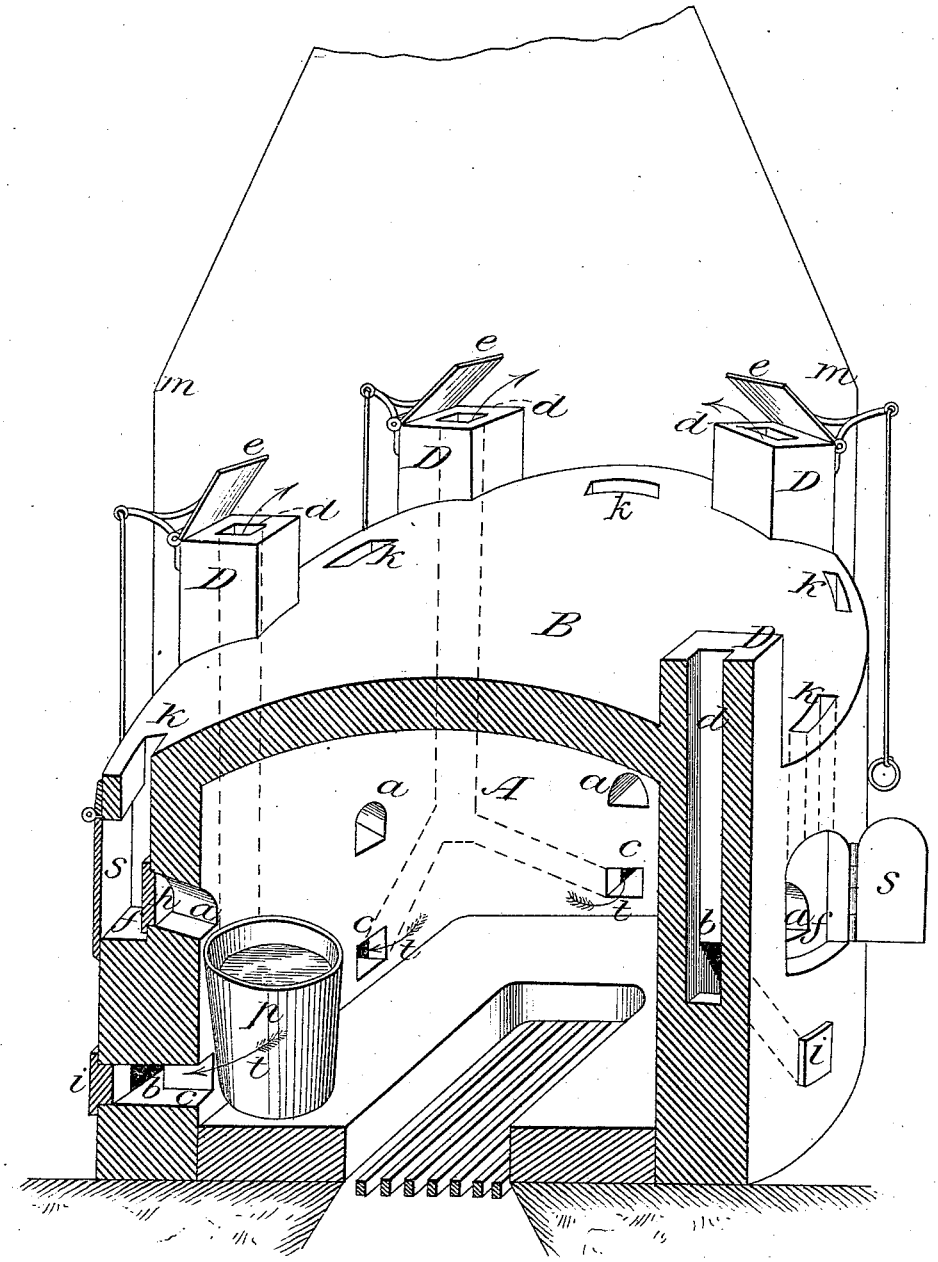
J. KRESS.

Glass Furnace.

No. 213,289. Patented Mar. 18, 1879.



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JOHN KRESS, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN GLASS-FURNACES.

Specification forming part of Letters Patent No. **213,289**, dated March 18, 1879; application filed December 13, 1878.

To all whom it may concern:

Be it known that I, JOHN KRESS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have made an Improvement in Furnaces for Melting Glass, which will be readily understood from the following description, taken in connection with the accompanying drawing, representing so much of my glass-melting furnace as is necessary to illustrate my invention.

