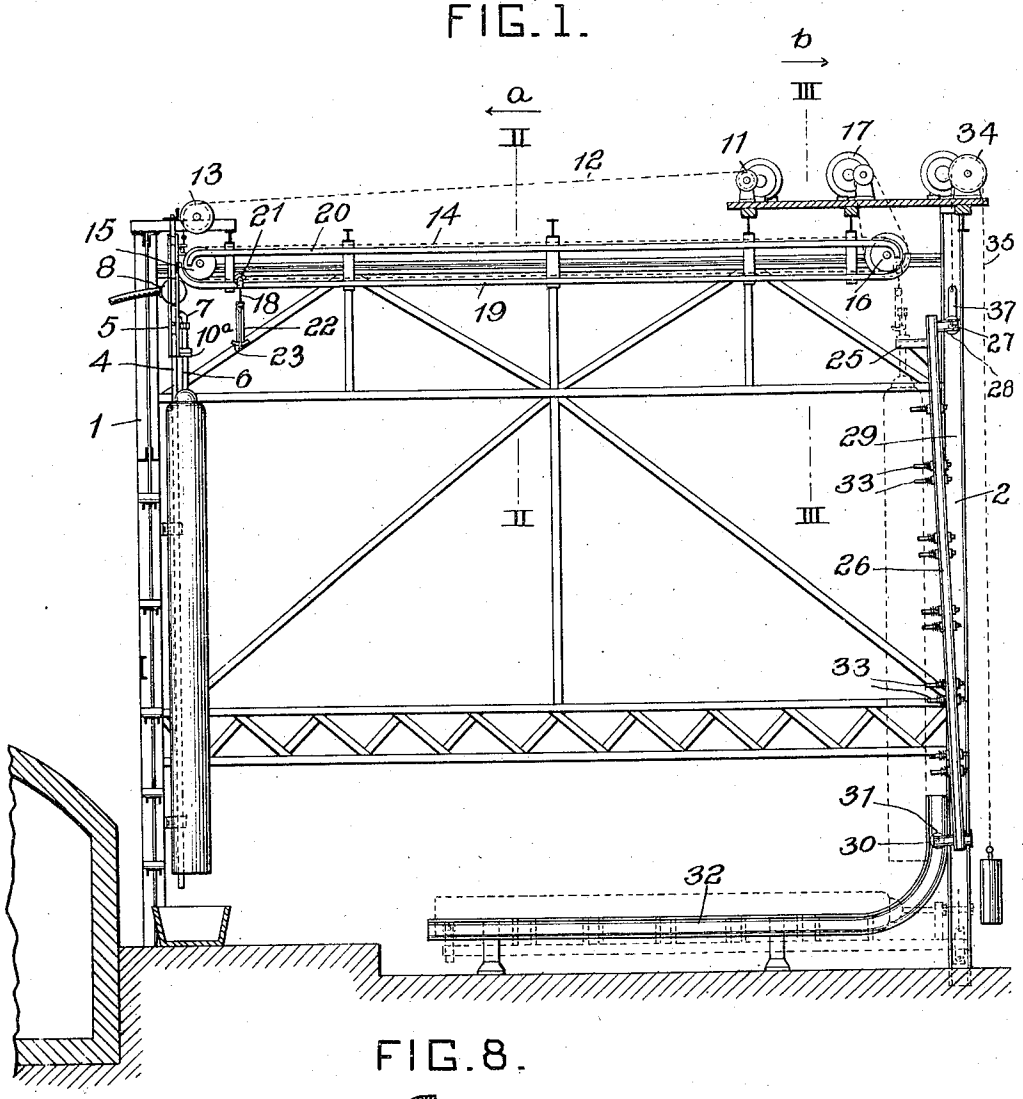
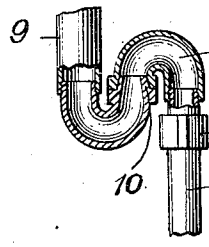


FIG. 8.



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4 SHEETS—SHEET 2.

FIG. 2.

