

(No Model.)

F. EVANS.
FURNACE GRATE.

No. 597,079.

Patented Jan. 11, 1898.



Fig. 5.

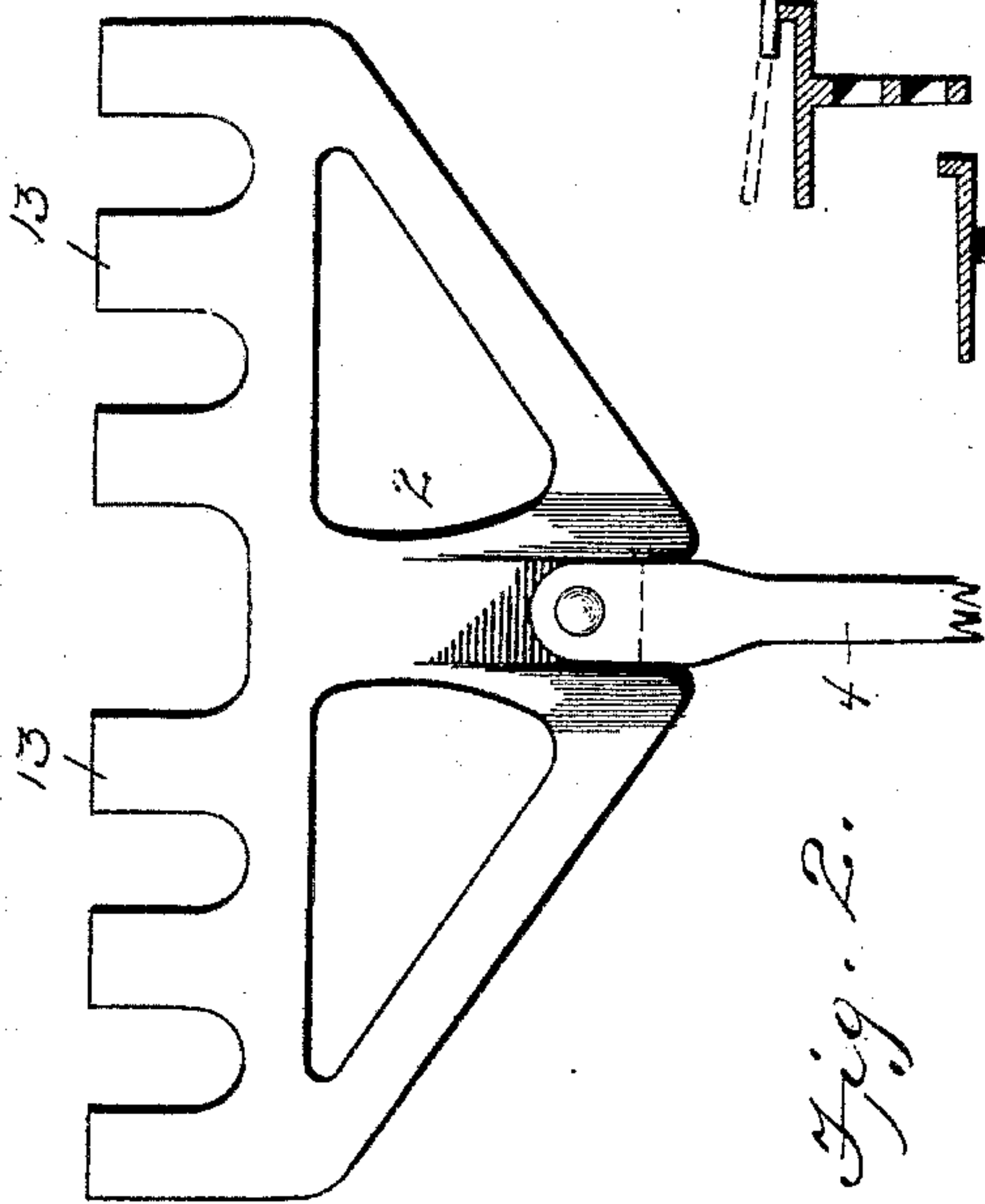


Fig. 2.

