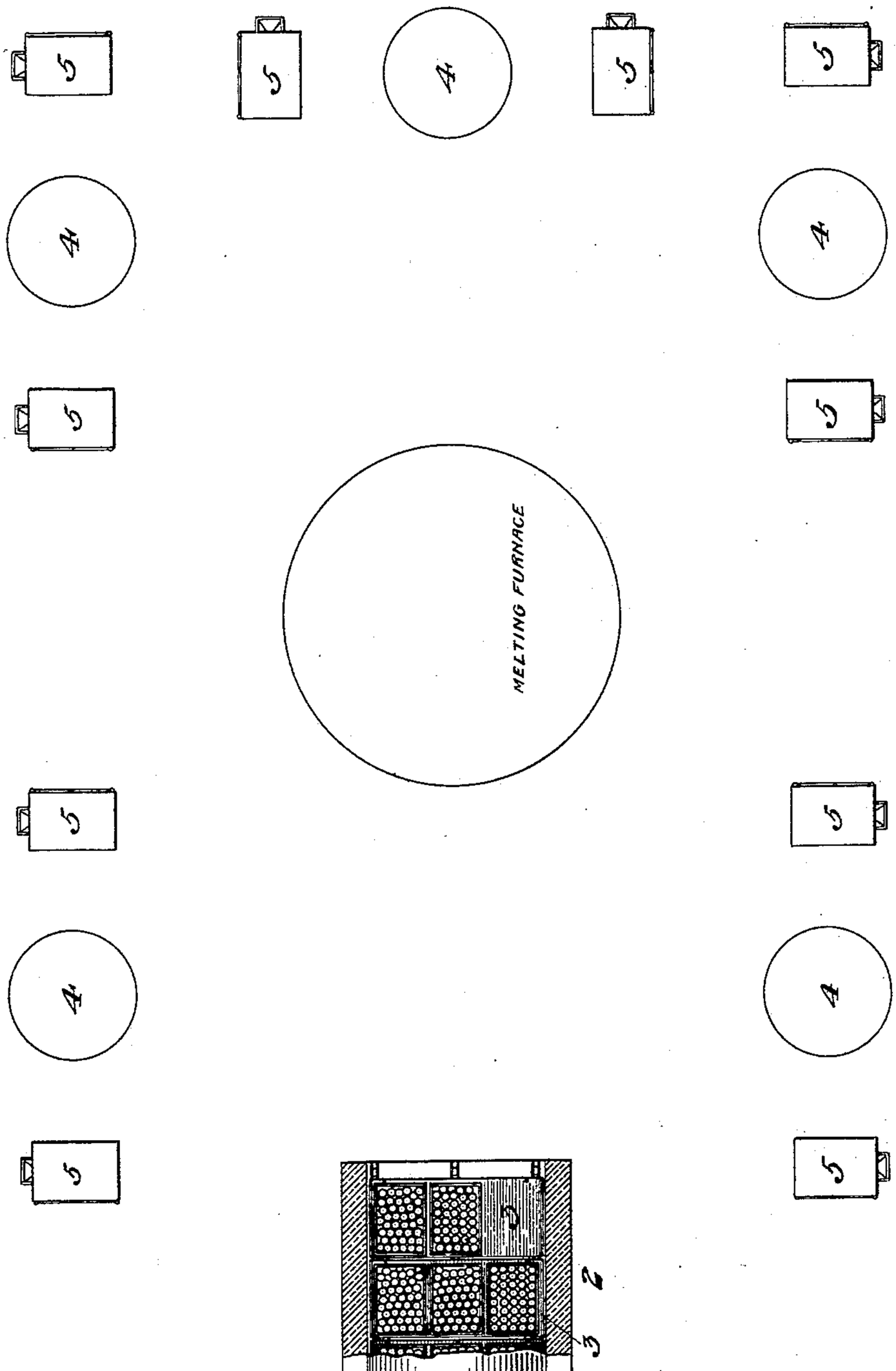
(No Model.) 2 Sheets—Sheet 1.

