

Oct. 20, 1925.

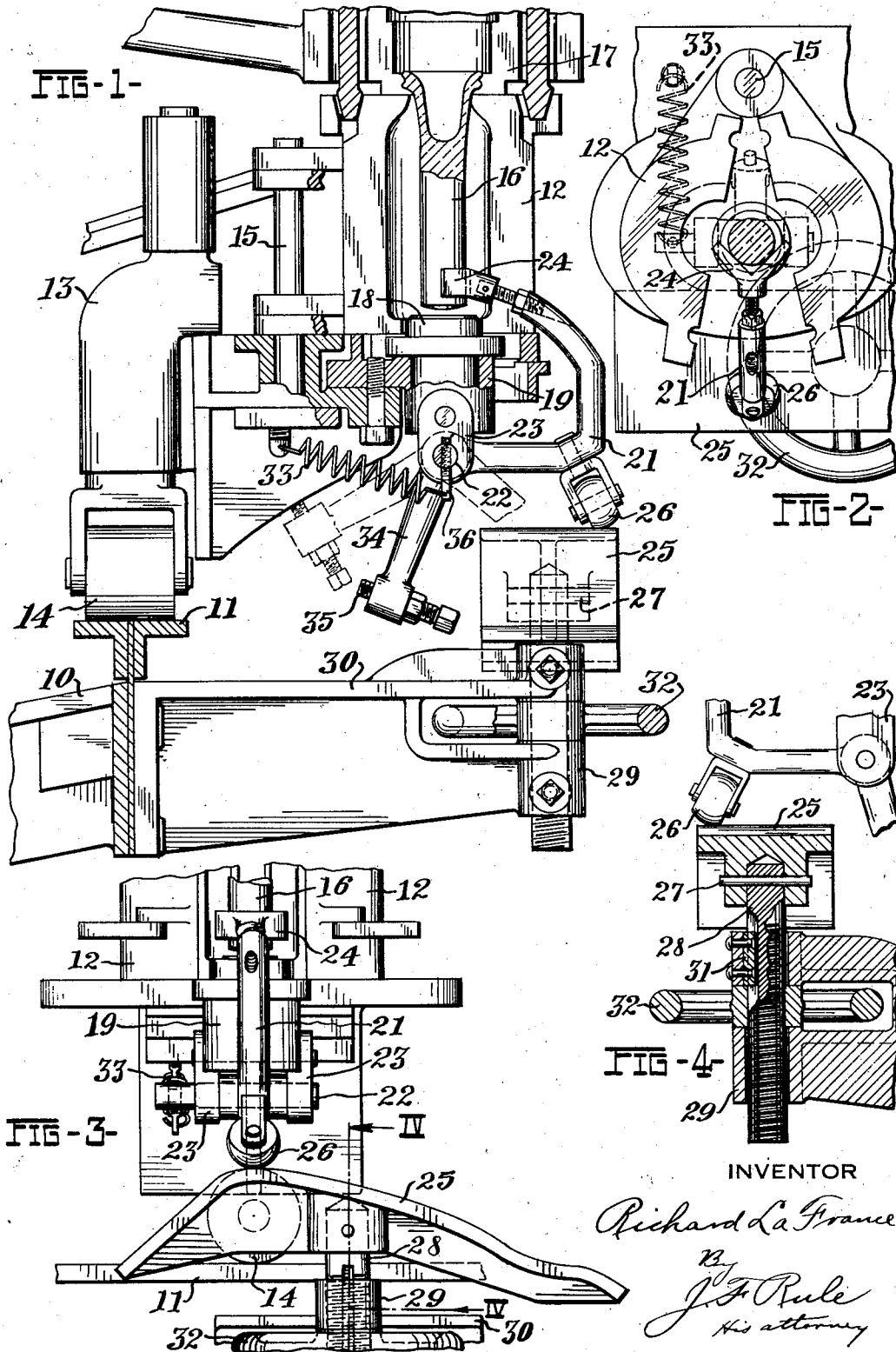
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BLANK CENTERING DEVICE FOR GLASS FORMING MACHINES.

