June 20, 1950 D. KLIJZING 2,512,431

WATER-COOLED GRATE

Filed Dec. 12, 1947

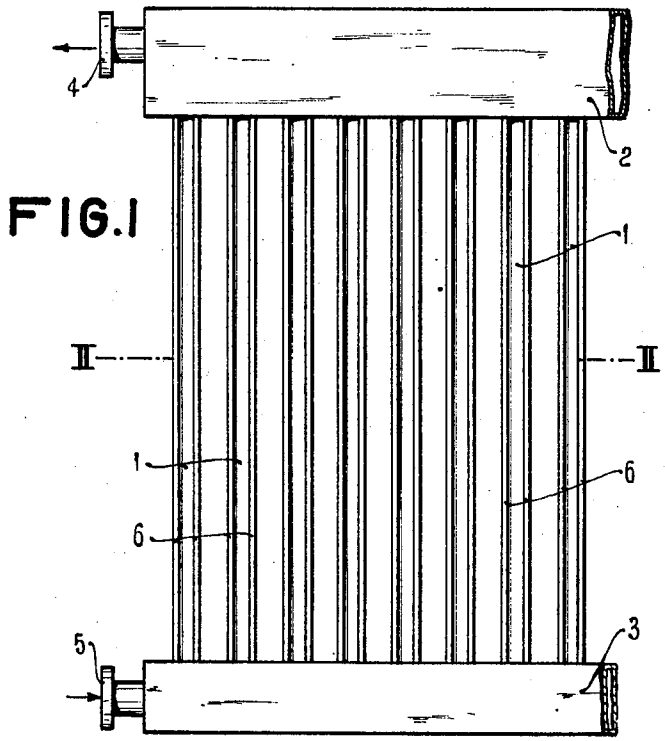


FIG. 1

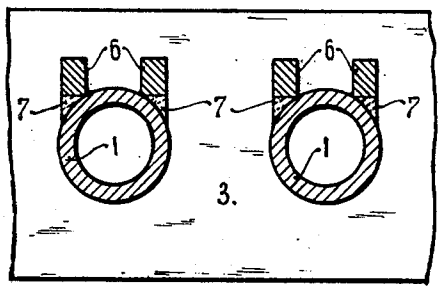


FIG. 2

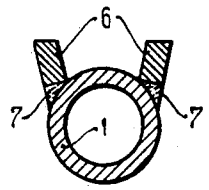


FIG. 3

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By Atty.

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WATER-COOLED GRATE

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Section 1, Public Law 690, August 8, 1946
Patent expires July 5, 1966

1 Claim. (Cl. 122—374)

1

The invention relates to a water cooled grate for a furnace consisting of hollow grate bars, through which cooling water flows.

Grates of this kind present the drawback that the bars exert a cooling effect on the layer of fuel so that the combustion immediately on the grate is disturbed.

The invention has for its object to remove said drawback of these cooled grates and to this end two longitudinally extending and upwards directed ribs are provided on the upper side of the grate bars. In the groove between said ribs fine particles of ashes are accumulated and form an insulating layer and thus protect the layer of fuel against the cooling action of the grate bars. Said ribs preferably are welded to the hollow bars in the form of strips and thus are integral with said latter.

The invention is illustrated on the accompanying drawing, in which:

Fig. 1 shows a plan view of the grate;

Fig. 2 is a cross sectional view on enlarged scale of part of the grate along the line II—II of Fig. 1; and

Fig. 3 is a similar view of a grate bar of modified form.

The grate bars 1 at one of their extremities are connected to a chest 2 which forms the dead plate, and at their other extremities the bars are connected to a chest 3 serving as fire bridge. The cooling water enters into the chest 3 at 5 and flows through the hollow bars 1 in order to leave the chest 2 at 4.

To each bar 1 two longitudinally extending metal strips 6 are welded at 7 and said strips are forming ribs. In the groove formed between said ribs dust and fine particles of ashes accumulate whereby the layer of fuel is protected against cooling.

2

As appears from Fig. 3 the ribs 6 need not be vertical and parallel but they may also be directed under some inclination.

As the ribs 6 are welded to the tube shaped bars along their whole length a favourable transfer of heat at the joint is secured, so that the ribs are not burnt.

It is to be noted that the grate when used in a steam boiler may be connected to the water circulation of the boiler. The form of the grate may be chosen at arbitrary as the invention may be applied to horizontal grates as well as to inclined grates.

What I claim is:

A water cooled furnace grate comprising two spaced headers, a plurality of spaced parallel cylindrical tubes extending between and in communication with said headers, an inlet for one header to supply cooling water to said header to be passed through said tubes, an outlet for the other header to exhaust water from said header and tubes, and two substantially parallel ribs extending substantially tangentially upward from the sides of each of said tubes to points above the upper circumference of said tubes and longitudinally of said tubes between said headers to define an ash receiving channel for insulating the upper portion of each of said tubes, the adjacent ribs of adjacent tubes being in spaced relationship to define grate passages therebetween.

DANIËL KLIJZING.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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