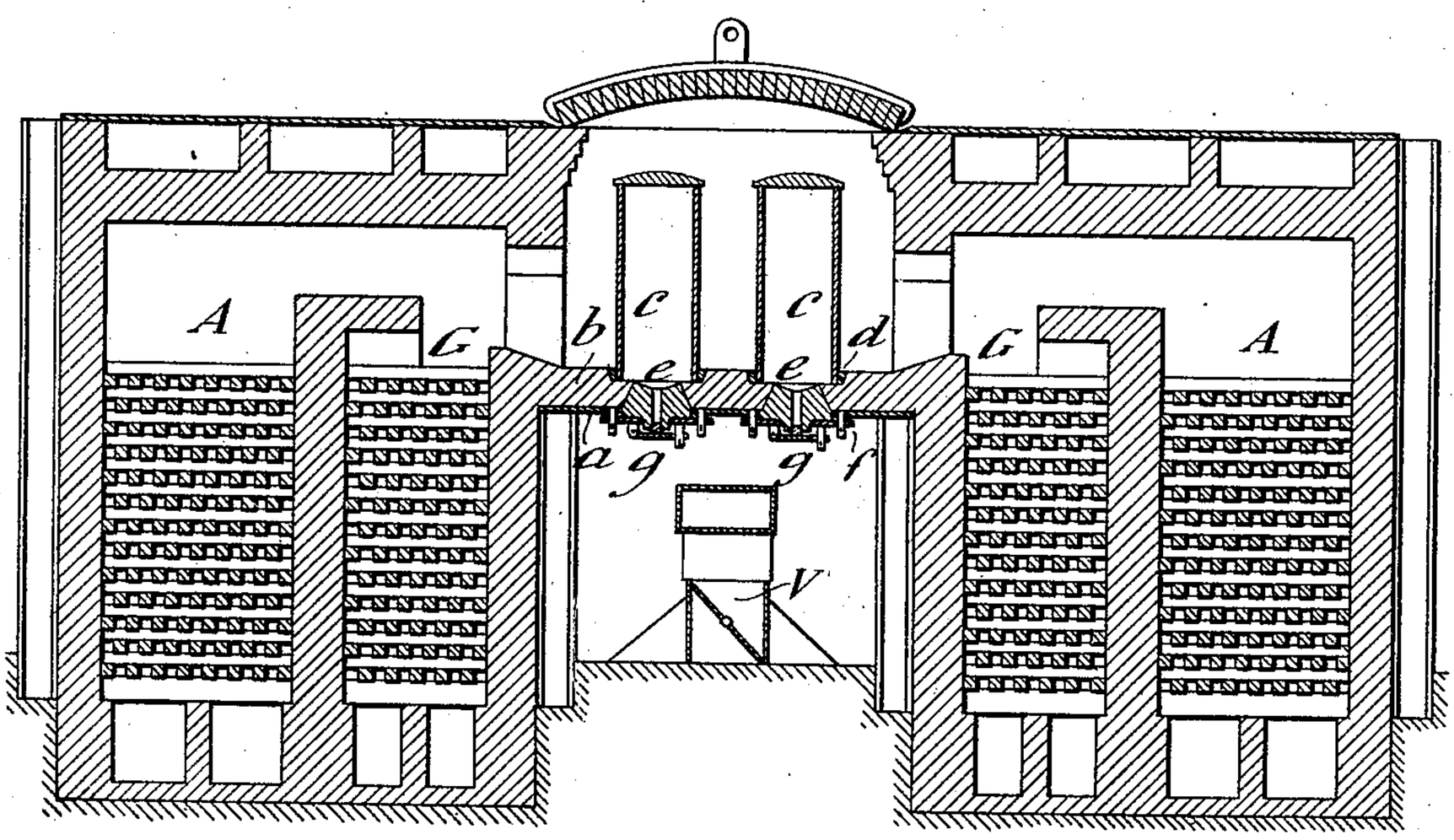
No. 668,803. Patented Feb. 26, 1901.

A. REYNOLDS.

CRUCIBLE AND CRUCIBLE FURNACE.

(Application filed Feb. 15, 1900.)

(No Model.)



WITNESSES

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UNITED STATES PATENT OFFICE.

ALLEYNE REYNOLDS, OF SHEFFIELD, ENGLAND.

CRUCIBLE AND CRUCIBLE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 668,803, dated February 26, 1901.

Application filed February 15, 1900. Serial No. 5,293. (No model.)

To all whom it may concern:

Be it known that I, ALLEYNE REYNOLDS, metallurgical engineer, a citizen of England, residing at Riverdale, Sheffield, in the county of York, England, have invented certain new and useful Improvements in Crucibles and Crucible-Furnaces, (for which I have applied for a patent in Great Britain, dated January 16, 1900, No. 1,004,) of which the following is a specification.

Usually crucibles, with their contents, have to be removed from the furnace, and therefore they are made of comparatively small size and their use is costly.

My invention has for its object means for simplifying crucible operations and reducing their cost by constructing crucibles and crucible-furnaces in such a way that the crucibles are of a cheap construction and can be of large size and instead of having to be removed for discharging their contents have these contents discharged by tapping, as from a cupola or hearth. For this purpose I construct the furnace and crucible as I shall describe, referring to the accompanying drawing, in which the figure is a longitudinal section of a furnace having its hearth provided with crucibles in accordance with my invention.

a is a supporting-plate for the hearth of the furnace, which should have a large free air-space below it, and *b* is a hearth of refractory materials supported on this plate, this hearth having a sunk circular recess to receive the end of a crucible or several of these.

Each crucible *c* is made of refractory material in the form of a tube open at both ends. One of the ends is inserted in the recess of the hearth, which is somewhat larger in diameter, so that after the insertion of the crucible it can be packed around with refractory material *d*, making a sound joint. Below the crucible the plate *a* has a hole through it, in which is preferably inserted a refractory plug *e*, formed with a tapping-hole through it and held in place by a plate *f*, secured by bolts and cotters or otherwise to the plate *a*. The crucible *c* may be of any convenient height and may be provided with a cover. The crucible *c* is charged with the materials to be melted and has the tap-hole plugged with refractory materials secured by a plate *g* and cotter or otherwise. It is heated to a high temperature, and when the contents are fused the tap-hole is opened and the contents are run out by the tapping-hole into a ladle or directly into molds. There may be a number of crucibles set on the same hearth, all the tapping-holes being accessible from the air-space below the plate *a*, as shown in the drawing. In the figure I show an ordinary regenerative gas-furnace having alternately-acting regenerative chambers A for air and G for gas, the currents being reversed in the usual way by the valve V.

Having thus described the nature of my invention and the best means I know of carrying the same into practical effect, I claim—

1. A crucible-furnace having a refractory hearth with a recess therein, an open-bottom crucible seated in the recess, a removable plug in the hearth below the recess and having a tap-hole through it, and a closure for the lower end of the tap-hole; substantially as described.

2. A crucible-furnace having a refractory hearth, a vertically-extending tubular crucible with an open lower end seated on the hearth, a removable refractory plug extending through the hearth beneath the crucible and having a tapping-hole, a supporting-plate for the plug, and a closure for the lower end of the tapping-hole; substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALLEYNE REYNOLDS.

Witnesses:

OLIVER IMRAY,

GERALD L. SMITH.