Oct. 30, 1923. 1,472,427

J. D. CAMPBELL

FUEL HOPPER FOR AUTOMATIC STOKERS

Filed July 24. 1922 2 Sheets-Sheet 1

Fig. 1.

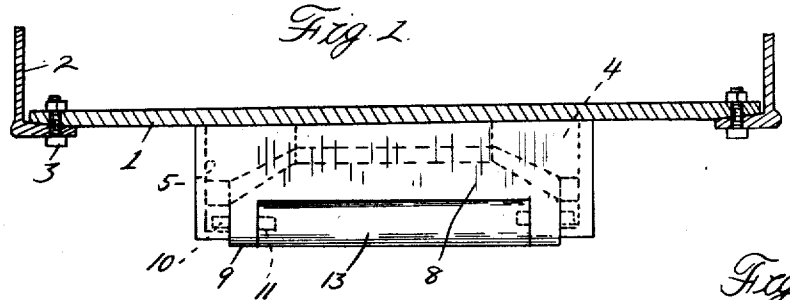
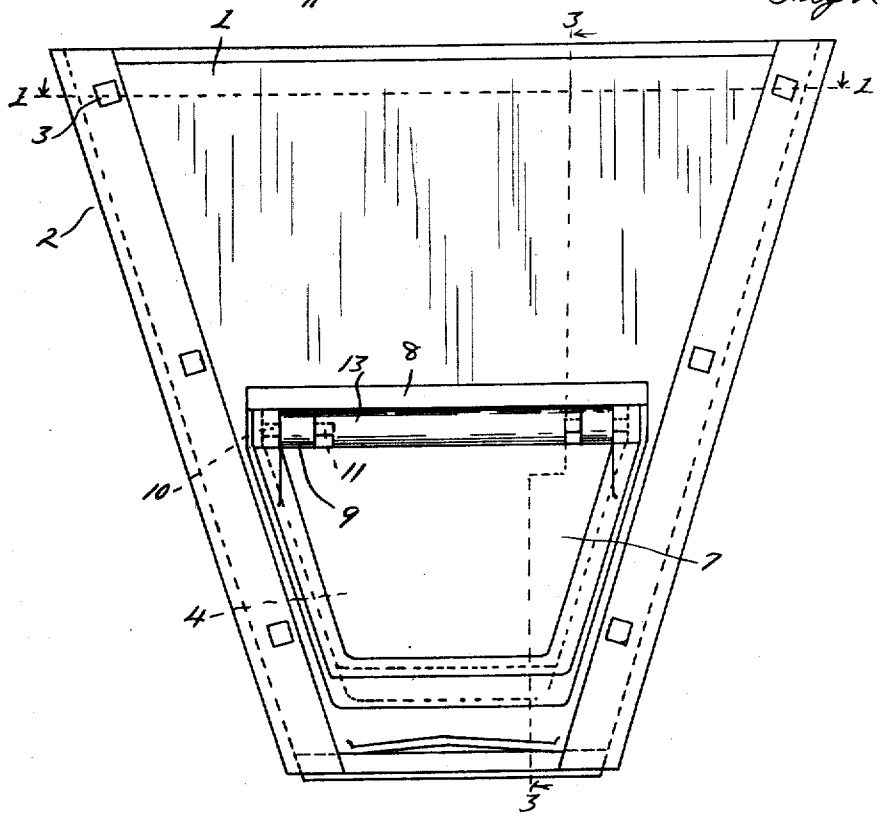


Fig. 2.



