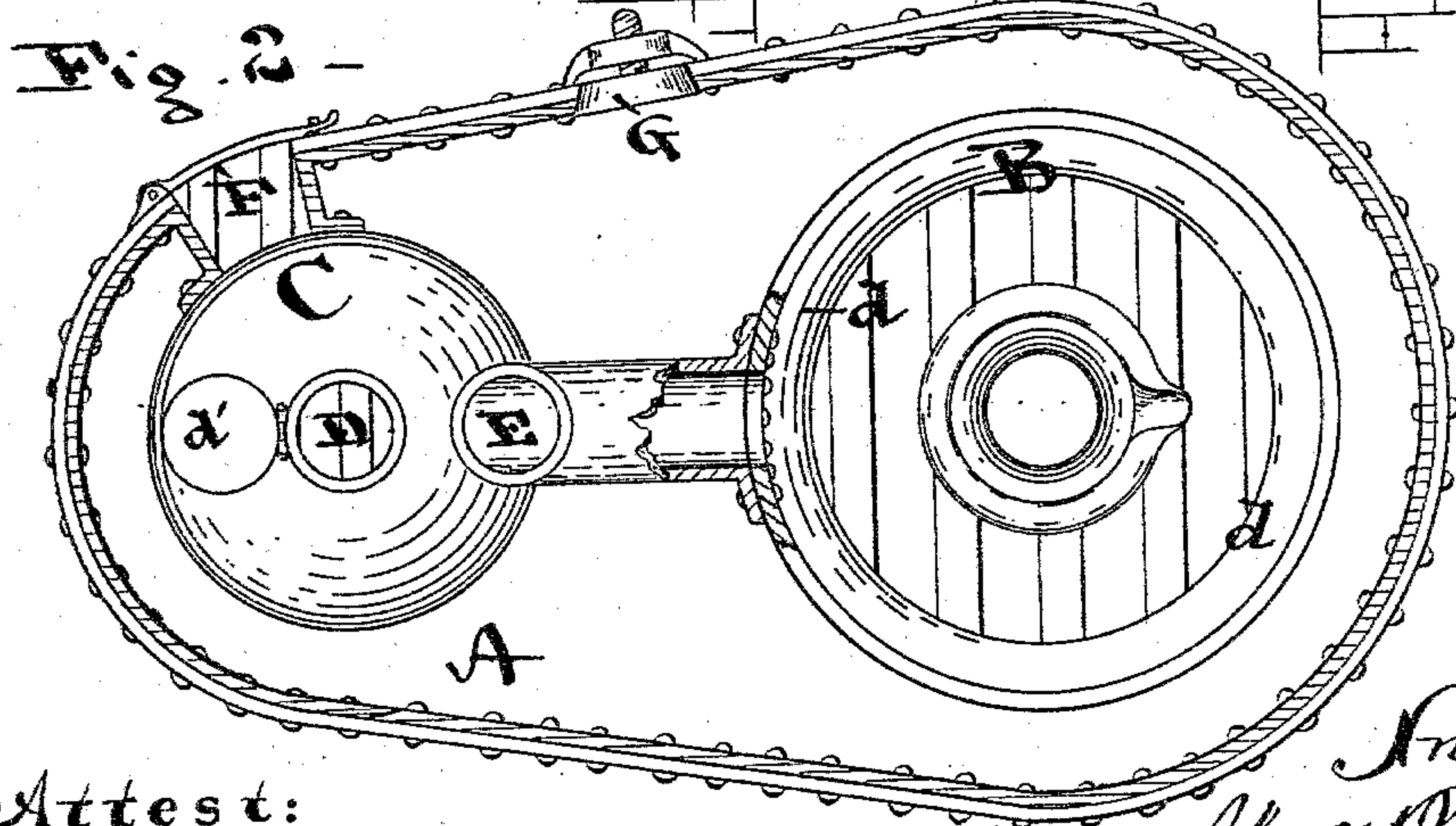
