H. I. F. STRANDH.

CHANNEL OVEN, DRYING OVEN, OR THE LIKE.

APPLICATION FILED DEC. 21, 1915.

1,243,777. Patented Oct. 23, 1917.

2 SHEETS—SHEET 1.

Fig. 1

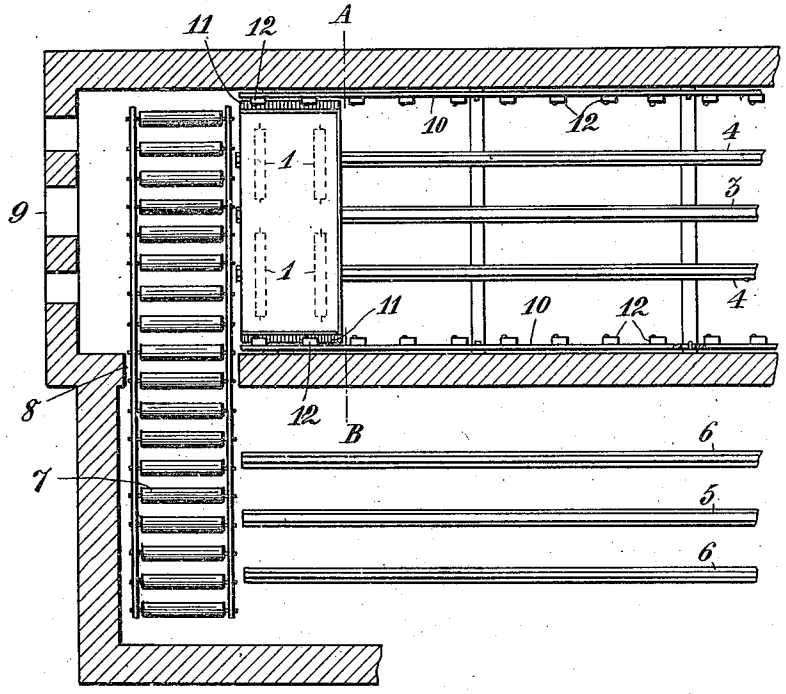
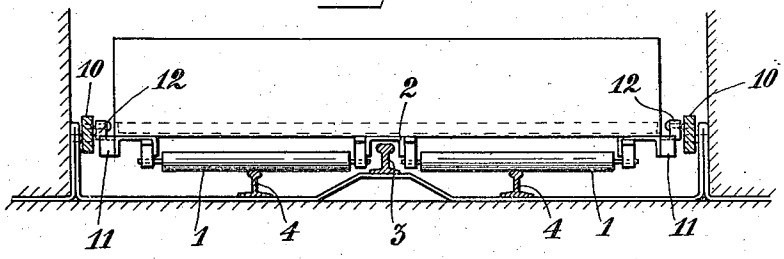


Fig. 2.



Inventor
Hans Isak Ferdinand Strandh,
By
Attorneys

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2 SHEETS—SHEET 2.

Fig. 3.