Inventor

John D. Campbell

By Whittemore, Hulbert, Whittemore, & Belknap

Attorneys

Oct. 30, 1923. 1,472,427

J. D. CAMPBELL

FUEL HOPPER FOR AUTOMATIC STOKERS

Filed July 24, 1922 2 Sheets-Sheet 2

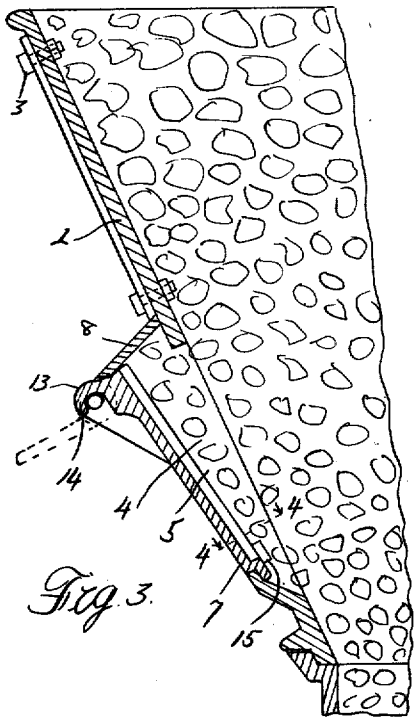


Fig. 3.

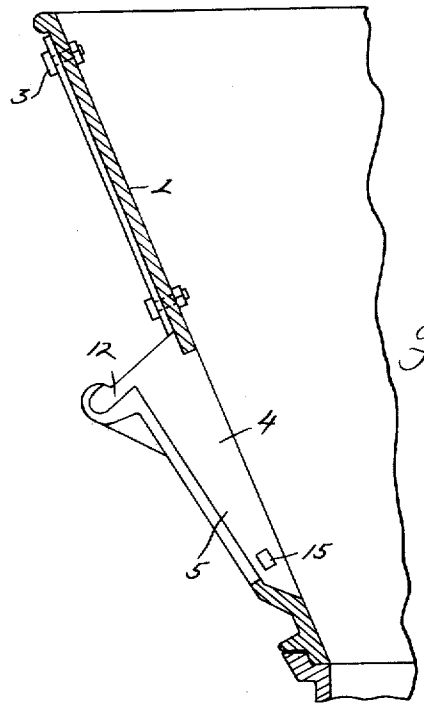


Fig. 8.

Fig. 4.

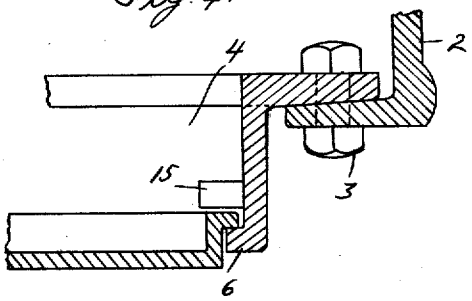
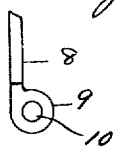


Fig. 7.



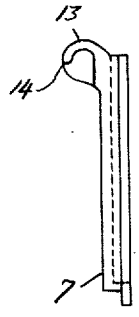
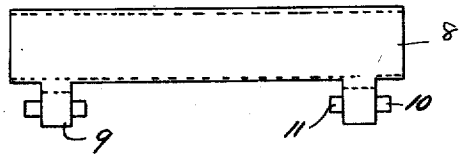


Fig. 5.

Fig. 6.



Inventor

John D. Campbell

By Whittemore, Hulbert, Whittemore, & Belknap

Attorneys

Patented Oct. 30, 1923. 1,472,427

UNITED STATES PATENT OFFICE.

JOHN D. CAMPBELL, OF DETROIT, MICHIGAN, ASSIGNOR TO DETROIT STOKER COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

FUEL HOPPER FOR AUTOMATIC STOKERS.

Application filed July 24, 1922. Serial No. 577,132.

To all whom it may concern:

Be it known that I, JOHN D. CAMPBELL, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Fuel Hoppers for Automatic Stokers, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to hoppers and more particularly to fuel hoppers for automatic stokers.

In delivering fuel to a furnace by means of an automatic stoker, the fuel hopper sometimes becomes clogged or choked and it is desirable to take care of such a contingency by provision of a normally closed opening in the hopper that will permit a slice bar or similar tool to be thrust into the contents of the hopper to loosen and break the same. It is further desirable in case the obstruction does not yield to such methods to provide for readily removing all or a portion of the fuel from the hopper.

