G. H. THACHER, Jr.

DUMPING GRATE.

APPLICATION FILED OCT. 22, 1912.

Patented Sept. 1, 1914.

1,109,265.

Fig. 1,

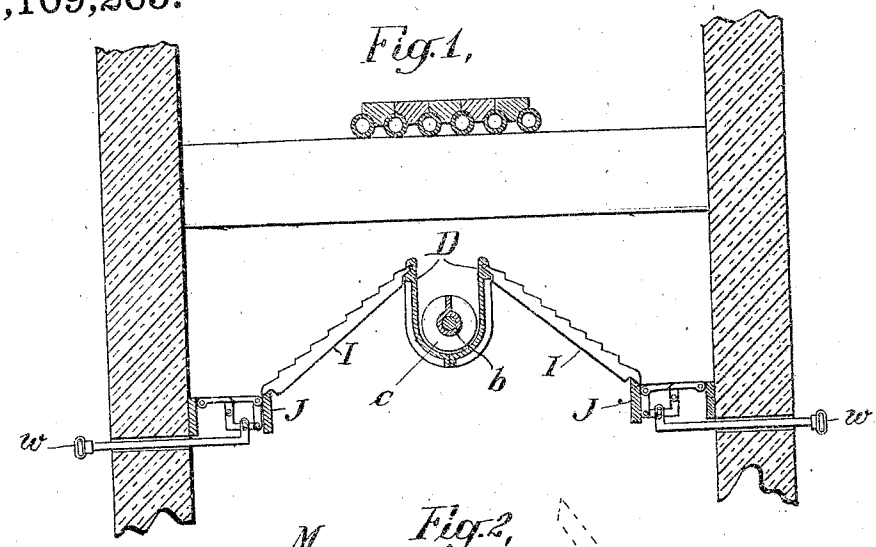


Fig. 2,

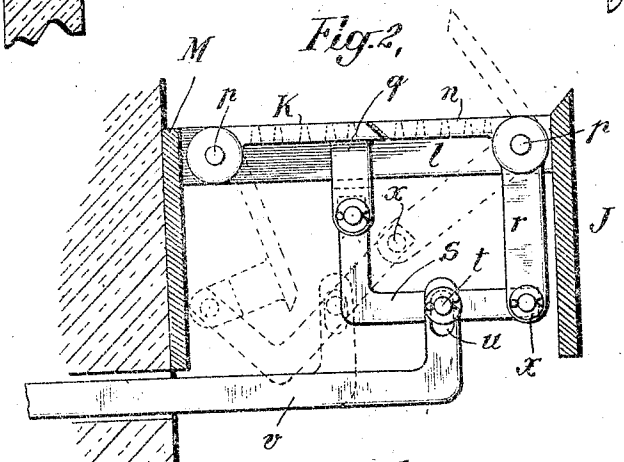
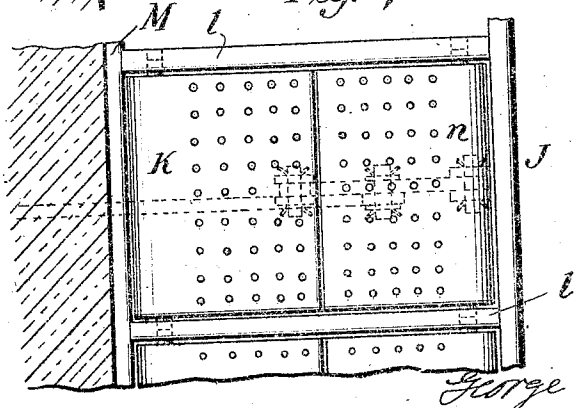


Fig. 3,



WITNESSES

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DUMPING-GRATE.

1,109,265. Specification of Letters Patent. Patented Sept. 1, 1914.

Application filed October 22, 1913. Serial No. 727,146.

To all whom it may concern:

Be it known that I, GEORGE H. THACHER, Jr., a citizen of the United States, residing at Albany, county of Albany, and State of New York, have invented certain new and useful Improvements in Dumping-Grates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in that class of furnaces wherein the fuel is supplied from a magazine to the top of inclined grate surfaces, which inclined grate surfaces, in turn, discharge upon dumping grates located at their lower ends.

Particularly, my invention relates to a construction and arrangement of parts whereby the dumping grates may be readily discharged of their contents, while, at the same time, the fuel on the inclined grate surfaces is held in place against accidental discharge into the ash pit.

In the accompanying drawing, Figure 1 represents, in cross-section, a furnace of the general type referred to, provided with a dumping grate embodying my improvements; Fig. 2 represents, partly in section and partly in elevation, a view of the dumping grate, on a somewhat larger scale, and illustrates in dotted lines the dumping position of the grate; Fig. 3 represents a top plan view of a portion of the dumping grate.

Similar letters of reference indicate similar parts throughout the several views.

Referring to the drawing, D represents a fuel feed magazine provided with a feed screw whose conveyer and lifting blades *c*, mounted upon the feed screw shaft *b* raise the fuel and discharge it upon the inclined grates I which rest at their lower ends upon the supports J. At the bottom of the inclined grate surfaces I are located the dumping grates. These grates extend lengthwise of the inclined grate surfaces so as to receive the ashes and clinker therefrom, and consist each of a number of sections mounted within a frame of which the support J constitutes one of the side members.

