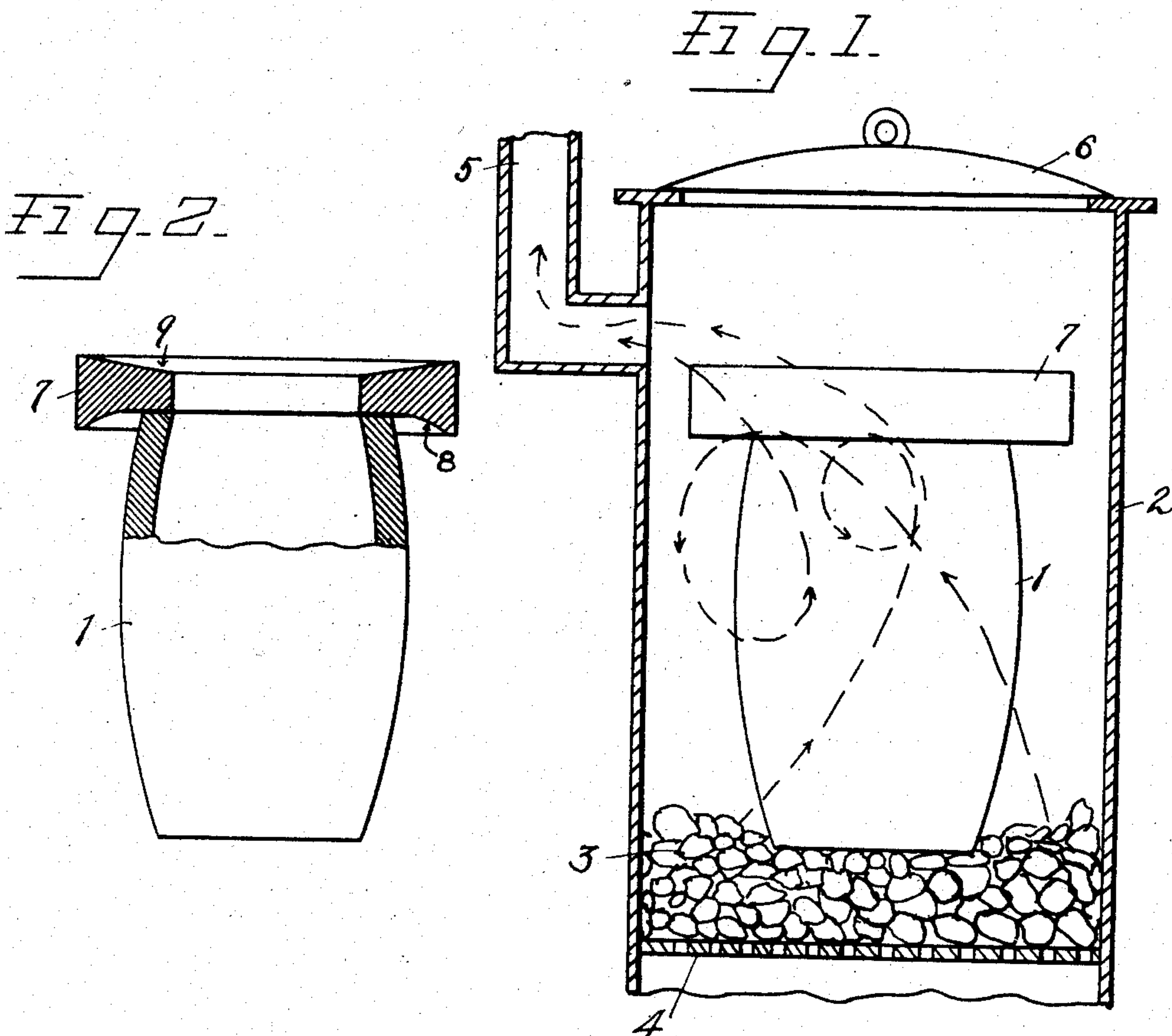
