W. M. DUNCAN.

MECHANICAL STOKER.

APPLICATION FILED MAR. 18, 1912.

1,031,253. Patented July 2, 1912.

Fig. I.

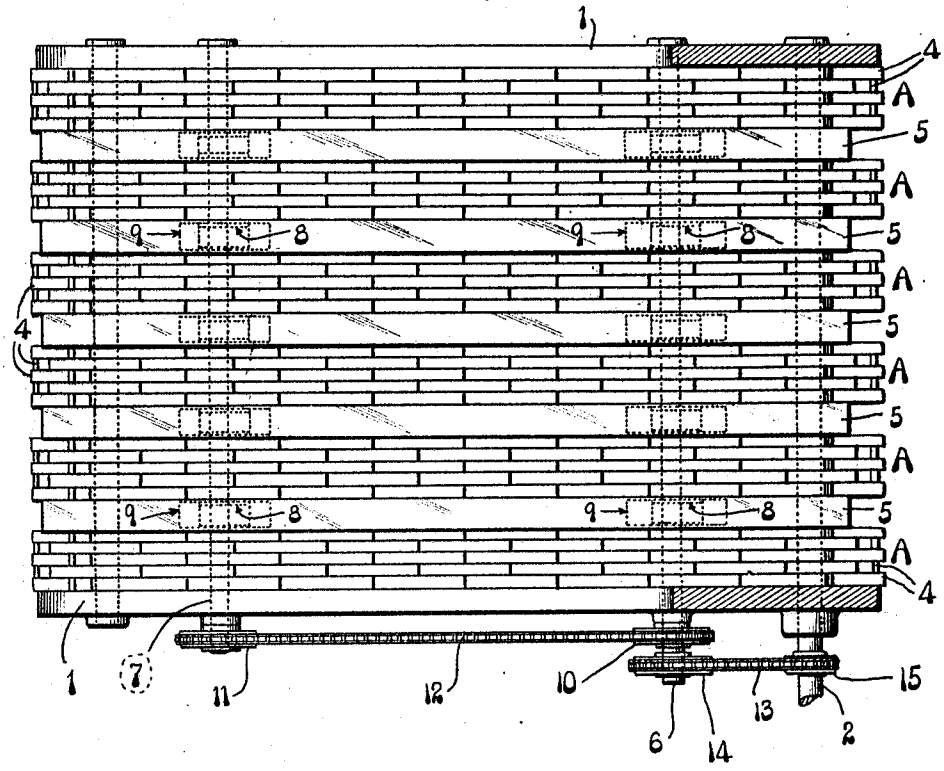
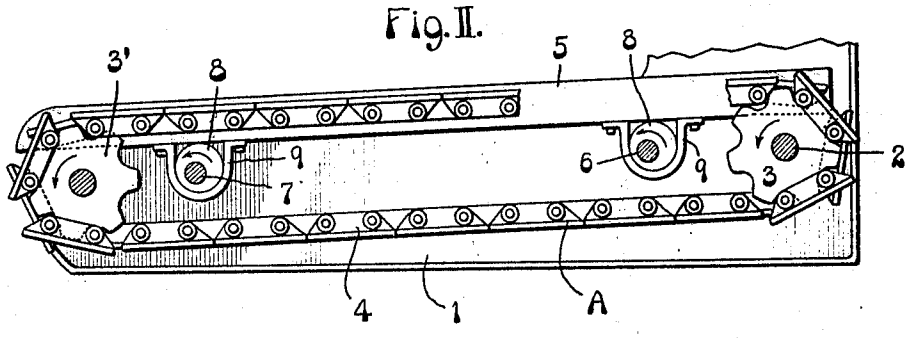


Fig. II.



Attest

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MECHANICAL STOKER.

1,031,253. Specification of Letters Patent. Patented July 2, 1912.

Application filed March 18, 1912. Serial No. 684,564.