The invention consists in the construction and arrangement of such a system of flues, dampers, doors, and stoppers, in combination with an open-pot furnace, as that a greater degree of heat may be generated in a given time and the "melt" more expeditiously made by a less and poorer quality of fuel than is done by any glass-melting furnace heretofore in use.

The construction of this furnace is such as that the flame and other volatile heated products of combustion may be regulated with respect to the pots, so as to act with equal intensity on and around all the pots at once, or brought more particularly in contact with a single pot or pair of pots, as the circumstances of the case may require.

I construct my improved furnace in any of the well-known forms, and provide the same with a smoke-stack, fire-grate, large door for the entry of the pots, a bench around the interior upon which the open-mouthed pots are arranged in a row against the inside wall of the furnace, and so that each pot shall be immediately under its appropriate working-hole, and with a stoke or "tease" hole and a radial "cloot"-hole opposite the breast of each pot, which holes are common to all properly-constructed glass-furnaces, and extend entirely through the walls, for the purpose of enabling the pots to be moved, adjusted, and set; and in addition thereto I use most of the appliances and appendages incident to contrivances of this character.

In order to accomplish the object of my invention, I construct the furnace A with a series of obliquely-arranged flues, *b*, each extending from one side of its respective cloot-hole *c*, so that one or a pair of such oblique flues shall communicate with large vertical flues *d*, built within the walls of the furnace, extending above the cap or dome B, terminating in the stack, constituting therein low chimneys D, each surmounted by a hinged lid or tightly-fitting damper, *e*, that, by proper appliances, may be opened or closed by the person in charge of the furnace.

The working-holes *a*, or those through which the glass-making material is introduced, and when melted gathered from the pots, terminate, exteriorly, each in a larged arched recess, *f*, provided with outwardly-swinging doors *s* hinged thereto; and, in addition, the working-holes *a* are each provided with a loose and readily-removable clay stopper, *h*. From each large arched recess *f* a short flue, *k*, extends upwardly, opening directly into the smoke-stack, represented by the outlines *m m* rising beyond the dome B.

As thus constructed the furnace is complete, and if the stoppers are out of the working-holes *a*, and the dampers *e* on the chimneys let down, so as to close the long vertical flues *d*, and the cloot-holes *c* closed at their outer ends by a refractory brick or plug, *i*, when a fire is kindled within the furnace, the flame of the fuel will naturally rise upward to the dome, and, from thence be deflected downwardly, passing directly over the open-mouthed pots *p*, escape through the several working-holes *a* into the arched recesses *f*, ascending through the short flues leading therefrom into the smoke-stack. Now, if the dampers *e* on the several chimneys D be raised, and the working-holes *a* closed, each by means of its appropriate clay stopper *i*, and the iron doors *s* of the arched recesses so shut as to cut off or prevent the flow or draft of air from entering the stack in that direction, the flame and greatly-heated products of combustion will play about the lower portion of the pots, and passing entirely around them enter the cloot-holes as indicated by the arrows *t*, and traveling upward by the oblique channels continue onward through the chimneys, and thus escape into the smoke-stack.

If, at any time, during the melting process one or more pots should require less heat than the others by reason of its contents becoming soonest melted or refined, and to save such pot or pots from the consequences of overheat, the dampers of the chimneys nearest such

pot or pots should be closed, and the working-holes leading thereto unstopped, by which the heat in their immediate vicinity will be modified, changed, and so tempered as to be less severe, held back, or maintained at that degree until the material in the other pots has been brought to the same state or condition. Thus, by simply changing the direction and varying the currents of flame, the several pots may be heated, and their contents melted uniformly and alike in a much more expeditious and shorter time than by the old construction of furnace.

When the "batch" or compound mixture within the pots has been brought to a proper state of fusion the dampers may be closed, the iron doors opened, and the stoppers removed from the working-holes, so that the work of gathering the glass or recharging the pots may be carried on in the usual manner.

Having described my improved furnace and its mode of operation, I claim—

1. A glass-melting furnace constructed with a series of oblique flues, *b*, each extending from one side of its respective cloot-hole *c*, so that one of a pair of such oblique flues shall communicate with a large vertical flue, *d*, in combination with the lids or dampers *e* on top of such vertical flues, substantially as shown, for the purposes set forth.

2. A glass-melting furnace constructed with a series of oblique flues, *b*, extending from the cloot-holes *c*, and communicating with large vertical flues *d*, each surmounted by a lid or damper, *e*, in combination with the upright flues *k*, arched recesses *f*, and their respective doors *s*, to the end that the direction of the flame and other products of combustion may be changed and regulated, substantially in the manner and for the purposes set forth.

JOHN KRESS.

Witnesses:
JOSIAH W. ELLS,
OLIVER HOLT.