No. 836,616. PATENTED NOV. 20, 1906.

W. THOW & W. H. NISBET.

GRATE OPERATING MECHANISM.

APPLICATION FILED MAR. 13, 1905.

Fig. 1.

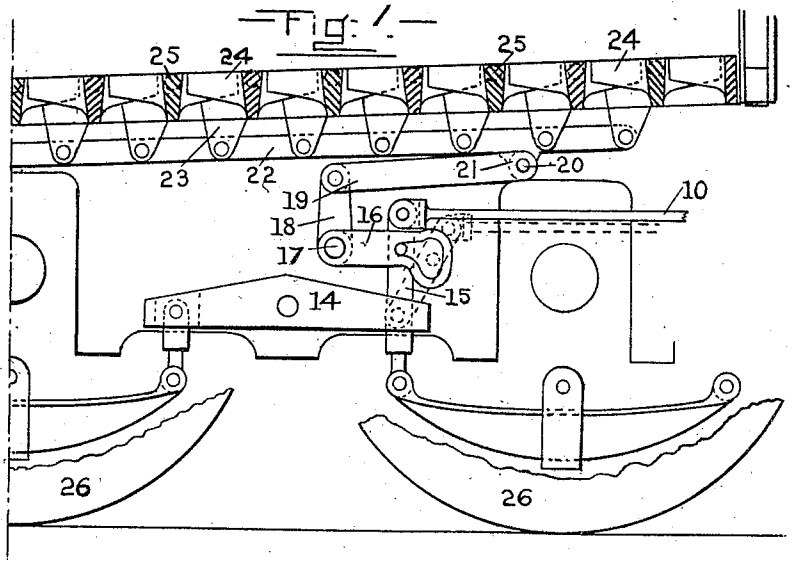


Fig. 2.

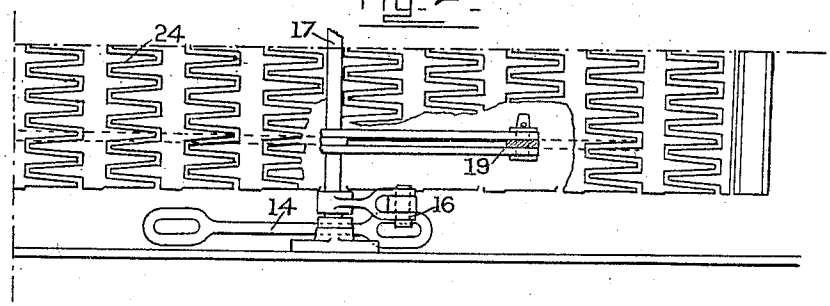
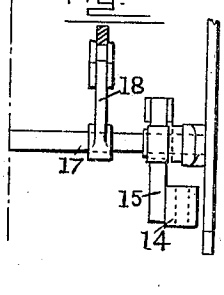


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM THOW, OF RANDWICK, NEAR SYDNEY, AND WILLIAM HOLMES NISBET, OF SYDNEY, NEW SOUTH WALES, AUSTRALIA.

GRATE-OPERATING MECHANISM.

No. 836,616. Specification of Letters Patent. Patented Nov. 20, 1906.

Application filed March 13, 1905. Serial No. 249,938.

To all whom it may concern:

Be it known that we, WILLIAM THOW, residing at "Ascot," Dutruc street, Randwick, near Sydney, and WILLIAM HOLMES NISBET, residing at Mutual Life of New York Buildings, Martin Place, Sydney, in the State of New South Wales, in the Commonwealth of Australia, engineers, subjects of the King of Great Britain, have invented certain new and useful Improvements in Grate-Operating Mechanism, of which the following is a specification.

This invention relates to grate-operating mechanism, and aims to provide means in a manner hereinafter set forth for automatically imparting a rocking, shaking, tilting, or vibrating motion to the fire-bars of locomotives-furnaces independent of the stoker or fireman, such motion corresponding with the speed of the locomotive.

The invention insures great economy of fuel through the more effective removal of ash and breaking up of clinker and the consequent more constant and regular steaming of the boiler, thus saving the time frequently occupied at stations in cleaning fires when movable fire-bars are not used. The comparatively gentle motion automatically imparted to the fire-bars avoids the violent shaking up of the fire and consequent loss of good fuel as when hand rocking arrangements or pricking-bars are employed. The invention, furthermore, has the advantage of enabling the fire-bars to be spaced more closely together.

According to our invention we obtain the necessary power from one or more of the axle-boxes or compensating beams or springs or connections thereto at one or both sides of the engine through a series of levers or levers and links, so that when the locomotive is running a vibrating or intermittent motion is automatically given to the fire-bars or some of them. If necessary, one only or more or all the fire-bars may have motion imparted to them at one time, or some bars may be raised, while others are lowered. Provision is made for disengaging the lever or levers, so that, if desired, no movement is transmitted to the fire-bars when the engine is running except at the will of the stoker or fireman.

With the foregoing and other objects in view the invention consists of the novel construction, combination, and arrangement of parts hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention; but it is to be understood that changes, variations, and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the accompanying drawings, Figure 1 is a sectional side elevation showing the grate-operating mechanism in position for use. Fig. 2 is a plan broken away. Fig. 3 is a portion of the device in end elevation.

In the drawings the reference character 14 denotes the beam, and 26 the wheels of the engine. A slotted lever 16 is provided and which has motion imparted thereto by the beam through the medium of a link 15. The lever 16 is fulcrumed on the shaft 17, and upon said shaft 17 is also fulcrumed the lever 18. The latter is connected to one end of a link 19, which in turn is connected by a pin 20 to a lug 21, carried by an elongated shiftable rod 22. The rod 22 is pivoted to an arm 23 on the lower side of each of the fire-bars 24, these latter rocking on the pivots 25. Movement to the fire-bars may be discontinued by shifting the link 15 out of the smaller part of the slot in the lever 16, and such shifting is had through the medium of a lever 10, which is connected to the upper end of the link 15. The position of the link 15 when shifted to discontinue the movement of the lever 16 is shown in dotted lines in Fig. 1.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a locomotive provided with a compensating beam and a fire-box, rocking grate-bars in said fire-box, a reciprocating rod pivoted to said bars, a link-and-lever mechanism connected to said rod and said beam, whereby movement of the beam actuates said bars.

2. In a locomotive provided with a compensating beam and a fire-box, rocking grate-bars in said fire-box, a link fulcrumed to said beam, a shaft, a slotted lever connected to one end of said shaft and at its other end engaged by said link, a lever 18 connected to the shaft, a link 19 pivoted to one end of said lever 18, and a reciprocatory rod connected to said link 19 and to the grate-bars.

3. In a locomotive provided with a compensating beam and a fire-box, rocking grate-

bars in said fire-box, a reciprocating rod pivoted to said bars, a link-and-lever mechanism connected to said rod and said beam, whereby the movement of the beam actuates said bars, and means for shifting said lever mechanism out of operative engagement with said beam.

In witness whereof we have hereunto set our hands in the presence of two subscribing witnesses.

WILLIAM THOW.
WILLIAM HOLMES NISBET.

Witnesses:
CHARLES EDWARD GRAHAM,
DAVID THOMSON.