

1,004,258.

2 SHEETS—SHEET 1.

Technical drawing of a mechanical device, likely a pump or valve assembly, showing a cross-section of a housing (1) with a central shaft (6) and a piston (15) inside a cylinder (14). The shaft is connected to a lever (4) and a valve (20) at the bottom. The device is mounted on a base (19) and has a handle (21) and a valve (22) at the bottom right.

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 MANUFACTURE OF VACUUM WALL RECEPTACLES.
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2 SHEETS—SHEET 2.

FIG. 3

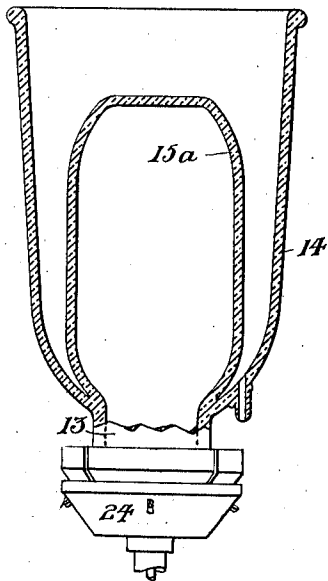


FIG. 5

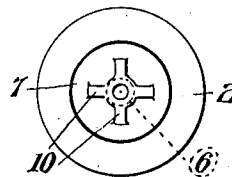


FIG. 4

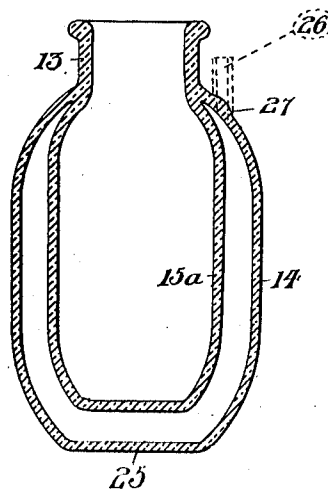
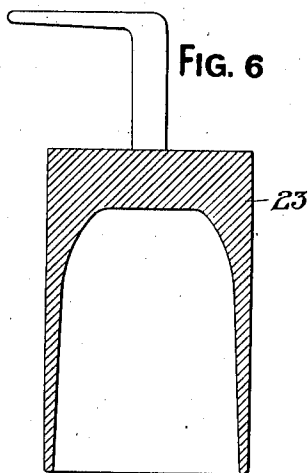


FIG. 6



WITNESSES:

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MANUFACTURE OF VACUUM-WALL RECEPTACLES.

1,004,258.

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To all whom it may concern:

Be it known that I, ORLANDO J. W. HIGBEE, a citizen of the United States, and residing in the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in the Manufacture of Vacuum-Wall Receptacles, of which the following is a specification.

10 My invention consists in a new and improved process for manufacturing hollow wall receptacles of glass or other material.

Generally speaking, it consists in first pressing the neck with the blanks for the inner and outer bottles integral therewith, the inner bottle being inclosed while the outer bottle is formed with the bottom end open, then, preferably, blowing the inner bottle to its final contour, then "cutting-in" or gathering together the edge of the outer bottle blank to form the bottom thereof, and, finally, exhausting the air from the space between the inner and the outer bottles and sealing the vacuum chamber thus formed. If desired the operation of blowing or extending the inner bottle may be omitted.

In the accompanying drawings, illustrating a convenient method for performing my process, Figure 1 is a vertical central section through the mold and plunger showing the pressing operation; Fig. 2 is a similar view showing the blowing operation; Fig. 3 is a vertical section showing the pressed and blown blank; Fig. 4 is a vertical section of the completed receptacle, the glass tube used for connecting the vacuum pump being shown in dotted lines; Fig. 5 is a plan view of the peg with the pop-valve removed, and Fig. 6 is a vertical section of the former used in the blowing of the inner bottle.

The following is a detailed description of the drawings.

15 1 is a mold and 2 the peg slidably mounted to extend upwardly into the interior of said mold. The peg is provided with a wrist-pin 3 engaging an inclined slot 4 in a slide 5 mounted in the base of mold 1. I prefer to provide two wrist-pins and two slides. By moving the slides, the peg may be raised or lowered. The peg 2 is provided with a central bore or passage 6 extending up from the bottom of said peg into a conical seat 7 in which is mounted the pop-valve 8 whose stem 9 engages the central

opening of a spider 10 secured in said seat 7.