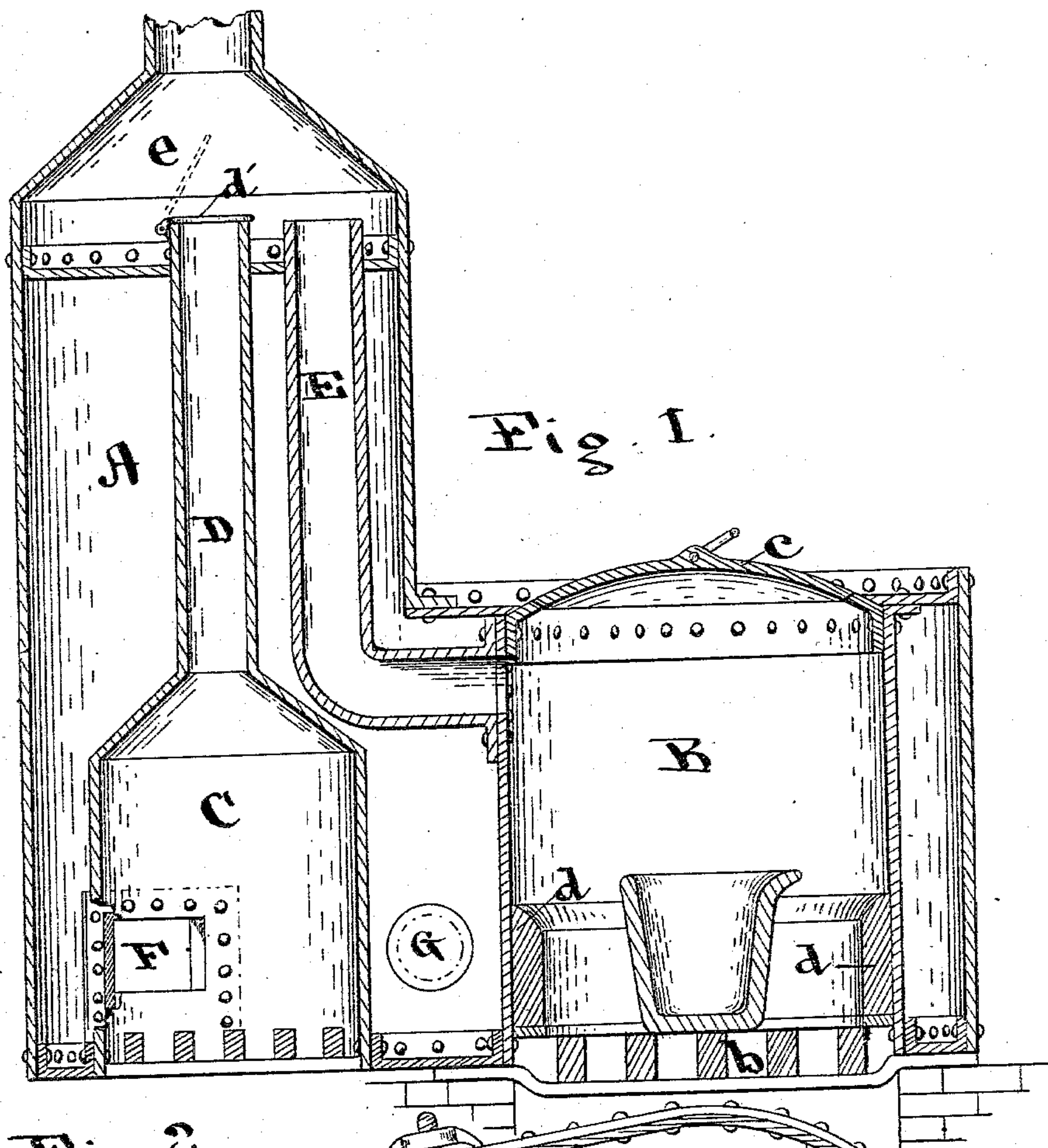