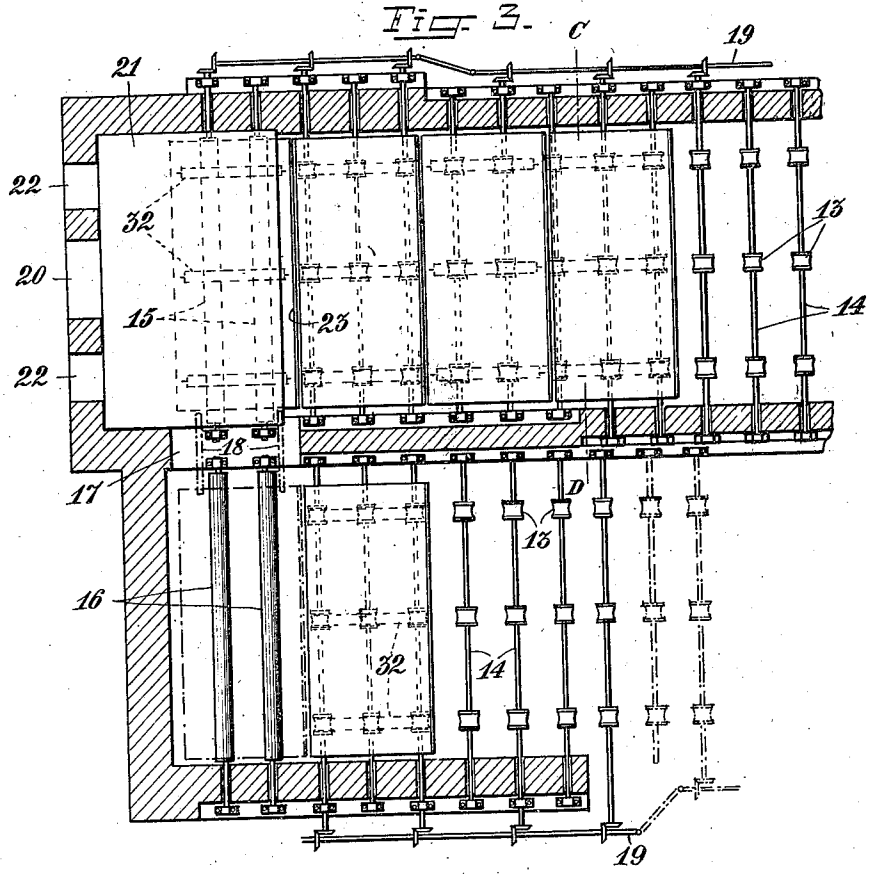


Fig. 4.

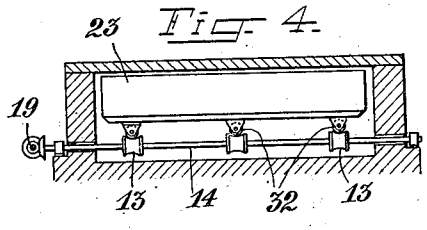
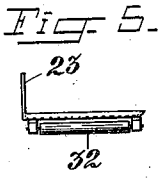


Fig. 5.



Inventor

Hans Isak Ferdinand Strandh,

By Knight Bros

Attorneys

UNITED STATES PATENT OFFICE.

HANS ISAK FERDINAND STRANDH, OF FORSERUM, SWEDEN.

CHANNEL-OVEN, DRYING-OVEN, OR THE LIKE.

1,243,777. Specification of Letters Patent. Patented Oct. 23, 1917.

Application filed December 21, 1915. Serial No. 68,105.

To all whom it may concern:

Be it known that I, HANS ISAK FERDINAND STRANDH, manager, a subject of the King of Sweden, residing at Forserum, Sweden, have invented certain new and useful Improvements in Channel-Ovens, Drying-Ovens, or the like, of which the following is a specification.

In coolers or so-called channel ovens for bottles and other glass wares there are generally used plates or boards, on which the ready-made hot glass wares are placed and transported through the stove heated to a certain degree in order to be subjected to a successive cooling. Exceptionally sheet-iron wagons having flanged wheels are used. In either case the hot glass wares are put on the plates through an inlet at one longitudinal side of the channel cooler.

The arrangement referring to the present invention allows the inserting of the glass wares manually or by means of an automatic transporting device directly through an inlet of the fore-wall of the cooling race.

The invention is essentially characterized by the fact that the boards for transporting the glass wares in the stove are provided with long rollers stretching in the transversal or the longitudinal direction of the wagon and that at the two ends of the stove or only at one of them a race is arranged, running perpendicularly to the cooling channel, said race also consisting of rollers or essentially of rollers for the purpose of getting only rolling friction between the board and its bed not only on moving the boards at the race in the channel and at the said rolling race, but also at every moment of the transition between the rolling race in the channel on one hand and the race outside the channel on the other hand. No special lifting arrangements or the like for making the moving of the boards easy are thus necessary.

Two embodiments of an arrangement according to the present invention are shown in the annexed drawings.

Figure 1 shows one embodiment in plan elevation. Fig. 2 is a section on a larger scale on the line A—B of Fig. 1. Fig. 3 shows the other embodiment in plan elevation. Fig. 4 is a section on the line C—D of Fig. 3. Fig. 5 shows in end view the board shown in Fig. 4.