Filed May 2, 1923

2 Sheets-Sheet 1



INVENTOR

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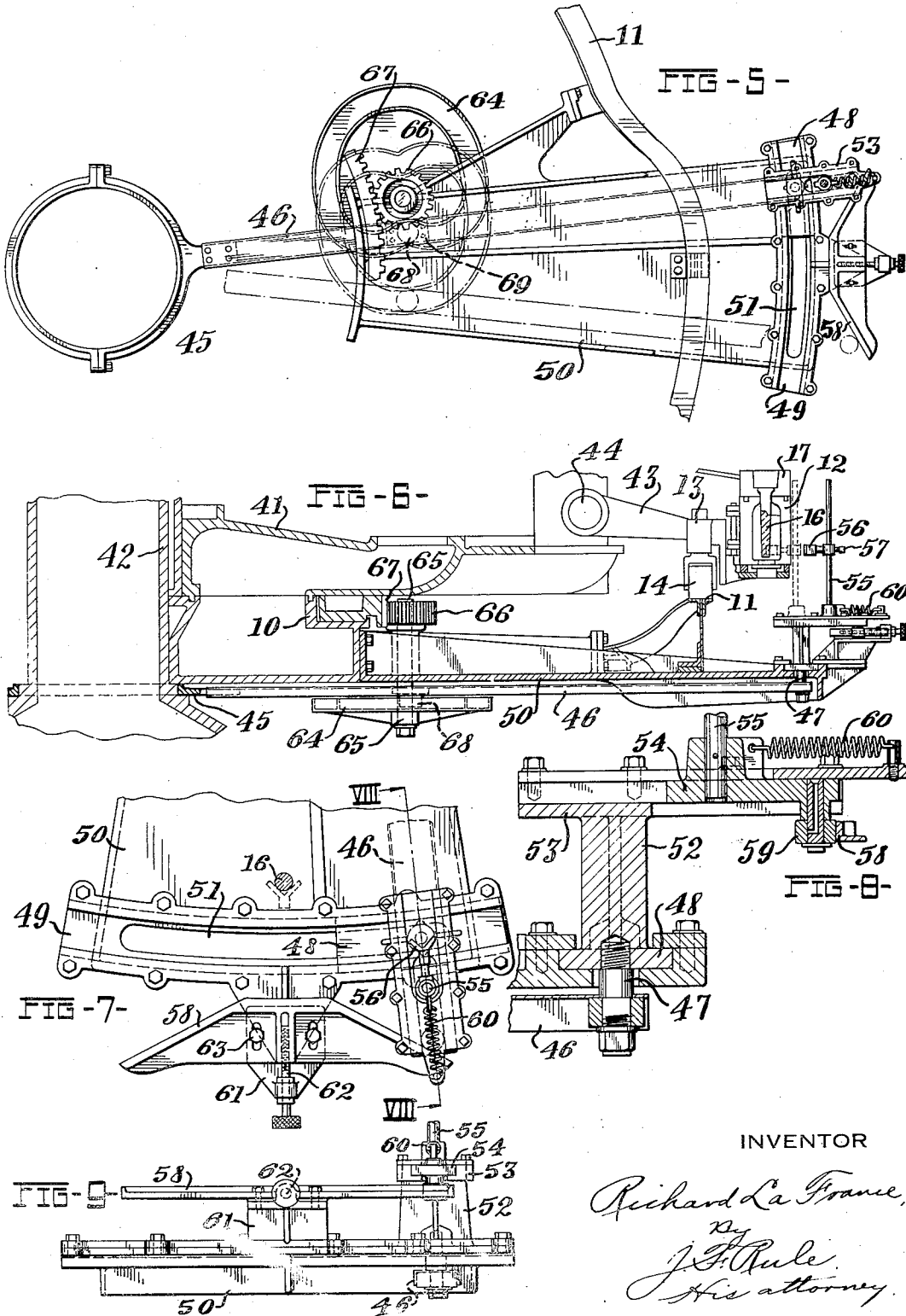
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INVENTOR

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By
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His attorney.