(No Model.)

A. RIEGLER.

COMBINED METALLURGICAL FURNACE AND WATER HEATER.
No. 280,955.

Patented July 10, 1883.



Attest:

W. H. Rainey
W. Hoffmann

Inventor:

Alex. Riegler,
by L. H. Horan,
Attorney.

UNITED STATES PATENT OFFICE.

ALEXANDER RIEGLER, OF CINCINNATI, OHIO.

COMBINED METALLURGICAL FURNACE AND WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 280,955, dated July 10, 1883.

Application filed May 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER RIEGLER, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful
5 Improvements in a Metallurgical Furnace and Water-Heater Combined, of which the following is a specification.

My invention relates to crucible-furnaces, its object being to combine the same with a
10 steam-boiler in such a manner as to utilize the surplus heat of the crucible-furnace in generating steam.

I have selected to illustrate my invention a furnace for melting brass, such as is commonly
15 used in brass-foundries, combined with an ordinary type of vertical flue-boilers, constituting in their combined form a novel apparatus, in which the otherwise waste heat evolved in smelting generates the steam used
20 in driving the machinery usually employed in such establishments. The same or a substantially similar apparatus can be employed in gold and silver smiths' establishments.

In the drawings accompanying and illustrating this specification, Figure 1 is a vertical section taken through the apparatus longitudinally, showing both the crucible-furnace proper and the steam-boiler with the flue connecting them; and Fig. 2 is a plan section taken
25 through both the above-mentioned parts of the apparatus.

Referring to the drawings in aid of the description, A designates the boiler proper, and B the crucible-furnace, both being united in
35 this case in one apparatus. The boiler A is of the ordinary type of upright boilers, having a circular internal fire-box, C, and any convenient number of flues D, (only one being shown in the drawings.) The boiler-shell
40 is extended laterally at the lower part to inclose and form a water-jacket around the circular fire-box or metallurgical furnace B, which is provided with grate-bars *b* at the bottom and a removable cover, *c*, at the top, being
45 otherwise open above and below. The interior shell of the furnace B is preferably protected by a lining, *d*, of fire-brick or tile, which may be varied in height, as desired, above the grate-bars. The gaseous products of combus-

tion are conducted from the furnace B through 50 the boiler A by one or more flues, E, to the smoke-arch *e*, above the boiler.

The fire-box C is auxiliary merely, and is intended for use only when an extra amount of steam is to be carried; but in practice I 55 have rarely found it necessary to use it, and it might be omitted entirely without departing from the spirit of my invention. When embodied in the construction, the flue (or flues) D is provided with a damper, *d'*, which is ordinarily kept closed. The ordinary fire-door, F, and man-hole G are provided for the ordinary uses, and the boiler is furnished with all usual appurtenances—such as steam-gage, safety-valve, &c.—which I have not considered 65 necessary to illustrate in the drawings.

It will be obvious that two or any convenient number of crucible-furnaces may be thus combined with a single boiler, a very convenient arrangement being four of such water-jacketed furnaces arranged equidistantly about 70 a central boiler, having suitable angle-irons at the adjacent sides, forming the corners, and stay-bolts extending through the boiler between opposite angle-irons to secure strength. 75

It will also be obvious that the principle of my invention can be applied to a horizontal boiler of the locomotive type, in which the crucible-furnace shall constitute the fire-box; but for manifest reasons I do not regard such 80 construction so desirable as that described.

Having described my invention, I claim and desire to secure by Letters Patent—

The apparatus shown and described, embodying in a common shell or water-casing a 85 crucible-furnace, B, a vertical flue-boiler, A, provided with its fire-box C, and a flue, E, arranged within the common water-space, and connecting the furnace B with the uptake of the boiler, substantially as set forth. 90

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

ALEXANDER RIEGLER.

Witnesses:

L. M. HOSEA,
W. HOFFMAN.