

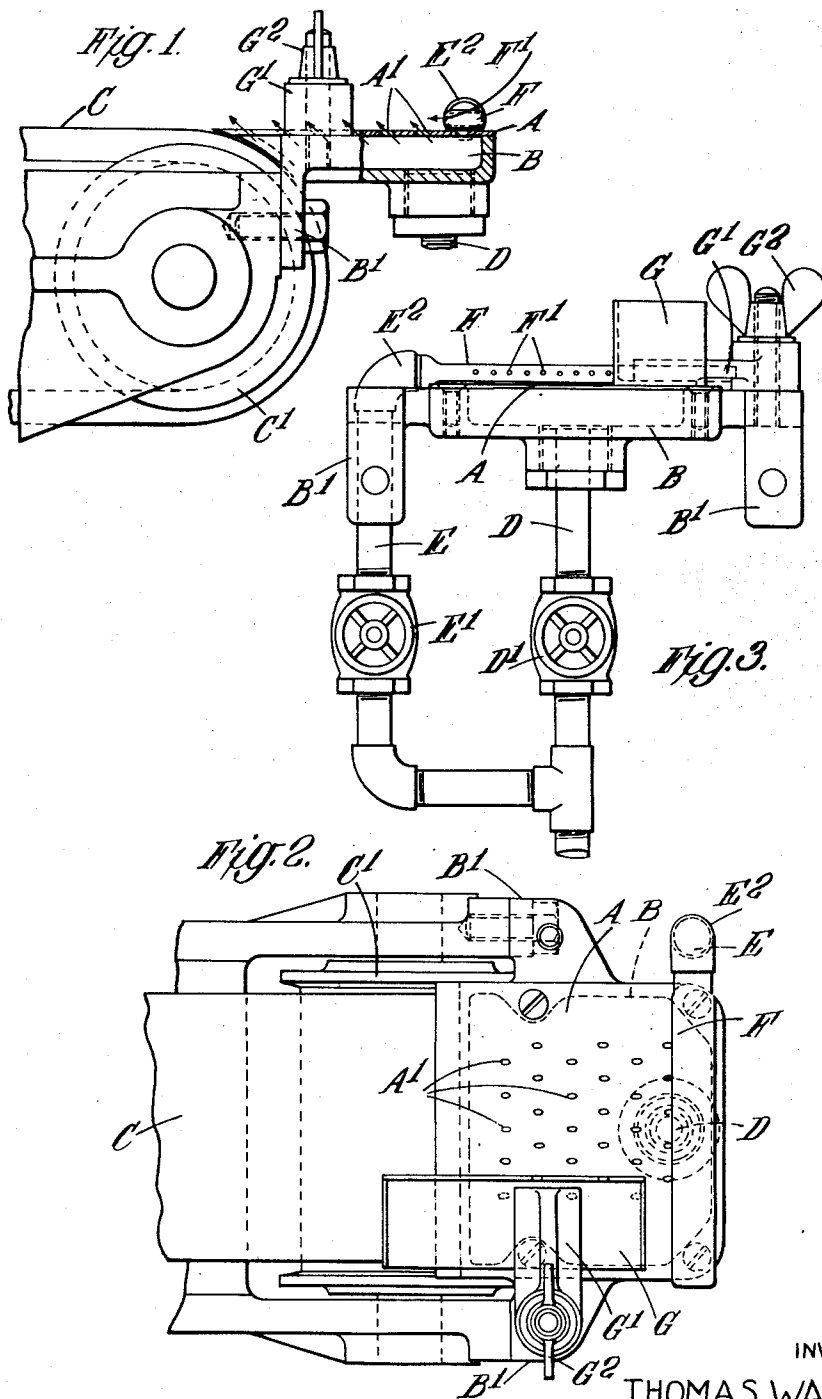
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MANUFACTURE OF GLASSWARE

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MANUFACTURE OF GLASSWARE

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This invention relates to the manufacture of glassware, such as bottles or other containers, the chief object being to facilitate the transfer or removal of the ware, hereinafter referred to as a bottle, from one position to another during its manufacture or treatment, for example, from the bottle forming machine on to a conveyor that carries the bottle to the annealing lehr. Usually the bottle is deposited from the forming machine on to a plate, known as a "dead plate", from which the bottle, whilst standing thereon is transferred or pushed by a wiper or swinging arm on to the conveyor. In some cases, the bottles are of such shape or design that they are somewhat unstable and frequently they are knocked over by the wiper arm and broken. By means of the present invention difficulties heretofore experienced in connection with the transfer of bottles under conditions such as those aforesaid, are overcome.