UNITED STATES PATENT OFFICE.

RICHARD LA FRANCE, OF TOLEDO, OHIO, ASSIGNOR TO THE OWENS BOTTLE COMPANY,
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BLANK-CENTERING DEVICE FOR GLASS-FORMING MACHINES.

Application filed May 2, 1923. Serial No. 636,038.

To all whom it may concern:

Be it known that I, RICHARD LA FRANCE, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented new and useful Improvements in Blank-Centering Devices for Glass-Forming Machines, of which the following is a specification.

My invention relates to automatic machines for blowing glass bottles or other hollow glass articles. It is customary in such machines to introduce each charge of glass into a combined blank mold and neck mold, in which a preliminary forming of the glass takes place. The blank mold is then opened, leaving the bare blank supported in the neck mold, after which a finishing mold is closed around the blank and the latter blown therein to its finished form. The bare blank, which is soft and plastic, is sometimes thrown out of alignment, so that when the finishing mold closes, the blank is not accurately centered therein. This results in an uneven distribution of glass and other imperfections in the finished ware.

An object of the present invention is to provide a practical form of centering device to position the bare blank so that it will be accurately centered within the finishing mold when the latter closes.

Other objects of the invention will appear hereinafter.

In the accompanying drawings:

Figure 1 is a part sectional elevation of a portion of a bottle blowing machine with my invention applied thereto.

Figure 2 is a fragmentary plan view showing the open finishing mold and the centering device in engagement with a blank, the latter being shown in section.

Figure 3 is a front elevation of mechanism shown in Figure 1.

Figure 4 is a section at the line IV—IV on Figure 3.

Figures 5 to 9, inclusive, illustrate a modified form of the invention. Figure 5 is a plan view showing the mechanism for actuating the centering device. Figure 6 is a sectional elevation of such mechanism and appurtenant portions of the machine frame and carriage. Figure 7 is a fragmentary plan view on a larger scale of mechanism shown in Figure 5. Figure 8

is a section at the line VIII—VIII on Figure 7. Figure 9 is an end elevation of the mechanism shown in Figure 7.

The invention is herein shown as applied to an Owens type of suction gathering machine such as shown, for example, in the patent to La France, Number 1,185,687, patented June 6, 1916. The invention, however, is not limited in its use to this type of a machine.

Referring particularly to Figures 1, 2, 3 and 4, the machine comprises a stationary framework or base 10 which supports a cam track 11. Finishing molds 12 are mounted on heads or frames 13, each of which carries a roll 14 running on the track 11. The mold 12 is made in sections mounted to swing about a vertical pivot pin 15 supported in the head 13 for opening and closing the mold. A blank of glass 16 formed in a blank mold (not shown) is left suspended from a neck mold 17 after the blank mold is opened. After the blank mold opens, the finishing mold 12 is brought up to the position shown in Figures 1 and 2, directly beneath the neck mold and is then closed around the blank, after which air is supplied to blow the blank to its finished form. The finishing mold includes a mold bottom 18 removably supported in a holding plate 19.

In machines of the type shown, there is a tendency for the bare blanks 16, which are soft and plastic, to swing outward or away from the center of the machine as the carriage rotates. In order to counteract this tendency or to restore the blank to its normal position if it has been bent or thrown out of vertical alignment with the neck mold, I provide a centering device as will presently be described. An arm 21 is keyed to a rock shaft 22 journaled in bearing lugs 23 carried on the support 19. Adjustably mounted in the upper end of the arm 21 is a forked centering piece 24 adapted to engage the blank 16 near its lower end.

The movements of the arm 21 are controlled by a stationary cam 25 on which runs a roll 26 carried by said arm. The cam 25 is attached by means of a pin 27 (Fig. 4) to the upper end of a screw threaded rod 28 adjustable vertically in a sleeve 29 formed on a stationary bracket 30 attached to the machine frame. The rod 28 is prevented

from rotating by means of a key 31 in a vertical keyway formed in the rod. The cam 25 is adjusted up or down by rotating a hand wheel 32 threaded on the rod.

