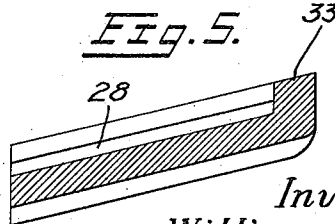
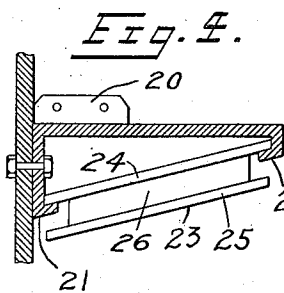
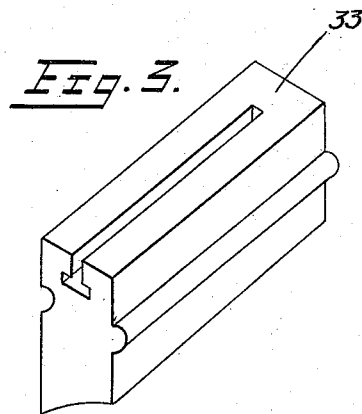
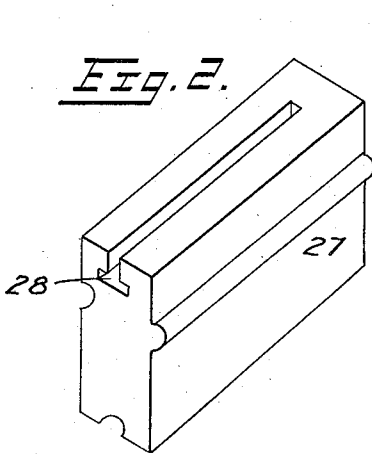
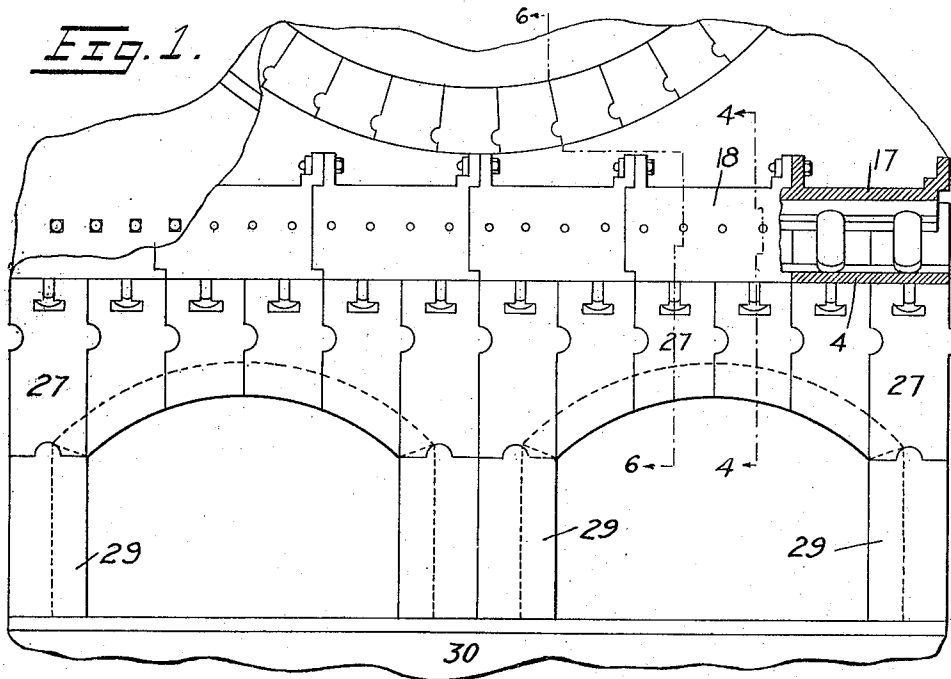


W. LEMB.
FURNACE DOOR ARCH CONSTRUCTION.
APPLICATION FILED APR. 24, 1916.

1,192,912.

Patented Aug. 1, 1916.

2 SHEETS—SHEET 1.



Inventor:
William Lemb,
By his Attorney: William H. Reid

W. LEMB.
FURNACE DOOR ARCH CONSTRUCTION.
APPLICATION FILED APR. 24, 1916.

1,192,912.

Patented Aug. 1, 1916.

