

Jan. 15, 1929.

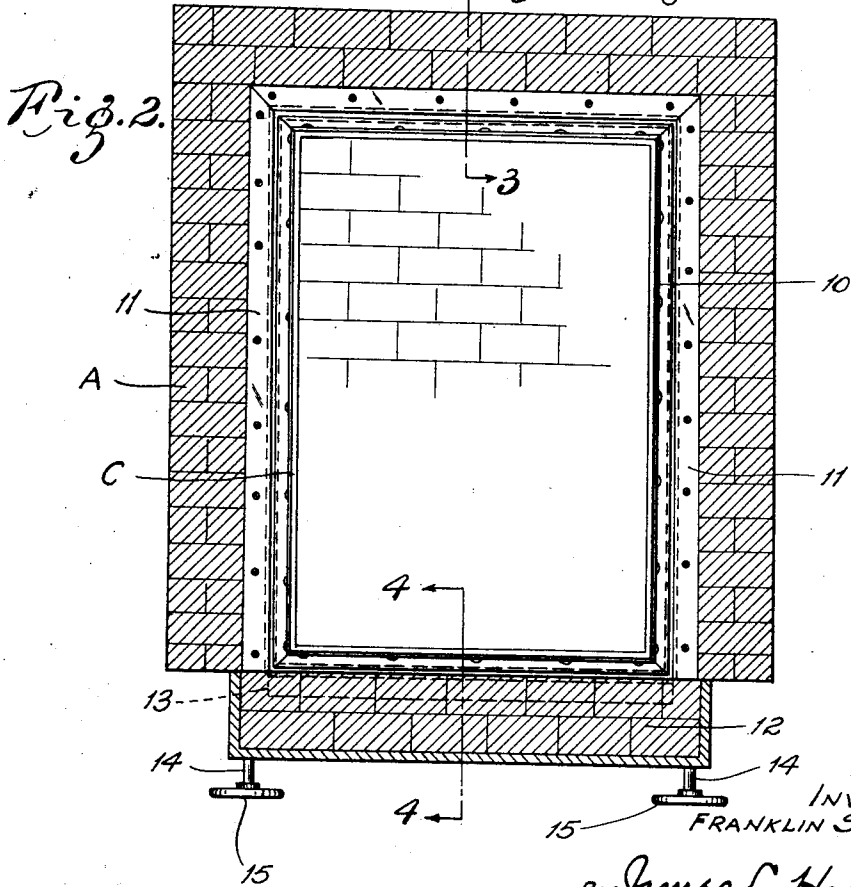
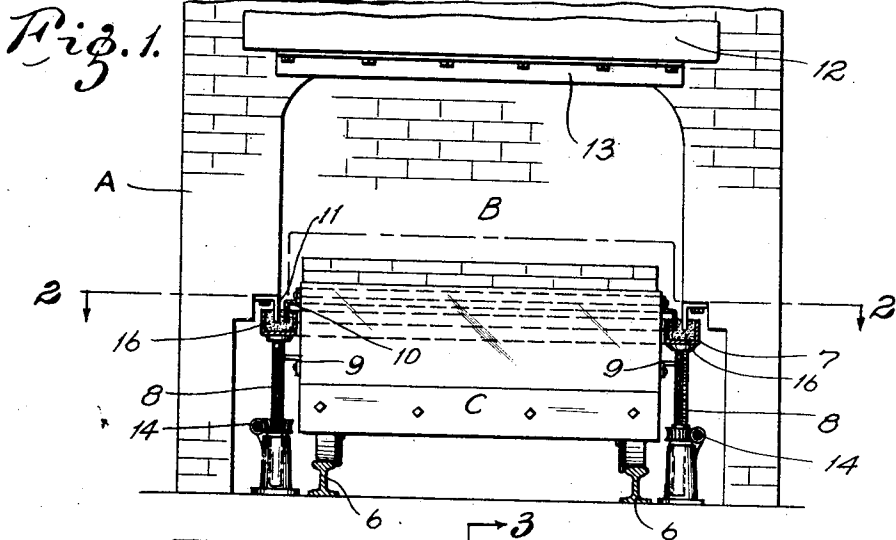
1,698,835

