No. 878,085. PATENTED FEB. 4, 1908.

A. E. PARKER & E. H. PEABODY.

CHAIN GRATE STOKER.

APPLICATION FILED OCT. 24, 1906.

3 SHEETS—SHEET 1

Fig. 1

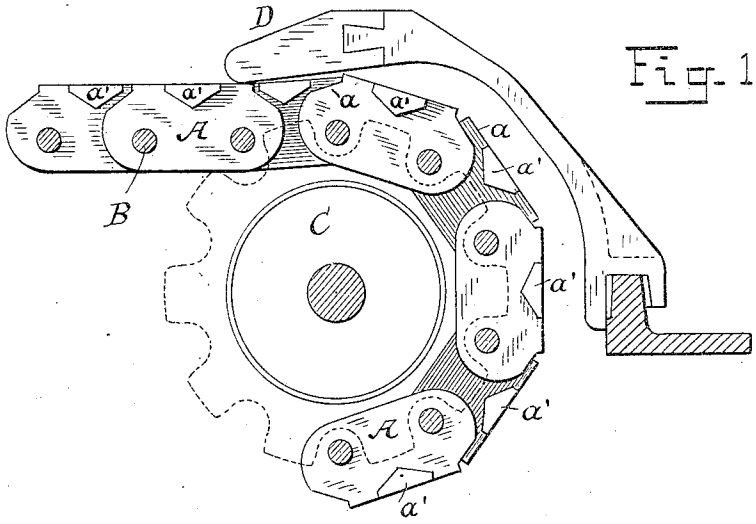


Fig. 2

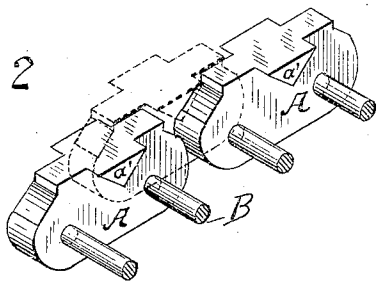
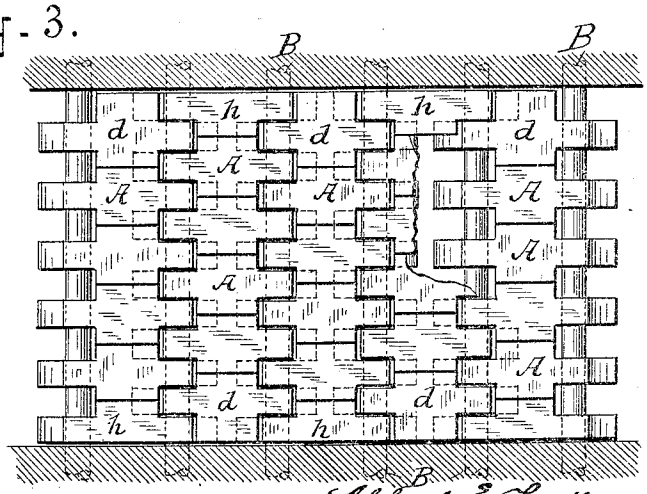


Fig. 3.



Witnesses:

Charles Hanimann

Katherine Schauer

Alfred E. Parker
Ernest H. Peabody
Inventors

By Attorney
Chas. M. Forbes

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Fig. 4

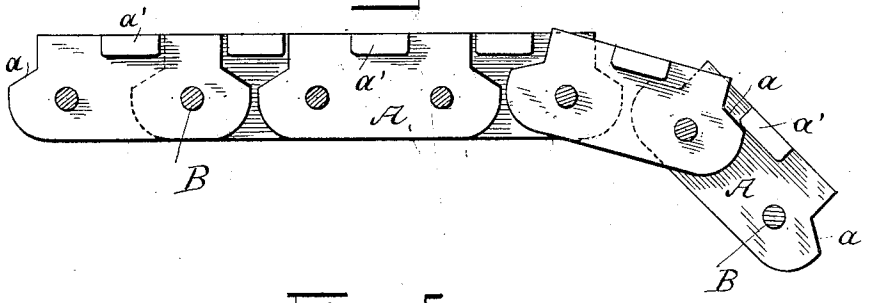


Fig. 5.