2 SHEETS—SHEET 2.

Fig. 6.

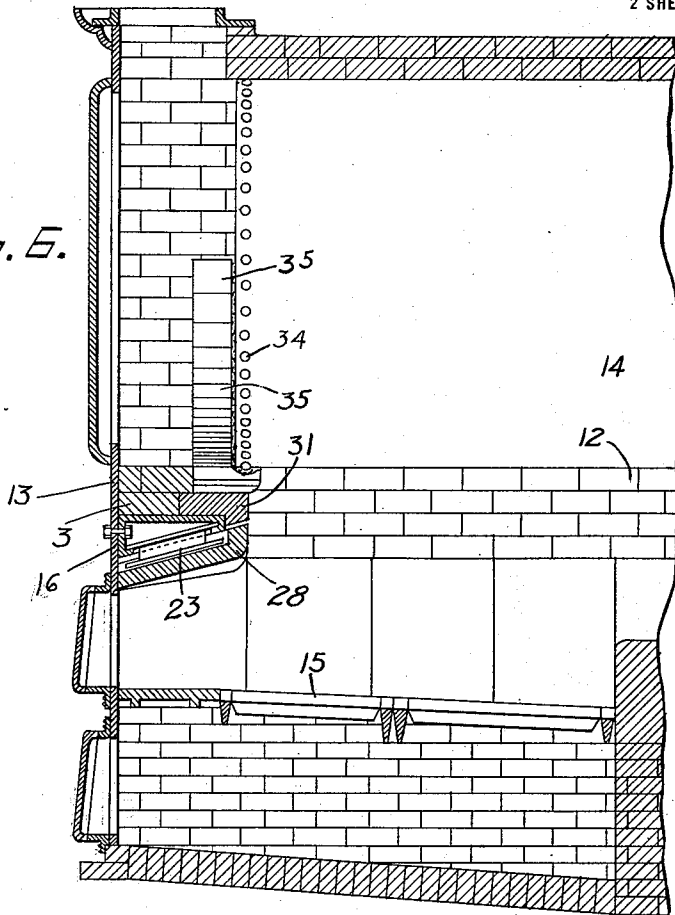


Fig. 10.

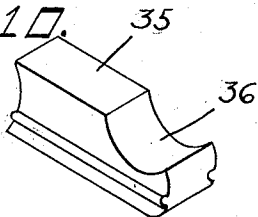


Fig. 9.

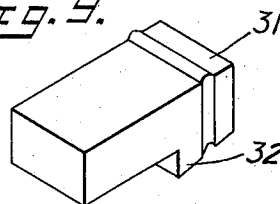


Fig. 7.

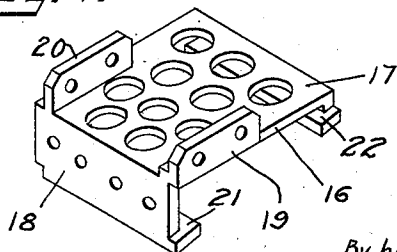
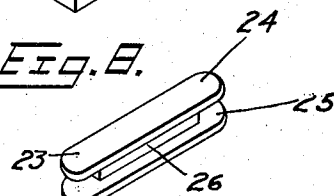


Fig. 8.



Inventor:
William Lemb.
By his Attorney: William H. Reid

UNITED STATES PATENT OFFICE.

WILLIAM LEMB, OF BROOKLYN, NEW YORK.

FURNACE-DOOR-ARCH CONSTRUCTION.

1,192,912.

Specification of Letters Patent.

Patented Aug. 1, 1916.

Application filed April 24, 1916. Serial No. 93,221.

To all whom it may concern:

Be it known that I, WILLIAM LEMB, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Furnace-Door-Arch Construction of which the following is a specification.

The object of the present invention is to provide an improved form of arch construction for the fire door portion of a boiler furnace, wherein the burning out of any of the brick work, will permit the easy removal and substitution of new bricks without the tearing down of the entire wall at such place.

A further object of the invention is to provide a form of support or section, that can be simply secured by bolts to the boiler front and which is provided with means for having the bricks attached thereto to form the walls for the furnace fire door.

A further object of the invention is to provide an improved form of hanger that is removably suspended from the sections, and from which the fire door blocks are suspended.