To all whom it may concern:

Be it known that I, WILLIAM M. DUNCAN, a citizen of the United States of America, residing at Alton, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Mechanical Stokers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a mechanical stoker, and it has for its object the production of a furnace grate structure for the support and movement of coking fuel, such as coal, in a manner to break up the mass of fuel at intervals for the facilitation of its combustion.

My stoker comprises a series of endless chain grates and inflexible grate bars movable between the chain grates; means being provided whereby the inflexible grate bars are raised and lowered with an oscillatory movement at regular intervals to disturb the entire bed of fuel by agitation, and at the same time act with the chain grates to feed the fuel toward the rear of the stoker.

Figure I is a top or plan view of my improved stoker. Fig. II is a vertical section.

In the accompanying drawings: 1 designates the side frames of my stoker. In the preferred form of my stoker, I preferably utilize at one end thereof a main operating shaft 2 journaled in the side frames 1, and equipped with drive wheels 3 for operating the chain grates A. At the opposite end of the stoker, the chain grates are supported by idler wheels 3′. Each endless chain grate A preferably consists of a plurality of endless chains 4, consisting of links pivotally connected in a manner to permit flexing of the chains as they pass around the supporting and driving wheels.

5 designates inflexible grate bars loosely arranged between adjoining pairs of the chain grates A. These inflexible grate bars are of such length as to extend approximately from the front end to the rear end of the stoker, so that the bed of fuel supported on the stoker will lie on the inflexible grate bars, from one end of the stoker to the other end, in order that the entire bed may be subjected to disturbance by the inflexible bars when they are moved vertically and longitudinally between the chain grates.

The means preferably utilized in my grate for imparting movement to the inflexible grate bars 5 are eccentrics 8 carried by transverse shafts 6 and 7 and operable in yokes or straps 9 secured to inflexible grate bars. It will be readily appreciated that by this means of moving the grate bars, the grate bars may be raised and lowered between the chain grates to any desired degree, and with uniformity of movement throughout the entire length of each grate bar. Consequently, when the eccentrics 8 are placed in motion, the inflexible grate bars are so elevated as to raise their top surfaces to a considerable distance above the surfaces of the chain grates, with the said grate bars remaining in position to fill the gaps between the chain grates and prevent the passage of fuel through said gaps. Furthermore, the eccentrics providing for the vertical movement of the inflexible grate bars results in the impartation of an oscillatory movement to the grate bars, and said grate bars being extended from end to end of the stoker, are caused to act as feeding members in conjunction with the grate bars, so that the fuel lying directly over the inflexible grate bars will be moved rearwardly and at the same time that it is disturbed by these grate bars to prevent caking of the fuel.

To provide for the operation of the eccentrics 8, the shafts 6 and 7 by which these eccentrics are carried are equipped with sprocket wheels 10 and 11, on which a sprocket chain 12 is operable. A drive chain 13 connects a sprocket wheel 14 on the shafts 6 to a sprocket wheel 15 on the main drive shaft 2, so that the eccentrics that are driven are of the same sources of power as that utilized to drive the chain grates A.

I claim:—

1. A stoker grate comprising a series of endless chain grates separated from each other, means for operating said separated chain grates to carry the fuel toward the rear of the grate, a series of inflexible grate bars arranged between said chain grates and extending from the front to the rear end of the grate to support fuel at both the front and rear ends of the grate, and means for imparting a vertical and longitudinal movement to said inflexible grate bars so as to break up the fuel and at the same time shift it toward the rear of the grate.

2. A stoker grate comprising a series of endless chain grates separated from each

other, means for operating said chain grates to carry fuel from the front to the rear of the grate, a series of inflexible grate bars arranged between said chain grates and extending from the front to the rear end of the grate so as to support fuel at both the front and rear ends of the grate, and operating devices at the front and rear ends of said inflexible grate bars for imparting a vertical and longitudinal movement to said inflexible grate bars so as to lift the fuel between said endless chain grates and, at the same time shift said fuel toward the rear of the grate.

WILLIAM M. DUNCAN.

In the presence of—
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A. H. BLAIR.