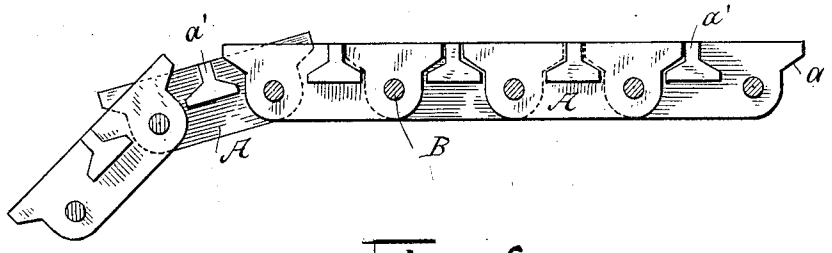


Fig. 6.

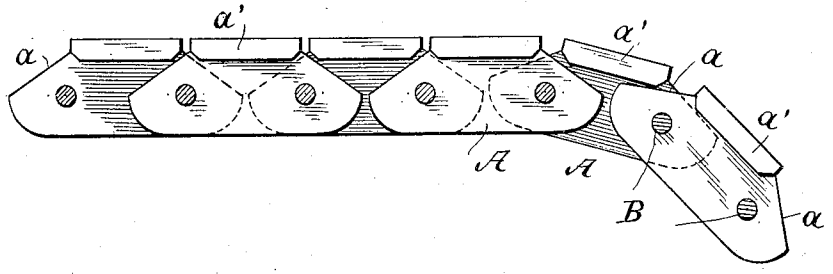
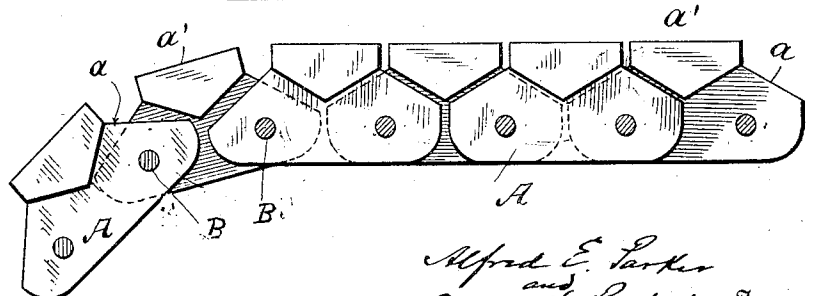


Fig. 7.



Witnesses
Charles Hanimann
Katherine Fellner

Alfred E. Parker
and
Ernest H. Peabody Inventors

By their Attorney
Chas. M. Gordon

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A. E. PARKER & E. H. PEABODY.

CHAIN GRATE STOKER.

APPLICATION FILED OCT. 24, 1906. 3 SHEETS—SHEET 3.

Fig. 9.

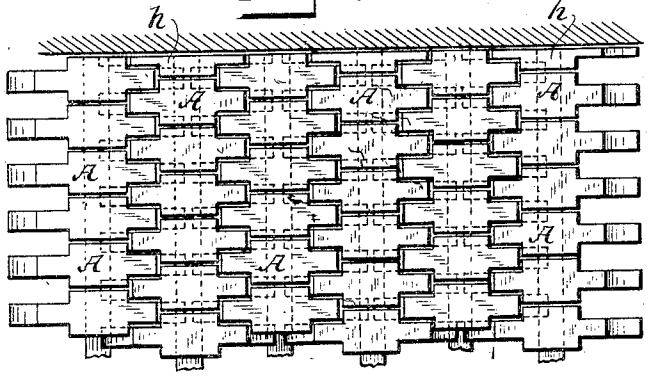


Fig. 8.

