R. LA FRANCE.

MEANS FOR DISTRIBUTING GASES.

APPLICATION FILED DEC. 11, 1916.

1,277,607.

Patented Sept. 3, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

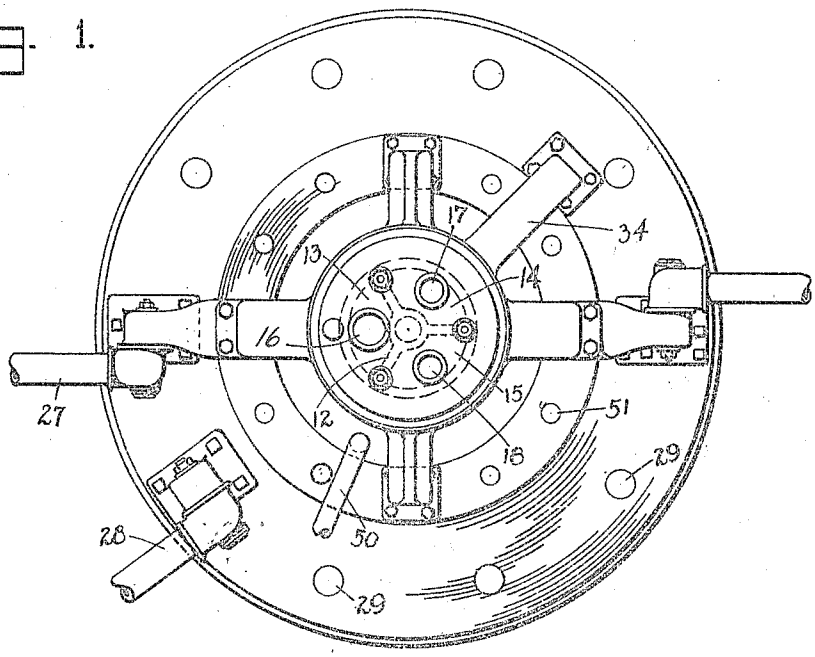
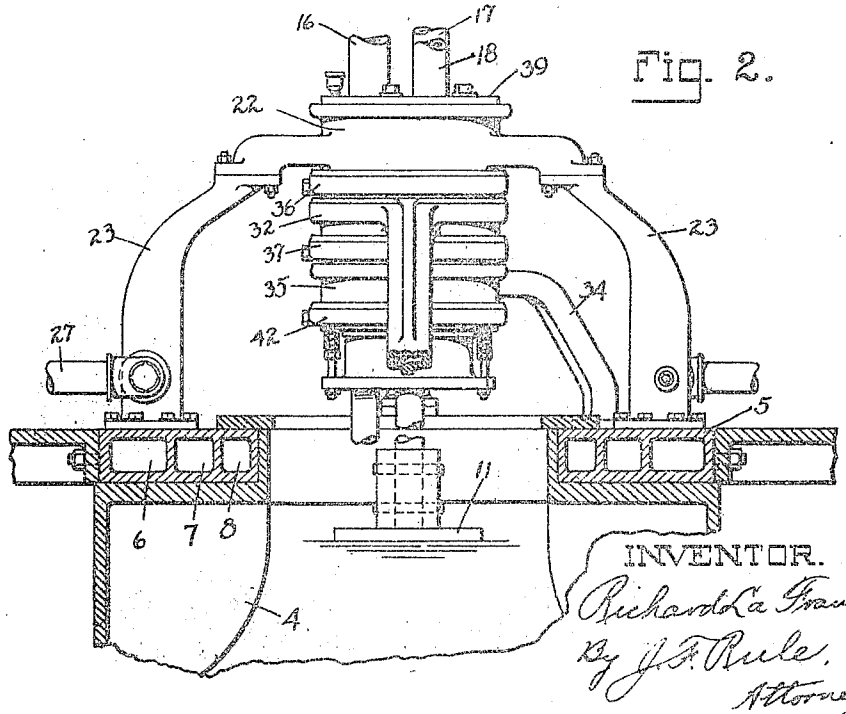


Fig. 2.



INVENTOR.

Richard La France

By J. F. Rule.

