A. FABER du FAUR & F. FOHR.

Making Lead-Pigment.

No. 218,248. Patented Aug. 5, 1879.

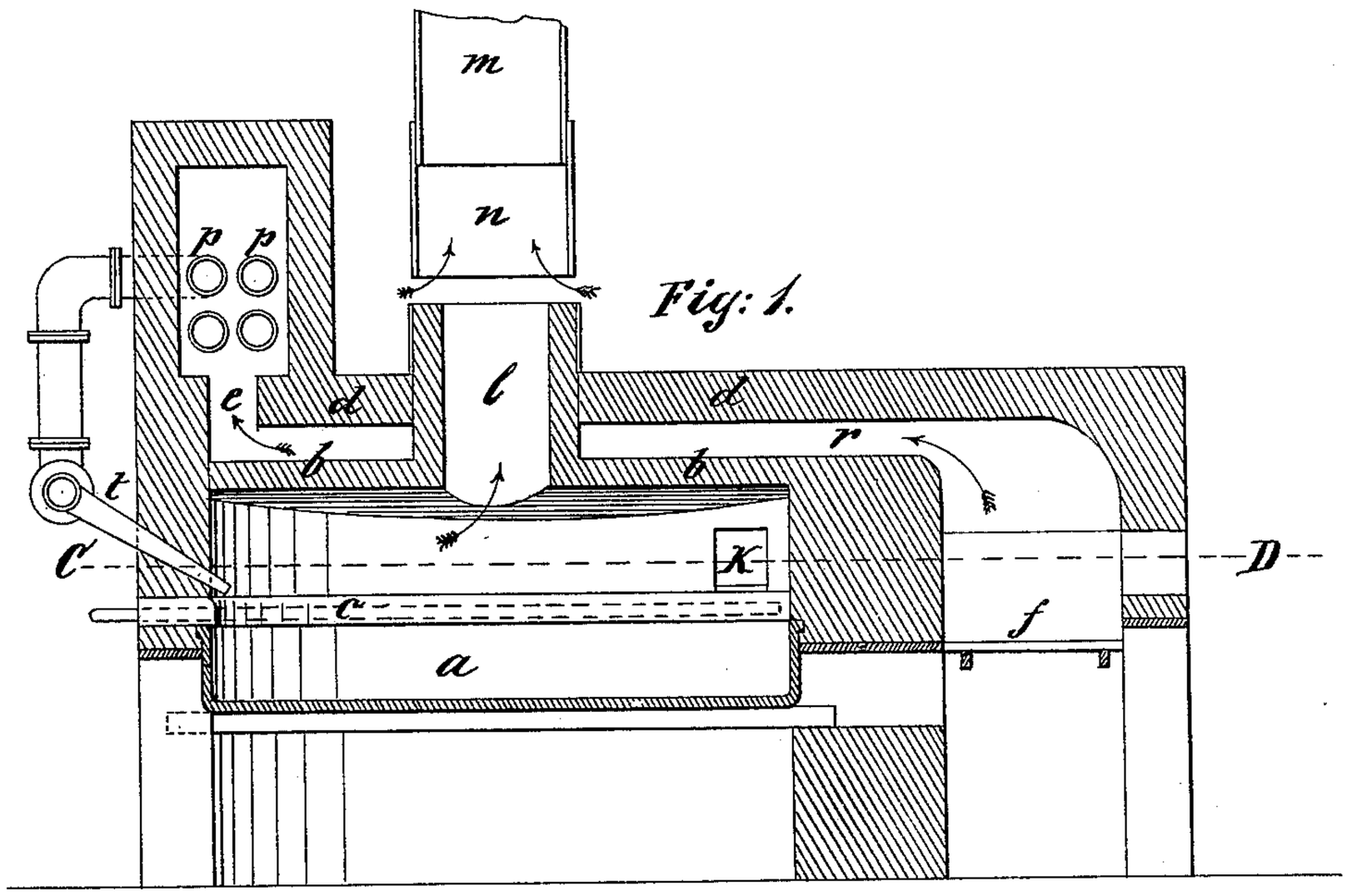

Fig: 1.

