(No Model.)

G. TOMKINSON.

ANNEALING FURNACE.

No. 492,594. Patented Feb. 28, 1893.

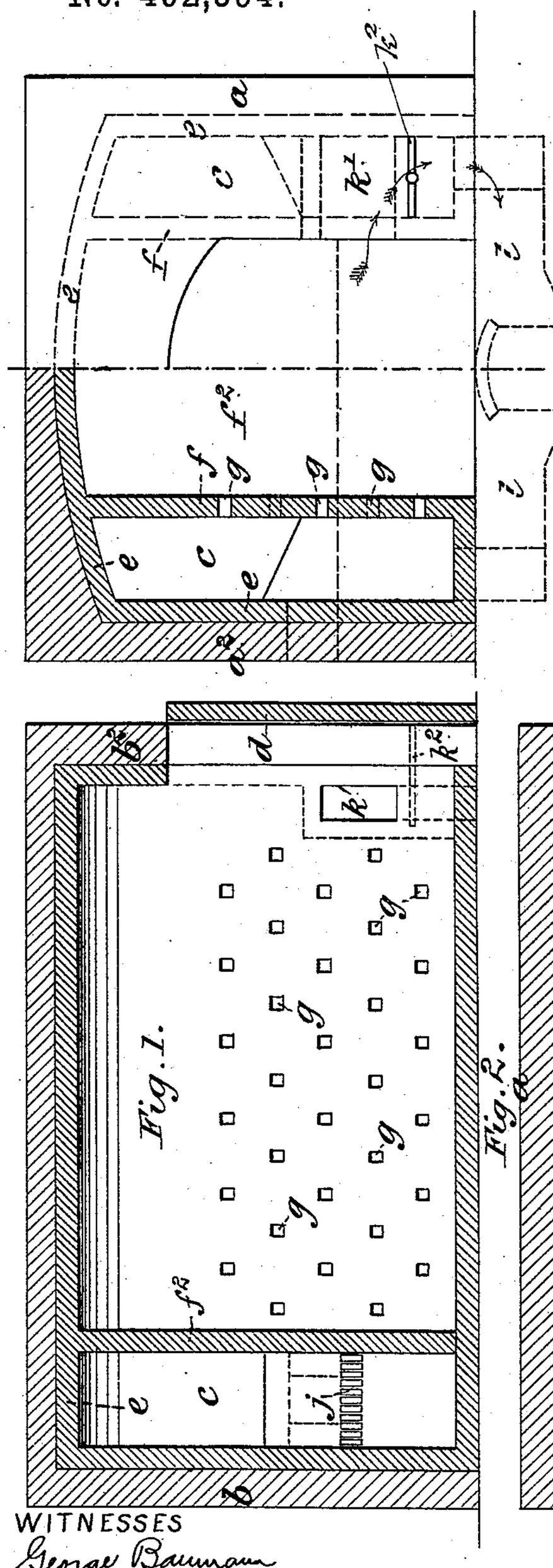

Fig. 1.

Fig. 2.

Fig. 3.

WITNESSES
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UNITED STATES PATENT OFFICE.

GEORGE TOMKINSON, OF TIPTON, ENGLAND, ASSIGNOR TO TOMKINSON & MILLS, OF SAME PLACE.

ANNEALING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 492,594, dated February 28, 1893.

Application filed July 22, 1892. Serial No. 440,927. (No model.) Patented in England March 26, 1889, No. 5,138.

To all whom it may concern:

Be it known that I, GEORGE TOMKINSON, furnace-builder, a subject of the Queen of Great Britain and Ireland, residing at 8 Tibbington Road, Tipton, in the county of Stafford, England, have invented certain Improvements in Annealing-Furnaces, (for which I have obtained a patent in Great Britain, No. 5,138, dated March 26, 1889,) of which the following is a specification.