W. BUTTLER.

APPARATUS FOR ANNEALING GLASSWARE.

No. 602,677. Patented Apr. 19, 1898.

Fig. 1.



WITNESSES

L. A. Connery Jr.

W. M. Corwin

INVENTOR

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his attys.

(No Model.) 2 Sheets—Sheet 2

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Fig. 2.

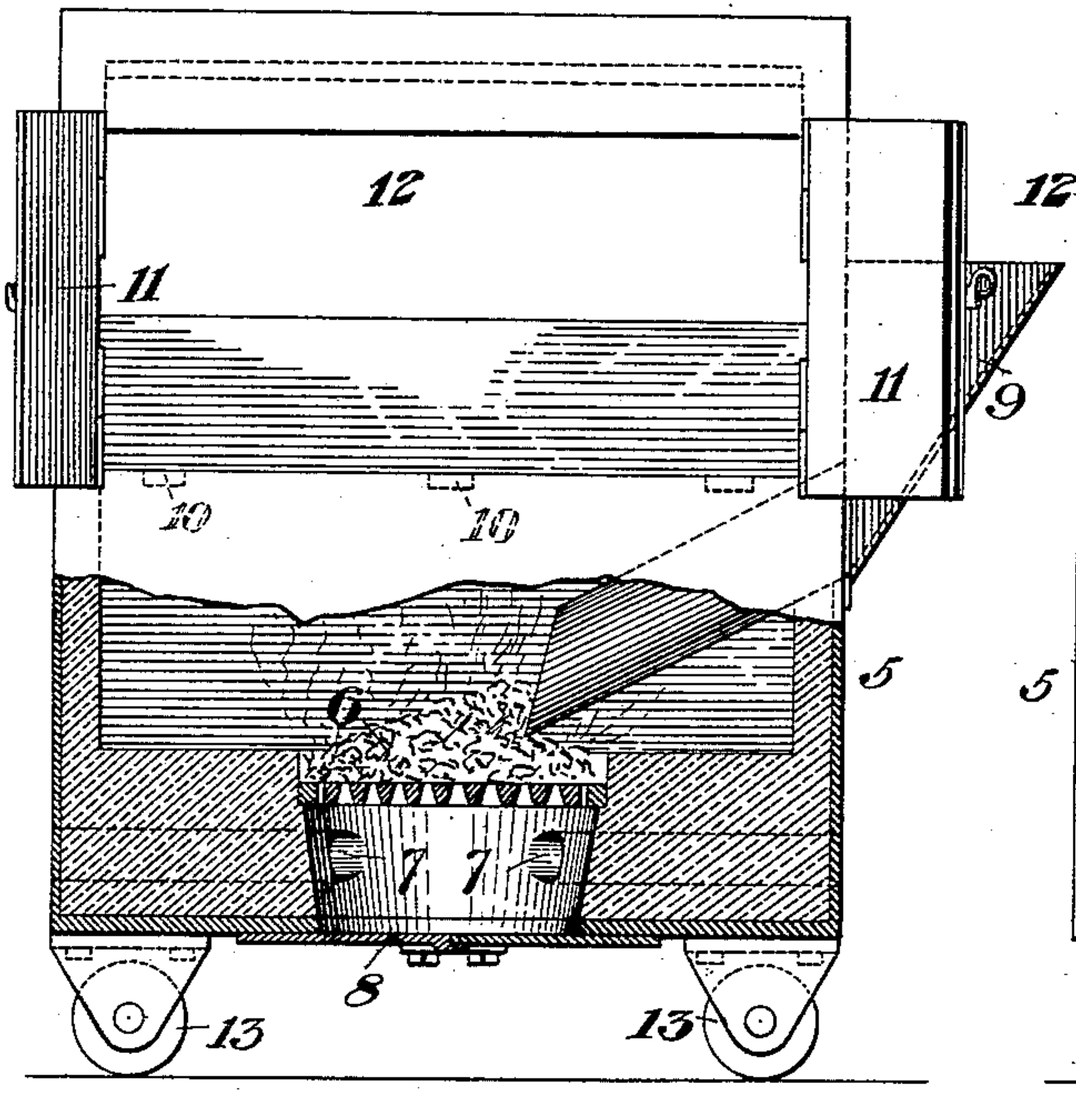


Fig. 3.