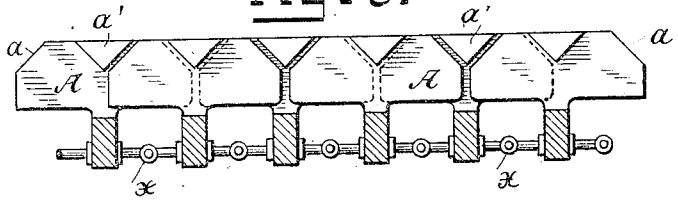


Fig. 11.

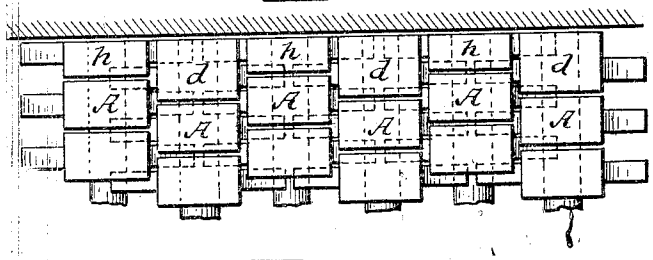
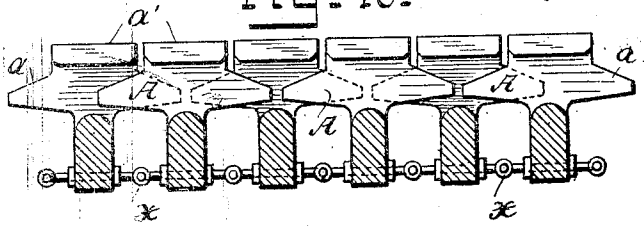


Fig. 10.



Witnesses
Charles Hanimann
Katherine Kluter

Alfred E. Parker
and
Ernest H. Peabody Inventors
By their Attorney
Ross B. Forbes

UNITED STATES PATENT OFFICE.

ALFRED EDWARD PARKER, OF LONDON, ENGLAND, AND ERNEST H. PEABODY, OF NEW YORK, N. Y.

CHAIN-GRATE STOKER.

No. 878,085. Specification of Letters Patent. Patented Feb. 4, 1908.

Application filed October 24, 1906. Serial No. 340,311.

To all whom it may concern:

Be it known that we, ALFRED E. PARKER and ERNEST H. PEABODY, respectively a subject of the King of Great Britain and a citizen of the United States, residing, respectively, at London, England, and New York city, in the county of New York and State of New York, United States of America, have invented certain new and useful Improvements in Chain-Grate Stokers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to grate bars for use with traveling grates for feeding fuel to boiler and other furnaces, and it consists of a novel construction and arrangement of said bar by means of which the grate is adapted for use for burning the cheaper grades of fuel such as screenings or coal dust. In traveling grates of this description, the green coal is fed upon the traveling grate in a uniform bed, which then passes under an incandescent fire brick arch or other structure by means of which the volatile gases are driven off and the fuel is ignited. This ignition of fuel begins upon the top of the layer and gradually works downward until the entire mass of fuel is ignited and gradually burns away. The lower portion of the bed of green fuel therefore remains in contact with the grate proper and travels some distance before it becomes ignited. During this time, which may be so long as 20 or 30 minutes, the tendency of the green fuel is to sift downward between the bars of the grate, this action being greatly increased when the coal fed upon the grate is very fine or contains a large portion of dust. All of the fine coal which sifts through the grate in this manner is either lost in the refuse or must be removed from the pit below the grate and again fed into the furnace, and it is desirable to reduce this sifting process to as small an amount as possible.

In ordinary traveling grates the openings through which the coal drops into the pit below are of considerable length, and there are no surfaces below to catch the coal and prevent its dropping through.

In the present invention the applicants have found that sifting of the coal is largely prevented by shortening the length of straight openings between the bars; the long narrow opening will allow much more coal to fall through than if it is divided into a number of short lengths, even though the width and aggregate length remain the same. The applicants have found, moreover, that the interposition of a surface directly below the opening in the grate will also prevent the coal from sifting through in a very large measure.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side view showing a portion of a traveling grate composed of grate bars embodying our invention. Fig. 2 shows in perspective three of the bars shown in Fig. 1. Fig. 3 is a top view of a chain grate showing how the bars intermesh and partially broken away to show the complete bars in full lines. Figs. 4, 5, 6 and 7 are side views of portions of connected bars of modified construction. Figs. 8 and 10 cross-sectional views; and Figs. 9 and 11 plan view of other modified forms.