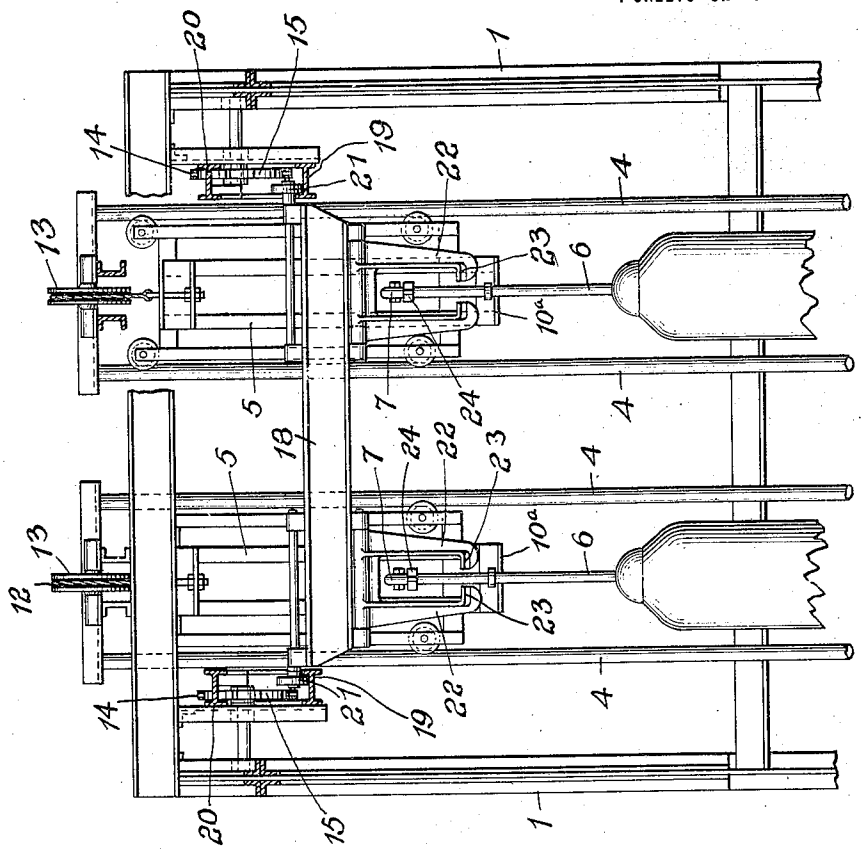
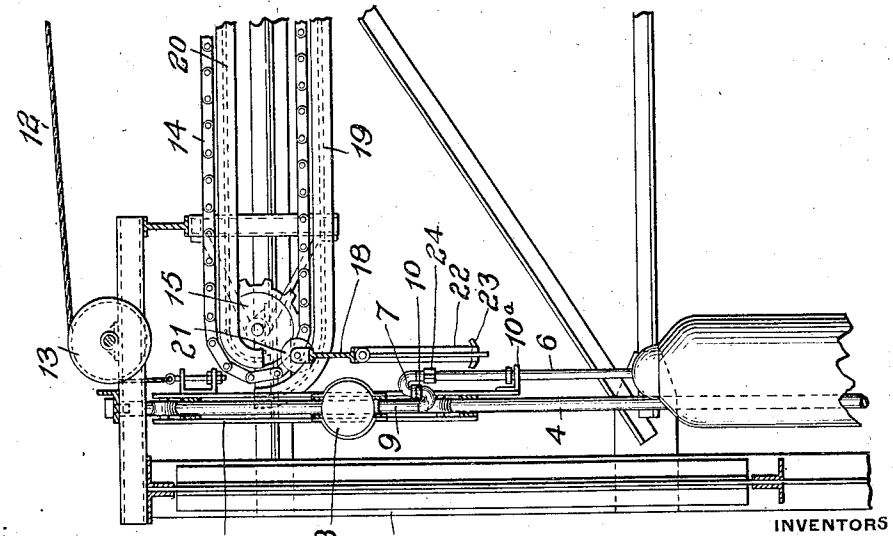


FIG. 4.



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4 SHEETS—SHEET 3.

FIG. 5.