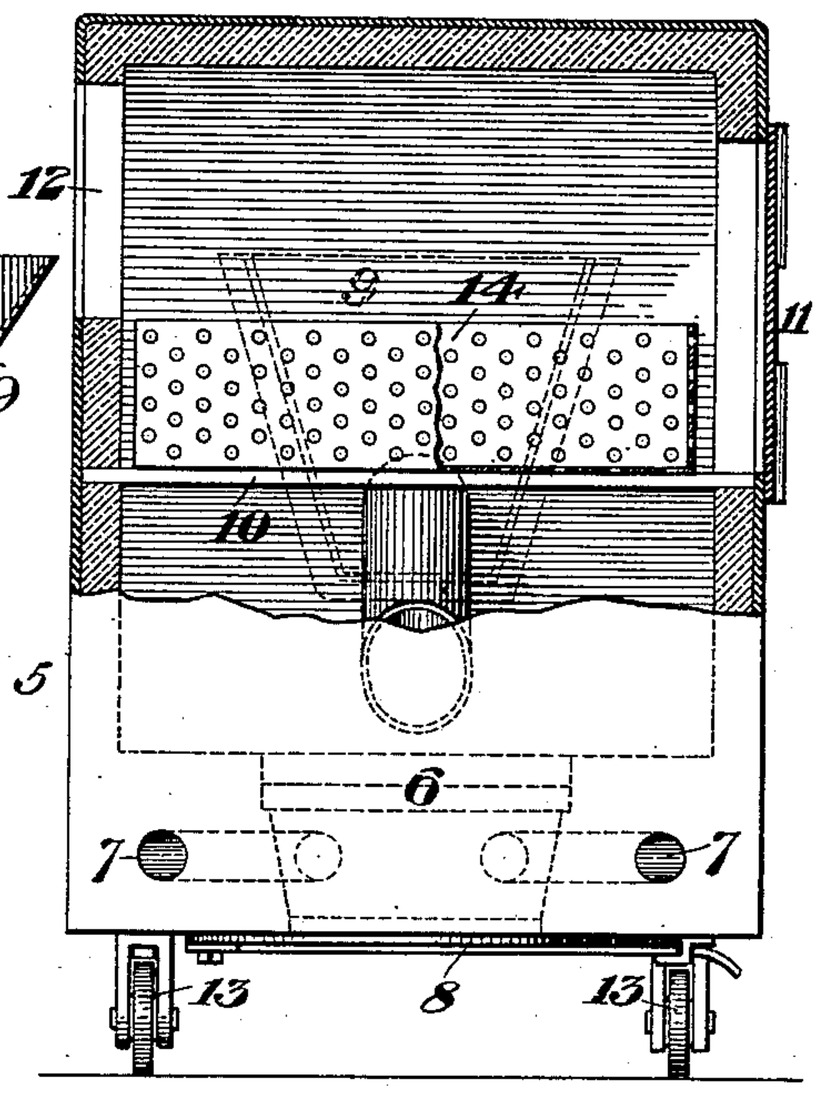
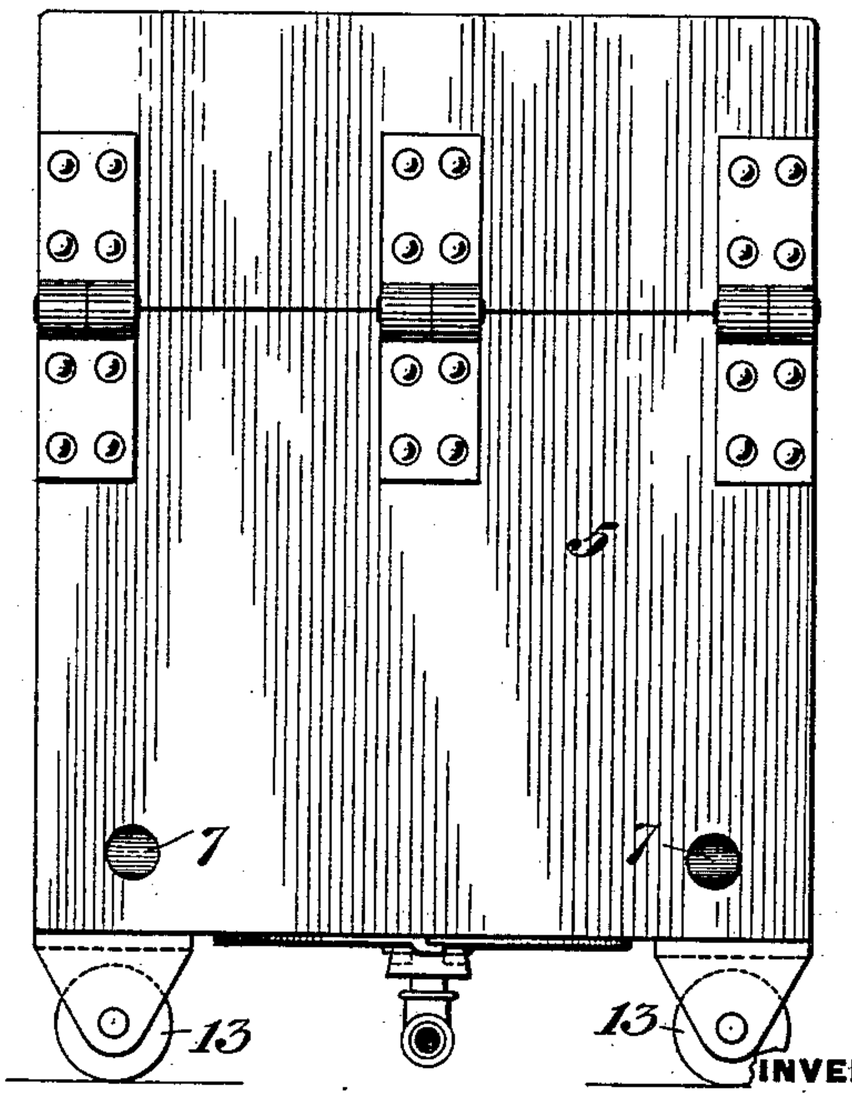