As indicated in Figs. 2 and 3, the frame is provided with cross-pieces *l* connecting the support or bar J with the like support or bar M; so that the grate is made up of a series of individual sections each located within one of the sub-divisions of the frame. All of the individual grate sections are alike in construction and mode of operation, and each individual section is adapted to be independently operated by its own dumping bar, so that a greater or less number of sections may be dumped, as necessity may require. As shown in Figs. 2 and 3, the grate surface of the individual dumping grate sections is made up of two leaves *k n* cast with hubs and with gudgeons *p* which latter engage within openings in the cross bars *l*, so as to be adapted to be rocked therein. The leaves *k n* are provided with suitable air apertures, as desired, as indicated in Figs. 2 and 3. They are likewise provided respectively with depending arms *q r* which are pivotally connected to a bell crank lever *s*. The bell crank lever is provided with a wrist pin *t* which engages a lost motion slot *u* of the dumping bar *v*, which latter may conveniently be operated from without by means of the operating handle *w*.

When it is desired to dump into the ash pit the ashes and clinker received from the inclined dumping grate sections, the dumping bar *w* is pulled outwardly by the operator, whereupon the parts arrange themselves in the position shown in dotted lines in Fig. 2. That is to say, the leaf *k* drops, and the leaf *n* rises. As a consequence, the fuel upon the inclined grate surfaces I is held against accidental descent into the ash pit, and the ashes and clinker upon the leaf *k* is dumped. The length of the several levers constituting the system is preferably so chosen that when the grate is in the full dumping position, the intermediate joint *x* between the wrist pin *t* and the gudgeons *p* of the leaf *n* is carried beyond the common plane in which said wrist pin and gudgeons find themselves, so that there is no tendency for the grate to resume its horizontal position, the parts being substantially locked in the dumping position until subsequently returned to their original location by the operator who pushes in the dumping bar *w* for that purpose.

Having thus described my invention what I claim is:

1. A dumping grate for the purposes described, comprising leaves coöperating to form a grate surface and mounted to rock in

opposite directions, the one upwardly and the other downwardly, and means for rocking said leaves, said means consisting of a dumping bar, a bell crank lever operatively connected to said bar, and projections from the leaves of the grate, one projection being longer than the other, to which projections the bell crank lever is jointed to swing said leaves open when the bar is pulled and to lock said leaves in open position until said bar is moved inward again; substantially as described.

2. A dumping grate for the purposes described, comprising leaves coöperating to form a grate surface and mounted to rock in opposite directions, the one upwardly and the other downwardly, and means for rocking said leaves simultaneously, said means consisting of a dumping bar, a bell crank lever to which said bar is operatively connected, a depending arm extending downwardly from the axis of one of the rocking leaves, a depending arm extending downwardly from the forward part of the other leaf, said depending arms being jointed to said bell crank lever, the length of said parts being such that the parts are substantially locked in the dumping position until the operator pushes in on the said dumping bar; substantially as described.

3. A dumping grate for the purposes described, comprising leaves coöperating to form a grate surface and mounted to rock in opposite directions, the one upwardly and the other downwardly, and means for rocking said leaves simultaneously, said means consisting of a dumping bar, a bell crank lever carrying a wrist pin by which said dumping bar is connected to the bell crank lever, a depending arm extending downwardly from the axis of one of the rocking leaves, and a depending arm extending downwardly from the forward part of the other leaf, said depending arms being jointed to the said bell crank lever in such manner that when the grate is dumped the wrist pin and the axis of the upwardly rising leaf shall lie in a common plane below the intermediate joint; substantially as described.

4. In a furnace, the combination of a central magazine, a feed screw therein, an inclined grate surface down which the coal transported and lifted by said screw may fall, a horizontal grate surface at the base of said inclined grate surface, said horizontal grate surface comprising a plurality of leaves grouped in pairs, said leaves being arranged to swing about axes parallel with said screw conveyer, one swinging upwardly and the other downwardly when the grate is to be dumped, the upwardly swinging leaf being provided with a vertically depending arm attached near the axis thereof, and the other leaf being provided with a shorter depending arm attached at the forward part thereof, said arms being connected by a bell crank, and a horizontal pull bar having a lost motion connection with said bell crank and projecting outward through the side of the furnace and under the downwardly swinging leaf, said bell crank and its related parts being so proportioned that after the grate has been dumped the parts will be substantially locked in the dumping position until the operator pushes in again on the bar whereby the action is controlled.

5. A dumping grate for use in conjunction with a central magazine and a grate inclined toward the side of the fire box and over which coal delivered from said magazine may fall, said dumping grate comprising parallel supporting bars with cross pieces between and a plurality of pairs of leaves pivotally connected with said cross pieces and adapted to swing one upward and the other downward, the upwardly swinging leaf having a vertically depending arm attached near its pivotal support, and the other leaf having a shorter arm attached near its forward part, said arms being connected by a link bent at right-angles, a horizontal dumping bar, said link serving as a bell crank for pivotal connection with said dumping bar, this connection providing for lost motion when the bar is pulled to dump the grate, said dumping bar being arranged to extend horizontally below the downwardly swinging leaf and out through the wall of the fire box there to be accessible to the operator and the several pivotal points of said leaves and the link being positioned to cause said parts to lock in the dumping position until the pull bar is pushed inward again.

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

GEORGE H. THACHER, Jr.

Witnesses:
ARTHUR R. ST. JOHN,
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