M. KASE.

DUPLEX GRATE.

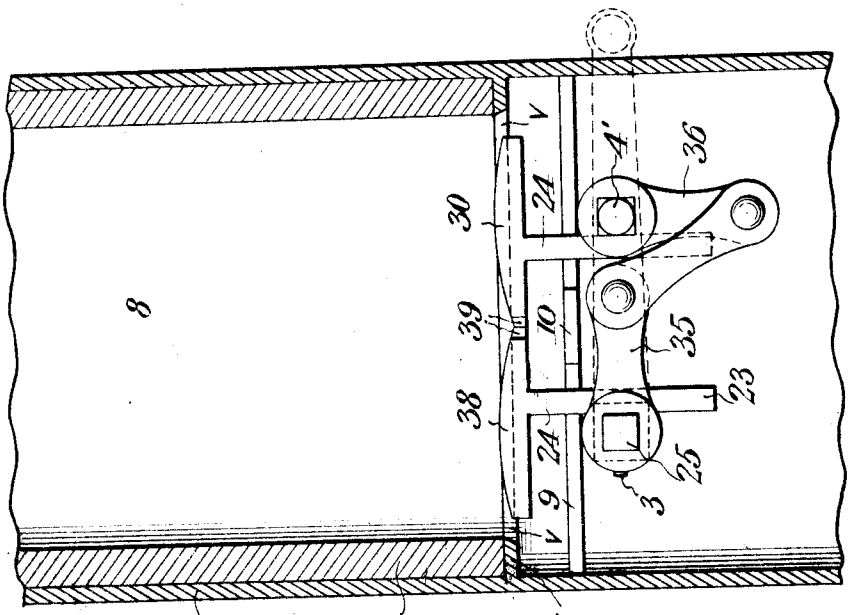
APPLICATION FILED AUG. 11, 1911.

1,128,364.

Patented Feb. 16, 1915.

2 SHEETS—SHEET 1.

Fig. 2.



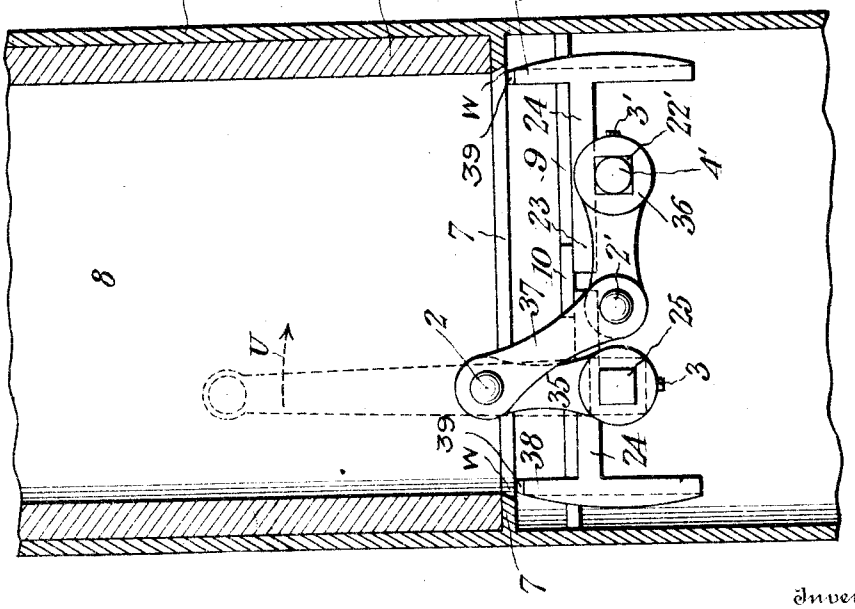


Fig. 1.

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2 SHEETS—SHEET 2.

