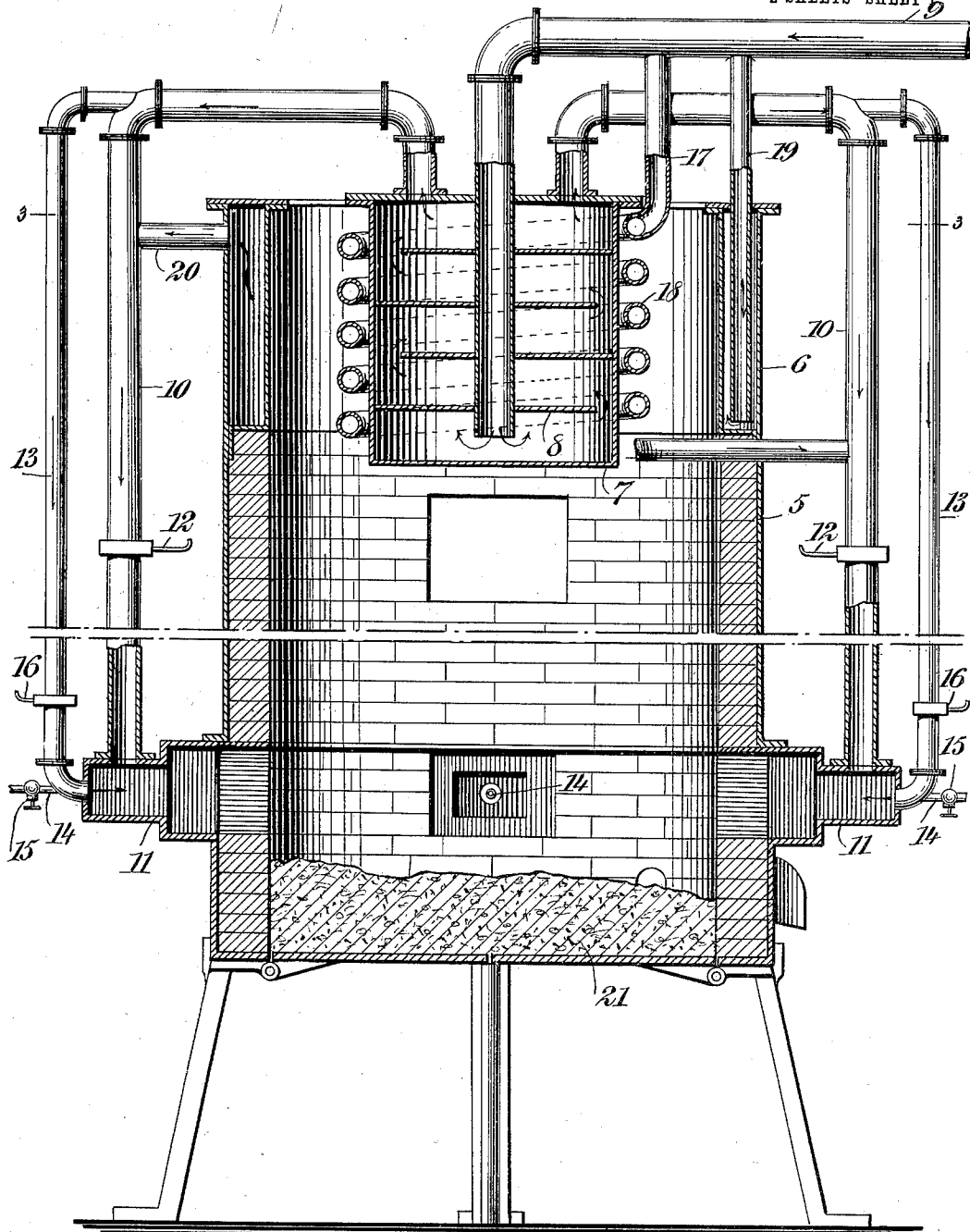


T. HOLLAND.
CUPOLA.

APPLICATION FILED APR. 3, 1903.

NO MODEL.

2 SHEETS—SHEET 1



WITNESSES:

John Ferguson
C. R. Ferguson

Fig. 1

INVENTOR

Timothy Holland

BY

Mumford

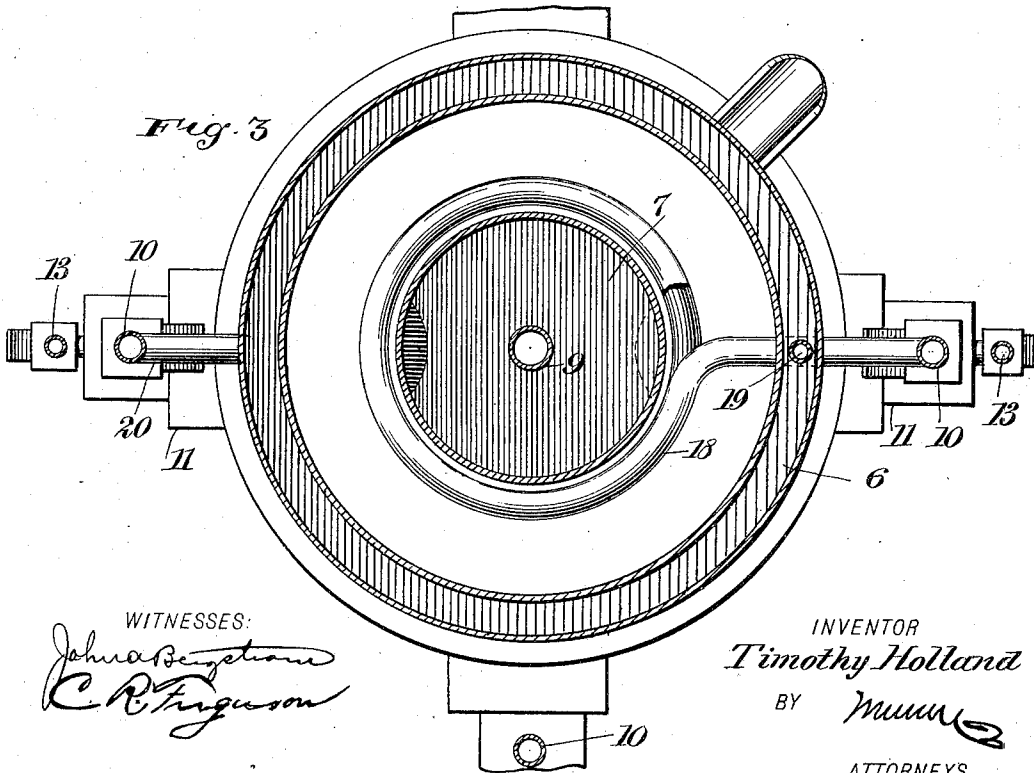
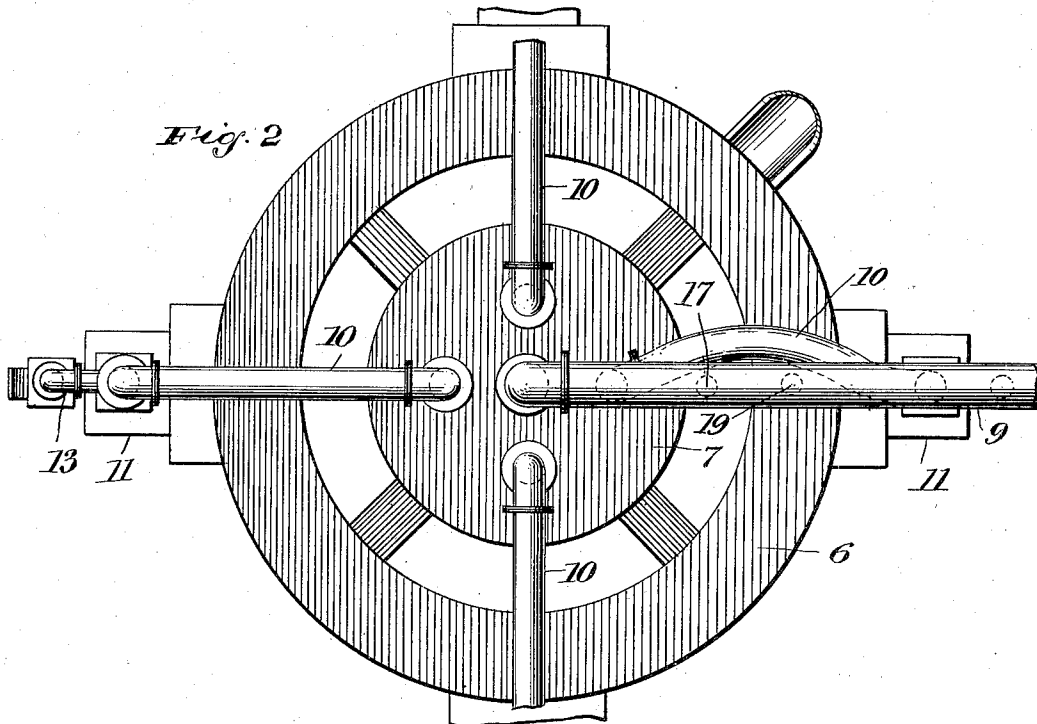
ATTORNEYS.

T. HOLLAND.
CUPOLA.

APPLICATION FILED APR. 3, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES:
J. B. Benjamin
C. R. Ferguson

INVENTOR
Timothy Holland
 BY *Mumford*
 ATTORNEYS.

UNITED STATES PATENT OFFICE.