It is the object of the invention to provide a fuel hopper for an automatic stoker having an opening provided with two closures, one of which is relatively small and hinged or otherwise adapted for quickly opening when it is desired to use a slice bar or the like while the other has the nature of a plate having no provision for adjustment but adapted to be completely removed either with or without the smaller closure when it is desired to provide a relatively large opening for removing fuel from the hopper.

It is an important feature of the invention that the opening controlled by the smaller closure is positioned so as to afford no egress to the fuel in the hopper.

The invention consists in the structural features and arrangement of parts hereinafter fully described.

In the drawings:—

Figure 1 is a sectional view of a front portion of the improved hopper, the plane of section being indicated at 1—1 in Figure 2.

Figure 2 is a front view of the same;

Figure 3 is a vertical sectional view on line 3—3 of Figure 2, showing in dash lines the opened position of the smaller closure;

Figure 4 is a cross section view on line 4—4 of Figure 3;

Figure 5 is an end view of the larger closure;

Figure 6 is a top view of the smaller closure;

Figure 7 is an end view of the same;

Figure 8 is a view similar to Figure 2 but omitting the closures.

In these views the reference character 1 designates a front wall of the fuel hopper of an automatic stoker and 2 the side walls of said hopper. The walls 1 and 2 may be rigidly connected in any suitable manner, bolts 3 being employed for that purpose in the illustrated embodiment of the invention. The walls 1, 2 and 3 are inclined, as is common practice in hopper construction. In the lower portion of the wall 1 there is formed an opening 4 of sufficient size to permit a ready removal of fuel from the hopper when said opening is clear. Along the side edges of said opening the wall 1 is formed with integral forwardly projecting ribs 5 which taper gradually toward said wall from top to bottom. The forward edges of said ribs are flanged toward each other, as indicated at 6 and seats are thus formed for the side margins of a removable plate 7 which normally closes the major portion of the opening 4. Said plate 7, however, is forwardly spaced from the upper edge of the opening 4 thus forming a comparatively small opening which when clear permits insertion into the hopper of a slice bar or other tool for the purpose of loosening or breaking up the fuel. This relatively small top opening is controlled by a closure 8 adapted to normally seat upon the top edges of the ribs 5, the forward edge of said closure being pivoted to permit adjustment to the dash line open position shown in Figure 3. It is to be observed that the location of the top opening is such that when the closure 8 is open, a tool may be inserted downwardly and inwardly to loosen any obstruction at the bottom of the hopper without allowing fuel to escape from the opening. The closure 8 is integrally formed adjacent its respective ends with forwardly projecting lugs 9 carrying aligned oppositely projecting pins 10, and pins 11 projecting toward each other, as is best seen in Figure 6. The pins 10 are adapted

to engage in grooves 12 formed in the opposing faces of the ribs 5 and inclining slightly upward toward the wall 1, said grooves being open at their ends adjacent said wall. Thus the closure 8 may be very quickly engaged in assembled relation with the hopper or removed from such relation by simply registering the pins 10 with the grooves 12 and shifting the pivotal edge of the closure forwardly or back. The pins 11 serve as supports for the plate 7, the latter having its upper margin cylindrically enlarged, as indicated at 13, and having the ends of this enlargement recessed to form hooks 14 adapted to engage over the pins 11. 15 designates a pair of lugs which project toward each other upon the lower portions of the ribs 5 and which are spaced sufficiently from the flanges 6 to engage in back of the lower portion of the plate 7 to hold said plate against the seats formed by said flanges.

