W. M. KELLY.

FURNACE.

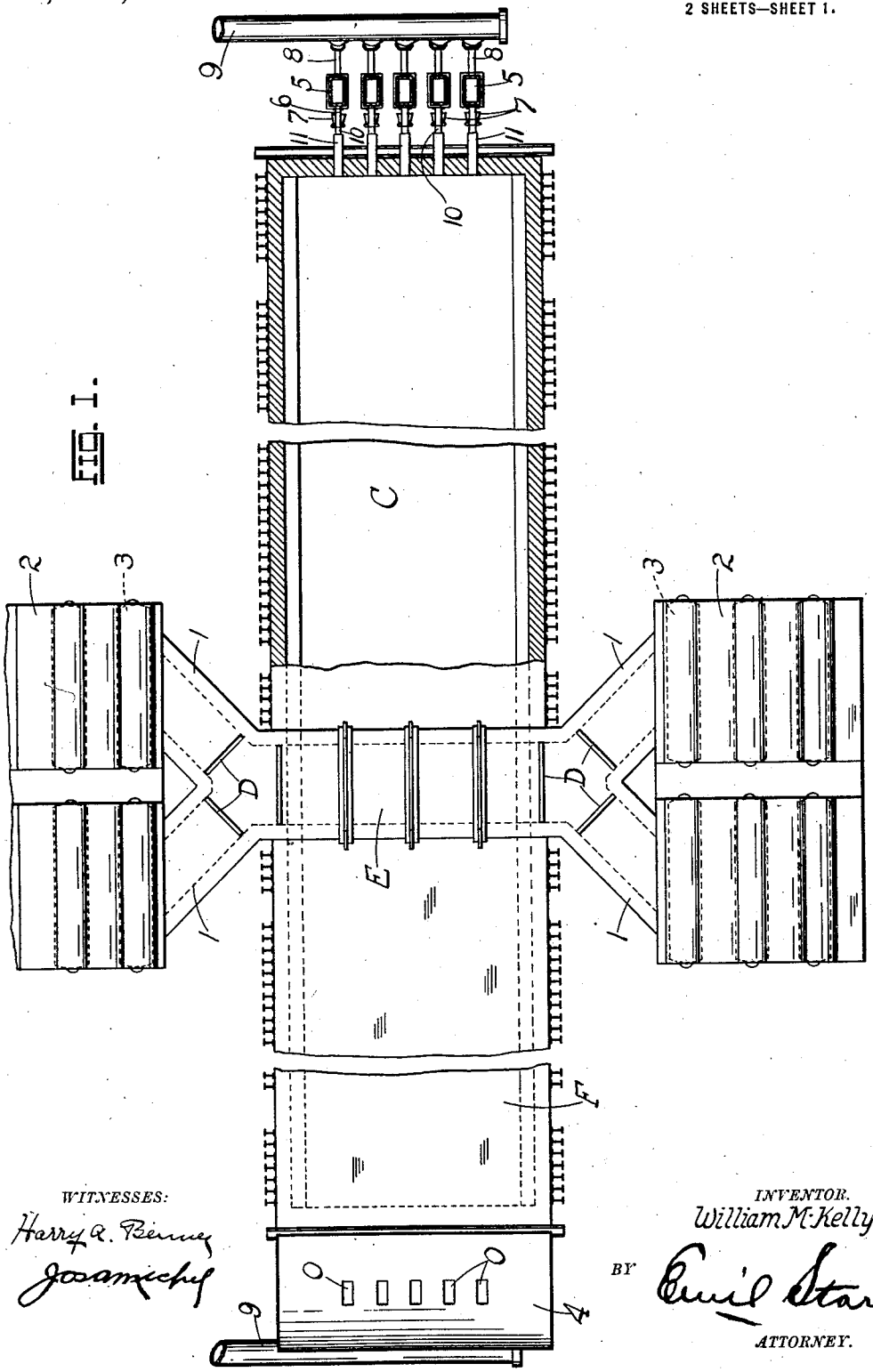
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1,186,104.

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2 SHEETS—SHEET 1.

FIG. 1.



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2 SHEETS—SHEET 2.

