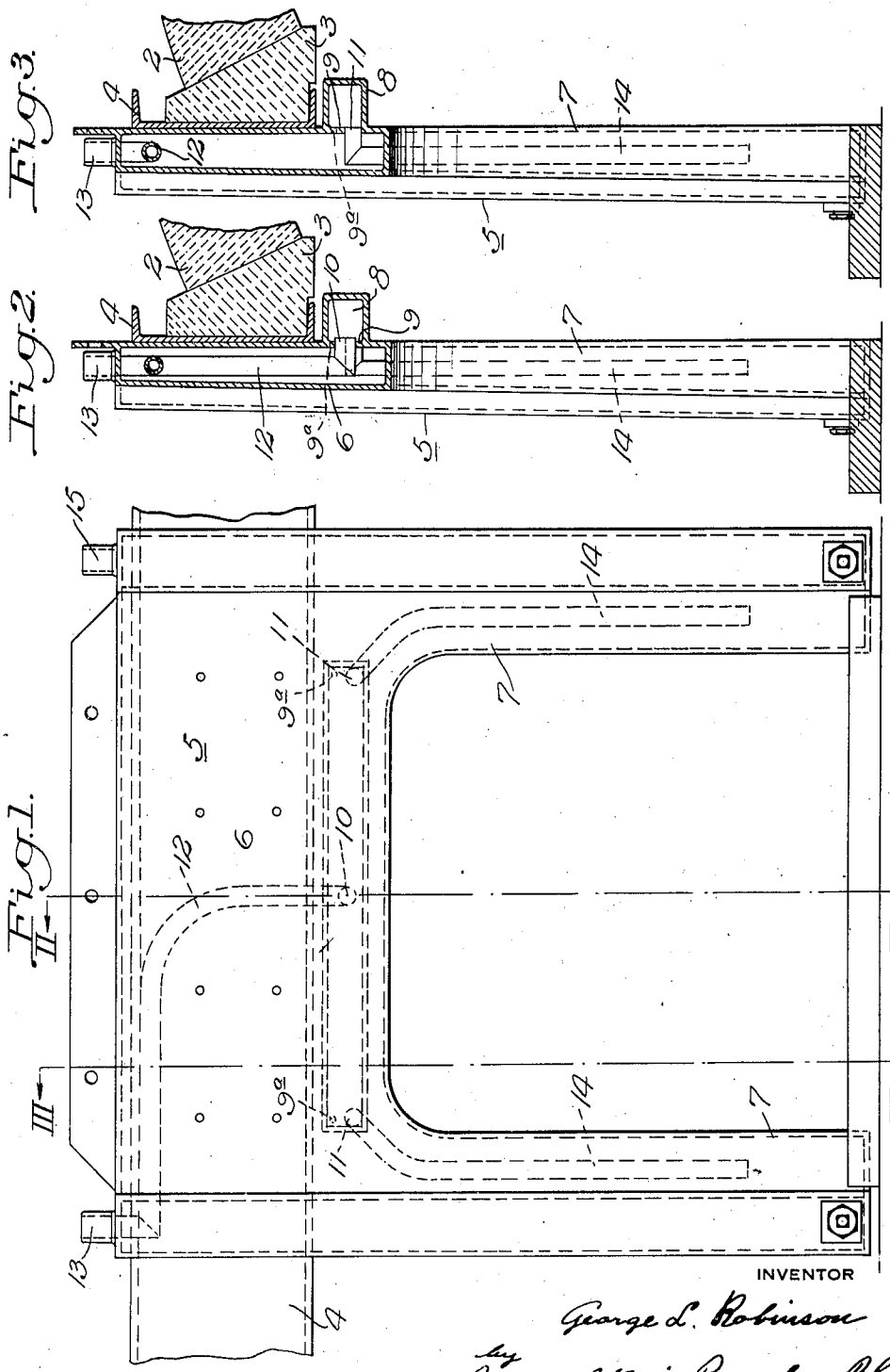
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WATER COOLER FOR FURNACES

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WATER COOLER FOR FURNACES

Application filed April 25, 1931. Serial No. 532,774.

This invention relates generally to water-cooling devices for furnaces, and more particularly to a combined water-cooled furnace door frame and skewback channel cooler.

In the accompanying drawing, which illustrates the present preferred embodiment of my invention,

Figure 1 is a front elevation of the cooler;

Figure 2 is a vertical section on the line II—II of Figure 1, and

Figure 3 is a vertical section on the line III—III of Figure 1.

Referring more particularly to the accompanying drawing, there is shown a portion 2 of a furnace roof, and skewback 3. The skewback is supported by a channel 4, according to well known practice.