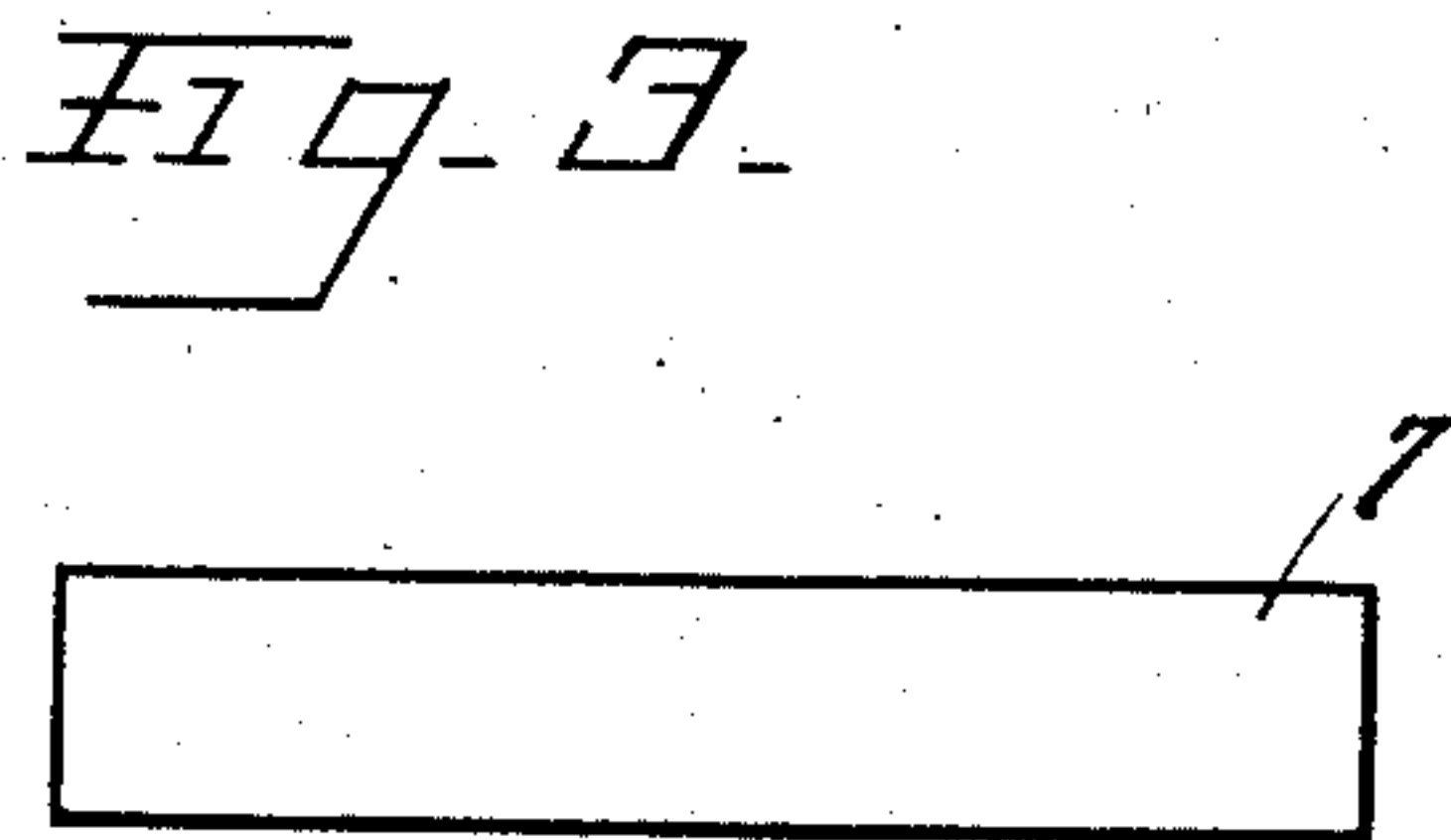