This invention consists in the following arrangement of furnace for annealing sheets, castings, or other forms, of metal; and it has for its object to provide a furnace in which a very perfect distribution of the heat, throughout the furnace is obtained, the risk of admission of external air the oxygen of which would injure the metal under treatment is minimized, and the furnace is so heated as not to be subject to the rapid deterioration which occurs, especially in connection with the roof, in such furnaces as hitherto constructed, moreover owing to the equal distribution of the heat the boxes dishes covers cases or pots in which the goods are annealed will last a very much longer time than hitherto. I build two side walls and two end walls, so as to form an outer chamber, which may be covered, or lined, with fire clay, or bricks, iron, or other suitable material, and, within this outer chamber, I build two side walls and an end wall, forming an inner chamber, or furnace proper, leaving a space between the said walls of the inner chamber and the corresponding walls of the outer chamber. The side walls of the inner chamber are pierced, or provided throughout their length and to a convenient height with holes, or passages. The space between the inner chamber and the outer chamber, will usually be about nine inches wide in a furnace of ordinary size. In the space between the end wall of the inner chamber and the end wall of the outer chamber I form a fire place. A roof (preferably arched), covers both the inner and outer chambers. A door, or doors, is, or are, provided at the entrance end of the inner chamber; passages are formed through the walls of the inner chamber low down and at, or toward, the end opposite the fire-place such passages leading out, through the floor, or bottom, of the outer chamber and into flues in connection with a chimney stack. My improved annealing furnace so constructed is used in the following manner. The sheets, castings, or other articles, to be annealed, which may be suitably packed in any ordinary or preferred way, are passed through the door, or doors, at the open end of the inner chamber and the said door or doors will then be shut, and a fire be lighted in the aforesaid fire-place. The flames and heated gases pass from the fire place in reverse directions, and along both of the passages at the sides of the inner chamber and then through the holes in the side walls of the inner chamber into the said chamber the said flames and heated gases thus passing from reverse directions toward each other and they will impinge on the material stacked in the inner chamber the flames and heated gases thence passing out through the openings provided at the lower part at the door end of the inner chamber and through the floor of the outer chamber into the flue and thence to the chimney.

I will now proceed to describe with reference to the accompanying drawings the manner in which my invention can be practically carried into effect.

Figure 1 is a longitudinal section. Fig. 2 a sectional plan and Fig. 3 is a half end view, and half section, of a furnace constructed according to my invention.

a and a^2 represent the side walls and *b* and b^2 the end walls of the outer chamber.

d is the entrance door, and *e*, a fire-brick casing extending over the inner surface.

f represents the partition walls at the side and f^2 that at the end leaving spaces *c* between themselves and the corresponding walls of the outer chamber.

g represent the holes pierced through the side partition walls.

h h', represent the bridges over which the flames and heated gases pass from the fire-place *j*.

k, *k'*, represent the outlet passages provided at the lower part of the door end of the inner chamber the said passages opening into the flues *l* leading to chimney.

k^2 are dampers for regulating the heat by adjusting the outlets.

A fire being lighted in the fire-place *j* the flames and heated gases pass in reverse directions from the said fire place over the bridges *h h'*, into the spaces between the inner and the outer chambers and thence through the holes *g*, thus directing a fierce accumulation of very equally distributed heat from one source onto and among the material stacked in the inner chamber on both sides at the same time and from opposite directions the spent flames, or heated gases, being drawn down into the flue passages *k k'* and thence into the flue and chimney.

I am aware that perforations have been used, or proposed to be used, in the walls of annealing chambers, so that there would be a current in one direction, or from one side, or end, to the other; and to this in itself I lay no claim but

What I claim is—

An annealing furnace having two walls at each side and at one end, forming an inner and an outer chamber with a free space around three sides of the inner chamber, the inner side walls being perforated in combination with a fire-place between the walls at the aforesaid end, and outlet passages leading from the lower part of the inner chamber at the end opposite the fire place, all substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE TOMKINSON.

Witnesses:

W. SWINFEN COTTRELL,
Notary Public, Birmingham.

JOHN HENRY FROST,
Waterloo Street, Birmingham, Notary's Clerk.