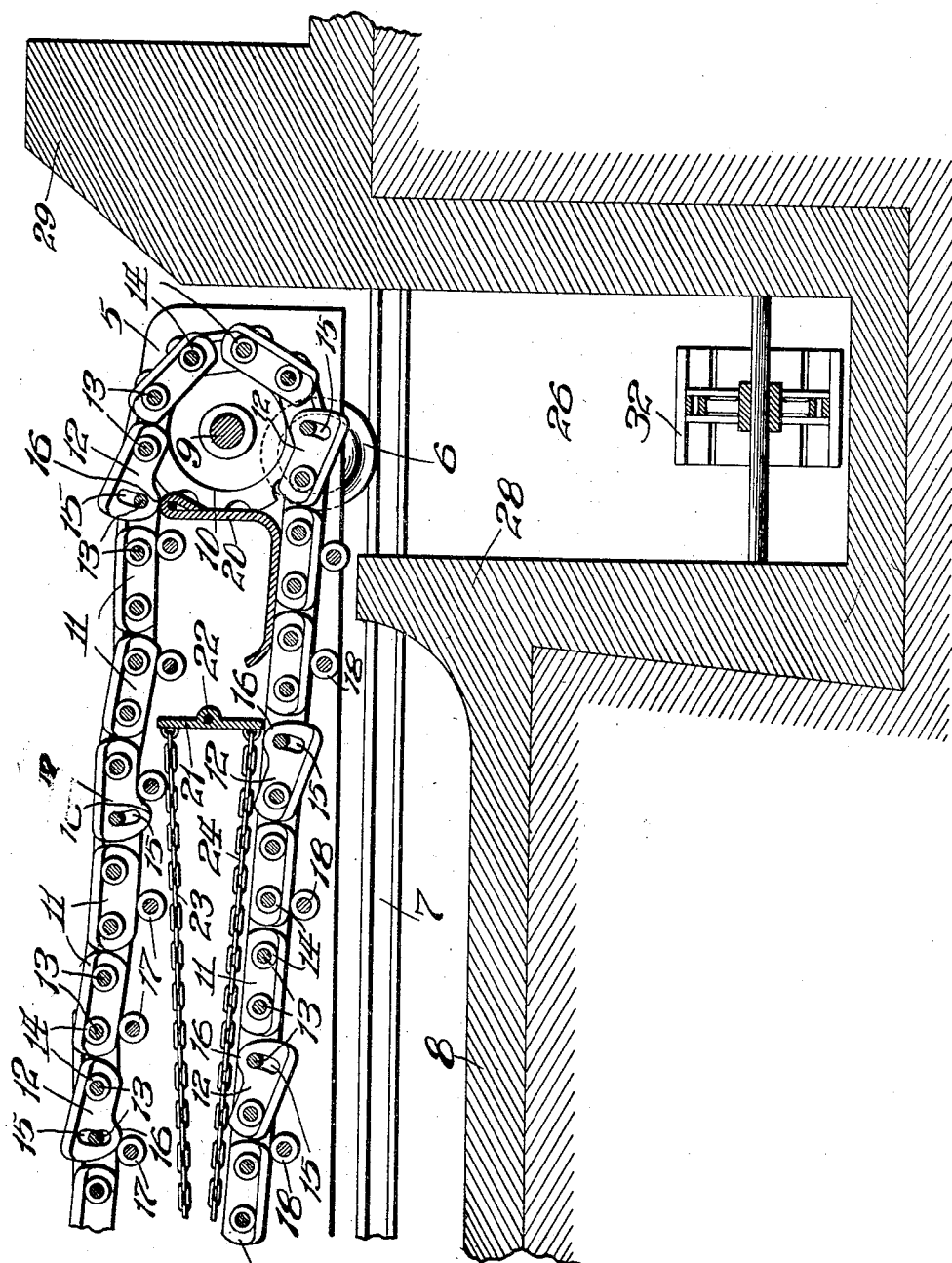


F. GIRTANNER.
 ENDLESS MOVABLE GRATE FOR FURNACES.
 APPLICATION FILED JULY 8, 1911.

1,050,531.

Patented Jan. 14, 1913.



attest:
 L. E. Wether,
 M. C. Hammon

Inventor:
 Frederick Girtanner.
 By *Tring Bros* attys.

UNITED STATES PATENT OFFICE.

FREDERICK GIRTANNER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO LACLEDE-CHRISTY CLAY PRODUCTS COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

ENDLESS MOVABLE GRATE FOR FURNACES.

1,050,531.

Specification of Letters Patent, Patented Jan. 14, 1913.

Application filed July 8, 1911. Serial No. 637,464.

To all whom it may concern:

Be it known that I, FREDERICK GIRTANNER, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Endless Movable Grates for Furnaces, of which the following is a specification.

This invention relates to endless movable grates for furnaces that are particularly adapted to the burning of bituminous or semi-bituminous or coking coals; and the invention consists in the features, combinations, and details of construction hereinafter described and claimed.