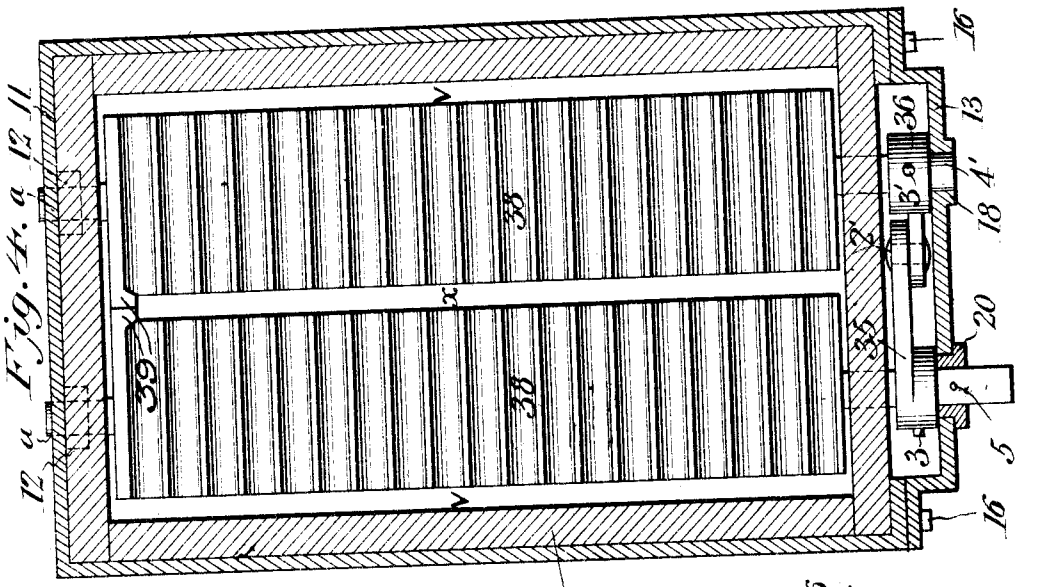


Fig. 4.

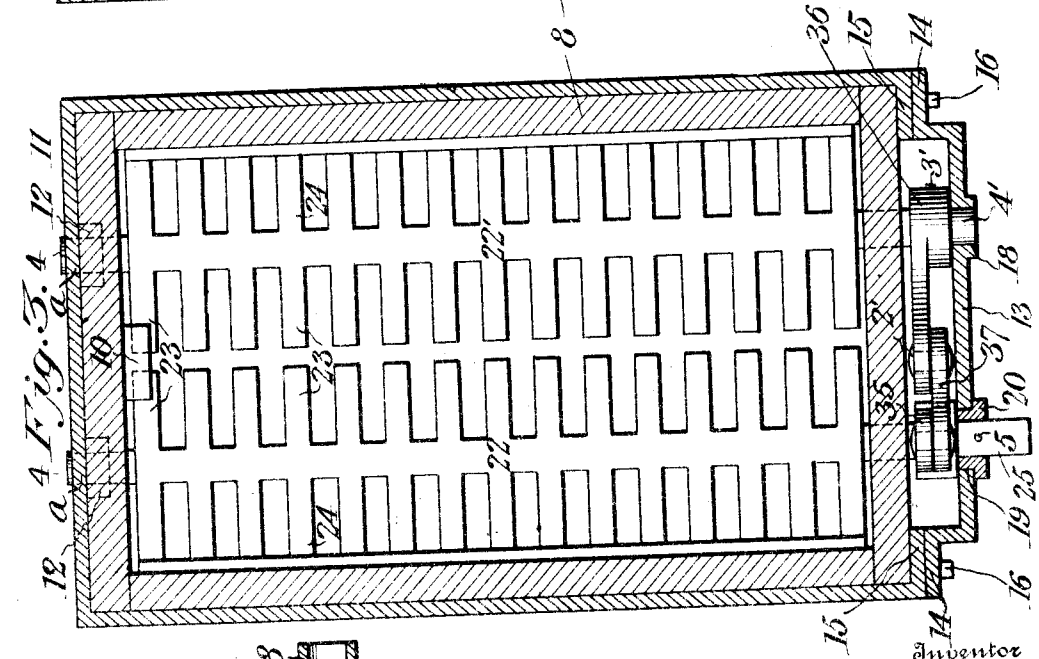
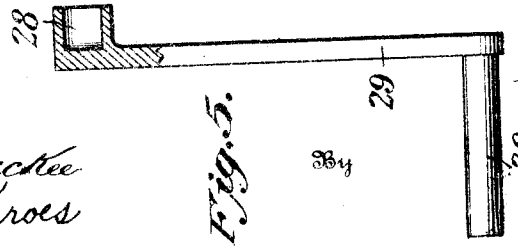


Fig. 5.