Fig. 4.



WITNESSES

F. A. Connett Jr.
H. M. Corwin

INVENTOR

William Buttler
by Bakewell & Bakewell
his attys

UNITED STATES PATENT OFFICE.

WILLIAM BUTTLER, OF REDKEY, INDIANA.

APPARATUS FOR ANNEALING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 602,677, dated April 19, 1898.

Application filed April 16, 1897. Serial No. 632,477. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BUTTLER, of Redkey, in the county of Jay and State of Indiana, have invented a new and useful Improvement in Apparatus for Annealing Glassware, of which the following is a clear, full, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a diagrammatic view of a plant embodying my invention. Fig. 2 is a front elevation, partially in section, of my intermediate heating-furnace. Fig. 3 is an end view of same, partly broken away; and Fig. 4 shows a modified form.

In the manufacture of glass articles as heretofore practiced it has been customary to employ boys to take the articles singly or a few at a time as they are finished at the press or at the glory-hole furnace and to carry them to the annealing-leer. This practice, although hitherto necessary, has been very objectionable, because it involves the employment of a large number of boys whose aggregate wages are considerable, and their carelessness in carrying the glass articles results in a very considerable breakage and loss.

I have devised an apparatus by which all the objections to the practice above mentioned are overcome and which, furthermore, improves the quality of the finished and annealed article of glassware.

