F. L. HITCHCOCK

FEEDING DEVICE FOR GLASS FURNACES

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To all whom it may concern:

Be it known that I, FORREST L. HITCHCOCK, a citizen of the United States, and a resident of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Feeding Device for Glass Furnaces; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention relates to an overhead feeding device for glass furnaces or the like, wherein the material to be supplied to the furnace, such as sand, or silicate or a mixed batch, may be introduced therein without opening a door or port, as has heretofore been done.

Prior to this invention it has been customary to feed the furnace with sand through a door or opening in the wall, which necessitated the opening and closing thereof; and one of the most modern means comprises a hopper positioned on the roof or near the top of the building having a pipe extending to the adjacent top of the furnace with a hanging funnel-like structure suspended thereon in position to be placed in an opening provided therefor when the sand is discharged from the hopper. A door or closure is positioned on the top of the furnace for opening and closing the port; and when it is desired to discharge sand therein, the top cover is removed and the funnel-like structure extended into the opening under intense heat. This arrangement not only permits the escape of heat and gases from the furnace through the top opening, but is difficult and dangerous to handle, owing to the tremendous heat of the furnace, and it also consumes considerable time in making each discharge therein.

The principal object of this invention is to arrange a feeding device for the furnace, which is at all times connected therewith so that the sand may be discharged therein by simply pulling a cable and opening a gate valve.

Another feature of the invention comprises a means for maintaining the feed pipe relatively cool and preventing the intense heat of the furnace from passing upwardly to the roof of the building or the sand hopper, which is accomplished by means of a suitable water jacket positioned about the discharge end of the feed pipe.

Another feature of the invention resides in the gate valves for controlling the passage of sand from the hopper to the furnace, shutting off the heat and preventing its passage upwardly through the discharge pipe, and also measuring the quantity of sand discharged therein.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Fig. 1 is a central vertical cross section through the top portion of the glass furnace and the feed pipe. Fig. 2 shows an enlarged side elevation of one of the gate valves.

In the drawings there is shown a furnace 10 having a top 11 of the usual construction provided with an opening 12 through which sand is discharged. Communicating with said opening and extending upwardly therefrom, there is a discharge pipe 13 which is surrounded by a water jacket 14 extending upwardly a short distance from the top of the furnace. The water jacket has connected therewith an inlet water pipe 15 and an outlet water pipe 16, so that running water at all times passes through the water jacket, surrounding and cooling the discharge pipe 13.

The pipe 13 continues upwardly to a hopper 17 which is positioned near the top of the building, or on the roof thereof, and is provided intermediate of the water jacket and hopper with a plurality of gate valves. One of the gate valves is positioned immediately above the water jacket so as not only prevent sand from passing into the furnace when closed, but principally to prevent the heat and gases from passing upwardly through the pipe. Another gate valve is positioned at a suitable distance from the first mentioned valve for the purpose of controlling the introduction of sand into the furnace.

The discharge pipe is separated into sections by the valves, said sections being secured together by the valve connections 18 comprising the usual collars bolted about the pipe and holding the sections rigidly in alignment. The valve connections are formed with the usual gate valve seat or
closure 19, in which the gate valves 20 are slidable. The gate valve 20 is provided with an outwardly extending ear 21 to which the link 22 is connected, said link being pivotally connected at its opposite end with a bell crank lever 23 which is pivoted on a supporting bracket 24 mounted on the pipe. The opposite end of the bell crank 23 is connected with a rod or cable 25 which extends down to a position within reach of the operator. In opening the valve, the operator pulls upon the valve or cable 25, causing the bell crank to turn about its pivotal mounting and raise the link 22 which elevates the gate valve 20 in the seat 19, which valve is then opened. The valve may then be closed by either releasing the cable, permitting the valve to close by gravity, or with the aid of a suitable spring; or if the rod 25 is used, the valve may be manually forced back into closed position, by pushing thereon.

The invention claimed is:

1. A feeding device for glass furnaces and the like having a permanent opening therein, comprising a feed pipe extending downwardly in position to be at all times in constant communication with said opening, means for supplying material to said pipe for discharging into said furnace, a sliding gate valve mounted on said pipe so as to extend therein and close the same, a bell crank lever pivotally mounted on said pipe, a link connecting said bell crank lever and said gate valve, and means connected with said bell crank lever and extending to within reach of the operator for permitting the same to be operated so as to open and close said valve.

2. A feeding device for glass furnaces and the like having a permanent opening therein, comprising a feed pipe extending downwardly in position to be at all times in constant communication with said opening, means for supplying material to said pipe for discharging into said furnace, a sliding gate valve mounted on said pipe so as to extend therein and close the same, a bell crank lever pivotally mounted on said pipe, a link connecting said bell crank lever and said gate valve, means connected with said bell crank lever and extending to within reach of the operator for permitting the same to be operated so as to open and close said valve, and a water jacket mounted in connection with said pipe adjacent said furnace for cooling the same.

In witness whereof, I have hereunto affixed my signature.

FORREST L. HITCHCOCK.