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UNITED STATES PATENT OFFICE.

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DUPLEX GRATE.

1,128,364. Specification of Letters Patent. Patented Feb. 16, 1915.

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To all whom it may concern:

Be it known that I, MAHLON KASE, a citizen of the United States, and a resident of Throop, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Duplex Grates, of which the following is a specification, reference being had to the accompanying drawings.

This invention has relation to an improvement in duplex grates employed in connection with stoves and furnaces; and the object of my invention is to provide a device of this general character of a simple and inexpensive nature and of a durable construction which shall be capable of convenient and accurate adjustment in position within a stove or furnace, so that the grate can be instantly and positively operated to shake the same or set the grate for coal or wood burning.

With these and other objects in view the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and finally pointed out in the appended claim, it being further understood that changes in the specific structure shown and described may be made within the scope of the claim, without departing from the spirit of the invention.

In the accompanying drawings forming a part of this specification and in which like numerals of reference indicate similar parts in the several views, Figure 1, is a sectional view with portions broken away of a furnace equipped with my invention, disclosing the grate members as set for coal burning. Fig. 2, shows the grate members as set for burning wood. Fig. 3, is a top view of Fig. 1. Fig. 4, is a top view of Fig. 2, and Fig. 5, is a detail with parts broken away, of the operating crank used to tilt the grate members.

A certain class of stoves and furnaces is provided with what is known as a duplex grate. These grates can be set so that wood or coal may be used as fuel. As conventionally constructed, the grates are turned 90 degrees in swinging them from one position to the other.

In my present invention I provide a duplex grate with a link connection by means of which when one grate section is actuated all the grate sections are synchronously and positively operated.

In the accompanying drawings the numeral 6, designates a broken portion of a furnace which is provided with the extending fire brick rest or flange 7, as is usual in the art. In the drawings the fire brick 8, is shown as lining the fire pot and resting upon the ledge.

In Figs. 1 and 2 I have shown at one end below the rest 7, a reinforcing flange 9, from which projects the centrally positioned stop lug 10, shown in top view in Fig. 3. At a suitable point below the flange 9, and opposite points the furnace is provided with oppositely positioned bearing openings located below the lug 10, these openings being arranged to receive the pivot ends of the swinging grate members.

In Figs. 3 and 4 one set of bearing openings is shown in dotted outlines *a*. At the opposite end for the sake of convenience the furnace is provided with the shell 13, having the securing flange 14, this flange being arranged to be bolted to the extending flange 15, forming a part of the furnace. The flanges 14 are connected to the flanges 15 by means of the bolts 16. The shell 13 is provided with the bearing 18, and the aperture 19, within which is held a bearing collar 20 having a square opening.

The grate employed in my invention comprises two similar members, each being T-shaped in cross-section and having a centrally positioned shaft, one being marked 22, and the other 22′, from which extend in opposite directions the straight grate fingers 23 and 24, these fingers being arranged in parallel spaced relation, as clearly shown in Fig. 3. At one end the fingers 23, are arranged to strike the stop lug 10, from below. The grate fingers are used for burning coal where considerable air is required for combustion, and in Fig. 3 the grate members are shown as set for coal burning purposes.

The grate shaft 22, has a square portion 25, of its shaft extending beyond the shell 13, as shown in Figs. 3 and 4, and this square shaft portion 25, is arranged to receive a head 28, of an operating crank 29, having the handle 30, as shown in Fig. 5. The projecting end 25, fits into the square opening of the collar 20, the collar being secured to the shaft by means of a pin 5, shown in Figs. 3 and 4.