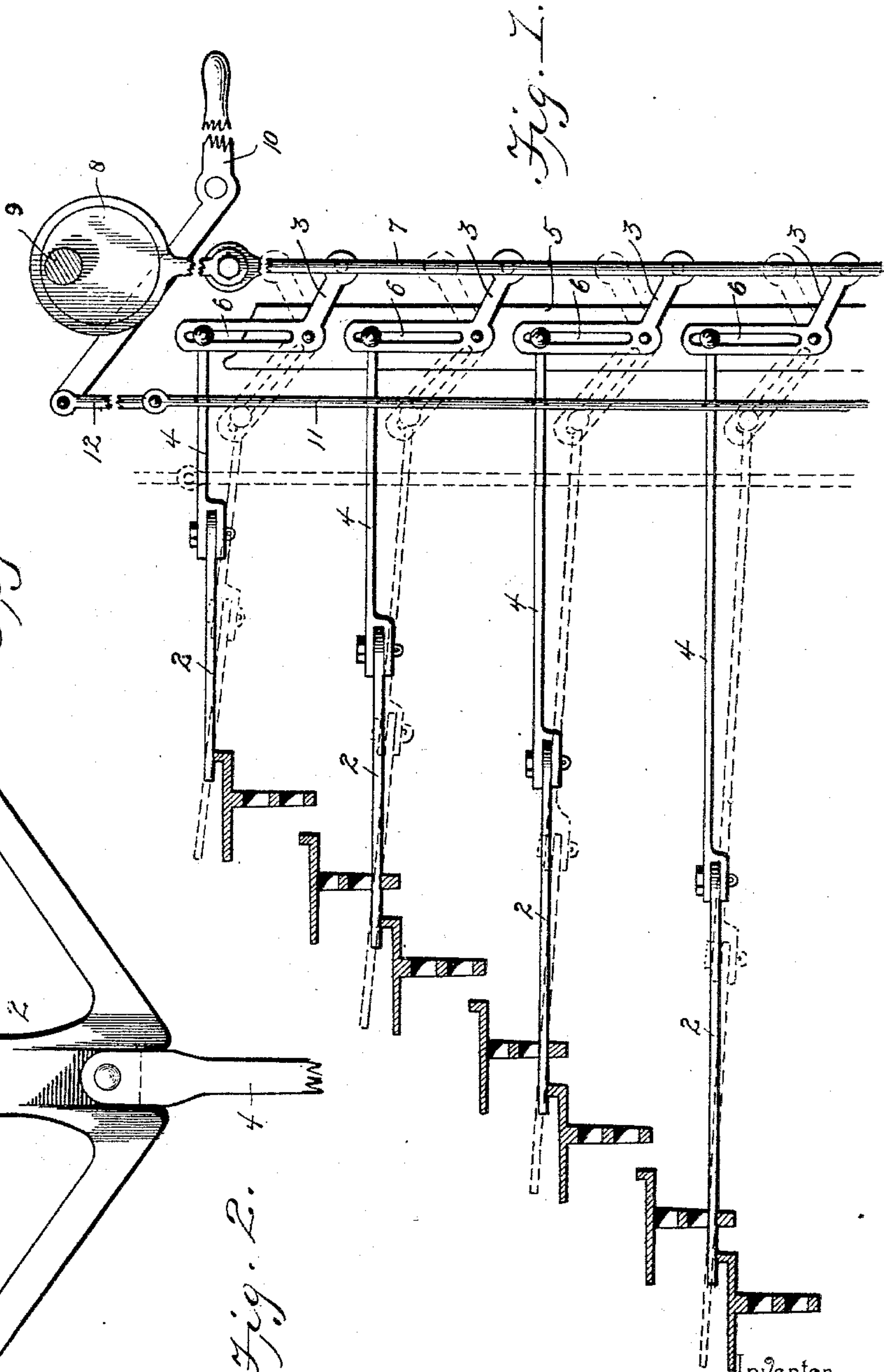


Fig. 1.

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UNITED STATES PATENT OFFICE.

FRANK EVANS, OF HOMESTEAD, PENNSYLVANIA.

FURNACE-GRATE.

SPECIFICATION forming part of Letters Patent No. 597,079, dated January 11, 1898.

Application filed January 7, 1897. Serial No. 618,327. (No model.)

To all whom it may concern:

Be it known that I, FRANK EVANS, a citizen of the United States, residing at Homestead, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Furnace-Grate, of which the following is a specification.

This invention relates to means for mechanically stoking or stirring the fire of steam-boiler furnaces, so as to lighten the fuel, remove ashes, and break up and remove clinkers.

The invention is designed most especially for that type of grates having the bars arranged relatively at an incline, so as to gradually and automatically feed the fuel, the latter being assisted by the stoking attachment in addition to the functions herein specified.

