L. H. MAXFIELD.

CHAIN GRATE FURNACE.

APPLICATION FILED DEC. 24, 1908.

944,454. Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.

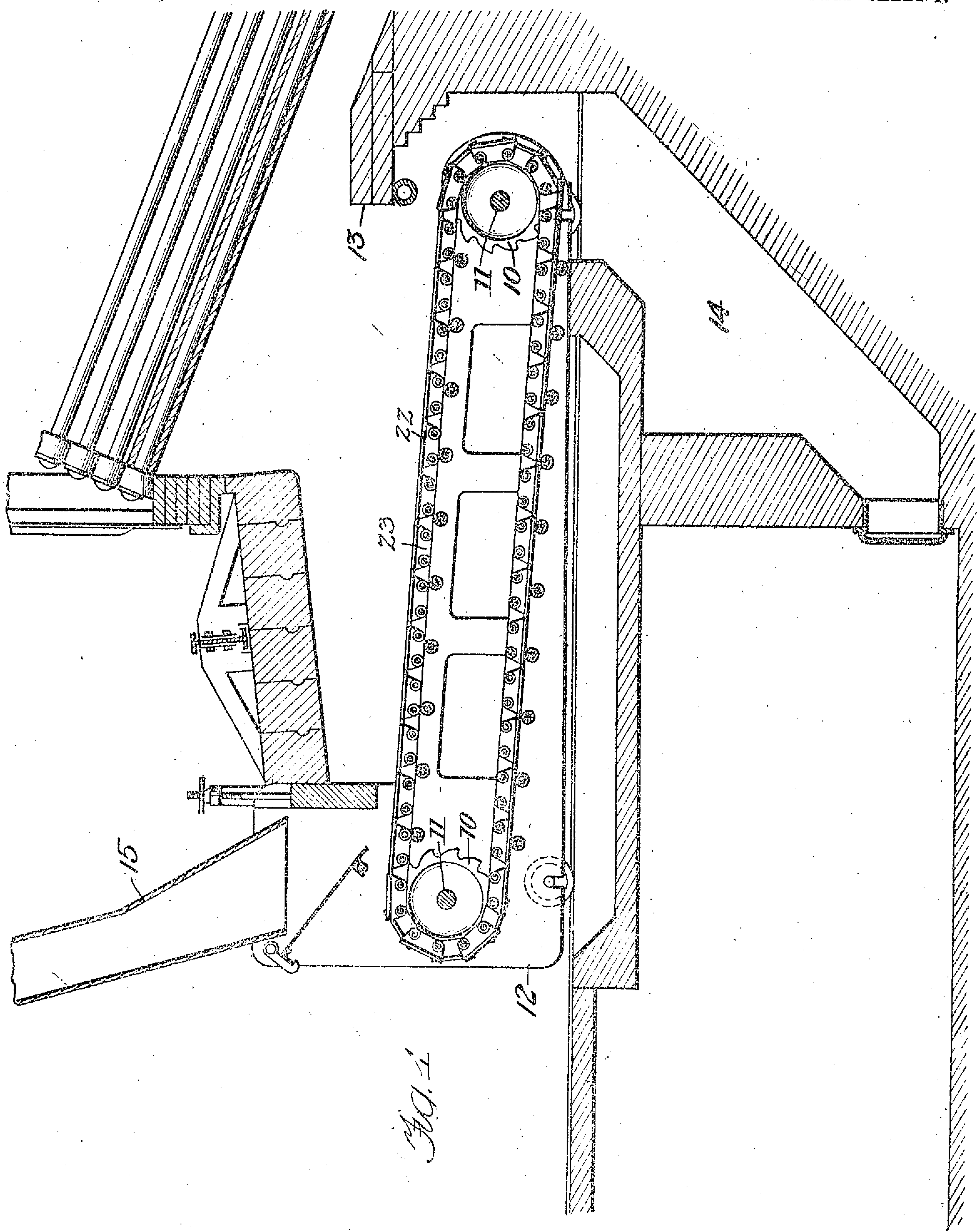

Fig. 1

Witnesses:
[illegible]
Robert N. Weir

Inventor:
Leroy H. Maxfield
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2 SHEETS—SHEET 2.

Fig. 2.