The circular bearing stems 4, which project from the grate members, as shown in

Fig. 3, extend beyond the furnace housing or fire pot and are provided with the stop collars 12, shown in dotted lines in Figs. 3 and 4. These stop collars 12, limit the movement of the bearing stems 4, in one direction.

As shown in Fig. 3, the grate member having the shaft 22, is the tilting grate member, and the other member 22′ is the tilted grate member. Fixed to the projecting end 25, of the tilting grate member is the crank arm 35, secured by means of the pin 3. This crank arm 35, as shown in Fig. 1, extends at right angles to the grate fingers and at its end carries a pin 2. The opposite grate shaft 22′ is provided with the cylindrical bearing stub 4′, shown clearly in Fig. 3, and which is revolubly held within the bearing 18, of the shell 13. Secured to the bearing stub 4′, as shown in Fig. 1, is the crank arm 36, held in position by means of a pin 3′. This crank arm 36 at its end is secured to the pin 2′ and is held parallel to the grate fingers as will be understood in referring to Fig. 1. As shown the crank arms 35 and 36, are normally held at right angles to one another. Pivotally secured to the pins 2 and 2′ is the link 37.

As shown in Fig. 1, where the grate members are set for coal burning, the fingers 24 and 23 are held in a horizontal plane a suitable distance below the brick rest 7. Forming a part of each grate member is a fuel supporting surface comprising an imperforated transversely corrugated plate 38, these plates being shown in top view in Fig. 4. These plates 38, form an integral part of the outwardly directed grate fingers 24, and extend at right angles to these fingers, the fingers extending from these imperforated plates intermediate of their sides, as will be understood in referring to Fig. 2. Each plate at one end is provided with an outstanding stop ear 39, these ears being arranged to contact so that an air space x, shown in Fig. 4, is provided between the two grate plates 38. The combined width of the two grate plates 38, is less than the distance between the opposite brick rests 7, as shown in Fig. 2, so that the side air spaces v, v are provided in addition to the central air spaces x.

As disclosed in Fig. 1, when the grates are set to burn coal, the plates 38, serve as side flanges preventing coal working off of the grate fingers 24, in which position an air space w, is provided above the upper edges of the members 38, as clearly indicated in Fig. 1. These air spaces w, are a suitable distance above the grate fingers 24 and 23. When it is desired to shake the grate, the operator attaches the crank 29 upon the extending portion 25, and shoves the crank in the direction of the arrow u, as shown in Fig. 1, the stop lug 10, preventing the crank being carried in the opposite direction.

From the foregoing it will be noticed that the fingers are approximately of a length equal to the width of the plates, and that the shafts are located upon one side of each set of fingers and intermediate of the ends of the same.

The furnace is simple and inexpensive in construction, and both durable and efficient in operation.

Having thus described my said invention, what I claim as new and desire to secure by United States Letters Patent is:

A furnace having a stop lug and oppositely positioned openings below said lug, two similar grate members T-shaped in cross section each comprising an imperforate transversely corrugated plate centrally from which extend at right angles a plurality of alined grate fingers of a length approximating the width of said plates, an integral shaft located upon one side of each set of fingers and intermediate of the ends of the same, the ends of said shafts held within said openings, a stop ear extending from each of said plates, a crank arm extending from one of said shafts at right angles to its grate fingers, a crank arm extending from said other shaft parallel to its grate fingers, said arms normally held at right angles to one another, an operating crank attached to said first mentioned shaft, and a link connected to the ends of said crank arms, said fingers being stopped against said lug when said fingers are in alinement, said ears serving as stops when said plates are held in alinement, all arranged as and for the purpose set forth.

In testimony whereof I affix my signature, in presence of two witnesses.

MAHLON KASE.

Witnesses:
P. H. FRYER,
W. J. APPLEMAN.