Considering now the utility of the described construction, the relatively small top closure 8, owing to its hinged mounting, may be quickly swung to open position to permit introduction of a slice bar or the like into the hopper. In case it is found necessary to remove some of the fuel from the hopper the entire opening 4 may quickly be uncovered by raising the plate 7 out of its position of use. The hooked engagement of said plate with the pins 11 permit such a removal to be accomplished without delay or trouble. Also if desired the closure 8 may be at the same time removed to still further clear the opening 4.

Utilization of the smaller upper closure 8 as a mounting for the larger closure formed by the plate 7 simplifies manufacture and expedites assembly and furthermore said mounting utilizes the plate 7 to assist in maintaining the proper pivotal position of the closure 8.

What I claim as my invention is:—

1. A fuel hopper having an opening in its lower portion, a removable plate forming a closure for the major portion of said opening, and a coacting adjustable closure for the remaining portion of said opening providing for introduction of a tool to relieve choking.

2. A fuel hopper having an opening in its lower portion, a removable plate forming a closure for the major portion of said opening, and a relatively small closure normally extending between the upper edge of said plate and the body of the hopper and controlling a minor portion of the opening through which a tool may be introduced for relieving choking within the hopper.

3. A fuel hopper having an opening in its lower portion, a closure for a portion of said opening providing for introduction of a tool to relieve choking within the hopper, and a closure for the major portion of said opening supported by the first mentioned closure.

4. A fuel hopper having an opening in its lower portion and formed with ribs outwardly extending at opposite sides of said opening, a closure seating upon the top edges of said ribs and adjustable to permit introduction of a tool to relieve choking within the hopper, and a plate extending between the forward edge portions of said ribs and removable to provide for withdrawal of fuel from the hopper.

5. A fuel hopper having an opening in its lower portion, ribs projecting forwardly at opposite sides of said opening, said ribs being flanged toward each other along their forward edges, a plate seating freely against said flanges and forming a primary closure for said opening, and a small closure carried at the tops of said ribs and normally extending between said primary closure and the body of the hopper.

6. A fuel hopper having an opening in its lower portion, a pair of ribs extending outwardly from said hopper at opposite sides of said opening, said ribs having opposed seats in their upper portions, a closure seated upon the upper edges of said ribs and having pivot pins engaging said opposed seats, and a plate extending between the forward edge portions of said ribs and supported by the first mentioned closure.

7. A fuel hopper having a closure adjustable to control the upper portion of an opening providing for insertion of a tool to relieve choking, and a relatively large closure, controlling a major lower portion of said opening, providing for removal of fuel from the hopper.

8. A fuel hopper having a hinged closure with oppositely projecting pivot pins for mounting the same, said closure controlling an opening for insertion of a tool to relieve choking, pins projecting toward each other upon said closure, and a second closure hung upon the last named pins and controlling an opening for removal of fuel.

9. A fuel hopper having an opening in its lower portion, and a removable plate forming a closure for the major portion of said opening, the upper edge of said plate being spaced from the body of the hopper providing an opening through which a tool may be introduced for relieving choking within the hopper.

10. A fuel hopper having an opening in its lower portion formed with ribs outwardly extending at opposite sides of said opening, and a plate extending between the forward edge portions of said ribs and removable to provide for withdrawal of fuel from the hopper, the upper edge portion of said plate being spaced from the body of the hopper providing a down opening for introduction of a tool to relieve choking within the hopper.

11. A fuel hopper having an inclined wall and having a lower portion of said wall outwardly offset and spaced at its top from the main body of said wall to form a downward opening for introduction of a tool to relieve choking within the hopper, and a closure for said opening pivoted upon said outwardly offset portion.

12. A fuel hopper having an opening in its lower portion, the side edges of said opening being downwardly convergent, ribs outwardly projecting upon the hopper respectively adjacent said edges, and a closure carried by said ribs between the same and upwardly removable, the upper portion thereof being spaced from the body of the hopper to form a downward opening for introduction of a tool to relieve choking.

In testimony whereof I affix my signature.

JOHN D. CAMPBELL.

Witnesses:
MABEL A. WINKEL,
F. B. STRALE.