According to the embodiment shown in Figs. 1 and 2 the boards are provided with rollers 1 stretching in their longitudinal direction.

Each board is provided with four rollers arranged by two and two, whereat the rollers of each pair collineate with each other. The rollers are of such a length as to occupy the main part of the length of the board. Between the bearings of the inner ends of the four rollers an inverted U-shaped guide 2 is attached to the under side of the board, said guide also suitably forming a support of said bearings and embracing a rail 3 stretching along the center of the channel and thereby guiding the board during its transport in the channel. The rollers 1 rest on rails 4 stretching at the two sides of this rail 3 and parallel to the same in the channel. At the outside of the stove a similar rail system 5, 6 is arranged. The empty boards run from the rails 6 onto the rolling race, arranged at the end of the stove and stretching transversely in relation to the rails 3, 4, 5, 6 through a lateral inlet 8 of the stove wall and situated half inside the stove and half outside the stove as indicated in Fig. 1. From the outer part of the rolling race 7 the board is inserted into the stove opposite to the inlet of the end wall of the stove, through which the glass wares are to be inserted. From its position at the inner part of the rolling race the board is brought upon the rails 4, on which it is carried forward along the stove channel. At the outgate of the channel a similar rolling-race 7 is suitably arranged, on which the boards are brought out of the stove to match with the rails 6.

The arrangement for moving the boards through the stove consists, according to the drawing, in two bars 10 stretching along the sides of the channel and driven to and back, said bars having pawls 12 catching into racks on the wagons.

One of the particular features of the present invention is the transfer roller races for receiving the rollers on the boards and thus realizing an easy and comfortable transport of the boards into the stove and out of it, so that an entire rolling effect may be produced not only when transporting the boards on the race in the channel and the race parallel to the former outside the channel and the transition races between said channels but also at every moment of the transition between two races that is to say at every motion moment there will be produced

only rolling friction between the boards and their bed. If for instance the race of the channel and the race parallel to it outside the channel as well as the transition races at the ends only consisted in rollers but on the contrary the plates for the glass wares had no rollers, the transport of a plate from the outer race (5, 6) to the transition race 7 would be performed only at utmost difficulty and a transport of the plate from the race 7 to the race 3, 4 in the channel would hardly be possible, the temperature of the stove amounting to 600° C. causing an excessive friction. It should be observed, that the weight of a charged plate is about 500 kgs. and that by transporting such a charge mainly by sliding that is to say practically without rolling effect (which would be the case during certain moments of the transition between the outer race and the end race respectively between the end race and the inner race) a considerable power is of course necessary. As will be clearly seen, this inconvenience is entirely eliminated by the present arrangement. In this arrangement only rolling effect will prevail during each moment of the transition between the end race on one hand and the inner race or the outer on the other hand.

When a wagon is transported from the rails 5, 6 to the rolling race 7 the rollers of the wagon will roll only on the rails at first and then at the rollers 7 (Fig. 1) parallel thereto. The wagon having occupied its proper position on the rolling race the rollers of the latter will operate while the rollers of the wagon, so to say operate as rails.

According to the embodiment shown in Figs. 3–5 the boards are provided with lateral rollers 32, three on each board. The boards rest by way of these rollers on track wheels 13, attached to axes 14 rotatably supported in the stove wall. The diameter of the rollers 32 is measured in such a manner, that the rollers fit rather precisely in the track of the wheels.

By this the boards get a straightlined guiding during their insertion and there will be obtained the friction between the track wheels and the rollers necessary for driving the boards forth.

Along the entire channel such axes 14 having track wheels 13 are arranged thereby forming a race for the boards. A similar race is arranged at the outside of the stove together with transition races as in the former embodiment arranged at the ends of the stove to allow the boards to be easily brought into, through and out of the stove by a perpetual circulation.