For a full understanding of the merits and advantages of the invention, reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 shows the invention in elevation, the dotted lines illustrating the operation. Fig. 2 is a plan view of a slice-bar or poker. Fig. 3 is an end view thereof.

Corresponding and like parts are referred to in the following description and indicated in the several views of the drawings by the same reference-characters.

The inclined grate 1 is composed of transverse bars having a depending portion formed with openings or spaces through which a slice-bar, poker, or other implement is thrust for stirring and agitating the fire. This inclined grate may be of any type or pattern and is shown to illustrate the application of the invention.

A series of pokers or slice-bars 2 are arranged at different levels, so as to stir the fire at different points and have connection with bell-crank levers 3 by means of rods 4, the active ends of the pokers or slice-bars being

supported by the grate-bars or in any convenient manner. The bell-crank levers 3 are fulcrumed to a support or frame 5, and their vertical members have slots 6, in which operate the bent ends or connections of the rods 4, whereby the throw of the pokers is adapted to be regulated. The horizontal members or arms of the levers 3 have pivotal connection with a rod 7, which is operated by means of an eccentric or crank 8 on a shaft 9, said shaft being actuated by hand or otherwise when it is required to stir the fire.

The throw of the pokers or slice-bars is regulated by varying the distance of the connection of the rods 4 with the slotted arms of the levers 3 from the pivotal support of the said arms, which is effected in a simple manner by means of a hand-lever 10, a connecting-bar 11, and a link 12 between the lever 10 and bar 11. The bar 11 has loose connection with the rods or bars 4, and by moving the same the outer ends of the rods or bars 4 can be adjusted to a greater or less distance from the fulcrum of the levers 3, whereby provision is had for regulating the amplitude of movement of the pokers, as will be readily understood. By arranging the bar 11, so that it will connect with the rods 4 at different distances from their outer ends, the pokers or slice-bars will receive a variable movement, as will be readily comprehended. The slice-bars or pokers may have any desired form so long as they will effect the purpose of the invention, and, as shown in Fig. 2, they are provided at their active edges with a series of fingers 13 to more readily penetrate the mass of coals and agitate them and break up clinkers. When it is required to stoke or stir the fire, the shaft 9 is rotated, and by means of the connections herein described the pokers or slice-bars will be reciprocated and effect the desired end.

By having the pokers or slice-bars connected in the manner set forth they receive a simultaneous vibratory and reciprocating movement approximating the operation of the fireman or stoker when stirring the fire. This movement is clearly indicated by the full and dotted lines in Fig. 1. Each poker or slice-bar can be adjusted independently of the others, so that its reciprocating and vi-

bratory movement may be regulated to suit the condition of the fire and its particular relation with reference thereto.

Having thus described the invention, what is claimed as new is—

1. In combination, an inclined grate, a series of pokers or slice-bars mounted so as to receive a simultaneous vibratory and reciprocating movement, an operating rod or bar, and means for adjustably connecting the individual pokers with the said operating rod or bar to independently regulate and vary the movement of the said pokers, the parts being disposed so that the series of pokers are simultaneously actuated by means of the aforementioned rod or bar, substantially as set forth.

2. The combination with a grate arranged so as to incline, a series of horizontally-disposed pokers or slice-bars, disposed at different relative levels, bell-crank levers arranged in vertical alinement, connections between the vertical arms of the bell-crank levers and the said pokers or slice-bars, means for simultaneously changing the relation of the connections with reference to the said vertical arms, and a rod connecting the horizontal arms of the bell-crank levers for simultaneously operating them, substantially as described.

3. A stoking attachment for grates, comprising a series of pokers, a bell-crank lever for each poker, a rod or bar adjustably connecting the pokers with an arm of the levers,

a bar connecting the other arms of the said levers, and means for reciprocating the said bar, whereby a corresponding movement is imparted to the pokers, substantially as and for the purpose set forth.

4. In a stoking attachment for grates, the combination of a series of pokers, bell-crank levers having slidable connection with the said pokers, means for simultaneously actuating the said levers, a rod or bar connecting the pokers in series, and means for operating the said rod or bar to vary the distance of the connection of the pokers with the said levers from their fulcra to vary the throw of the pokers, substantially as described.

5. The herein-described stoking attachment, comprising a series of pokers or slice-bars, a corresponding series of bell-crank levers having a member slotted, bars or rods connecting the pokers with the slotted members of the levers, a bar connecting the other arms of the levers and adapted to be reciprocated, a bar or rod connecting the rods between the pokers and levers, and means for moving the said rod or bar, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK EVANS.

Witnesses:

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