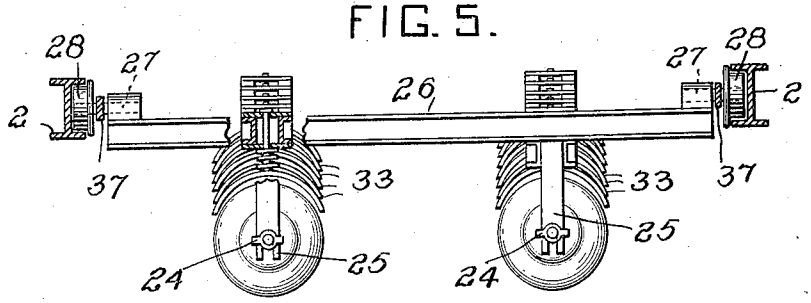
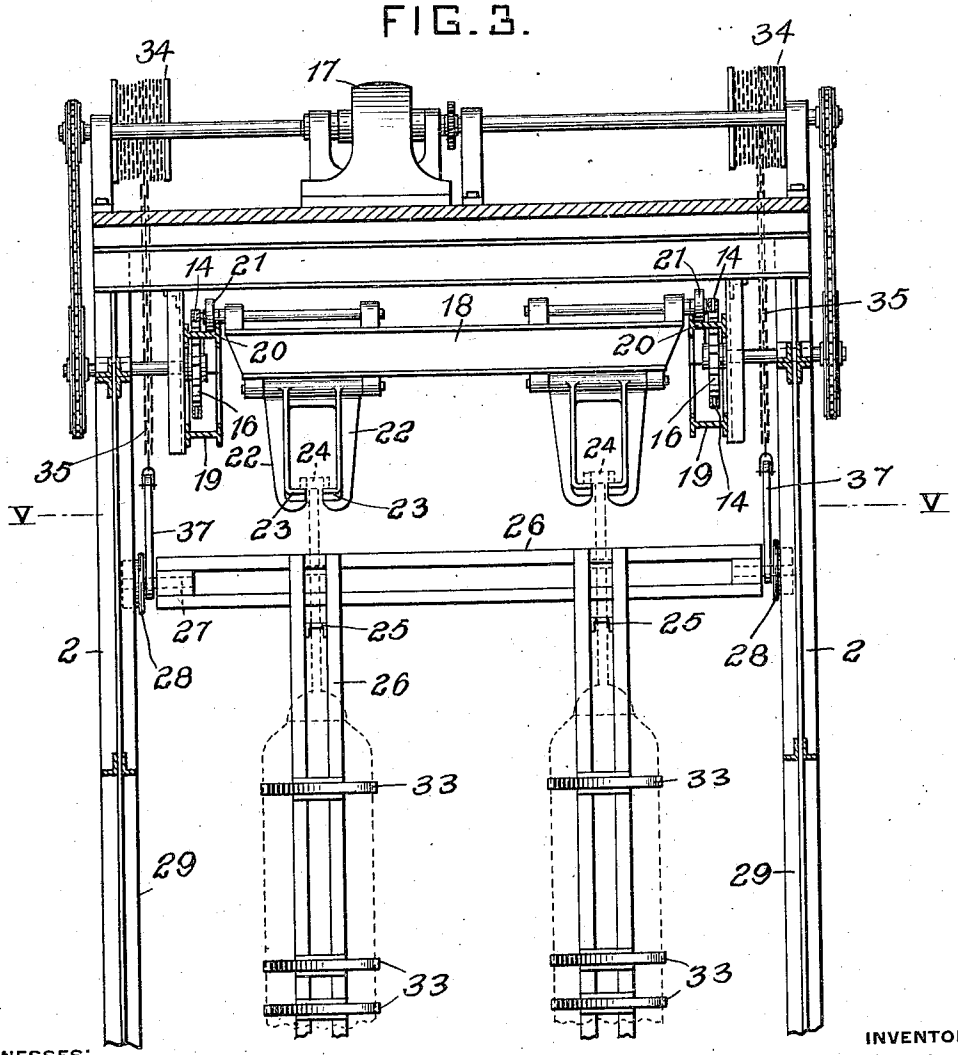


FIG. 3.



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4 SHEETS—SHEET 4.

FIG. 7.

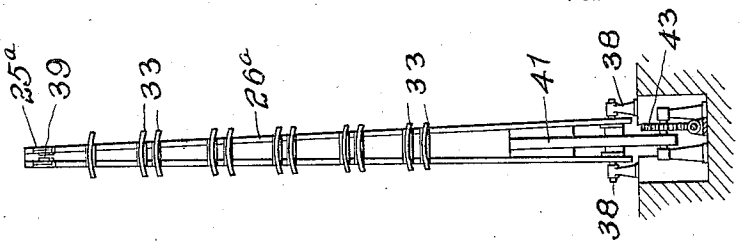


FIG. 9.