According to Fig. 3 the transition race consists in two pairs of rollers 15, 16 parallelly arranged to the axes 14, of which one pair 15 is arranged in the stove channel, the other 16 outside of it. The rollers are almost as long as the channel is broad and the rollers of one pair are placed opposite to the rollers of the other pair. Between the two pairs of rollers that is to say in the lateral inlet 17 of the stove wall two rail pieces 18 are placed forming a bridge between the two pairs of rollers thus forming a continual transition race for transporting the boards into the stove from the race outside the stove.

The axes 14 of the track wheels 13 by the rotation of which the boards resting thereon are carried forward, are suitably driven, in a manner known by itself, by means of a system of axis 19 arranged along the outside of the stove, said axis communicating with the axes 14 by means of worm gear or cog wheels.

Through the inlet 20 of one end wall of the stove the glass wares are inserted on a fixed plate 21, under which the boards enter from the outer race. The hot bottles placed on this plate are seized by means of pliers inserted through the inlets 22 and are placed by rows on the underlying board successively to the inserting of the bottles.

Claims:

1. In a channel oven for annealing glass wares the combination of a track, comprising a race within the annealing chamber and inlet and outlet races lying at an angle to the race in the said chamber, boards for transporting the goods on said track through said chamber, rollers provided on said boards so as to rest on said track at every moment of the traveling of the boards on all the races, rollers mounted on the said track in such a manner that only rolling friction between the boards and the races is obtained not only while transporting the boards on the different races, but also at every moment of the transition between two adjacent races.

2. In a channel oven for annealing glass wares the combination of a track, comprising a race within the annealing chamber and inlet and outlet races lying at an angle to the race in the said chamber, boards for transporting the wares through said chamber, rollers mounted on said boards, said rollers having a relatively great extension in a direction parallel with one of the said races and being arranged so as to rest at all times on said track while traveling thereon, said track being formed by rollers in such a manner that only rolling friction between the boards and the races is obtained not only while transporting the boards on the different races, but also at every moment of the transfer between two adjacent races.

3. In a channel oven for annealing glass wares the combination of a track, comprising a race within the annealing chamber and inlet and outlet races lying at an angle to the said race in the said chamber, a race lying outside of the said annealing chamber

and connecting the inlet and outlet races, boards for transporting the goods on said track through said chamber, rollers provided on such boards so as to rest on said track at all times of the traveling of the boards on all of the races, rollers mounted on the said track in such a manner that only rolling friction between the boards and the races is obtained not only while transporting the boards on the different races, but also at every moment of the transfer between two adjacent races.

4. In a channel oven for annealing glass wares the combination of a rectangular track, one side of which extends within an annealing chamber, the opposite side of which extends along the outside of said annealing chamber and the other side of the said track forming outlet and inlet races, boards for transporting the goods on said track through said chamber, rollers provided on such boards so as to rest on said track at all times of the traveling of the boards on all the races, rollers mounted on the said track in such a manner that only rolling friction between the boards and the races is obtained not only while transporting the boards on the different races, but also at every moment of the transfer between two adjacent races.

5. In a channel oven for annealing glass wares the combination of a track, comprising a race within the annealing chamber and inlet and outlet races lying at an angle to the race in the said chamber, boards for transporting the goods through the said chamber, rollers mounted on such boards, said rollers having a relatively great extension in a direction parallel with one of the said races and being arranged so as to always rest on said track, while traveling thereon, the race within the annealing chamber lying parallel with the rollers on the boards, said inlet and outlet races being formed by rollers, lying at right angles to the rollers on the boards.

6. In a channel oven for annealing glass wares, the combination of a track, comprising a race within the annealing chamber and inlet and outlet races lying at an angle to the race in the said chamber, boards for transporting the goods on said track through said chamber, rollers provided on said boards so as to rest on said track at every moment of the traveling of the boards on all races, rollers mounted on the said track in such a manner that only rolling friction between the boards and the races is obtained not only while transporting the boards on the different races, but also at every moment of the transition between two adjacent races, racks on the said boards, pawls engaging said racks and reciprocating rods, on which the said pawls are mounted.

In testimony whereof I affix my signature in presence of two witnesses.

HANS ISAK FERDINAND STRANDH.

Witnesses:
VICTOR SANDSTROM,
E. HAGELBERG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."