According to this invention air under pressure acts or impinges on the bottle in such manner as to effect, assist or facilitate the transfer or movement of the bottle from one support to another, for example from a dead plate on to a conveyor as aforesaid. For instance, a series of air jets may impinge on the bottle, particularly on the lower part as or when it is placed on the dead plate and the transfer or movement of the bottle may be effected entirely by the air pressure acting on the bottle, in which case the use of a mechanical wiper or swinging arm is avoided.

A series of perforations or apertures may be provided in the dead plate or other support and air can be forced upwardly through the said perforations or apertures on to the bottom of the bottle, so that the air pressure prevents the full weight of the bottle from being entirely supported on the plate, the bottle therefore being lightly supported or maintained in a floating or semi-floating condition with the result that it can be readily transferred from the dead plate on to the conveyor by another series of air jets impinging on the bottle or if desired by a mechanical device such as the usual wiper or swinging arm. The air which issues from the apertures in the dead plate and maintains the bottle in a lightly supported or semi-floating condition, may assist or effect the transfer of the bottle and for this purpose the apertures in the dead plate may be inclined in such direction that the air jets impinging on the bottle tend to move the latter in a forward direction on to the conveyor.

In order that the said invention may be clearly understood and readily carried into effect, the same will now be more fully described with reference to the accompanying drawing, in which:—

Figures 1 and 2 are respectively a side view (partly in section) and a plan view of one construction of apparatus for carrying out this invention, comprising a dead plate located at one end of a conveyor which carries the bottles into an annealing lehr.

Figure 3 is an end view of the dead plate showing more particularly the pipes through which the compressed air is supplied to the transferring position.

The dead plate A is constituted by the top of a box-like casing or support B which is suitably attached to a fixed frame part by means of lugs B¹ and which together with the dead plate A is shaped to enable the latter to be located close to an endless conveyor C where it passes around one of its rollers C¹, the surface of the plate A being flush or level with the top surface of the upper part of the conveyor as shown more particularly in Figure 1. Air under pressure is supplied to the interior of the box-like casing B through a pipe D having a controlling valve or the like D¹. A branch pipe E having a controlling valve E¹ extends from the pipe D and communicates with or terminates in a flattened tube or nozzle F disposed across the rear end of the dead plate A. The tube or nozzle F is provided with a series of apertures or openings F¹ through which jets of air issue in a forward direction, that is, towards the conveyor. The dead plate A as shown more particularly in Figures 1 and 2 is provided with a number of closely arranged and preferably inclined apertures or perforations through which the air issues in the form of jets in a forwardly inclined direction as indicated by the arrows in Figure 1.

When a bottle or the like is deposited from the forming machine on to the dead plate A, the air jets issuing from the apertures A¹ and from the tube or nozzle F impinge on the lower part of the bottle in such manner as to cause the bottle to be moved off the dead plate A on to the conveyor C. The supply of air may be controlled by a valve that may be moved by air pressure used in conjunction with certain operations in the glass forming machine, so that the valve allows the air to pass to the dead plate and to the jet tube or nozzle at predetermined intervals in timed relation to the depositing of the bottles from the forming machine on to the dead plate. The air is therefore only allowed to issue from the apertures A¹ and the jet tube or nozzle F when the bottle is placed on the dead plate, and during the actual transfer of the bottle from the dead plate to the conveyor. The air issuing through the apertures A¹ in the dead plate A prevents the full weight of the bottle from being entirely supported on the dead plate so that the bottle is maintained in a lightly supported or semi-floating condition, and whilst in this condition it can be readily moved or transferred from the dead plate on to the conveyor by the air jets issuing from the jet tube or nozzle F without likelihood of the bottle being knocked over and broken. The forwardly inclined air jets issuing through the apertures A¹ in the dead plate, not only maintain the bottle in a lightly supported or semi-floating condition, but they assist in the transfer or forward movement of the bottle on to the conveyor owing to the direction of inclination of the jets. By means of the valve D¹ on the pipe D which supplies the air under pressure to the casing or chamber B, the air pressure acting on the bottle can be regulated according to the weight and shape of the bottle and the air pressure within the pipe E and the jet tube or nozzle F can be varied according to requirements by adjusting the valve E¹. The angular position or direction of the air jets issuing from the jet tube or nozzle F can also be varied by angularly adjusting the tube or nozzle about its axis for which purpose it is provided with a cylindrical end which fits in an elbow or socket E² on the pipe E. A guide plate G may be adjustably mounted on the dead plate A and it may be arranged to cover some of the apertures A¹ therein according to requirements, whilst it may also be arranged to cover some of the apertures in the jet tube or nozzle F. The guide plate G may be secured in any desired position on the dead plate by means of a bracket or arm G¹ and a clamping wing nut G². The apertures A¹ in the dead plate A, whether inclined or otherwise, may be used without the jet tube or nozzle F and the transfer or movement of the bottle from the dead plate to the conveyor

