Oct. 22, 1935. W. G. DAVENPORT ET AL 2,018,636

HOPPER CONSTRUCTION

Filed March 22, 1934 2 Sheets-Sheet 1

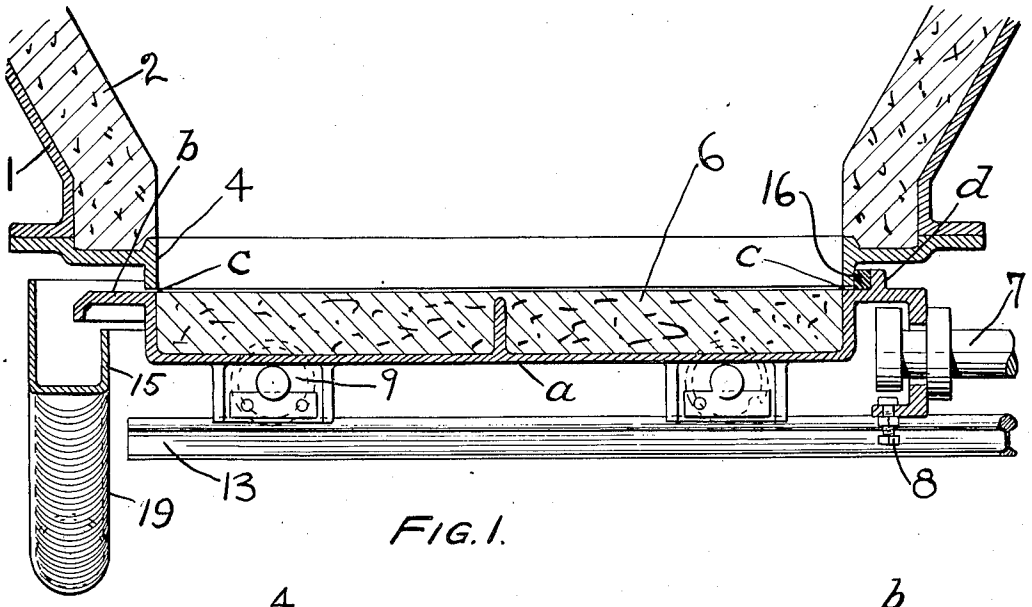


FIG. 1.

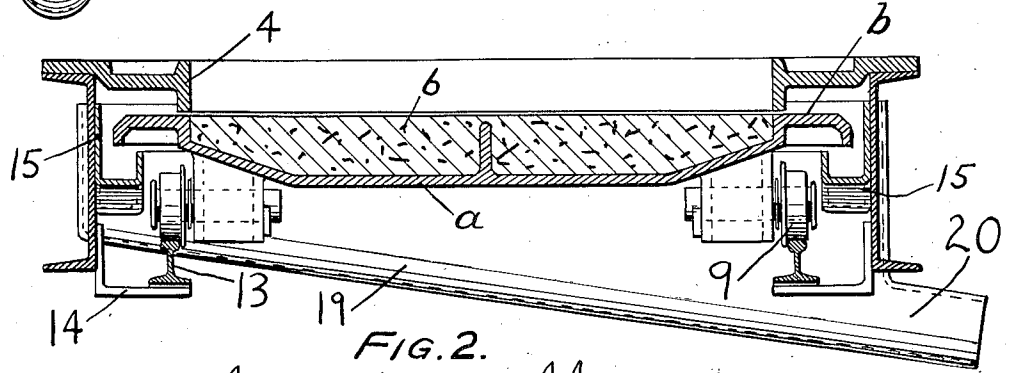


FIG. 2.