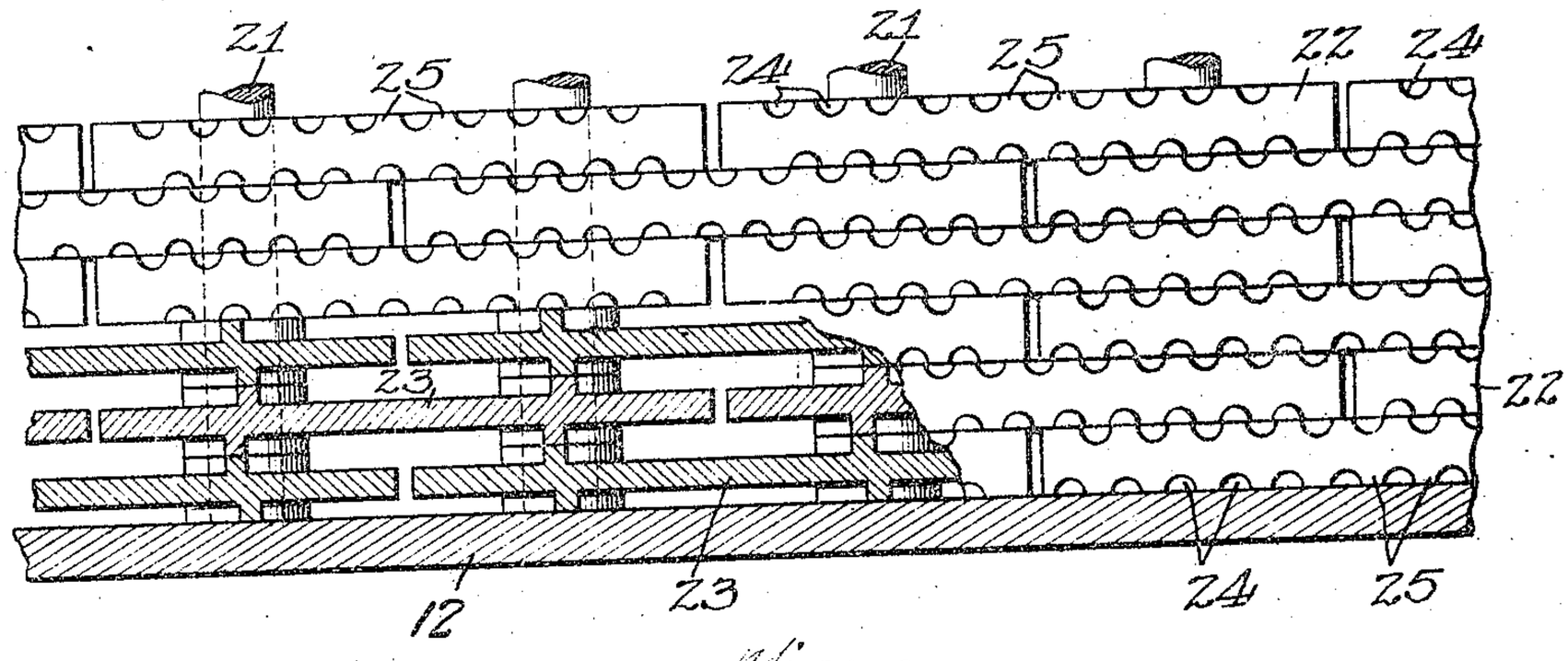


Fig. 3.