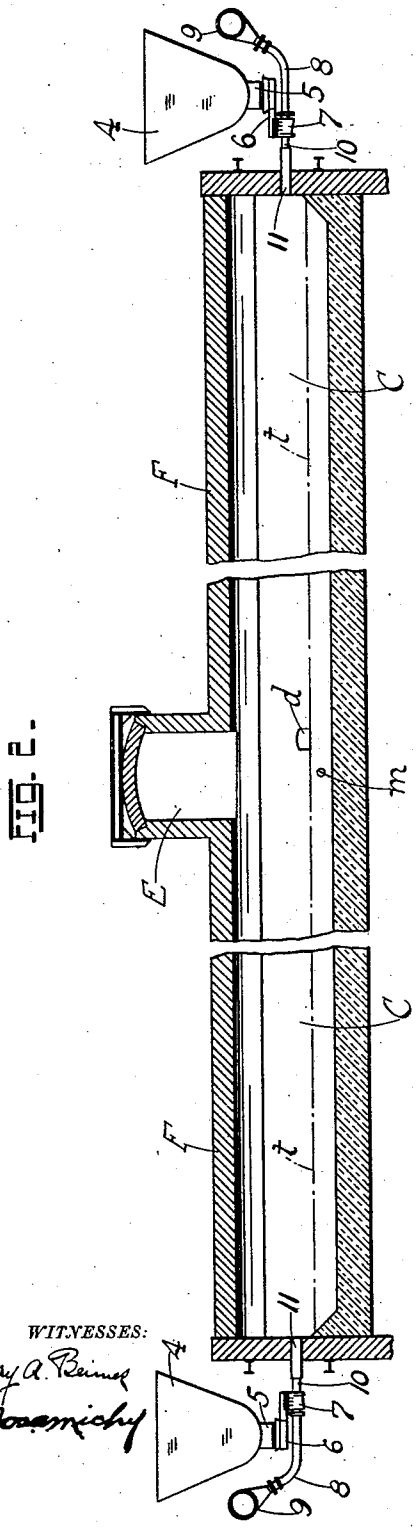


FIG. 2.

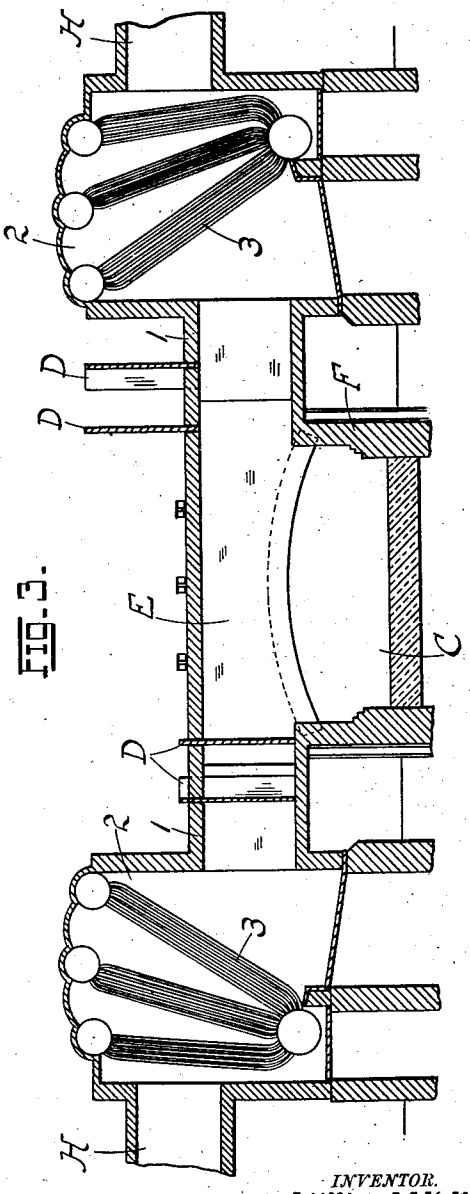


FIG. 3.

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To all whom it may concern:

Be it known that I, WILLIAM M. KELLY, a citizen of the United States, residing at Anaconda, in the county of Deerlodge and State of Montana, have invented certain new and useful Improvements in Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in furnaces; and it consists in the novel features of construction more fully set forth in the specification and pointed out in the claims.