The bars A are cut away at the ends *a* and are provided with lugs *a'* midway of their length projecting outwardly from the body of each bar. These lugs are of such form that when the bars are mounted upon transverse rods B, and connected to form a chain, the lugs fit into the openings formed between the ends of the adjoining bars of the chain.

The form of bar shown in Figs. 1, 2 and 3 is the one preferred by us, as it facilitates means for sealing the rear end of chain grates constructed on this plan against excessive leakage of air. As therein represented, each bar A which is or may be of ordinary construction in other respects, has each of its ends beveled or inclined at *a*, and on each side of each bar is cast or otherwise formed at the mid length of the bar a projecting lug *a'*, of depending triangular formation, so that when the bars are jointed on the cross rods B and assembled together, as shown, the abutting ends of the bars and the projecting lugs close the spaces between.

Each of the lugs in the example illustrated is one-half the width of the bar, but it is obvious that the lugs may be formed on one side of the bar only, and made of the full width of the latter so as to cover the entire space between the adjacent bars sufficient to prevent the passing of pulverulent fuel.

In the plan view, Fig. 3, the plane of the grate is shown made up of the assembled bars which are constructed as described and

which collectively form a fire surface in continuity sufficient to prevent sifting of a pulverulent fuel without material waste.

It will be observed that the outer rows of the bars are constructed alternately with but one projecting lug, as at *h*, and with an extended lug at *d*, in order to fill in the spaces at the extreme sides or edges of the grate.

The construction described has also the advantage, only heretofore attained with chain grates having rounded ends, of clearing the usual dumping plate as at D in passing over the carrier C of the grate support in that the dumping plate is not unduly raised to destroy the air seal thereby formed. The same results as to the prevention of sifting of fine coal, however, may be obtained by the use of bars of other forms, as shown, for example, in Fig. 4, 5, 6 and 7. In all of these structures the bar is provided with a lug upon its middle portion projecting laterally from the body of the bar, and of such form as to fit into the opening between the ends of the adjacent bars.

In Fig. 8 a structure is shown embodying our invention which may be used in those forms of traveling grates consisting of transverse bars carried upon suitable traveling gear at the ends and arranged to intermesh, forming a continuous grate surface. Bars of this structure virtually consist of a series of bars (as A) held in position by, and integral with, a bar depending therefrom with a rod connecting the depending part, said bar or rod being carried on a chain or other suitable jointed gear at the ends.

It will be observed in all these structures that the outer row of bars are varied slightly in form to make a flush face at the sides of the furnace. Thus the bars have lugs projecting from one side only, which alternate with those of the above described type.

Having thus fully described our invention, what we claim is:—

1. In a traveling grate a plurality of bars each provided with lateral projections extending over the ends of adjacent bars.

2. In a traveling grate a plurality of bars each provided with lateral projections extending over the ends of adjacent bars and suitable lateral connections between said bars.

3. In a traveling grate a plurality of bars each provided with lateral projections extending over the ends of adjacent bars said bars being so arranged as to provide non-vertical air spaces between them.

4. In a traveling grate composed of a plurality of bars suitably connected, each bar having its ends depressed below the fire surface of the grate and provided with projections between its ends extending laterally and made flush with the fire surface of the grate, said projections substantially fitting into and intermeshing with the depressions between the abutting ends of the adjacent bars. In testimony whereof we affix our signatures in presence of two witnesses.

ALFRED EDWARD PARKER.
ERNEST H. PEABODY.

Witnesses for Parker:
WALLACE FAIRWEATHER,
JOHN ARMSTONG, Jr.
Witnesses for Peabody:
EUGENE P. TERRY,
CHAS. W. FORBES.