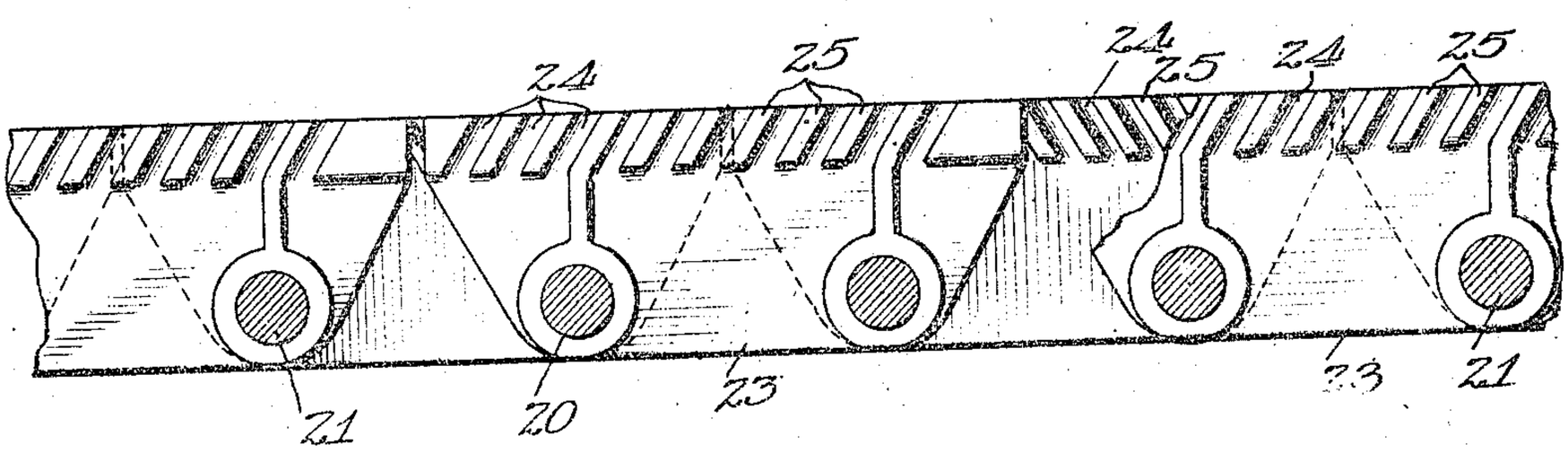


Fig. 4.

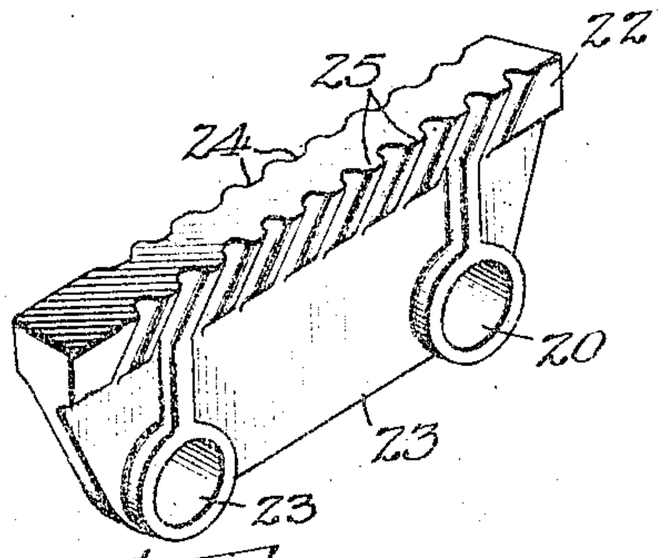
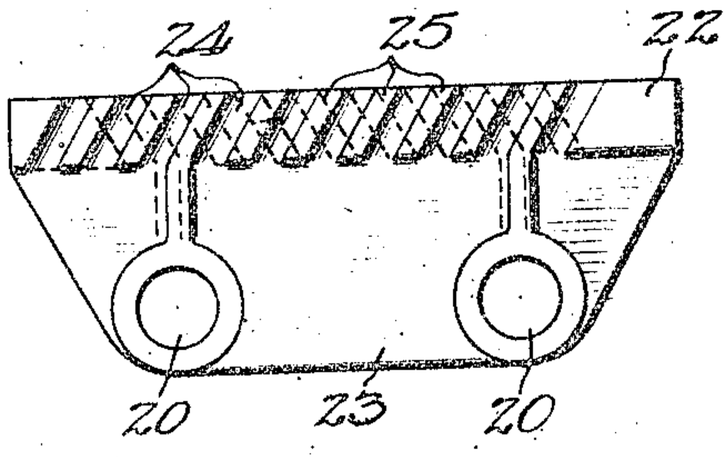


Fig. 5.



Witnesses:

Inventor:
Leroy H. Maxfield
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UNITED STATES PATENT OFFICE.

LEROY H. MAXFIELD, OF GODFREY, ILLINOIS, ASSIGNOR TO ILLINOIS STOKER COMPANY, OF ALTON, ILLINOIS, A CORPORATION OF ILLINOIS.

CHAIN-GRATE FURNACE.

944,454. Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed December 24, 1908. Serial No. 469,059.