may be effected by means of a wiper or mechanical device, the transfer or movement being assisted or facilitated by reason of the air jets issuing from the dead plate and impinging on the bottom of the bottle in order to maintain the latter lightly supported on the dead plate. In some instances the forwardly inclined air jets issuing from the dead plate may effect the transfer of the bottle without the use of a wiper or of other air jets. If desired, the jet tube or nozzle F may be used without the air jets issuing from the dead plate.

What I claim and desire to secure by Letters Patent of the United States is:—

1. Apparatus for use in transferring glassware, comprising a plate having a plurality of oblique and unobstructed apertures through which air issues upwardly in an oblique direction to impinge on the ware supported on said plate and both tend to raise the same and urge the same across the plate while preventing said glassware from being knocked over, and transfer means from which air issues in a substantially horizontal direction across said plate in order to transfer the ware from said plate to a conveyor, there being means supplying air under pressure to said transfer means and the oblique apertures in said plate.

2. Apparatus for use in transferring glassware, comprising a plate having a plurality of oblique and unobstructed apertures through which air issues upwardly in an oblique direction to impinge on the ware supported on said plate and both tend to raise the same and urge the same across the plate while preventing said glassware from being knocked over, and an air tube transversely disposed with respect to the ware and having nozzles from which air issues in a substantially horizontal direction across said plate in order to transfer the ware from said plate to a conveyor while being supported and assisted in movement by the air from the oblique apertures in said plate, there being means supplying air under pressure to said apertures and said air tube.

3. Apparatus for use in transferring glassware, comprising a plate having apertures through which air issues upwardly to impinge on the ware supported on the said plate, and transfer means from which air issues substantially horizontally across the plate in order to transfer the ware from the plate to a conveyor while the upwardly directed air from the apertures in said plate tend to prevent the ware from being knocked over, there being means supplying air under pressure to said plate apertures and said transfer means.

4. Apparatus for use in transferring glassware, comprising a plate having apertures through which air issues to impinge on the ware, an air tube transversely disposed with

respect to the ware and having nozzles from which air issues to impinge substantially horizontally on the ware to shift the latter off the plate and a conveyor to receive the ware from the said plate, there being means supplying air under pressure to the apertures in said plate and to said air tube.

5. Apparatus for use in transferring glass-ware from a plate to a conveyor as in claim 4, in combination with means for adjusting the air tube about its axis.

6. Apparatus for use in transferring glass-ware from a plate to a conveyor as in claim 4, including separate supply pipes leading from the air supply means to the plate and to the air tube and separate controlling means on the said pipes.

7. Apparatus for use in transferring glass-ware comprising a perforate plate on which the ware is placed and an endless conveyor fitting closely against the conveying surface of the conveyor, a casing below the said plate and forming an air chamber from which air issues through the apertures in the said plate to impinge on the ware, and a horizontally disposed tube from which air issues in a direction to propel the ware upon the plate whilst it is acted upon by the air issuing through the said apertures, which latter issuing air serves to prevent the ware from being knocked over during the shifting or transferring thereof, there being means supplying air under pressure to said casing and to said tube.

THOMAS WARDLEY.