

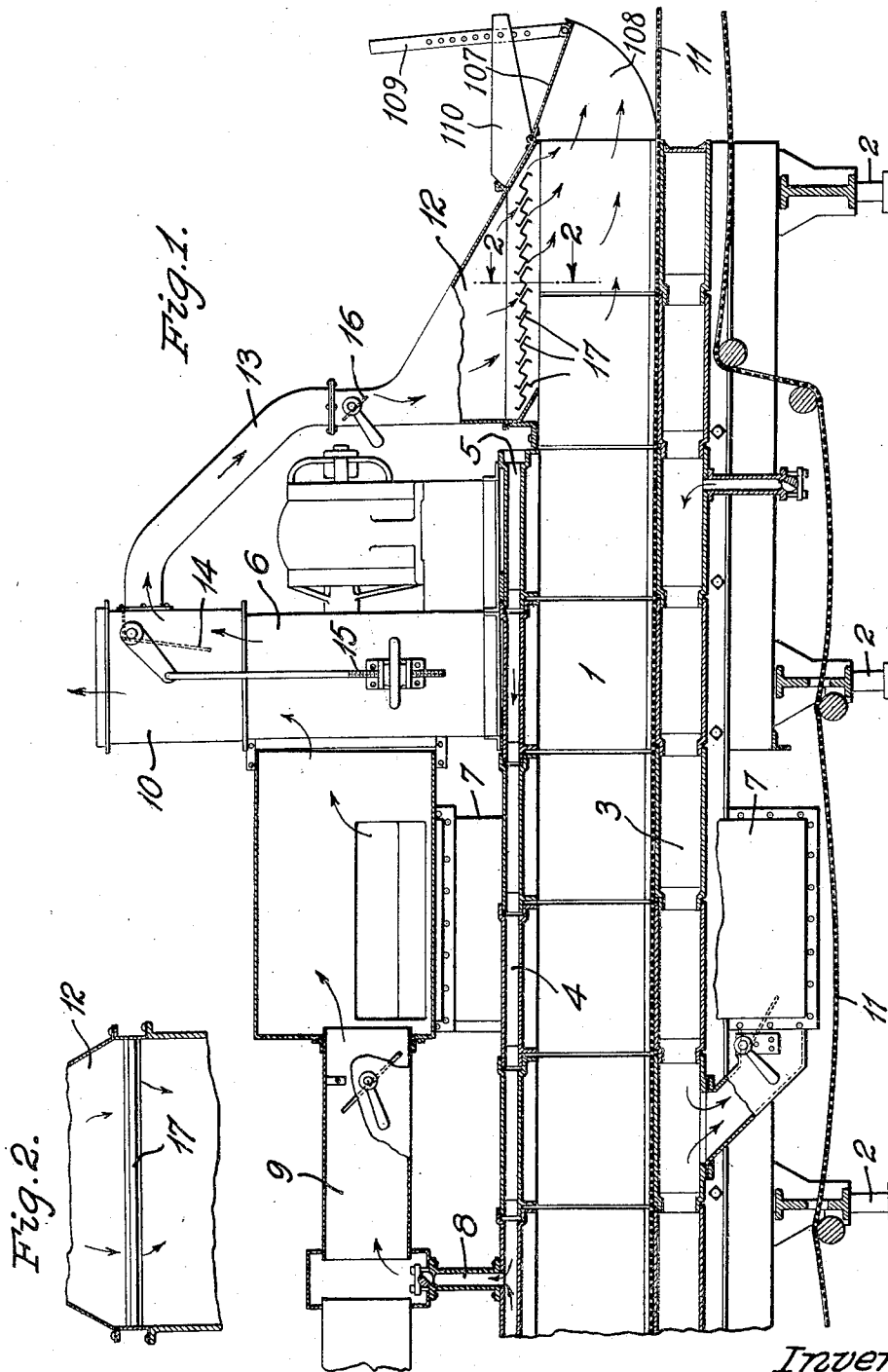
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APPARATUS FOR ANNEALING GLASSWARE

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UNITED STATES PATENT OFFICE

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APPARATUS FOR ANNEALING GLASSWARE

Application filed March 11, 1926. Serial No. 93,872.