The invention consists in an intermediate heating-furnace into which the glass articles when taken from the press or mold or glory-hole are placed and from which they are taken to the annealing-leer, said furnace containing a pan or box on which the glass articles are temporarily laid, so that when a number of them have been accumulated the pan can be lifted and all carried together to the leer. In this furnace the glass articles are uniformly warmed and are thus partially annealed before being introduced into the leer. The consequence is that the operation of annealing in the leer is not only shortened, but it is better performed and a better product is obtained. Breakage and labor of handling the glass at its introduction into the leer and in its removal therefrom can also be reduced by the carrying of a great number of articles on a single pan, for which my invention provides.

Within the scope of my invention the intermediate heating-furnace may be variously constructed. I have illustrated in the drawings the preferred construction which I intend to claim specifically, although the broad claims of this specification are not intended to be limited thereto.

Referring to the drawings, in Fig. 1, 2 represents a leer containing the usual leer-pans or carriers 3 3.

4 is the position of the glass-press, blow-mold, or glory-hole, at which the glass articles are finished.

5 is the intermediate furnace. As shown in the drawings, Figs. 2 and 3, it consists of an outer case having an interior refractory lining of brick or clay and having at the base an eye or combustion-chamber 6, in which may be burned gas, oil, coke, or anthracite coal. Air-ducts or twyers 7 lead into this chamber and afford passages through which air may be blown to maintain active combustion. Doors or grates 8 may be provided at the bottom of the chamber for withdrawing the fuel, and solid fuel may be introduced through a hopper 9.

10 is a support on which the box or pan carrying the glass articles is placed. This support is preferably constituted by horizontal bars at the level of the lower edge of the door-opening 11, through which the box or pan may be introduced and removed. At the opposite side of the furnace from the door-opening is an opening 12, permitting the introduction of the glass articles upon the box or pan.

In Figs. 2 and 3 I show the furnace provided with a fixed top or cover; but in Fig. 4 I show the same with a hinged top, which can be lifted so as to expose the interior of the furnace and to permit easier access thereto.

The furnace is movable, being preferably mounted on wheels 13, so that it may be carried to the desired position in the works. It is placed near the position of the pressman, blower, or the operator of the glory-hole at which the glass articles are reheated. A box or pan 14 is placed in the furnace on the support 10, the doors 11 are shut, and as the glass

articles are finished they are placed successively through the opening 12 upon the box or pan. The pan is preferably made of perforated-metal or of woven-metal strips, so as to afford numerous openings through which the heat may rise from below. The articles on the pan are heated by the fire in the furnace, and when a sufficient number of the articles have been accumulated the doors are opened and the pan, with all the articles thereon, is lifted out and placed upon one of the pans of the leer 2, on which it is carried through the leer, completing the annealing of the glass articles in the usual manner. As soon as one of the pans is removed from the furnace it is replaced by another one, so that the operation is continuous and without interruption. The heating of the articles in the furnace immediately after their finishing is of great benefit in improving the quality of the finished articles by imparting to them a preliminary partial annealing, and in addition thereto the apparatus enables me to dispense with the numerous carrying-in boys who have been employed heretofore for carrying the glass articles to the leer. Thus with my apparatus one man tending the furnace can do the work which has heretofore required sixteen boys.

I claim—

1. In a glass plant, a finishing-station, an annealing-leer, an intermediate glass-heating furnace independent of any glass-finishing furnace and located adjacent to the finishing-station, and a series of pans or carriers arranged to be successively placed in the heating-furnace, and to be placed in an annealing-leer after receiving the finished glass articles in the heating-furnace.

2. In a glass plant, the combination with a finishing-station and an annealing-leer, of an intermediate glass-heating furnace independent of the glass-finishing furnace and adjacent to the finishing-station, said furnace containing a tray, a door at one side and a receiving-opening at the opposite side, the tray being arranged to receive the finished article and be deposited in the annealing-leer.

3. In a glass plant, a finishing-station, an intermediate glass-heating furnace adjacent thereto, an annealing-leer, and a series of pans or trays arranged to be successively placed in the heating-furnace and then placed in the annealing-leer after being filled with finished glass articles in said heating-furnace.

In testimony whereof I have hereunto set my hand.

WILLIAM BUTTLER.

Witnesses:

THOMAS W. BAKEWELL,

GEORGE I. HOLDSHIP.