The present invention is directed to metallurgical furnaces generally, and to the reverberatory type in particular, the object sought being to provide a furnace which can be fired at both ends, the structure assuming the form of two reverberatories disposed back to back, a central discharge or waste-gas flue being located at the juncture of the two furnaces. As the furnaces are arranged, their longitudinal axes are coincident, the firing mechanism of one furnace being directly opposite the firing mechanism of the opposite furnace, the two mechanisms serving to discharge the fire gases or flames into the common chamber of the two combined reverberatories.

The object sought by the present improvement is to conserve the heat of the furnace to the best advantage, the firing devices supplementing one another, the double reverberatory being desirable for special metallurgical operations in cases where the single fired reverberatory will not answer the purpose.

The advantages of the structure will be best apparent from the following detailed description in connection with the accompanying drawings in which—

Figure 1 represents a top plan of the double reverberatory, the waste gases being applied to the heating of a battery of steam boilers of the Stirling type; Fig. 2 is a middle vertical longitudinal section of the reverberatory, the boilers being omitted, the firing devices being shown in elevation; and Fig. 3 is a middle vertical cross section through the reverberatory and through the boilers.

Referring to the drawings, F, F, represent two reverberatory furnaces disposed back to back and in longitudinal axial alinement whereby a single, double reverberatory results, the same having a single treatment chamber C. The resulting double reverberatory is fired at opposite ends in any way known to the art, the present illustration contemplating the use of coal dust, pulverized coal or its equivalent. The waste gases discharge into the central, transversely disposed waste flue E spanning the roof of the reverberatory and extending beyond the sides of the furnace, the flue discharging into the diverging legs 1, 1, each of which conducts the waste gases to the furnace 2 of a Stirling boiler or other steam generator 3, the boiler being shown more or less conventionally.

H, represents the boiler flue leading to the stack (not shown).

In the present embodiment of my invention the furnace is fired by coal-dust, a suitable hopper 4 into which the coal dust is dumped, discharging through short tubes or necks 5 (communicating with the hopper through the bottom openings O) into a series of screw-conveyer casings 6 whence the material drops into a chamber 7 traversed by a current of air under pressure delivered thereto by a pipe 8 branching from the main compressed air pipe 9. The discharge tube 10 from each air chamber 7 couples to a burner tube 11 which projects the fuel into the furnace or treatment chamber C. The firing device or fuel feed is shown more or less conventionally and no claim thereto (or to any equivalent thereof) *per se*, is herein made. At points where necessary, the flues E and 1, 1, are provided with dampers D, manipulated in any manner known to the art, for controlling and regulating the escape of the waste gases and products of combustion, and directing them to the proper boiler or boilers. The matte tap hole *m* is located beneath the flue E, a suitable skimming door *d* being provided adjacent the tap hole *m* along the skimming line *t*.

Obviously, the furnace may be modified considerably without in any wise affecting the nature or spirit of my invention. The invention of course need not be restricted in its application to "metallurgical" furnaces.

It is obvious that conditions may arise where only one of the firing devices may be availed of, the opposite one for the time being, being idle. At other times both firing devices may be in operation but burning with different degrees of intensity; and finally

both may be fired with equal intensity at each end of the furnace.

Features shown but not alluded to are well known in the art and require no description in the present connection.

Having described my invention what I claim is:

1. A metallurgical furnace comprising two reverberatory furnaces disposed back to back and in longitudinal axial alinement, the same forming a single treatment chamber arched across the longitudinal axis of the chamber, a central transversely disposed waste flue leading from and spanning said chamber, and means on the longitudinal axis at each end of the chamber for firing the furnace.

2. A metallurgical furnace comprising two reverberatory furnaces disposed back to back and in longitudinal axial alinement, the same forming a single treatment chamber, a centrally disposed waste flue leading from and spanning said chamber, and means for firing the chamber from both ends of the double furnace.

3. A metallurgical furnace comprising two reverberatory furnaces disposed back to back and in longitudinal axial alinement, the same forming a single treatment chamber, a central transversely disposed waste or exit flue surmounting and spanning the roof of the furnace and in free communication with the treatment chamber, means for controlling the discharges of the waste gases from each end of the waste flue, and firing means at each end of the double furnace.

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

WILLIAM M. KELLY.

Witnesses:
E. M. DUNN,
W. E. MITCHELL.