The principal object of the invention is to provide a simple, economical, and satisfactory endless movable grate for the burning of bituminous coals and the like; and it consists principally in a grate composed of tilting and non-tilting or relatively fixed sections alternately arranged, with means for kicking or raising the free ends of the tilting sections as they move along their operative path.

The invention consists further and finally in the features, combinations, and details of construction hereinafter set forth and described.

In the accompanying drawing the figure illustrates one form of endless movable or traveling grate in which this invention is capable of being embodied.

In the art to which this invention relates, it is well known that it has long been desirable to provide an endless movable or traveling grate of such construction and arrangement that it will economically and automatically stoke the fuel or break up any coking or coked fuel which may be on the upper or operative part of the grate. Further, it has long been desirable to provide a grate of such construction and arrangement that the sections thereof may be independent of each other and so constructed as to be easily operated and at the same time very durable in operation. To accomplish these results is the principal object of this invention.

In constructing a grate in accordance with these improvements, a supporting frame portion is provided having sides 5, as shown in the drawing, and which is further provided with wheels 6 for moving it in or out of the furnace on the track 7. These tracks are arranged upon the bed 8 of the furnace.

The supporting frame is further provided with a shaft 9 at each end (only one of which is shown) rotatably mounted in the side frame and provided with a plurality of supporting rotating sprocket wheels 10. An endless movable or traveling grate is provided, formed of grate links 11 and 12 supported upon, and in necessary instances also pivoted upon as well as pivotally connected to the cross rods 13, 13, which cross rods are provided with distance pieces 14.

To economically and automatically stoke as well as break up any coking or coked fuel which may be resting upon the upper or operative portion of the grate and while said grate is moving along its operative path, it is desired to make such grate of tilting sections 12 and non-tilting or relatively fixed sections 11 alternately arranged, as shown. The non-tilting sections are preferably arranged in double series, as shown, and therebetween are arranged the tilting sections 12. The tilting sections are perforated at each end, and at or near one end are independently and loosely pivoted upon their particular cross rods 13, while the opposite free or tilting end is provided with an elongated slot 15 and depending projections 16 loosely engaging another set of the cross rods 13.

Arranged immediately beneath the upper portion of the grate are a series of rolls 17, placed preferably in undulated or wave-like arrangement so as to support the grate with its bed of fuel. These rolls are so arranged that they are contacted by the depending projections 16 on the free ends of the tilting grate sections, and as the grate moves along its upper operative path these rolls act to kick or raise the free ends of the tilting sections (as shown) upwardly into the mass of coking or coked fuel to break up or stoke the same; all of which will be understood and appreciated by those skilled in the art.

The operation of the parts is such that as the grate sections move along their upper path they are given an undulating or wave-like motion, which motion tends to break up and stoke the mass of burning fuel, and in addition the tilting sections are kicked up between the non-tilting or relatively fixed sections, thus kicking small portions or masses of the burning fuel and dislodging it in such manner that the atmospheric air necessary to support combustion may more readily enter into the mass of burning fuel.

The furnace herein shown and described is but one type of furnace in which this invention is capable of being used, and the supporting grate frame may have arranged therebetween a baffle plate 20 at or near the rear end of the furnace so as to control the draft, and at a short distance in front a damper 21, pivoted at 22, may be arranged and provided with chains or similar elements 23 and 24, by which it may be operated.

An ash pit 26 is preferably formed at or near the rear of the furnace, between its walls 28 and 29, and may be provided with an ash conveyer 32 to carry the ashes out of the pit as desired.

I claim:—

1. In a mechanical stoker, a chain grate comprising fuel supporting links and transverse rods connecting said links, certain of said links engaging the rods closely but loosely, and others of said links engaging the said rods similarly at one end of each link and having vertical slots engaging the rods at the other end of each such link, said last-mentioned links having cams under the slots therein, and abutments under the fuel supporting portion of grate whereby the individual slotted links will have their slotted ends kicked up as the cams pass over the said abutments.

2. In a mechanical stoker, a chain grate comprising fuel supporting links and transverse rods connecting said links, certain of

said links engaging the rods closely but loosely at both ends of each link, and others of said links engaging said rods closely but loosely at one end of each link and by means of a vertical slot at the other end of each link, the slotted links being arranged along the length of the grate in alternation with the other class of links, said slotted links having cams under the slots therein, and supporting rollers under the fuel supporting portion of said chain grate whereby the individual slotted links will have their slotted ends kicked up as the cams pass over the rollers.

3. In a mechanical stoker, a chain grate comprising fuel supporting links and transverse rods connecting said links, stationary transverse shafts under the fuel bearing portion of said chain grate, rollers on said stationary shafts, said fuel bearing portion of said chain grate being supported by said rollers and adapted to travel thereon, said stationary shafts being staggered in height whereby the chain grate is caused to travel with an undulatory movement, and certain individual links of the chain grate having means to coact with said rollers to kick said links up above the other links as they pass over the rollers.

FREDERICK GIRTANNER.

In the presence of—

M. C. HAMMON,
H. G. FLETCHER.