TIMOTHY HOLLAND, OF NEW YORK, N. Y.

CUPOLA.

SPECIFICATION forming part of Letters Patent No. 731,300, dated June 16, 1903.

Application filed April 3, 1903. Serial No. 150,856. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY HOLLAND, a citizen of the United States, and a resident of the city of New York; borough of Manhattan, in the county and State of New York, have invented a new and Improved Cupola, of which the following is a full, clear, and exact description.

This invention relates to improvements in furnace-cupolas for melting metals, an object being to provide a simple means for introducing hot-air blasts into the cupola to quickly raise and maintain a uniform temperature of very high degree.

Other objects of the invention will appear in the general description.

I will describe a cupola embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of a cupola embodying my invention. Fig. 2 is a plan view thereof, and Fig. 3 is a section on the line 3 3 of Fig. 1.

Referring to the drawings, 5 designates the cupola, substantially of the usual construction—that is, consisting of a metal casing and a lining of brick or other suitable material. On the upper end of the cupola is an air-jacket 6, and suspended from the upper end thereof is an air-receiver 7, which is closed at its top, excepting for the pipes that lead therein, as will be hereinafter described.

Arranged in the air-receiver 7 are horizontal partitions 8, the alternating partitions having openings at one end, so that air will be directed upward in a zigzag manner, thus breaking the air to cause its quick and thorough heating. The cold-air-inlet pipe 9 leads into the air-receiver 7 through the partitions and nearly to the bottom of said receiver. From the upper end of the receiver 7 pipes 10 lead into the combustion-boxes 11 at the lower end of the cupola and communicate with the interior thereof. Each pipe 10 is provided with a valve 12, so that the passage of air may be regulated. From the pipes 10 by-pass tubes 13 lead into the boxes 11, and also leading into said boxes through

the open ends of the tubes 13 are hydrocarbon-oil-supply tubes 14, provided with valves 15, and valves 16 are also provided for the tubes 13. A branch pipe 17 leads from the air-supply pipe 9 and is formed in a coil 18 around the receiver 7, and the inner end of this coil is connected to one of the pipes 10. A branch pipe 19 also leads from the pipe 9 into the jacket 6 and discharges in the bottom thereof, and from this jacket a tube 20 leads to one of the pipes 10, or each pipe 10 may be connected with the jacket by means of a similar tube.

In using the device I prefer to place a bed of silica 21 in the bottom of the cupola and of course below the coal or other fuel therein. This silica will become incandescent by the heat from the hydrocarbon-oil jets, which are forced into the cupola by the air-blast through the tubes 13. The cold-air inlet through the pipe 9 is discharged into the receiver 7, the coil 18, and the jacket 6 and in its circulation in these devices becomes heated to a very high degree by the burning gases in the cupola.

By extending the pipes 9 and 19 nearly to the bottom of the receiver and the jacket entering cold air will prevent the melting or burning of the receiver and jacket. From the receiver and jacket the air is carried by the pipes and tubes to the boxes 11, and consequently into the cupola, where it mingles with the products of combustion, maintaining a very high and steady degree of heat.

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

1. The combination with a cupola, of an air-receiver arranged in the cupola, an air-baffling device in the receiver, a pipe leading into the receiver and terminating near the bottom thereof, and means for conducting air from the receiver to the lower interior of the cupola.

2. The combination with a cupola, of an air-receiver suspended therein, partitions arranged in said receiver one above another and opening alternately at opposite ends, a cold-air-supply pipe leading into the receiver and nearly to the bottom thereof, and pipes leading from the receiver into the lower portion of the cupola.

3. The combination with a cupola, of an air-receiver arranged in the upper portion thereof, an air-supply pipe leading into said receiver, a cold-air-supply pipe having a portion coiled around the said receiver, the said
5 pipe communicating with the lower portion of the cupola, and pipes leading from the receiver to the lower portion of said cupola.

4. The combination with a cupola, of an
10 air-receiver therein, means for supplying cold air to said receiver, a pipe coiled around said receiver, means for conducting cold air to said coil, a pipe providing communication between said receiver and the lower portion of the
15 cupola, an air-jacket at the upper portion of said cupola, a cold-air pipe leading therein, a pipe providing communication between said jacket and the cupola, and pipes leading

from the air-receiver into the lower portion of said cupola.

5. The combination with a cupola, of combustion-boxes arranged at the lower portion thereof, and communicating with the interior, a cold-air receiver arranged in the upper portion of the cupola, pipes leading from said
25 receiver into said combustion-boxes, by-pass tubes leading from said pipes into said boxes, and oil-supply tubes extended into said boxes and into the outlet ends of the by-pass tubes.

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

TIMOTHY HOLLAND.

Witnesses:

JNO. M. RITTER,
C. R. FERGUSON.