

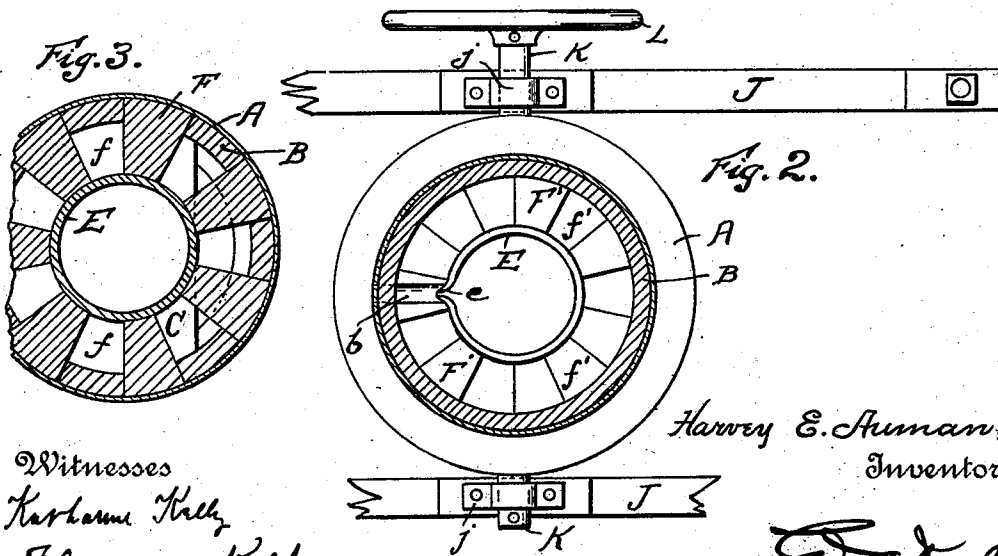
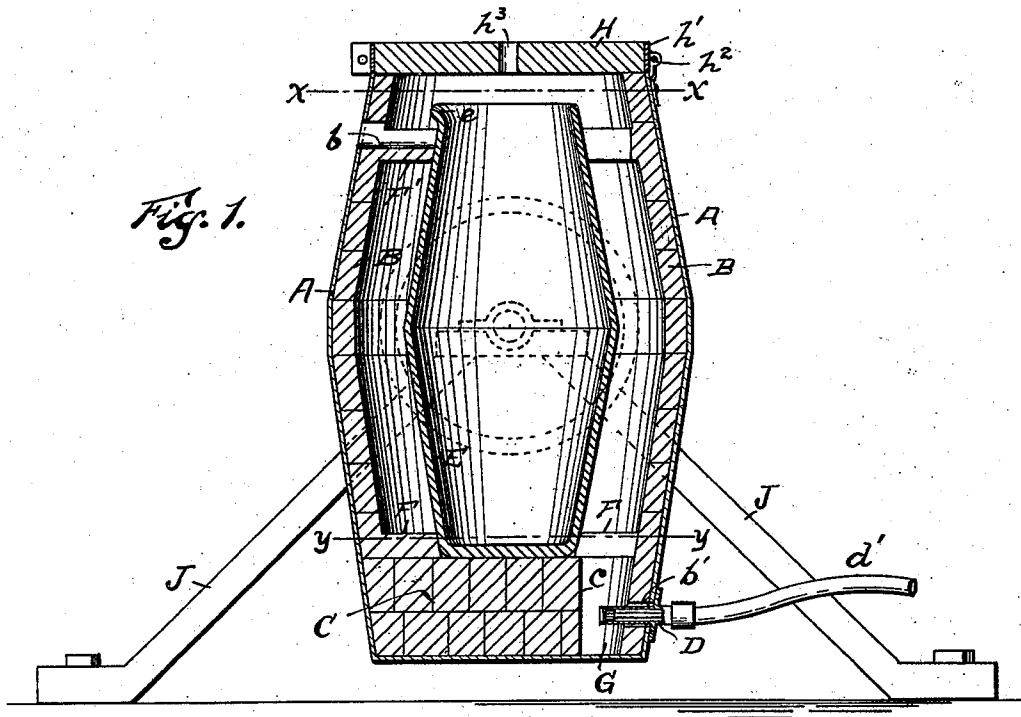
No. 692,776.

Patented Feb. 4, 1902.

H. E. AUMAN.  
SMELTING FURNACE.

(Application filed June 5, 1901.)

(No Model.)



Witnesses  
Karlmann Kelly,  
Florence Kelly.

Harvey E. Auman,  
Inventor

By Attorney *E. A. Kelly.*

# UNITED STATES PATENT OFFICE.

HARVEY E. AUMAN, OF READING, PENNSYLVANIA, ASSIGNOR TO THE HARVEY BURNER AND FURNACE COMPANY, OF READING, PENNSYLVANIA.