A cooler, indicated generally by the reference numeral 5, has a body portion 6 forming the top of the frame, and from each end of the body portion is a downwardly-extending leg 7 forming the sides of the frame. Projecting inwardly into the furnace chamber from the bottom of the body portion 6 is a horizontally-extending hollow offset 8 forming a lintel which acts as a cooler for the skewback channel 4.

The structure thus far described is old in the art, it having been suggested heretofore to provide a cooler having a body portion with downwardly-extending legs and also having a lintel extending into the furnace and acting as a cooler for the skewback channel. Difficulties have been experienced, however, in the prior art structures in securing the proper circulation of water in the lintel as well as in the rest of the frame. Heretofore, the lintel chamber has been open to the main body of the frame, and in such an arrangement, proper circulation has not been insured. Difficulty also has been experienced due to the collection of sediment in the lintel.

These difficulties are overcome, according to the present invention, by providing a wall between the lintel and the main chamber or body portion of the frame and providing means for positively circulating the cooling water first through the lintel and thereafter through the frame.

According to the present invention, the lintel 8 is separated from the body portion 6 of the frame by a wall 9 having vent holes 9^a to prevent accumulation of steam. The lintel is provided with an inlet 10 near its center, and with an outlet 11 near each of its ends. The lintel inlet is connected by an inlet pipe 12 to an inlet 13 of the frame. Connected to each of the lintel outlets 11 is a pipe 14 which extends downwardly into the leg 7 and terminates at a point near the bottom of the leg.

The cooling water enters through the inlet 13 and is delivered by pipe 12 to the lintel 8 at the center of the lintel. It then flows toward each end of the lintel and is delivered by the pipes 14 at points near the bottoms of the legs 7 of the frame. The water then passes upwardly and escapes through an outlet 15.

The lintel is subjected to the highest temperature of any portion of the frame. In the present invention, the cooling water first passes through the lintel and thereafter through the remainder of the frame. It will be seen that the portion of the frame which naturally is subjected to the highest temperatures is cooled by the cooling water before the water has become heated by passing through other parts of the frame. The invention provides for a positive flow of water through the lintel, rather than leaving the circulation to chance, as is the case where the lintel is open to the main chamber of the frame. The positive flow of water through the lintel prevents the collection of sediment or scale. Since the water flows through the lintel before it has had an opportunity to become heated, there also is less tendency for the deposition of scale than would be the case if the water in the lintel were at a higher temperature, due to its passage through other parts of the frame prior to its entering into the lintel. The positive flow of cooling water through the lintel results in a more even cooling of the lintel and frame than has been obtained where the lintel is open to the main chamber of the frame.

I have illustrated and described the present preferred embodiment of my invention. It

is to be understood, however, that the invention may be otherwise embodied within the scope of the following claims.

I claim:

1. A hollow water-cooled furnace door frame and skewback channel cooler, comprising a body portion forming the top of the frame, legs forming the sides of the frame, a hollow horizontal offset adapted to project into the furnace chamber beneath the skewback channel and forming a lintel, the body portion and lintel being separated by a wall, and connections for causing flow of water through the lintel and then through the frame.

2. A hollow water-cooled furnace door frame and skewback channel cooler, comprising a body portion forming the top of the frame, legs forming the sides of the frame, a hollow horizontal offset adapted to project into the furnace chamber beneath the skewback channel and forming a lintel, the body portion and lintel being separated by a wall, the frame and lintel each having an inlet and an outlet, and a pipe connecting the frame inlet and lintel inlet.

3. A hollow water-cooled furnace door frame and skewback channel cooler, comprising a body portion forming the top of the frame, legs forming the sides of the frame, a hollow horizontal offset adapted to project into the furnace chamber beneath the skewback channel and forming a lintel, the body portion and lintel being separated by a wall, the frame having an inlet and an outlet, the lintel having an inlet, and an outlet at each end, a pipe connecting the frame inlet and lintel inlet, and other pipes leading from the lintel outlets to points near the bottom of the legs.

4. A hollow water-cooled furnace door frame and skewback channel cooler, comprising a body portion forming the top of the frame, legs forming the sides of the frame, a hollow horizontal offset adapted to project into the furnace chamber beneath the skewback channel and forming a lintel, the body portion and lintel being separated by a wall, the frame having an inlet and an outlet, the lintel having an inlet near its center, and an outlet near each end, a pipe connecting the frame inlet and lintel inlet, and other pipes leading from the lintel outlets to points near the bottom of the legs.

In testimony whereof I have hereunto set my hand.

GEORGE L. ROBINSON.