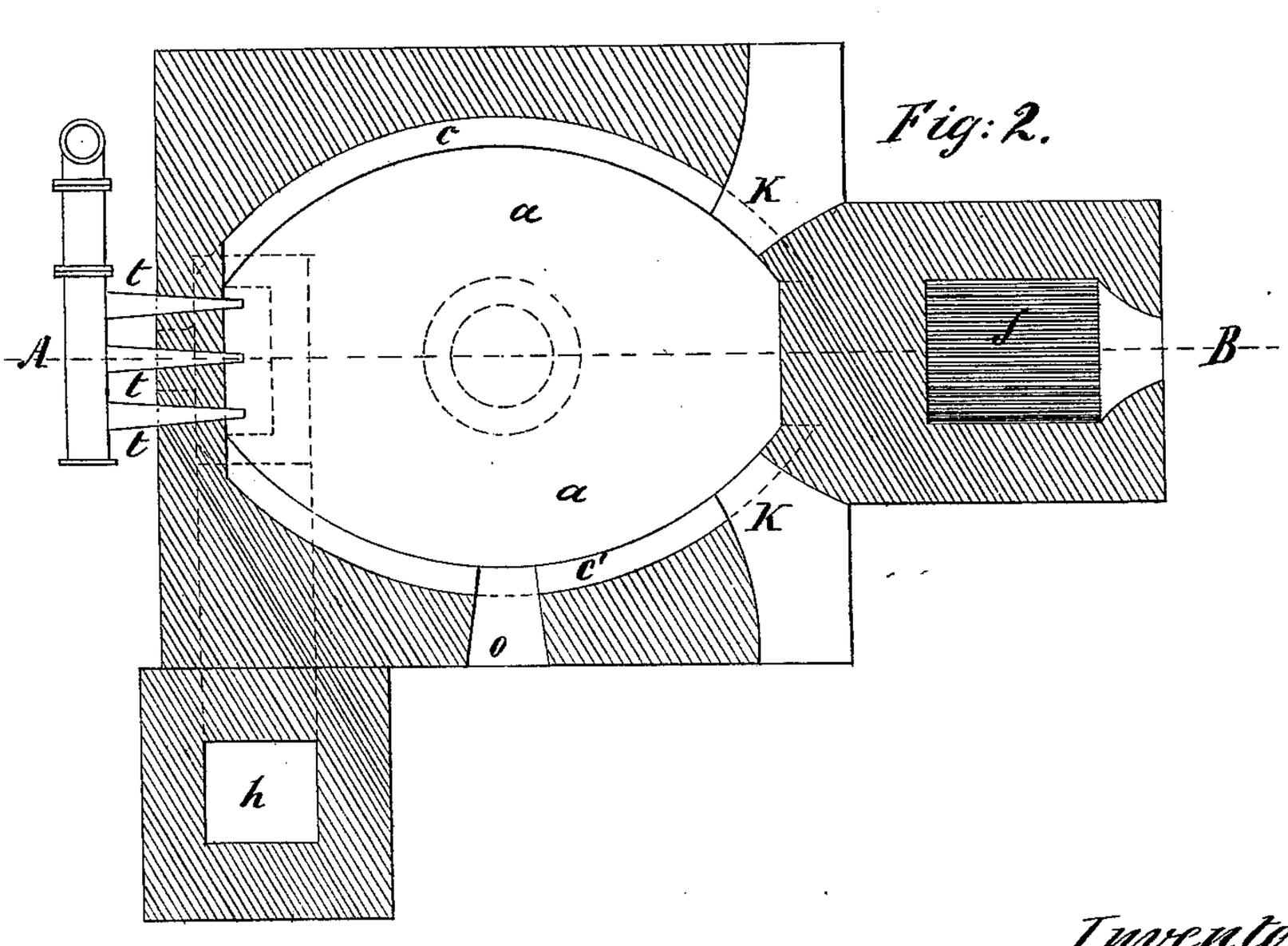

Fig: 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

ADOLPH FABER DU FAUR, OF NEWARK, NEW JERSEY, AND FRANZ FOHR,
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IMPROVEMENT IN MAKING LEAD PIGMENTS.

Specification forming part of Letters Patent No. **218,248**, dated August 5, 1879; application filed April 23, 1879.