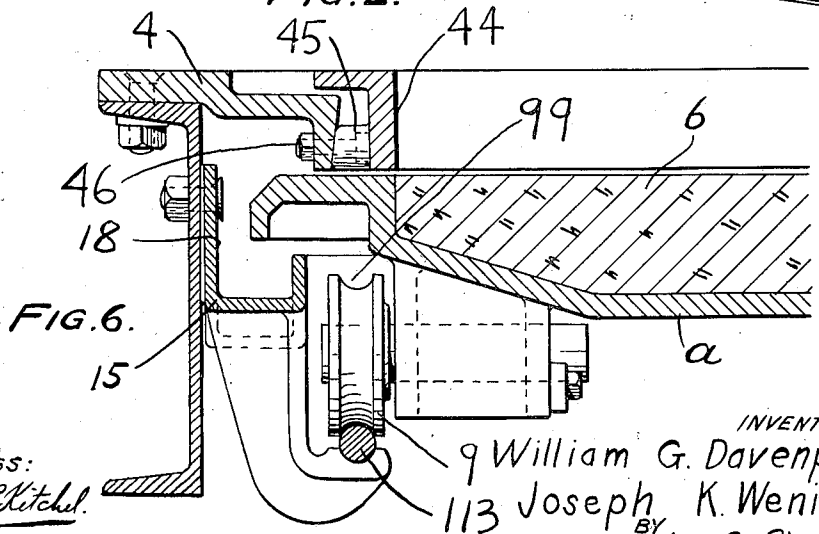


FIG. 6.

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HOPPER CONSTRUCTION

Filed March 22, 1934 2 Sheets-Sheet 2

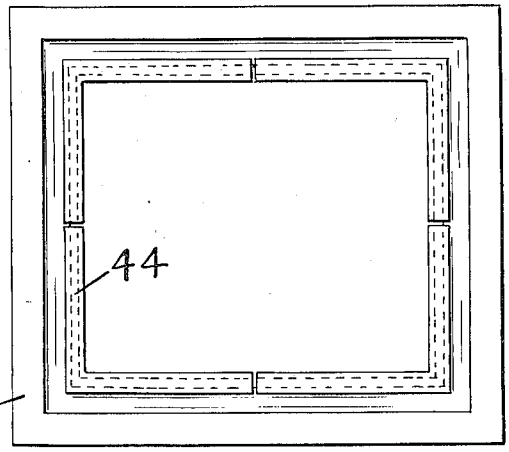


FIG. 5.

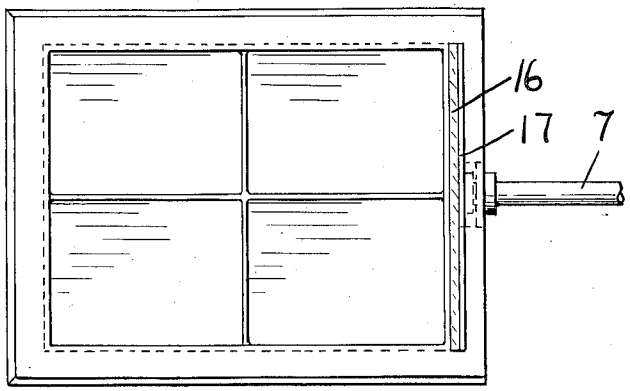


FIG. 3.

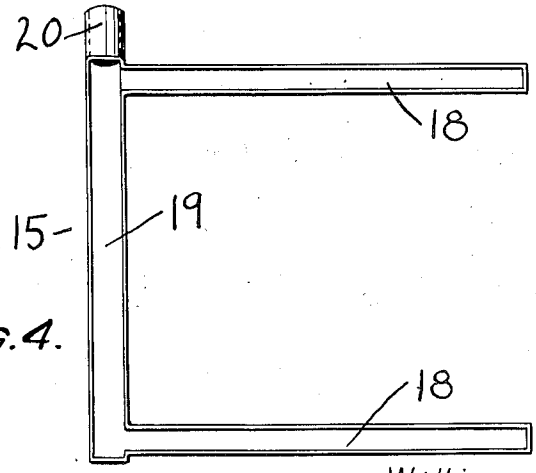


FIG. 4.

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UNITED STATES PATENT OFFICE

2,018,636

HOPPER CONSTRUCTION

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Application March 22, 1934, Serial No. 716,917

2 Claims. (Cl. 202—227)

The principal objects of the present invention are to provide ample drainage for quench water at the bottom of a hopper having a sliding gate so that accumulation of water on the gate structure is opposed, and to divorce the drainage provisions from the gate structure so that the latter is relieved of the burden of their weight.

Other objects of the invention will appear from the following description at the end of which the invention will be claimed.