11 is a plunger, preferably of the exterior contour shown, and provided with a central bore or recess 12 which fits loosely down over the peg 2. The plunger 11 being raised and the peg 2 elevated, a sufficient quantity of glass is placed in mold 1 and the plunger then depressed into the position shown in Fig. 1, pressing the glass into a blank consisting of a neck portion 13 and integrally therewith an outer bottle blank 14, with open bottom, and an inner bottle blank 15. By the coaction of a projection 16 on the plunger 11 and a depression 17 in the mold, a hollow teat or projection 18 is formed on the shoulder of the portion 15 of the blank. The plunger 11 is now raised and a tool inserted to break through the end of projection 18. The mold 1 is now slid along the supporting table 19 from beneath the plunger 11 and over the compression seat 20 which forms the mouth of the compressed air pipe 21 extending up through the table 19 and provided with a convenient stop-cock 22. By means of slides 5 the peg 2 is now depressed until its lower end rests upon the table 19 and the bore 6 registers with the seat 20 and the pipe 21. A former having an interior contour desired for the inner bottle is now set down inside the blank 14 with its lower edge resting upon the wall of said blank. The cock 22 is now opened and air admitted to the bore 6 of the peg 2, raising the pop-valve 8 and admitting the compressed air into the interior of the blank 15, blowing and extending said blank from the size at which it was pressed, shown in dotted lines in Fig. 2, to the final form shown at 15^a in said Fig. 2.

The air confined below the edge of former 23 between the walls of blanks 14 and 15 prevents the wall of the said blank 15 being forced outwardly at this point against the wall of blank 14. When the inner bottle has been fully blown to the capacity of former 23, the cock 22 is closed to cut off the air, the former 23 removed, the mold opened and the pressed and blown articles removed therefrom. The neck 13 is now seized with a snap 24, Fig. 3, and the open edge of the portion 14 reheated and "cut-in" or gathered together to form the flat bottom 25 shown in Fig. 4, thus inclosing the inner bottle. A tube 26 is then fused to the open projection 18 and a vacuum pump,

not shown, attached to exhaust the air contained between the inner and outer bottles. After a satisfactory vacuum is obtained, the tube 26 is fused off and the opening in the wall of the outer bottle sealed, as at 27 in Fig. 4, thus completing and sealing off the vacuum chamber between the inner and outer bottles. The completed bottle is thus provided with a solid neck of great strength and the inner and outer bottles are integrally attached thereto, giving an article of great strength and durability. The inner bottle, being blown to form, will withstand sudden and great changes of temperature and will not be broken loose from the neck by sudden jar or droppings.

It has previously been the practice to form the two bottles separately and afterward to unite them together. My process, by simplifying the process and reducing and altering the steps, works a great economy in manufacture in addition to resulting in a better article. If desired, I may omit the blowing of the inner blank or bottle, completing the same in the pressing or initial operation, and then "cutting-in" or closing the open end of the outer blank or bottle, but I prefer to include the blowing operation as described. If desired I may simply close in the bottom of the outer blank or bottle to complete the inclosure of the chamber between the walls of the two bottles and omit the operation of establishing a vacuum in said chamber.

Although for the sake of clearness I have minutely described the embodiment of my invention illustrated in the accompanying drawings, I do not wish to limit the scope of my invention thereby but claim broadly—

1. The process of manufacturing hollow wall receptacles which consists in, first forming integrally the outer blank with an open end and the inner blank with a closed end, and then closing the open end of the outer blank.

2. The process of manufacturing hollow wall receptacles which consists in, first, forming integrally the outer blank with an open end and the inner blank with a closed end, then closing the open end of the outer blank, and then creating a vacuum between the walls of said blanks.

3. The process of manufacturing hollow wall receptacles which consists in, first, forming the outer blank with an open end and the inner blank with a closed end, both integral with a common neck, and then closing the open end of the outer blank.

4. The process of manufacturing hollow wall receptacles which consists in, first, forming the outer blank with an open end and the inner blank with a closed end, both integral with a common neck, then closing the open end of the outer blank, and then creating a vacuum between the walls of said blanks.

5. The process of manufacturing hollow wall receptacles which consists in, first, forming integrally the outer blank with an open end and the inner blank with a closed end, then blowing the inner blank to the desired contour, and then closing the open end of the outer blank.

6. The process of manufacturing hollow wall receptacles which consists in, first, forming integrally the outer blank with an open end and the inner blank with a closed end, then blowing the inner blank to the desired contour, then closing the open end of the outer blank, and then creating a vacuum between the walls of said blanks.

7. The process of manufacturing hollow wall receptacles which consists in, first, forming the outer blank with an open end and the inner blank with a closed end, both integral with a common neck, then blowing the inner blank to the desired contour, and then closing the open end of the outer blank.

8. The process of manufacturing hollow wall receptacles which consists in, first, forming the outer blank with an open end and the inner blank with a closed end, both integral with a common neck, then blowing the inner blank to the desired contour, then closing the open end of the outer blank, and then creating a vacuum between the walls of said blanks.

Signed at Pittsburg, Pennsylvania, this 2nd day of March, 1911.

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