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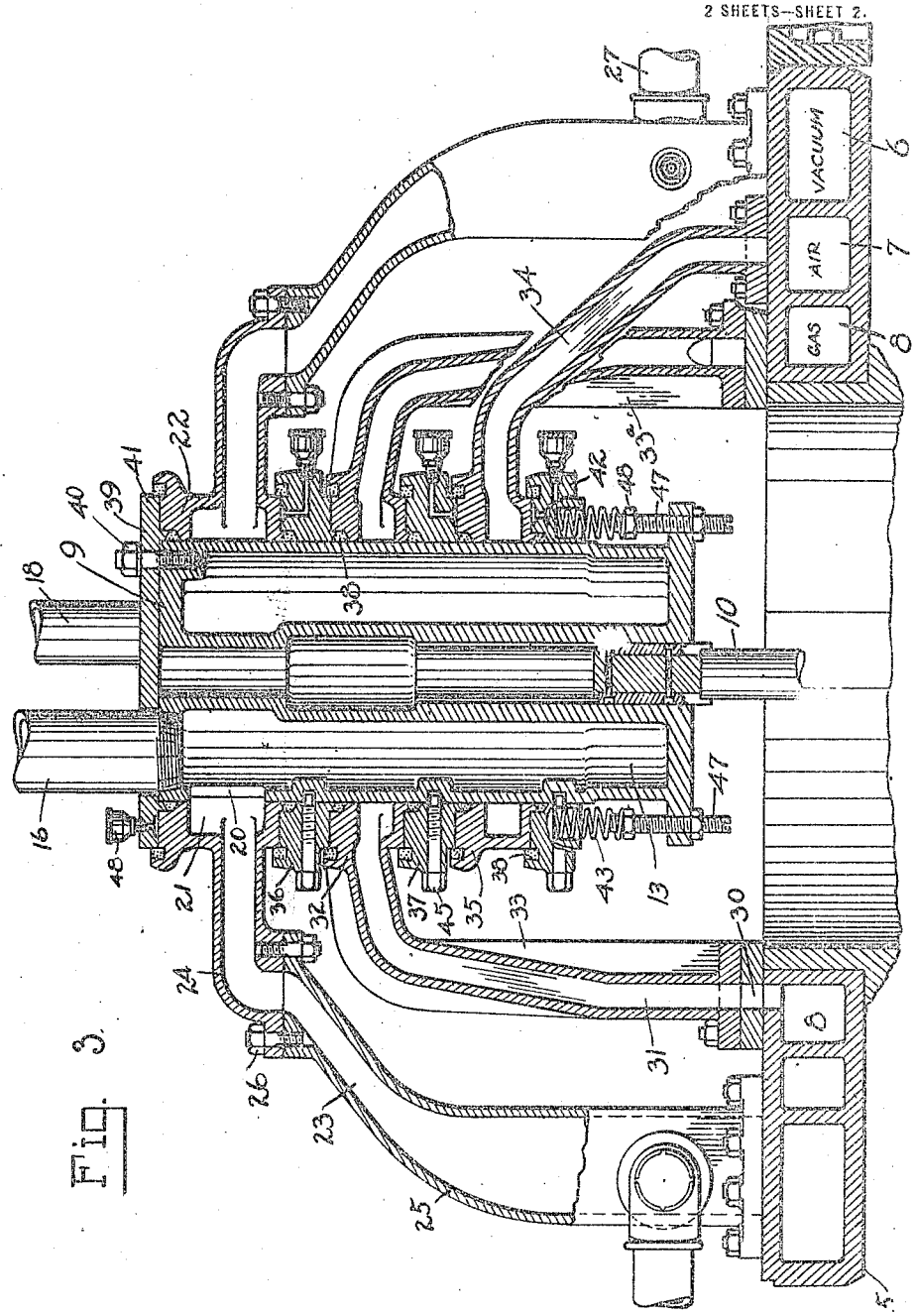


Fig. 3.

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UNITED STATES PATENT OFFICE.

RICHARD LA FRANCE, OF TOLEDO, OHIO, ASSIGNOR TO THE OWENS BOTTLE MACHINE COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

MEANS FOR DISTRIBUTING GASES.

1,277,607. Specification of Letters Patent. Patented Sept. 3, 1918.

Application filed December 11, 1916. Serial No. 136,174.

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 Means for Distributing Gases, of which the following is a specification.

My invention relates to means for controlling the distribution of gases, particularly in connection with automatic machines for making blown glass articles.

In machines of this type, it is customary to provide a series of units or mechanisms, each comprising a blank mold, into which a charge of molten glass may be drawn from a tank to produce a blank by exhausting the air from the mold, and a blowing mold in which the blank is blown to give the article its final shape. These units are mounted on a frame, rotating about a vertical axis, to bring the blank molds successively into position to gather a charge of glass. A plunger or core may be employed to produce an initial blow opening in the blank, which core may be kept at the required high temperature by directing a jet of burning gas at intervals thereon.

An object of the present invention is to provide improved means for distributing to the several revolving units the compressed air, combustible gas and vacuum needed to carry out these or other operations. More specifically, the invention relates to a stationary distributing head and its connections with the conduits leading to the several rotating units constructed and arranged to maintain a close contact between the relatively movable surfaces and automatically take up any play or looseness due to wear, thereby preventing leakage or escape of the gases.