To all whom it may concern:

Be it known that we, ADOLPH FABER DU FAUR, of Newark, in the county of Essex and State of New Jersey, and FRANZ FOHR, of the city and State of New York, have invented a new and useful Improvement in Process of Making Lead Pigments, which process is fully set forth in the following specification.

Lead pigments have been made by mixing roasted or unroasted pulverized galena with carbon, heating the mixture in a compound reducing and oxidizing furnace, and collecting the fumes in chambers and bags. Lead pigment is also alleged to have been made by feeding pulverized silver lead ores into the flame of a furnace by means of an air-blast, and submitting the ore to the direct action of a flame.

The presence of carbon, flame, or reducing-gases in the processes just referred to causes the reduction of an unnecessarily large quantity of lead, and also injures the quality of the product by an admixture of small particles of carbon or smoke from the fuel.

Our process consists in the manufacture of lead pigment from galena or other compounds of lead and sulphur by subjecting the heated materials to a blast of atmospheric air, by preference heated air, without mixing the galena with fuel, and without bringing the galena or the fumes from the same in contact with fuel, flame, or reducing-gases, the products being collected, in the usual manner, in flues, chambers, and bags.

When galena is heated at the exclusion of reducing agents—as, for instance, by placing a scorifier containing galena into a heated muffle—the galena melts at a bright-red heat, without giving off considerable quantities of fumes; but the moment a blast of air is turned against the heated mass, dense volumes of white fumes rise from the same and are carried off by the current. The same result is also produced by introducing the blast beneath the surface of the heated material. The fumes are heavy and of good color, their density being increased by not being diluted by the products of combustion of the fuel, as in the old processes, while the absence of carbon or flame insures a better color.

In carrying out our process we use, by preference, a furnace as shown in the accompanying drawings, in which similar letters of reference indicate like parts.

Figure 1 is a vertical section at A B of Fig. 2, and Fig. 2 a horizontal section at C D of Fig. 1.

a is an iron pan, forming the bottom or hearth of the furnace. *c c'* are castings, cooled by water in the usual manner. *b* and *d* are brick arches; *f*, the fire-place, from which the flame passes over the bridge *r*, through the space between the arches *b* and *d*, thence through the flue *e* to the hot-blast apparatus *p p*, and finally to the chimney *h*. The flame from the fire-place *f* does not enter the space between the arch *b* and the bottom *a*. *t t t* are blast-nozzles, protected by water-tuyeres. (Not shown in the drawings.) Through these nozzles heated air is blown toward the materials on the bottom *a*.

k k are openings or doors for the introduction of the charge. *o* is an opening for giving access to the hearth. *l* is a round flue, through which the fumes and hot gas leave the hearth, and are by the pipe *m* carried to the separating-chambers, suction-fan, and bags, in the manner generally practiced for collecting oxide of zinc. *n* is an adjustable sliding pipe or sleeve, by which the admission of external air into the pipe *m* is regulated.

Tap-holes may be provided, in the usual manner, for drawing lead from the pan, or for drawing litharge or slag from the top.

The pan is filled with metallic lead, which we consider to be the most suitable material for a bottom. The galena, which must be as free as possible from foreign substances, is charged through the doors *k* and floats on the top of the lead-bath. Matte, litharge, carbonate of lime, or other suitable fluxes, may be charged with the galena. The materials charged into the furnace are heated by the arch above, and gradually advance toward the blast of hot air, by which they are oxidized and to a great extent vaporized.

When very hot blast is used the heated arch may be dispensed with, and the air may also be blown into the mass beneath its surface. In this case the operation must be started with

melted galena, or by putting the first charge on the top of fuel. The hearth must in this case, also, be of greater depth and of smaller diameter or surface. Even by this process the formation of metallic lead is not necessarily avoided, although much less is reduced than by the old processes, and any excess collecting in the pan may be drawn off through a tap hole, or it may be dipped out through the door *o*; and in the same manner slag may also be removed.

We do not claim the product of our process, as substantially the same has long been known and collected in the dust chambers of various lead-smelting furnaces; nor do we restrict our process to the particular furnace shown and described.

What we claim is—

The process of manufacturing lead pigment from galena, or other compounds of lead and sulphur, by subjecting the heated material to a blast of air, by preference hot air, and excluding fuel, flame, or reducing-gases from contact with said heated material, and collecting the product in the usual manner, substantially as described.

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