## SMELTING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 692,776, dated February 4, 1902.

Application filed June 5, 1901. Serial No. 63,195. (No model.)

*To all whom it may concern:*

Be it known that I, HARVEY E. AUMAN, a citizen of the United States, residing at Reading, Berks county, Pennsylvania, have invented certain new and useful Improvements in Smelting-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in furnaces, and is particularly intended for smelting brass and other metals.

The object of the invention is to produce a furnace wherein metal may be subjected to intense heat and rapidly reduced to a molten state.

A further object is to overcome the use of the underground furnace in which the crucibles are placed and from which they are lifted by operators who must contend with the annoyance of the intense heat arising therefrom.

The convenience in handling my furnace and the rapidity with which I reduce metal placed therein to a molten state are essential features of my invention.

The invention is fully set forth in the following specification and clearly shown in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of my furnace. Fig. 2 is a cross-sectional view on line *xx* of Fig. 1; and Fig. 3 is a cross-sectional view on line *yy*, Fig. 1.

The casing *A* is circular in cross-section and is preferably made of sheet metal lined throughout with fire-brick *B*.

In the bottom of the space formed in the interior of the brick lining I provide a base or crucible-support *C*, of solid fire-brick, extending nearly the full diameter of the furnace, leaving sufficient space at the rear to form a combustion-chamber *G*.

At the rear of the furnace near the bottom I provide an opening *b'*, through which enters a hydrocarbon-burner *D*, the spraying-point coming inside the wall-line—that is, into the combustion-chamber *G*—and it is so arranged as to throw a spray of fuel against the vertical wall *c* of the brick support *C*.

This burner has a flexible feed-pipe *d'*, preferably

a hose, attached thereto and leading from the fuel-supply.

Inside the furnace I provide a crucible *E*, which rests on top of the fire-brick base or support *C*, and which is of a larger diameter at its central portion than at its ends and is sufficiently smaller in diameter to allow a space all around it, between it and the inner wall of the furnace, for the hot air to circulate. Near the bottom of the crucible and at the top of the support *C* the casing is formed with a series of inwardly-projecting and openly-spaced fire-brick *F*, which closely surround the crucible. This fire-brick *F* is formed with a series of openings *f* to allow the hot blast to rise from the combustion-chamber and find its way completely around the crucible. Near the top of and surrounding the crucible I also provide a series of fire-brick *F'* to firmly hold the upper end thereof, and this brick is also formed with a series of openings *f'* to allow the hot air to reach the top of the crucible.

The furnace body or casing is provided with a cover *H*, made of fire-brick and held in a metal band *h'*, which is secured at its rear to the casing *A* by means of a hinge *h*<sup>2</sup> and has a suitable fastening device at its front. (Not shown.) Through this top or cover *H* at its center I provide an opening *h*<sup>3</sup>, sufficiently large to permit feeding the crucible without removing the cover when desirable.

The entire furnace is pivotally mounted on stands *J* by means of shafts *K*, one at either side slightly above the center, adapted to fit in journals *j'* in said stands. To one of these shafts *K*, I secure a hand-wheel *L*, by means of which the furnace may be tilted to pour the molten metal from the crucible *E*.

Immediately in front of the lip *e* of the crucible I form an opening or gutter *b* in the upper face of the inwardly-projecting fire-brick, through which the metal will flow when the furnace is tilted sufficiently to pour it from the crucible.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A rotatably-supported smelting-furnace,

formed of a casing, a crucible-support in the  
bottom thereof and of a less diameter than  
the casing, a combustion-chamber formed by  
one side of the support, and the casing and a  
5 hydrocarbon-burner located therein, a cruci-  
ble resting upon the support, a series of  
openly-spaced fire-bricks projecting inwardly  
from the casing, surrounding the crucible  
and engaging the same only near the top and  
10 bottom, to prevent displacement when the  
casing is tilted, a groove in the upper face of  
one of the fire-brick and extending through  
the casing, and a cover for closing the fur-  
nace, substantially as and for the purposes  
15 set forth.

2. A rotatably-mounted smelting-furnace,  
formed of a casing, a crucible-support there-  
in, a combustion-chamber formed by one face

of the support and the casing, and a hydro-  
carbon - burner therein, a crucible resting 20  
upon the support, said crucible being of a  
larger diameter near its center than at its top  
and bottom, a series of inwardly-projecting  
fire-bricks entirely surrounding and engag-  
ing the crucible only near its top and bottom, 25  
to hold the same rigidly in position and pre-  
vent displacement when tilted, openings be-  
tween the fire-brick, an outlet for the molten  
metal and means for closing the furnace, sub-  
stantially as described. 30

In testimony whereof I affix my signature  
in presence of two witnesses.

HARVEY E. AUMAN.

Witnesses:

ED. A. KELLY,  
GEO. M. MILLER.