This invention relates to lehrs for annealing glassware, and it has particular relation to lehrs of the type embodying a tunnel through which a series of articles of glassware are transported, and in which they are
5 subjected to varying temperature environments in order to relieve stresses and strains existing in the ware. Such a lehr is shown for example in my copending application, Ser. No. 661,827, filed Sept. 10, 1923, of
10 which this application is a continuation in part.

In some installations it has been found that a differential air pressure exists at opposite ends of the lehr tunnel, such as will
15 cause a tendency for air to flow into either the discharge end or the receiving end of the tunnel and disturb the thermal environment of the ware.

One of the objects of this invention is to eliminate the above-mentioned difficulty by providing a lehr in which a current of a gaseous medium is caused to flow through the discharge end of the tunnel and in the
25 same direction as that in which the ware moves, which in effect forms a gaseous curtain to regulate the flow of cold air from the outer atmosphere into and through the tunnel and which may interfere with the regulation of the temperature therein.
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Other objects will appear from the following specification and the appended claims.

In the accompanying drawings:

35 Figure 1 is a view partly in side elevation and partly in vertical longitudinal section of the discharge end of a lehr embodying the invention; and

40 Fig. 2 is a vertical transverse sectional view taken on line 2—2 of Fig. 1.

Referring to the drawings, the invention is shown as being embodied in a lehr such as that shown in my Patent No. 1,560,481 granted Nov. 3, 1925, which briefly comprises an inclined tunnel 1, of sectional con-

struction and supported upon pedestals 2. A heating flue 3 extends longitudinally below the tunnel and is supplied with heated gases from a fire box, not shown. A flue 4 also extends longitudinally above the tunnel and communicates with the outer atmosphere at 5. The hot gases and the cooling air are both drawn through their respective flues by a motor-driven suction fan 6. This fan communicates with the heating flues 3
55 through pipes 7, which extend vertically one at each side of the tunnel, and communicate with the cooling flues 4 through damper-controlled pipes 8 and a wind pipe 9. The hot gases and cooling air, after traversing the flues 3 and 4, are discharged to the outer air through a stack 10.
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Articles of glassware are transported through the tunnel by a conveyor 11 which is supported directly by the bottom of the tunnel and which is driven by any suitable means, not shown.
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The top of the tunnel adjacent to its exit end comprises a hood or casing 12 which communicates with the stack 10 through a pipe 13. An adjustable plate or damper 14 is provided in the stack for deflecting a portion of the gases passing therethrough into the pipe 13. The angularity of the plate 14 may be adjusted by a screw 15 to vary the amount of gaseous medium deflected from the stack 10 into the pipe 13 and the hood 12. A damper 16 is also provided in the pipe 13 by means of which the amount and velocity of gaseous medium admitted to the hood may be further regulated according to requirements.
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A series of baffle plates 17 extend transversely across the hood at the point where it communicates with the tunnel and deflect the gases issuing therefrom towards the discharge end of the tunnel and at an angle to the path of movement of the ware. The current of gas thus provided forms, in effect, a curtain adjacent to the exit end of the tunnel.
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nel to regulate the amount of cold air from the outer atmosphere which may obtain access thereto. The exit end of the tunnel is provided with a door 107 which is hinged at its upper edge to the rear bottom edge of the hood 12, and which is provided with arcuate side flanges 108 to prevent an influx of excess air from the outer atmosphere into the tunnel. The door may be opened sufficiently to permit ware to pass therebeneath and maintained at such height by a bar 109 which is adapted to be adjustably secured to a bracket 110 carried by the hood 12.

While I have shown and described the invention as being utilized at the discharge end of the tunnel, it will be understood that under certain conditions it may be found desirable to provide an air curtain at the entrance end of the tunnel. In this and in other respects the invention may be modified in construction, arrangement and mode of operation, without departing from the invention as defined in the appended claims.