F. S. WEISER

SEAL FOR FURNACES

Filed Aug. 18, 1927

2 Sheets-Sheet 1



INVENTOR:
FRANKLIN S. WEISER

By *James L. Hopkins,*
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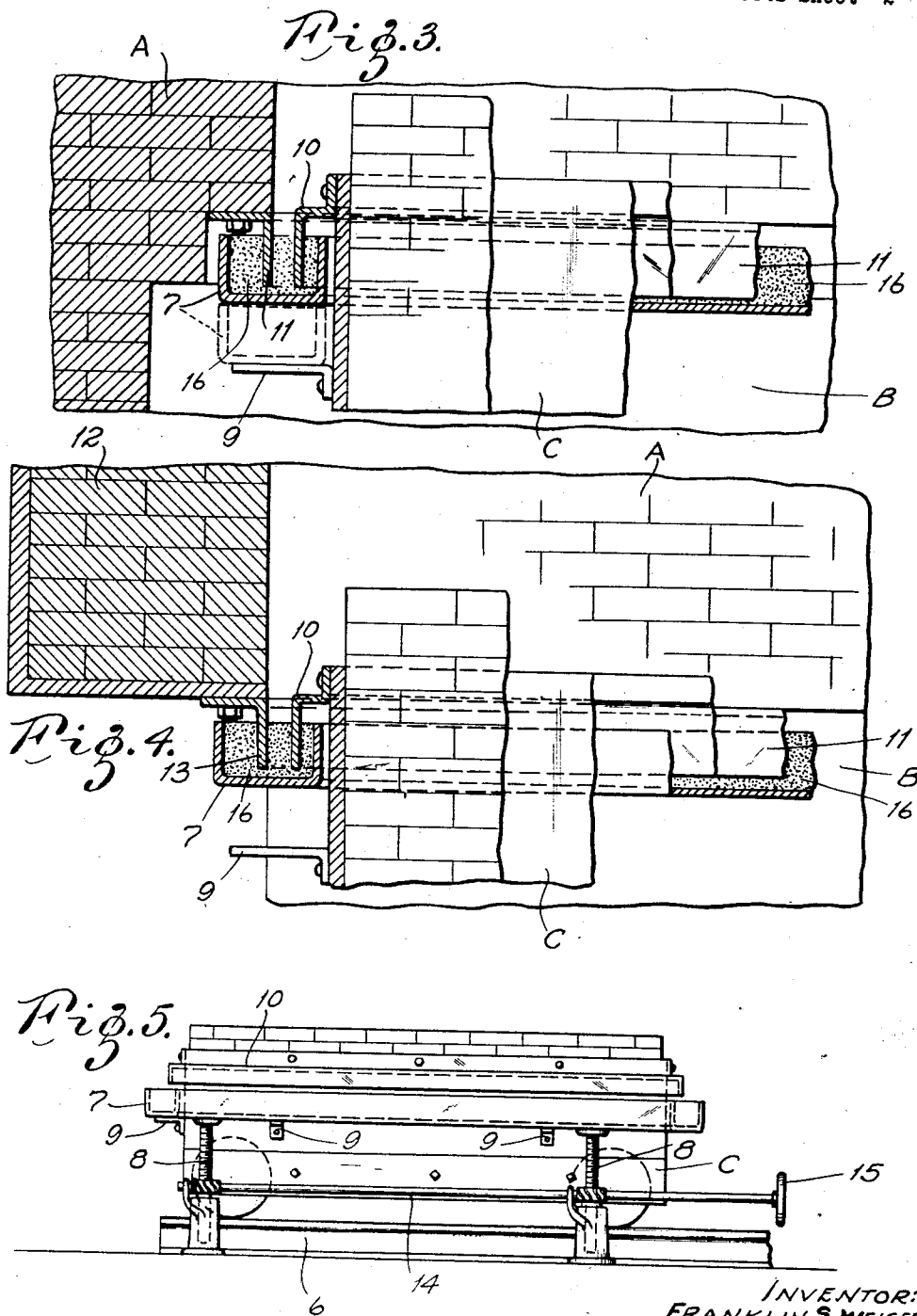
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INVENTOR:
FRANKLIN S. WEISER

By *James H. Hopkins*,
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UNITED STATES PATENT OFFICE.

FRANKLIN S. WEISER, OF ALTON, ILLINOIS.

SEAL FOR FURNACES.

Application filed August 18, 1927. Serial No. 213,751.

My invention relates to seals for furnaces and its object is to provide positive means for sealing a carrier on all sides within a furnace chamber.

In accomplishing the desired result I provide the carrier around its outer edge with a trough carrying sealing material; and the trough, being inserted in place within the furnace chamber, is then elevated into a position where its sealing material impinges upon depending flanges fixed upon the sides, rear wall, and door of the furnace to form a substantially air-tight seal, thus insuring uniform heat above the carrier, and preventing the irregularities in the heated area which result from leakage. An imperfect seal leads to heat-loss through the seal; the cold air admitted through the seal prevents uniform heating of the material being treated, and also increases the amount of oxidation during the heating cycle. In event the heating cycle is followed by a regulated cooling cycle, an imperfect or leaky seal is detrimental to a regular and uniform rate of cooling; for example, the heat treatment and subsequent cooling of steel.

The sealing may be effected by a fixed trough and a furnace having the capacity of being lowered to engage its door and interior flanges with the sealing material in the trough.

The sealing material may be granular or liquid, provided its heat-resisting properties are sufficient for the requirements of the heat process.

Drawings.

In the drawings—

Fig. 1 is a front elevation of a carrier in place within a furnace, the sealing mechanism being shown in section.

Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a similar view taken on the line 4—4 of Fig. 2.

Fig. 5 is a side elevation of the carrier and sealing mechanism.

Description.