To all whom it may concern:

Be it known that I, LEROY H. MAXFIELD, a citizen of the United States, residing at Godfrey, in the county of Madison and State of Illinois, have invented a certain new and useful Improvement in Chain-Grate Furnaces, of which the following is a specification.

It will be understood by those familiar with the use of chain grates that it is necessary to arrange apertures in or between the links at frequent intervals for the upward passage of air. There are two reasons for this requirement; first, the necessity for introducing air for combustion; and second, the necessity for cooling the links to prevent them from burning out. The purpose is accomplished in one well known construction by forming vertical channels in the sides of the links and so placing them that they register with each other when the links are assembled. But the apertures which permit the entrance of air also permit the exit and loss of coal and consequently they are a disadvantage as well as an advantage.

The object of this invention is to retain the advantages and to eliminate the disadvantages of this kind of link.

The object is accomplished generally speaking, by slanting the air channels in opposite directions on the sides of the links which contact each other, so that two channels instead of registering will run obliquely in different directions. In the preferred form they cross each other and thereby reduce by half the size of a piece of coal which can pass through. In other words, the ribs intervening between two adjacent channels on one link will form a cut off for the channels crossing it on the adjacent link with the result that the largest piece of coal which can pass through will be no larger than the size of a single channel instead of the aggregate size of two registering channels.

I obtain my objects by the mechanism shown in the accompanying drawings, in which:

Figure 1 is a side elevation of a chain grate embodying my invention. Fig. 2 is a fragmentary plan view partly in section of the grate. Fig. 3 is a sectional elevation of a portion of the grate showing the links assembled. Fig. 4 is a perspective view of a link embodying the invention, and Fig. 5 is a side view thereof showing the crossed arrangement of the air channels.

Similar numerals refer to similar parts throughout the several views.

While my form of link is adapted for chain grate furnaces exhibiting great variety as to general construction, I have for the purpose of illustration shown a suitable construction in Fig. 1 wherein it will be seen that the grate proper is supported upon sprockets 10 mounted upon shafts 11 supported in suitable side frames 12. The construction of the bridge wall 13, ash pit 14 and coal chute 15 is immaterial so far as it concerns my present invention. The grate links are apertured at the points 20 near their ends and in their lower portion to receive the pivot rods 21. Certain characteristics of the grate here illustrated are shown and claimed in a companion application filed in the Patent Office on the 24th day of December, 1908, Serial No. 469,058, and are not herein claimed.

The links are adapted to be arranged side by side with the end of one overlapping the end of the other, as illustrated in Figs. 2 and 3 and are so constructed that the heads 22, which are wider than the webs 23, contact with each other or practically so when the parts are assembled. In the sides of the heads are air channels 24 which extend obliquely upward as shown in the drawings. The metal between the channels forms a series of parallel ribs 25. The links are so constructed and arranged that the channels upon one link will slant oppositely to the channels on the adjacent link with the result that a rib 25 on one link will extend across a channel 24 on the adjacent link. As a result of this construction the channels never register, in the acting portions of the grate, and therefore the channel through which coal may drop is never equal to the aggregate area of the two channels. This reduces, practically by half, the size of the largest piece of coal which may drop through the grate and a very material saving is thereby effected. Moreover, the air passing up through the links will move in different directions, oblique to each other, and will consequently enhance the mixing action and increase the efficiency of the grate. I prefer to so construct the links that the top of the channel on one link will never register with

the top of the channel on the adjacent link. In other words, in the preferred construction when the grate is viewed from above, as in Fig. 2, the top of a channel will come opposite to the top of a rib.

It will be noticed that in my construction the top of each link is substantially a plane surface. This prevents coal or clinkers from becoming lodged therein and produces a strong and durable link.

I claim as my invention:

In a chain grate the combination of articulately connected links arranged side by side with their ends overlapping, said links having channeled heads formed at their upper portion adapted to contact each other when the links are assembled and the lower portion of the link being of reduced thickness, said heads being of substantially rectangular cross section except for the channels therein, said channels extending obliquely in the sides of the heads and the parts being so arranged that the channels nearest to each other in the assembled grate run in opposite directions, the top of the links being substantially plane surfaces.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

LEROY H. MAXFIELD.

Witnesses:
GEORGE D. DUNCAN,
WILLIAM M. DUNCAN.