What I claim is:

1. Apparatus for annealing glassware, comprising a tunnel having its discharge end at least partially open to the atmosphere at all times, and continuously operating means for forming a gaseous curtain adjacent to the discharge end of said tunnel for preventing an inflow of atmospheric air into said discharge end of said tunnel.

2. Apparatus for annealing glassware, comprising a tunnel having its discharge end at least partially open to the atmosphere at all times, and means for causing a gaseous current to flow through the discharge end of said tunnel and in a direction transverse to that of the passage of the ware therethrough to prevent atmospheric air from flowing into said discharge end of said tunnel.

3. Apparatus for annealing glassware, comprising a tunnel having its discharge end at least partially open to the atmosphere at all times, a heating flue associated with said tunnel, means for causing a heating medium to flow through said flue, and means for directing a portion of said medium into said tunnel adjacent to the discharge end thereof to provide a gaseous curtain for preventing atmospheric air from flowing into said discharge end of the tunnel.

4. Apparatus for annealing glassware, comprising a tunnel, a flue associated therewith, means for causing a cooling medium to flow through said flue, and means for directing a portion of said cooling medium into said tunnel adjacent to the discharge end thereof to provide a gaseous curtain to prevent atmospheric air from flowing into said discharge end of said tunnel.

5. Apparatus for annealing glassware, comprising a tunnel, a heating flue and a cooling flue associated therewith, means for

causing a heating medium and a cooling medium to flow through said heating and cooling flues respectively, and means for directing a portion of said media into said tunnel, to provide a gaseous curtain adjacent to the discharge end thereof for preventing air from the outer atmosphere from flowing into said tunnel.

6. Apparatus for annealing glassware, comprising a tunnel, means for transporting articles of glassware through said tunnel, a heating flue and a cooling flue associated with said tunnel, means for causing a heating medium and a cooling medium to flow through said heating and cooling flues respectively, means for directing a portion of said heating and cooling media into the exit end of said tunnel adjacent the discharge end thereof and in the same direction as the movement of the ware therethrough, to prevent air from the outer atmosphere from flowing into the discharge end of said tunnel, and means for regulating the amount of gaseous media thus directed into said tunnel.

7. Apparatus for annealing glassware, comprising a tunnel, means for transporting articles of glassware through said tunnel, a flue associated with said tunnel, means for causing a temperature-controlling medium to flow through said flue, a hood disposed above the exit end of said tunnel, and communicating with the interior thereof, means for establishing communication between said flue and said hood, a series of baffle elements disposed in said hood, and means for causing a portion of said temperature-controlling medium to flow from said flue into said hood and thence into said tunnel, to provide a gaseous curtain adjacent to the discharge end thereof.

8. The method of preventing an in-draft of atmospheric air from entering a heated tunnel or other enclosure having an opening continuously connecting said enclosure with the outer air, which method comprises directing a stream of gas diagonally across the said opening.

9. In the operation of a tunnel Lehr, the method of preventing an in-draft of atmospheric air from entering the tunnel of the Lehr, which method comprises directing a stream of gas downwardly across said tunnel near one end thereof.

10. Apparatus for annealing glassware, comprising a tunnel, means for transporting articles of glassware therethrough, means for heating said tunnel exteriorly thereof, means for directing a current of gaseous medium into said tunnel to establish a condition of super-atmospheric pressure therein, and means for varying the volume of said medium directed into said tunnel for controlling said pressure.

11. Apparatus for annealing glassware, 130

- comprising a tunnel, means for transporting articles of glassware therethrough, means for heating said tunnel exteriorly thereof, means for directing a current of
- 5 gaseous medium into said tunnel to establish a condition of super-atmospheric pressure therein, and means for varying the velocity of the medium directed into said tunnel for controlling said pressure.
- 10 Signed at Hartford, Conn., this 4th day of March, 1926.

VERGIL MULHOLLAND.