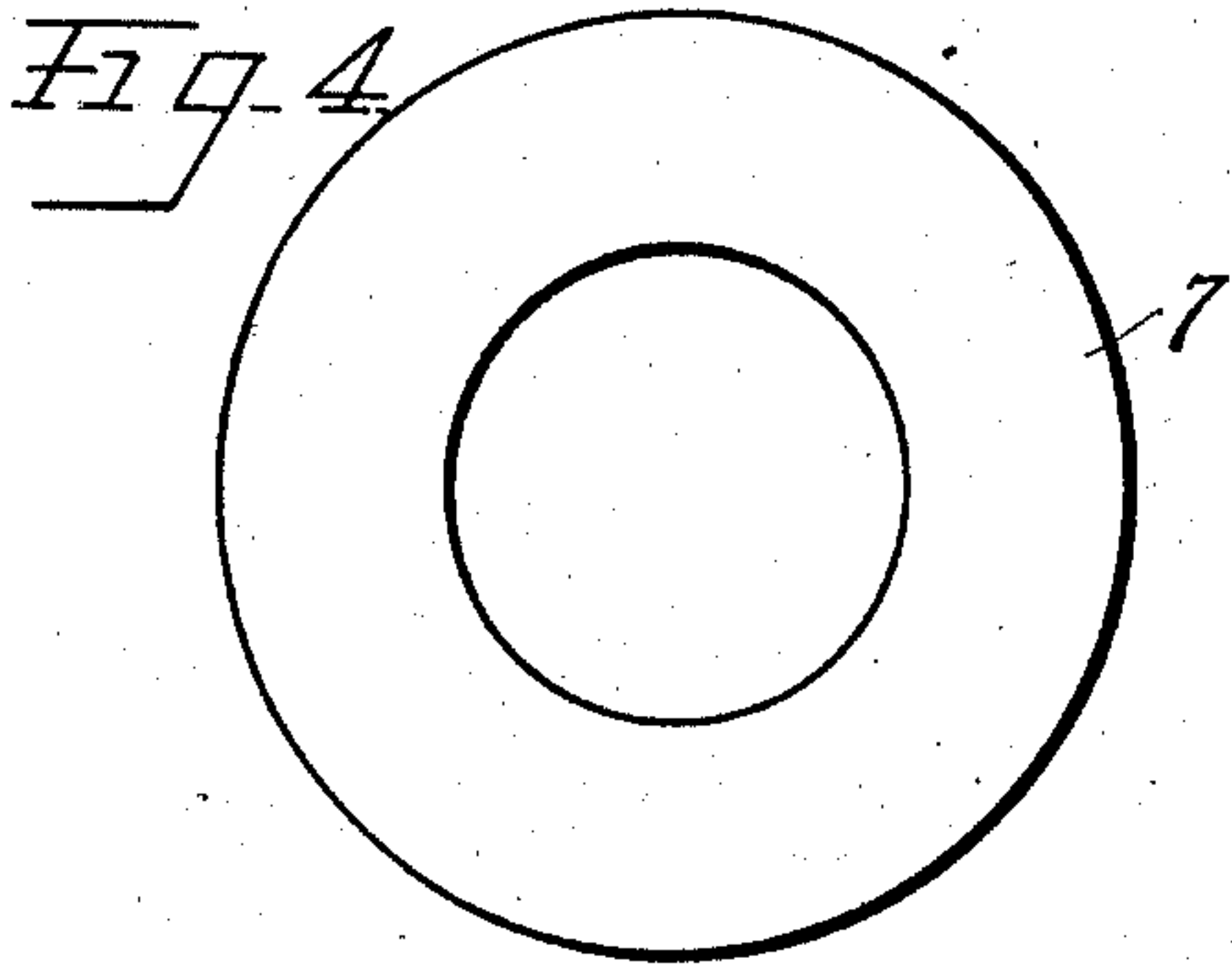