5 The roll 26 is held against its cam by a spring 33 attached to a pin 36 projecting from the rock shaft 22. When the roll 26 runs off its cam, the downward movement of the arm 21 is limited by a stop arm 34
10 fixed to the rock shaft 22. This stop arm carries an adjustable stop screw 35 to engage the frame 13.

The operation of the form of invention shown in Figures 1 to 4 is as follows: As
15 the machine carriage rotates, each open finishing mold 12 is in turn swung up to the position shown in Figures 1 and 2 after the corresponding blank mold is opened. Each stop arm 21 is also lifted in turn by
20 the cam 25 to the position shown, whereby the centering head 24 engages the blank to hold it in a vertical position or move it inward to such position, if it has been thrown out of alignment. The cam is so positioned
25 that the roll 26 runs off the cam and permits the centering arm to be withdrawn just before the finishing mold closes, so that the blank will be accurately centered in the mold. It will be understood that there is a separate
30 centering device associated with each finishing mold, but that a single cam 25 serves for operating all of said devices.

The modified form of centering mechanism shown in Figures 5 to 9 will now be
35 described. This mechanism is shown in connection with the same type of machine as indicated in Figures 1 to 4, said machine comprising the stationary frame 10 on
40 which the mold carriage 41 is mounted for continuous rotation about the stationary center column 42. The heads 13 which carry the finishing molds 12 are carried on arms 43 which swing about horizontal pivots 44 on the carriage.

45 A ring 45 mounted for oscillation on the center column 42, carries a radially extending channel iron arm 46. At the outer end of this arm is a stem 47 attached to a slide block or plate 48 arranged to slide in a
50 stationary arc-shaped guideway or track 49 at the outer end of a supporting plate 50 bolted to the frame 10. A slot 51 extending lengthwise of the track 49 accommodates the stem 47. The slide block 48 forms an
55 integral part of an upright post or bracket 52, at the upper end of which is a horizontal arm 53 extending radially of the machine. Said arm forms a guideway in which a block 54 slides toward and from the center
60 of the machine. Attached to the block 54 is a vertical rod 55 which carries a blank centering head 56. Said head is adjustable up and down on the rod to accommodate blanks of different lengths and is held in
65 adjusted position by a set screw 57. The

sliding movements of the block 54 are controlled by a cam 58 on which runs a roll 59 on said block. A spring 60 holds said roll in engagement with its cam. The cam 58 is supported on a bracket 61 at the outer
70 end of the plate 50 and is adjusted radially of the machine by means of a stem 62 journalled in said bracket and having a threaded connection with the cam plate. The latter is secured in adjusted position by clamping
75 bolts 63.

The radial arm 46 is oscillated by means of a cam 64 carried on a vertical shaft 65 journalled in the stationary frame. Said shaft and cam are continuously rotated by
80 a pinion 66 keyed to the shaft and running in mesh with a ring gear 67 on the carriage 41. A roll 68, carried by a block 69 fixed to the arm 46, runs in the cam groove of the cam 64.

The operation of the blank centering mechanism shown in Figures 5 to 9 is as follows: The mold carriage 41 rotates continuously so that the ring gear 67 carried thereby imparts a continuous rotation to the pinion 66 about a stationary vertical axis. The cam 64 is thus rotated about the axis of
85 said pinion and moves the roll 68 which runs in the cam groove, toward and from said axis. A horizontal oscillating movement is thereby imparted to the radial arm 46 so that the slide plate 48 and parts carried thereby are caused to travel back and forth on the track 49.

As the arm 53 is thus advanced with the mold carriage, the slide block 54 carrying the centering head 56 is moved radially inward by means of the stationary cam 58, so that said centering head is brought into contact with the suspended blank 16 and centers it. The cam 58 is so positioned and shaped that it permits the centering head 56 to be withdrawn by its spring 60 just before the finishing mold 12 closes about the blank. The parts are so proportioned that
95 the centering head will advance at the same speed as the blank while in engagement therewith. After the centering head has advanced with a blank, it is withdrawn and returned so as to advance with the next succeeding blank.

