April 12, 1932. W. O. SPRINGER 1,853,092

CHAIN GRATE STOKER

Filed June 9, 1926

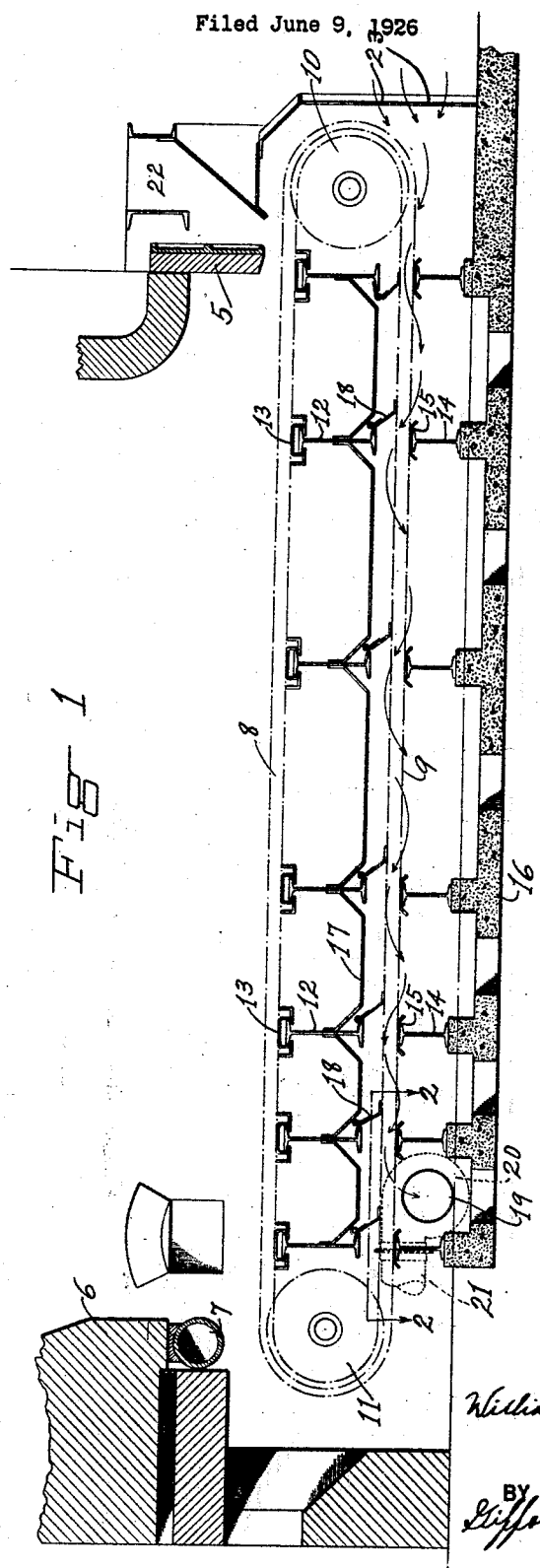

Fig 1

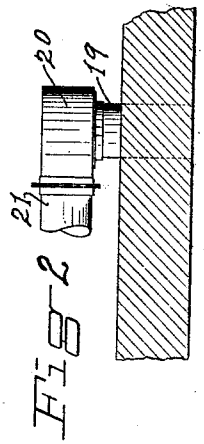

Fig 2

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UNITED STATES PATENT OFFICE

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CHAIN GRATE STOKER

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This invention relates to chain grate stokers in which provision is made for cooling the grate by an air blast and using the air thus heated for combustion purposes, and will be understood from the description in connection with the accompanying drawings, in which Fig. 1 is a vertical section of an illustrative embodiment of the invention and Fig. 2 is a section along the line 2—2 of Fig. 1.

In the drawings, reference character 5 indicates the front wall and 6 the rear wall of a furnace that is broken away in Fig. 1. A water tube 7, which may be connected to the boiler in the usual manner, is located above the rear end of a chain grate stoker, the upper run of the grate being shown at 8 and the lower run at 9. This chain grate passes around front and rear sprocket wheels 10 and 11 of the usual sort, one of which may be driven in the usual manner well known in this art.

Transverse I-beams 12 extending across the lower portion of the furnace are located below the upper run 8 of the chain grate, and are provided with plates 13 along their upper edges to support the upper run 8 of the grate, as this run passes over the plates 13. Similar I-beams 14 located below the I-beams 12 extend across the furnace below the lower run 9 of the grate, and are provided with drag plates 15 along the upper edges thereof, over which the lower run of the grate passes. The I-beams 14 are mounted upon the foundation or base 16.

Metal plates 17 extend between the I-beams 12 and entirely close the spaces therebetween, so as to form an air-tight closure above the lower run of the grate. The plates 17 may be connected to the I-beams 12 so that a considerable portion of the I-beams extend below the closure. Baffle plates 18 are hinged or pivoted to the lower edges of the I-beams 12 with their lower ends bent outwardly, and resting upon the upper side of the lower run 9 of the chain grate. An outlet 19 is located between the last two I-beams 14 in one side of the furnace wall and leads to a fan 20, from which a pipe 21 carries the air to any desired place.

A coal chute for feeding coal to the chain grate is shown at 22, and openings 23 are provided below the coal chute for admitting cool air to the lower run of the grate.

The operation is as follows: The chain grate is driven in the usual way, whereupon the upper run becomes heated and passes over the sprocket wheel 11, while cool air is drawn by means of the suction fan 20, through the openings 23. This cool air contacts with the lower run 9, passing between the links thereof and thence between the baffles 18 and I-beams 14, as indicated by the arrows, in a direction countercurrent to the travel of the lower run of the grate, and transversely across its lower run, a plurality of times, as indicated becoming more and more heated until it passes out of the opening 19, and thence back into any convenient portion of the furnace where the heated air is used for combustion purposes. At the same time, the lower run of the chain grate becomes more and more cooled as it passes toward the sprocket wheel 10, and when it passes thereover it is sufficiently cooled as the coal from the chute 22 is fed thereon. The cold air also removes heat from the lower edges of the I-beams 12, thus aiding in keeping the I-beams 12 at a sufficiently low temperature to prevent the same from being injured by the heat.

I claim:

1. In a chain grate stoker, an endless chain grate, and means for passing air for combustion purposes into contact with the lower run of said grate and along the length of said run, and means to cause the air to cross said run a plurality of times, said last named means comprising baffles.

2. In a chain grate stoker, an endless chain grate, a closure disposed between the upper and lower runs of said grate, means for passing cooling air along said lower run, and a plurality of baffles adapted to cause said air to cross said run during its travel lengthwise thereof.

3. In a chain grate stoker, an endless chain grate, a plurality of supports for the upper run of said grate, closures disposed between said supports, a plurality of supports for

the lower run of said grate disposed substantially beneath said first-named supports, a plurality of baffles disposed adjacent the upper supports, said closures and said baffles comprising means to guide air along said lower run.

4. In a chain grate stoker, an endless chain grate, and means for causing air to pass a plurality of times back and forth through the lower run of the grate.

5. In a chain grate stoker, an endless chain grate having an upper and a lower run, members disposed transversely of the grate and engaging opposite sides of said lower run and arranged in offset relation to each other longitudinally of the grate, and means coacting with said members for causing air to flow generally longitudinally of said lower run and back and forth a plurality of times through said lower run between said members.

6. In a furnace, a chain grate stoker, means defining an air passage through which the lower run of the chain grate extends for substantially the entire length thereof, means for passing air through said passage, and means for causing the air to flow back and forth through said lower run in a plurality of passes in flowing from one end of the passage to the other.

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