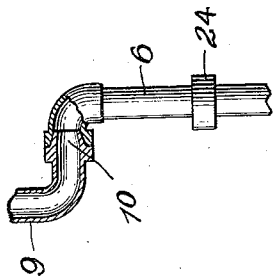


FIG. 6.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR HANDLING CYLINDERS.

1,263,341. Specification of Letters Patent. Patented Apr. 16, 1918.

Application filed December 13, 1907. Serial No. 406,366.

To all whom it may concern:

Be it known that we, HARRY G. SLINGLUFF and HERMAN S. HEICHERT, residing at Allegheny and Pittsburgh, respectively, in the county of Allegheny and State of Pennsylvania, citizens of the United States, have invented or discovered a certain new and useful Improvement in Apparatus for Handling Cylinders, of which improvement the following is a specification.

In the manufacture of window glass by machinery, the glass is drawn in the form of cylinders from fifteen to twenty feet more or less in length, and great difficulty is experienced in shifting the cylinders from drawing position, and in turning them down to horizontal position necessary for opening the cylinders and flattening them. The invention described herein has for its object the removal of the cylinders from drawing position and turning them down to horizontal position. The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a side elevation of our improved transferring and turning mechanism; Figs. 2 and 3 are sectional views on a plane indicated respectively by the lines II—II and III—III Fig. 1 looking in the direction of the arrow *a* in Fig. 2 and of the arrow *b* in Fig. 3; Fig. 4 is an enlarged view of the left hand end of the transfer mechanism, and showing also the pulling frame; Fig. 5 is a top plan view of the cradle; and Fig. 6 is a side elevation illustrating a modified construction for transferring and turning cylinders; Fig. 7 is a front elevation of the same; Fig. 8 and Fig. 9 are sectional detail views showing forms of detachable connections between the blow pipe and air supply.

In the practice of our invention we provide a frame work consisting of uprights 1 and 2 and a horizontal member 3 connecting the upper ends of the uprights 1 and 2. One of the uprights as 1 is arranged adjacent to the place where the cylinders are to be drawn and to such uprights are secured guide rods 4 for the drawing frames 5, one, two or more in number. The drawing frame is provided with suitable means for supporting the bait 6 and blow pipe 7 during the drawing operation, said means being so constructed as to permit the bait and blow pipe to be readily removed by the transfer mechanism. In the construction shown in Figs. 1 to 5, a cylinder 8 is secured to the drawing frame and is provided with an outlet pipe 9 having at its end a socket 10 for the reception of the end of the curved blow pipe 7 on the bait. In this construction the same means are employed for supporting the bait during the drawing operation and for connecting the blow pipe with the air controlling or supplying means. It is preferred to provide on the drawing frame means for steadying the blow pipe and bait, such means consisting of a fork 10^a for the reception of the blow pipe when supported by the pipe 9.

The frames 5 are drawn to form a cylinder by motor driven drums 11, ropes 12 extending from the drums over guide pulleys 13 to the frame.

Means are provided for removing the bait and attached cylinder from the drawing frame and moving them to points where they can be turned to horizontal positions. In the construction shown in Figs. 1 to 5, this transfer means consists of sprocket chains 14 passing around pulleys 15 and 16, the latter being driven by a suitable motor 17. A cross bar 18 provided with one, two or more means for engaging the parts to be transferred, is pivotally connected to the chain, and is supported in its movements by tracks 19 and 20 on which wheels 21 travel, said wheels having their journals mounted in bearings on the cross-bar. It is preferred that the transfer mechanism should engage the blow pipe, and to this end the cross-bar has secured thereto arms 22, arranged in pairs and provided with inwardly projecting lugs 23, adapted to pass under and engage shoulders 24 on the blow-pipe as the cross-bar moves upward around pulleys 15, thereby lifting the blow-pipe and bait from their supports on the drawing frame. After thus lifting the cylinder or cylinders, the chains move the cross-bar with the cylinders hanging therefrom to the right the cross-bar during this movement being supported by the upper track 20. As the

cross-bar approaches the limit of its movement to the right and begins to move downwardly, the blow-pipe of each bait will pass into a slot in the end of an arm 25 on the turning cradle. As the cross-bar continues to move down, a shoulder on the blow-pipe will take a bearing on said arm, so that during the remainder of the downward movement of the cross-bar, the lugs 23 will move away from the shoulder 24 on the blow-pipe, and the bait and cylinder will thereafter be supported by the arm 25.