In practising the invention, a hollow cylindrical drum or head may be provided with its axis coinciding with the axis of revolution of the gathering units, and a series of conduits may extend from said head to the several units for conveying the gases to or from said units. The distributing head may be divided, as by means of vertical partitions, into compartments communicating respectively with the means for supplying compressed air, gas and vacuum. Each compartment may communicate with a conduit or conduits leading toward the several units; said conduits at the distributing head merging into a hollow ring forming an annular chamber surrounding the said head. Spacing rings surrounding the distributing head may be interposed between said first mentioned rings, and packing material arranged between the adjoining surfaces of the several rings. Springs may be provided to apply a pressure which is transmitted through the series of rings and the packing material, thereby holding said parts together with an elastic pressure and preventing leakage of the gases.

Other features and advantages will appear hereinafter.

In the accompanying drawings which illustrate a construction embodying the principles of my invention, Figure 1 is a top plan of the distributing head and a portion of the rotary frame. Fig. 2 is a part-sectional elevation of the same. Fig. 3 is a sectional elevation on a larger scale.

A stationary central column 4 provides a support on which is mounted a rotating frame comprising an upper member 5, having annular compartments 6, 7 and 8, through which are conducted respectively rarefied air, compressed air and combustible gas. The rotating frame provides a support on which may be mounted a number of units each comprising a blank mold, blowing mold, operating mechanism and adjuncts. Said frame and the mechanisms thereon may be constructed and operated in the usual or any approved manner, as shown for example in my Patent No. 1,185,687, or the Patent to Bock, No. 870,664.

As the frame 5 rotates, the blank molds are brought successively into position over a tank of molten glass to receive a charge of glass drawn therein by suction provided through a suitable pipe or conduit leading thereto from the vacuum chamber 6. The blank thus produced in the blank mold is transferred to a blowing mold, in which it is blown into final shape by compressed air supplied through the chamber 7. Gas transmitted through the compartment 8 may be used for heating the plunger by which the initial blow opening is formed in the blank.

A stationary or non-rotating cylindrical distributing head or drum 9 is mounted at the upper end of the central supporting rod 10, the lower end of which is secured to a base 11 at the bottom of the machine. The cylinder 9 may be divided by vertical parti-

tions 12 (Fig. 1) into separate compartments 13, 14 and 15. The compartment 13 is connected through a pipe 16, to a vacuum pump or means for exhausting the air therefrom. The compartments 14 and 15 may be connected respectively through pipes 17 and 18 to sources of compressed air and combustible gas.

The vacuum chamber 13 is provided with a port or opening 20 formed in the wall of the cylinder 9, communicating with an annular chamber or passage 21 formed in a ring 22 surrounding the cylinder. Conduits or pipes 23 lead from the passage 21 to the vacuum chamber 6. Each of said conduits, as shown, comprises a section 24 integral with the ring section 22, and a section 25 bolted to the frame 5, said sections 24 and 25 being secured together by bolts 26. Pipes 27 may lead directly from the conduits 23 to certain of the blank molds, while other of the blank molds may communicate with said conduits 23 through pipes 28 connected at openings 29 in the chamber 6.

The gas chamber 8 may open through a port 30 into a conduit 31 leading upward therefrom to the distributing head and terminating in an annular member or ring 32 surrounding said head and communicating with the chamber 15. The conduit 31 is provided by a hollow standard 33 which also serves as a support for the ring 32. Additional standards 33ª may also be provided for supporting ring 32, which additional standards need not necessarily provide communication between the distributing head and the chamber 8. From the chamber 8 the gas is conveyed through a pipe 50 and distributed to the several units.

The air chamber 7 may communicate through one or more conduits 34 with the air chamber 14 in the distributing head, said conduit 34 terminating in a hollow annular ring 35 surrounding the distributing head. Openings 51 are provided in the upper wall of the chamber 7 from which pipes lead to the several units. Spacing rings 36 and 37 surround the distributing head, the ring 36 being interposed between the rings 22 and 32, and the ring 37 between the rings 32 and 35. Packing material 38 is placed between the opposing surfaces of each two adjoining rings, and also at the joints between the rings and cylinder. A top plate 39 secured to the cylinder 9, as by means of bolts 40, is extended to provide a ring or flange 41 overlying the ring 22. A bottom ring 42 is placed beneath the ring 35. Packing material 38 is also provided between the rings 42 and 35 and between the ring 22 and top plate 39.

Springs 43 are arranged to bear upwardly against the lowermost ring 42, said pressure being transmitted through the entire series of rings or annular members surrounding the cylinder. These springs thus serve to maintain a continuous pressure between each two adjacent rings or elements, holding them closely together and thereby preventing leakage of the gases, either from one conduit to another, or to the outside air.