Various modifications may be resorted to within the spirit and scope of my invention.

What I claim is:

1. In a glass blowing machine, the combination of means to suspend a blank of plastic glass, a mold to enclose said blank, and a centering device separate from the mold and said suspending means, operable to engage the suspended blank below its point of suspension and center it with respect to the mold.

2. In a glass forming machine, the combination of means to suspend a blank of plastic glass, a centering device, means to move said device transversely of the blank
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into engagement with the lower end thereof while the blank is suspended, and a mold to enclose said blank.

3. In a glass forming machine, the combination of a traveling carriage, means thereon to support a bare blank of plastic glass at one end, a positioning device arranged to engage the blank adjacent its unsupported end and counteract any tendency of the blank to be thrown out of normal position, automatic means to withdraw said device from the blank, and a mold to enclose the blank after said device has been withdrawn.

4. In a glass forming machine, the combination of means to support a bare blank with the blank projecting from its support, a mold, a positioning device, and means to move said device into engagement with the projected end of the bare blank while the blank is held by said support and position it with respect to said mold and to then withdraw said device, said mold operable to enclose the blank after said device has been withdrawn.

5. In a glass forming machine, the combination of supporting means to engage one end of a blank of plastic glass and hold it in a substantially vertical position with the bare blank projecting from said supporting means, a positioning device, means to move said device laterally into engagement with the bare blank at a point remote from said supported end for positioning and holding the blank against lateral displacement, means to withdraw said device, and a mold to enclose the blank after said device has been withdrawn and while the blank is held by said supporting means.

6. In a glass forming machine, the combination of means for holding a bare blank at one end thereof, a mold to enclose said blank, and a mechanical positioning device separate from the mold for engaging and centering the bare blank relative to the mold while the blank is held by said holding means.

7. In a glass forming machine, the combination of a neck mold operable to support a bare blank at one end thereof, a positioning device, automatic means to move said device into and out of engagement with the bare blank while the latter is supported in the neck mold, and a finishing mold to enclose the blank after said device has been withdrawn.

8. In a glass forming machine, the combination of a rotary mold carriage, a neck mold thereon from which a blank of glass is suspended, a centering device, automatic means to move said device laterally into engagement with the free end of the blank and

return it to vertical position when it has been thrown out of such position, and a mold to enclose the blank after it has been centered by said device.

9. In a glass forming machine, the combination of means to engage a blank of glass at one end and hold it in a vertical position, a sectional mold to surround the blank, a centering device movable between the separated mold sections into position to center the blank with respect to the mold, and means to withdraw said centering device and permit the mold sections to be brought together to enclose the blank.

10. In a glass forming machine, the combination of a mold carriage, a neck mold thereon by which bare blanks are supported, a blow mold, a blank centering device associated with the neck mold, and a stationary cam to actuate said centering device and cause it to engage and center the bare blank with respect to the mold.

11. In a glass forming machine, the combination of a mold carriage, means to rotate it, neck molds thereon in which bare blanks are supported, a blank centering device, means to cause said device to successively engage the blanks and center them, said means comprising mechanism for advancing said device with the mold carriage while in engagement with a blank and then returning for cooperation with the next succeeding blank, and means for moving said device into and out of engagement with the blanks.

12. In a glass forming machine, the combination of a rotary mold carriage, neck molds thereon from which bare blanks of glass are suspended, a blank centering device, an arm to which said device is connected, said arm mounted to oscillate about the axis of rotation of the mold carriage, a cam to actuate said arm, gearing between the cam and the mold carriage for rotating the cam, said cam and gearing being so shaped and proportioned that said arm is caused to advance with the mold carriage and cause the centering device to advance with a blank, said arm being then returned by the cam and advanced with the next blank, said centering device being mounted for movement radially toward and from the center of the machine for moving the centering device into and out of contact with the blank, and a stationary cam operable to effect said radial movements of the centering device.

Signed at Toledo, in the county of Lucas and State of Ohio, this 30th day of April, 1923.

RICHARD LA FRANCE.