I have illustrated the furnace A having a chamber B wherein are mounted tracks 6—6 whereon the carrier C travels. Completely surrounding the carrier C, being spaced therefrom, is the trough 7 resting upon and

made vertically adjustable by the jacks 8. Upon the sides of the carrier C are arranged brackets 9, to serve as stops for the trough 7 in the lower position of said trough 7. Attached to the walls of the carrier C, and completely surrounding said carrier C, I provide the angular flange 10, and a similar and parallel flange 11 is mounted in the side walls of the furnace chamber B as shown in Fig. 1, and in the back wall of said furnace chamber B as shown in Fig. 3; while the furnace door 12 is provided with a corresponding flange 13, as shown in Fig. 4.

The jacks 8 are actuated to raise and lower the trough 7 by means of the horizontal shafts 14, which shafts 14 are rotated by means of hand wheels 15.

The trough 7 is charged with a body of sealing material 16 which sealing material is of any heat-refractory character which is adapted to withstand the heat of the furnace, and in which the flanges 10, 11 and 13 may be readily inserted to form the seal, and as readily withdrawn when desired, by the removal of the contents 16 of the trough 7 out of contact with said flanges 10, 11 and 12.

The parallel arrangement of flanges 10—11 (see Fig. 3) and 10—13 (see Fig. 4) in relation to the trough 7 is adapted to accommodate the expansion and contraction of those parts, due to the range of temperatures to which they are subjected. But for those irregularities the flange 10 might be dispensed with.

Mode of operation.

The carrier C being loaded with the material which is to be subjected to the heat of the furnace chamber B, is shoved into said furnace chamber B upon the tracks 6—6, carrying with it the trough 7, supported by the brackets 9. When in position within the furnace chamber B, the trough 7 will also be supported by the jacks 8. Thereupon the door 12 is closed, and the trough 7 elevated by means of the jacks 8, operated through the hand wheels 15—15, bringing the flanges 10, 11 and 13 into partial submersion in the mass of sealing material 16, as illustrated in Figs. 1, 3 and 4, thus preventing the leakage of air into the furnace chamber B above the level of the seal so affected.

When the annealing or other heat-treatment of the contents of the carrier C has been concluded, the hand wheels 15—15 are manipulated to lower the trough 7 to a point where

it rests upon the brackets 9, and its sealing contents 16 is consequently lowered out of contact with the flanges 10, 11 and 13. Thereupon the door 12 is opened and the carrier C is withdrawn from the furnace chamber B upon the tracks 6—6.

It is obvious that the trough 7 may be raised and lowered by any desired suitable means; and that said trough 7 may be fixed upon the carrier C and the carrier C itself raised and lowered by any suitable means.

Any other variations of structure may be accomplished without departure from my actual invention as defined in the appended claims.

I claim—

1. A furnace comprising walls and a movable car, said walls being formed to provide access to said car, and means for sealing said car to said walls, said sealing means including a vertically movable endless trough and a sealing medium within said trough.

2. A furnace comprising walls providing a passageway, a movable car in said passageway, and means for sealing said car to said walls, said sealing means including a vertically movable endless trough and a sealing medium within said trough.

3. A furnace comprising walls providing a passageway, a movable car in said passageway, means for sealing said car to said walls, and sealing means including an endless trough and a sealing medium within said trough, and means for moving said trough vertically into and out of sealing relationship with said walls.

4. A furnace comprising walls providing a passageway; a conveyor within said passageway; endless trough means surrounding said conveyor; depending flange means carried by said furnace and said conveyor adapted to extend into said trough means, and a sealing medium within said endless trough means for preventing the escape of heat from said furnace and for preventing the infiltration of air into the furnace.

5. In combination, a furnace having a car

as a movable bottom of said furnace; relatively stationary wall means cooperating with said car, and vertically movable sealing means cooperating with said wall means and said car; said sealing means consisting of an endless trough and a sealing medium within said trough.

6. A furnace comprising walls and a movable car, said walls being formed to provide access to said car, and means for sealing said car to said walls, said sealing means including a vertically movable trough and a sealing medium within said trough.

7. A furnace comprising walls providing a passageway, a movable car in said passageway, and means for sealing said car to said walls, said sealing means including a vertically movable trough and a sealing medium within said trough.

8. A furnace comprising walls providing a passageway, a movable car in said passageway, means for sealing said car to said walls, said sealing means including a trough and a sealing medium within said trough, and means for moving said trough vertically into and out of sealing relationship with said walls.

9. A furnace comprising walls providing a passageway; a conveyor within said passageway; trough means surrounding said conveyor; depending flange means carried by said furnace and said conveyor adapted to extend into said trough means, and a sealing medium within said trough means for preventing the escape of heat from said furnace and for preventing the infiltration of air into the furnace.

10. In combination, a furnace having a car as a movable bottom of said furnace; relatively stationary wall means cooperating with said car, and vertically movable sealing means cooperating with said wall means and said car; said sealing means consisting of a trough and a sealing medium within said trough.

In testimony whereof I have hereunto affixed my signature.

FRANKLIN S. WEISER.