The spacing rings 36, 37 and 42 may be held against rotation by means of bolts 45 extending through said rings into holding notches provided in the non-rotating cylinder. It will thus be seen that the rotary elements or rings 22, 32 and 35 through which the gases are conveyed to or from the distributing head, alternate with the non-rotating elements. The springs 43 serve automatically to take up any play or looseness between the several elements, so that tight joints are maintained and leakage prevented, even when the parts become more or less worn.

The several annular elements surrounding the cylinder are movable vertically under the pressure of the springs, the slight amount that may be necessary to take up wear and transmit the pressure through the set of rings. The holding pins 45 have a slight vertical play in their sockets for this purpose.

The tension of the springs 43 may be regulated by adjusting the screws 47 or nuts 48 on which said springs are mounted. The bearing surfaces and packing material may be lubricated by means of oil or grease cups 48.

Modifications may be resorted to without departing from the spirit and scope of my invention.

What I claim is:

1. The combination with a hollow cylindrical distributing head or drum, of partition walls therein at different positions circumferentially of the drum and dividing the drum into compartments, a rotary frame, a series of conduits carried by said frame to rotate therewith, said conduits being individual to said compartments and terminating in annular members or rings surrounding the drum, and means to provide communication between each conduit and its compartment to permit the passage of gases between said drum and conduits.

2. The combination with a hollow cylindrical distributing head or drum, of radially disposed partition walls therein dividing the drum into compartments, a rotary frame, a series of conduits carried by said frame to rotate therewith, said conduits being individual to said compartments and terminating in annular members or rings surrounding the drum, and means to provide communication between each conduit and its compartment to permit the passage of gases between said drum and conduits, and means to provide a gas tight connection between the said rings and drum.

3. The combination with a hollow cylindrical distributing head or drum, of a rotary frame, a series of conduits carried by said frame to rotate therewith, said conduits terminating in annular members or rings surrounding the drum, means to provide communication between said conduits and the interior of the drum to permit the passage of gases between said drum and conduits, stationary spacing rings surrounding the drum and interposed between said first mentioned rings, said rings individually movable to a limited extent lengthwise of the drum for adjustment to prevent leakage of the gases in their passage between the drum and conduits.

4. The combination with a hollow cylindrical distributing head or drum, of a rotary frame, a series of conduits carried by said frame to rotate therewith, said conduits terminating in annular members or rings surrounding the drum, means to provide communication between said conduits and the interior of the drum to permit the passage of gases between said drum and conduits, stationary spacing rings surrounding the drum and interposed between said first mentioned rings, said rings individually movable to a limited extent lengthwise of the drum, and means to apply a yielding pressure to said rings in a direction lengthwise of the distributing head, said pressure being transmitted through the several rings to hold them in close contact and prevent leakage of the gases.

5. The combination with a cylindrical distributing head or drum, comprising a plurality of compartments arranged side by side around the axis of said drum, rotary members surrounding said drum, and each comprising an annular passage or chamber communicating with one of said compartments, packing material surrounding the drum between the said members, and springs arranged to apply a continuous pressure to said members in a direction lengthwise of the drum and thereby press said members and packing material together to prevent leakage of the gases.

6. The combination with a cylindrical distributing head or drum, comprising a plurality of compartments, rotary members surrounding said drum, and each comprising an annular passage or chamber communicating with one of said compartments, spacing rings interposed between said members and held against rotation, and packing material interposed between said rings and the adjoining surfaces of said members.

7. The combination with a cylindrical distributing head or drum, comprising a plurality of compartments, rotary members surrounding said drum, and each comprising an annular passage or chamber communicating with one of said compartments, spacing rings interposed between said members and held against rotation, and packing material arranged to form a close joint between said rotary members and the non-rotating drum.

8. The combination with a cylindrical distributing head or drum, comprising a plurality of compartments, rotary members surrounding said drum, and each comprising an annular passage or chamber communicating with one of said compartments, spacing rings interposed between said members and held against rotation, and springs arranged to apply a continuous pressure to said rings and annular members in a direction lengthwise of the drum, said members and rings being capable of a limited individual movement along the drum whereby said pressure is transmitted through the series of rings and said members to maintain their relatively movable surfaces in close contact.

9. The combination with a frame rotatable about a vertical axis, of a stationary cylindrical head, having vertical radially disposed partitions dividing it into compartments distributed around said axis, conduits carried by said rotary frame and extending to said cylinder, the latter having ports by which said conduits are individually connected to the respective compartments.

In testimony whereof I have affixed my signature this 9th day of December, 1916.

RICHARD LA FRANCE.