In the accompanying drawings showing embodiments of my invention, Figure 1 is a front elevation of the lower portion of a boiler furnace, with the boiler front broken away to show the interior construction that is partly in section. Figs. 2 and 3 show forms of the blocks of the fire door arch. Fig. 4 is a partial section on the line 4—4 of Fig. 1. Fig. 5 shows one of the hanger blocks. Fig. 6 is a vertical section on the line 6—6 of Fig. 1. Fig. 7 shows one of the arch sections, Fig. 8 shows one of the hangers. Fig. 9 shows one of the filler blocks; and Fig. 10 shows one of the blocks for protecting the boiler rivet line.

As shown in the drawing the furnace denoted generally by 12 has a boiler front 13 that is usually of heavy metal. The boiler 14 of cylindrical form is suitably supported above the furnace and a short distance removed from the front wall 13. The furnace grate is indicated at 15, at the front of which the boiler front is provided with the usual one or more openings. It is usual to build up back of the boiler front and above the fire door, to close the space upward to the front of the boiler. I provide a series of section members 16, one being shown in Fig. 7, that each comprises a body plate 17,

having at the front a depending wall 18, that is preferably apertured to permit the section to be thereby bolted securely to the boiler front 13 as indicated in Figs. 1 and 6. These sections are placed together in alinement in series extending horizontally across the boiler front, as indicated in Fig. 1. They are shown provided with upwardly extending flanges 19 and 20, that project on one side, and which are inset on the opposite side to permit them to interlock in adjacent sections as shown in Fig. 1; and these flanges are shown apertured so that the sections can be bolted together for additional security. The body plate 17 may be apertured to permit circulation of air, and also to reduce the weight of the section. The depending wall 18 of the sections is provided with an inwardly extending ledge 21, and at the rear of the body plate 17 has an inwardly extending ledge 22, offset from the body plate. As shown these ledges are not in the same horizontal plane as the front ledge 21 is lower than the rear ledge, and these ledges are inclined to extend in the same plane. The purpose of these ledges is to support one or more hangers 23, shown separately in Fig. 8. Each hanger comprises an upper flat bar 24, connected with a similar lower bar 25 by a vertical web portion 26, beyond which the bars project at both ends. Each hanger is suspended by the end portions of its top bar from the ledges 21 and 22 of the section members, as best shown in Fig. 4. It will be understood that these hangers can be inserted and removed readily after the set of sections have been secured in place, by giving the hanger a movement to bring it transversely to the boiler front, until the bars can engage the ledges.

It will be understood from Fig. 4 that each hanger has the lower bar 25 free, and these are engaged by suitable hanger blocks 27, one on each hanger as shown in Fig. 1. This block is provided with a T shaped groove 28 in its upper face, that projects rearwardly from one end to within a short distance of the other end. These hanger blocks can be slid on to the lower bars 25 of the hangers, as indicated in Figs. 4 and 5, the lower bar 25 entering the groove 28. This will bring the hanger block 27 to the position indicated in Fig. 6. The lower faces of these hanger blocks 27 are differently shaped, so that the series extending

across the front, as indicated in Fig. 1, can assume the form of one or more arches. At each side, and at the middle portion, the arch blocks 27 can be supported by jambs or pier blocks 29 extending down to the bottom wall 30 of the furnace. By this means the sections 17, having two hangers in each as shown in Fig. 1, serve to support the series of hanger blocks extending across the entire width of the furnace. This serves to protect all of the sections and hangers from the fire and heat on their lower faces.

To protect the upper portions of the sections, I place suitable blocks and bricks on top of the sections, and provide a special block 31 having a rear depending portion 32, that will extend down to approximately meet the rear portion 33 of the adjacent hanger block 28, as shown in Fig. 6. In front of the blocks 31 may be placed ordinary bricks 3.

The front edge of a cylindrical boiler is usually provided with a circle of rivets 34, and to allow for these I provide a set of blocks 35 having grooves 36 on their top faces at one end. These blocks are placed at the front edge of the boiler so that the rivets 34 extend into these grooves, by arranging these blocks in a kind of inverted arch. By this means the entire line of rivets of the boiler is protected, and the smoke and gases are prevented from escaping from this part of the furnace. Suitable fire proof cement may be inserted in the groove to fill the space adjacent the rivets.