Generally stated, the invention comprises an open top drain gutter arranged around three sides of the opening in the frame at the bottom of the hopper and a generally flat marginal portion spaced from the frame and arranged at three sides of the gate and flush with the surface thereof and over all three of which water freely flows into the open top drain gutter; there being on the fourth and leading side of the gate an upstanding rib adapted to abut on the outer face of the fourth side of the frame to provide a water seal and to operate as a stop for the gate.

The invention also comprises the improvements to be presently described and finally claimed.

In the following description reference will be made to the accompanying drawings forming part hereof and in which,

Figure 1 is a longitudinal cross section of a structure embodying features of the invention.

Figure 2 is a transverse cross sectional view of the same.

Figure 3 is a top or plan view drawn to a reduced scale.

Figure 4 is a top or plan view of the drainage gutter.

Figure 5 is a top or plan view illustrating a modification, and

Figure 6 is a transverse sectional view illustrating a modification and also the structure shown in Figure 5.

Referring to the drawings, 1 indicates a metal shell of the lower part of a hopper having the refractory lining 2. 4 indicates a gate frame defining a rectangular opening through which the contents of the hopper is discharged. *a* indicates a rectangular gate slidable in respect to the frame to cover and uncover the opening. The gate *a* is slidable toward the right in Figure 1 and for that purpose it is shown as mounted upon wheels 9 adapted to ride upon rails 13 supported by brackets 14. As shown the wheels are flanged and the rails are of T-form. In Figure 6 the rails 113 are shown as of circular cross section and the wheels 9 are grooved at 99. There is an open top drain gutter 18 and 19 arranged around three sides of the opening in the frame and it is connected with an offtake 20. *b* indicates a generally flat marginal portion spaced from the frame as indicated at *c* and it is arranged at three sides of the gate and its surface is flush with the surface of the gate so that water poured into the hopper for the purpose of quenching hot ashes or for any other purpose, flows freely and unrestrictedly over three sides of the gate into the three parts of the drain gutter. In this way there is afforded ample drainage for water so that the latter may not accumulate on the gate. On the third side of the gate there is an upstanding rib *d* adapted to abut on the outer face of the fourth side of the frame to provide a stop as well as a water seal. For the latter purpose packing 16 may be supplied. As shown the gate is faced with refractory material 6. The rib *d* is provided at the leading edge of the gate and means are indicated at 7 for pulling the gate toward the right in Figure 1. 44, Figs. 5 and 6, indicates replaceable frame aprons comprising a number of angle shaped corner pieces provided with lugs 45 for the reception of fastenings 46 so that they are detachable. At 8 there is indicated a means for giving vertical adjustment to the pull rod.

It will be obvious to those skilled in the art to which the invention relates that modifications may be made in details of construction and arrangement and in matters of mere form without departing from the spirit of the invention which is not limited in respect to such matters or otherwise than as the prior art and the appended claims may require.

We claim:

1. In a hopper construction having a gate frame arranged at the bottom of the hopper and defining a rectangular opening and a rectangular gate slidable in respect to the frame to cover and uncover the opening, means for draining quench water from the hopper and comprising the combination of, an open top drain gutter fixedly arranged around three sides of the opening, a generally flat marginal portion of the gate spaced from the frame and arranged at three sides of the gate and flush with the upper surface thereof and over all three of which water may freely flow into the drain gutter, there being on the fourth side of the gate an upstanding rib adapted to abut on the outer face of the fourth side of the frame to provide a positive water seal.

2. In a hopper construction having a gate frame arranged at the bottom of the hopper and defining a rectangular opening and a rectangular

gate slidable in respect to the frame to cover and uncover the opening, means for draining quench water from the hopper and comprising the combination of, an open top drain gutter fixedly arranged around three sides of the opening, a generally flat marginal portion of the gate spaced from the frame and arranged at three sides of the gate and flush with the upper surface thereof and over all three of which water may freely flow into the drain gutter, there being on the fourth side of the gate an upstanding rib adapted to abut on the outer face of the fourth side of the frame to provide a positive water seal, and there being a detachable apron applied to the inside of the frame and stopping short of the marginal portion of the gate.

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