No. 864,425.

PATENTED AUG. 27, 1907.

S. KNIGHT.
METAL MELTING.

APPLICATION FILED APR. 20, 1907.



WITNESSES

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METAL-MELTING.

No. 864,425.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed April 20, 1907. Serial No. 369,286.

To all whom it may concern:

Be it known that I, SAMUEL KNIGHT, a citizen of the Dominion of Canada, residing at Chicago, Cook county, Illinois, United States of America, have invented new and useful Improvements in Metal-Melting, of which the following is a specification.

My invention relates to improvements in apparatus for melting substances, particularly metals such as brass, aluminium, copper and alloys.

10 It is customary in certain classes of work to place the metal to be melted in a crucible within a furnace heated by coal, coke or other fuel. These crucibles are usually formed of graphite, clay or other fire resisting materials or mixtures. The cost of fuel and the cost of crucibles constitute very large proportions of the total cost of operation.

It is my main object to reduce the amount of fuel necessary for producing fusion.

20 Another object is to prolong the life of the crucibles. Another object is to reduce the time required for heating and to make the action more uniform.

All these objects are obtained in a simple manner by the use of my invention as illustrated in its preferred form in the accompanying single sheet of drawings.

25 Essentially it contemplates the use of a flange or ring of suitable fire resisting material such, for instance, as graphite, clay or mixtures of the same or other substances. This ring is so proportioned relative to the crucible with which it is used and relative to the furnace in which the heat is applied so as, first, to permit charging the crucible, second, to extend laterally beyond the top of the crucible so as to deflect the burning gases and, third, to allow sufficient draft around the sides and top of the crucible to the flue or chimney. 35 The top of the ring is so shaped as to permit the metal to be piled up and yet insure that it will all run down into the crucible when melted. The under side of the ring is so shaped as to provide a secure seat on the top of the crucible and to deflect the gases downwardly as well as laterally. 40

Figure 1 is a side view and vertical section of apparatus embodying my invention. Fig. 2 is a side view and partial section of a crucible and ring of my invention. Fig. 3 is a detail side or edge view of the ring of my invention. Fig. 4 is a plan view of the ring of my invention. 45

The crucible 1, is filled with metal and placed within

the furnace 2, on top of the fuel 3, above the grate 4. The gases and products of combustion pass upward around the sides of the crucible and out the flue or chimney 5. The crucible is inserted and removed through the top of the furnace which is ordinarily closed by the cover 6.

The gases under the ordinary usage are seldom completely burned. Much heat is thus wasted. To perfect the combustion I employ a ring 7, which rests on the top of the crucible and projects laterally. This is so shaped and proportioned as to cause the gases to circulate downward, and form eddying currents about the sides of the crucible. For this purpose the underside of the ring is preferably recessed as at 8, so that a concaved deflecting surface is provided. The gases are thus kept within the furnace a greater length of time and more complete combustion takes place. The downward deflection of the burning gases also tends to concentrate the heat about the center of the body of the crucible so as to expedite the melting. Since the combustion of the gases is made more complete, the oxidation of the top of the crucible is retarded and the life of the crucible prolonged. The ring 7, should not be too large relative to the internal diameter of the furnace or the draft will be impeded. The operation is facilitated by proportioning the parts so that the top of the ring lies on a level with or slightly below the flue.

I prefer to recess the top of the ring as at 9, so as to permit the metal to be piled up and yet cause it all to pass down into the crucible as it melts and so prevent loss by overflowing. In the form shown, the ring, being separate from the crucible and recessed above and below, may be reversed if desired. When in place on the crucible the ring forms in effect a projecting flange. 80

The more uniform heating of the crucible reduces the time necessary for melting and produces a more uniform result in the product.

I claim:

1. An improvement for crucibles for furnace use comprising a ring extending laterally of the body of the crucible, for deflecting the products of combustion and protecting the top of the crucible.

2. A crucible construction, comprising the combination of a crucible, and a ring of fire resisting material projecting laterally and downward from the top of the crucible. 90

SAMUEL KNIGHT.

Witnesses:

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