One, two or more arms 25 are secured to a rectangular frame or cradle 26, which is provided adjacent to one end with trunnions 27 on which wheels 28 are loosely mounted, said wheels moving in the vertical channels 29. Trunnions 30 having wheels 31 loosely mounted thereon, are secured to the cradle adjacent to the other end. These wheels move along channel bars 32 which are so bent that at one end they will be parallel with the vertical channels 29, but the remainder and main portion will extend horizontally or nearly so from the vertical channels. It will be observed by reference to Fig. 1 that by arrangement of the channels 29 and vertical portions or channels 32 relative to each other, and the placing of the trunnions 27 and 30 on opposite sides of the cradle, the latter when in a vertical position, will be inclined toward an approaching cylinder and that the cylinder when supported by the arm 25 will not be parallel with the cradle.

The cradle is provided with one, two or more series of curved arms 33 corresponding to the supporting arms 25 and in line therewith, said arms being adapted to receive the cylinder, when the cradle is moved to a vertical position parallel with the cylinder. The cradle is brought to and supported in the position shown in Fig. 1 by motor driven drums 34, ropes 35 extending from the drums, to links 37 pivotally connected to the cradle adjacent to the upper corners thereof.

As soon as the cylinder or cylinders have been suspended from the arms 25, the cradle is allowed to move down, and in such movement the lower end of the cradle will move to the left causing the curved arms 33 to engage and thereafter support the cylinder or cylinders. During the continued movement of the cradle its lower end will move out along the channels 32 and its upper end will move down the channels 27, until the cradle and cylinders carried thereby are in the horizontal position indicated by dotted lines in Fig. 1.

In lieu of employing an intermediate mechanism for transferring the cylinders from the drawing frame to the cradle, the latter may be so constructed as to remove the cylinder from the drawing frame, but also turn it to a horizontal position, as shown in Figs. 6 and 7. The cradle 26[a] is pivotally mounted on pillow blocks 38 so that an arm 25[a] on the cradle can be caused to engage the cylinder or part in engagement therewith by the forward swing of the cradle. This arm is notched or forked as in the case of the arm 25 and is provided with a spring dog 39 to engage the blow-pipe or shoulder thereon. The cradle can be shifted on its axis by any suitable means, as for example by a motor 40 operating through suitable interposed mechanism. In the construction shown a toothed segment 41 is secured to the cradle adjacent to its pivotal point, so that it will serve as a counter balance for the cradle, a pinion 42 intermeshes with the teeth on the segment, said pinion being on the same shaft as the worm-wheel 43 which is driven by a worm on the armature shaft of the motor. In this construction the cylinder is removed from the drawing frame by the backward movement of the cradle, and during such movement the cylinder swings into the arms on the cradle which will thereafter support it.

We claim herein as our invention:

1. The combination with a cylinder drawing mechanism, of a carrier for removing the cylinder from the drawing mechanism and moving it laterally in a vertical position to a distance from the drawing mechanism, and a shifting cradle adapted to receive the cylinder from the carrier at the end of its lateral movement and support it and turn it from a vertical to substantially horizontal position, guides for said cradle to cause its lower end to move horizontally toward the drawing mechanism as the upper end moves downwardly.

2. In a plant for the manufacture of glass cylinders, the combination of a drawing frame provided with means for supporting the cylinder, an endless carrier for removing the cylinder from the frame and moving it laterally to a distance from the drawing frame, and a cradle adapted to receive the cylinder from the transfer mechanism and means for turning the cradle with the cylinder from a vertical to a horizontal position.

3. In a plant for the manufacture of glass cylinders, the combination of a drawing frame provided with means for engaging the bait and supporting the cylinder in a vertical position, an endless carrier provided with means to engage the bait and remove it from the drawing frame in a vertical direction, and then move it laterally, a cradle adapted to receive the cylinder from the carrier and means for turning the cradle from a vertical to a horizontal position.

4. In a plant for the manufacture of glass cylinders, the combination of a drawing frame provided with means for supporting

the cylinder at its upper end, means for engaging the upper end of the cylinder while supported by the drawing frame, and a frame provided with means for successively engaging the lower parts of the cylinder as the frame is turned from a vertical to a horizontal position, and means for turning such frame.

In testimony whereof, we have hereunto set our hands.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."