It will be understood that my boiler sections and hangers are adaptable to various forms of fire doors, either one or more as may be desired, and that the same sections are employed for various forms flat or curved. It is only necessary to provide different configurations of the hanger blocks, whose depth and lower face are varied according to requirements. The sections are simply bolted to the boiler front and secured together by the engaging flanges. Then the hangers are placed in position by the mere insertion, without any fastening means.

The hanger blocks are assembled by merely sliding them from the rear on the hangers. Then the top blocks and bricks are placed on the sections, and the blocks 35 are suitably supported to form an inverted arch to inclose the rivet line of the boiler. Should any of the hanger blocks become broken they can readily be removed and others substituted, without interfering with the construction of the furnace, and without disturbing the sections of the hangers. It will also be understood that the middle parts, the sections and the hangers are practically entirely inclosed and protected from the furnace gases and excessive heat, at the same time the sections are open at the interior and a circulation of air can be provided

across the sections by merely having openings in the furnace side walls or other places.

Having thus described my invention, what I claim is:—

1. Furnace door arch construction, comprising a boiler front, a series of arch sections each composed of a body plate having a front depending wall, and also side flanges that engage in adjacent sections, means securing said flanges together, means securing said depending wall to said boiler front, the sections having inwardly extending opposed ledges on the lower portion adapted to support hangers, a series of hangers each comprising a pair of bars connected at the middle portions by a web, the hangers having the upper bars removably suspended on said section ledges, and a set of blocks having T shaped slots in their upper faces by which they engage the lower bars of the hangers to be suspended beneath the sections in juxtaposition.

2. An arch section for furnace door arch construction, comprising a body plate having a front depending wall apertured for attachment to the boiler front, a ledge extending inwardly from the depending wall, an inwardly projecting ledge depending from the rear of the body, the body plate having upwardly extending flanges at each side portion adapted for engagement in adjacent arch sections and perforated for securing together of the sections, said ledges and flanges being offset to interlock in adjacent sections.

3. Furnace door arch construction, comprising a boiler front, a series of arch sections each composed of a body plate having a front depending wall, and also side flanges that engage in adjacent sections, means securing said flanges together, means securing said depending wall to said boiler front, the sections having inwardly extending opposed ledges on the lower portion adapted to support hangers, the front ledge being lower from the body plate than the rear ledge with the ledge extending in a plane inclined to the body plate, a series of hangers each comprising a pair of bars connected at the middle portions by a web, the hangers having the upper bars removably suspended on said section ledges in inclined positions and a set of blocks having T shaped slots in their upper faces by which they engage the lower bars of the hangers to be suspended beneath the sections in juxtaposition in an inclined position.

4. Furnace door arch construction, comprising a boiler front, a series of arch sections each composed of a body plate having a front depending wall, means securing said depending walls to said boiler front, the sections having inwardly extending opposed ledges on the lower portion adapted to sup-

port hangers, a series of hangers removably suspended on said section ledges, a set of blocks having slots in their upper faces by which they engage the lower bars of the hangers to be suspended beneath the sections in juxtaposition, and a set of blocks placed on top of the sections and having a rear depending portion engaging said depending blocks, whereby the sections are inclosed by two said sets of blocks.

5. Furnace door arch construction, comprising a boiler front, a series of arch sections each composed of a body plate having a front depending wall, and also side flanges that engage in adjacent sections, means securing said flanges together, means securing said depending wall to said boiler front, the sections having inwardly extending opposed ledges on the lower portion adapted to support hangers, a series of hangers each comprising a pair of bars connected at the middle portions by a web, the hangers having the upper bars removably suspended on said section ledges, a set of blocks having T shaped slots in their upper faces by which they engage the lower bars of the hangers to be suspended beneath the sections in juxtaposition, and a set of blocks placed on top of the sections and having a rear depending portion engaging said depending blocks, whereby the sections are inclosed by two said sets of blocks.

6. An arch section for a furnace door arch construction, comprising a horizontal body plate having a front depending wall apertured for supporting attachment to the boiler front, a short ledge extending inwardly from the bottom of the depending wall, a short ledge depending from the rear of the said body plate, the sections being free below the body plate between said ledges for the removable attachment of hangers, the body plate having an upwardly extending perforated flange on each side for securing together adjacent sections.

WILLIAM LEMB.

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