

J. H. ROBINSON.

Manufacture of Enamelled Dial and other Plates.

No. 152,689.

Patented June 30, 1874.

Fig 1

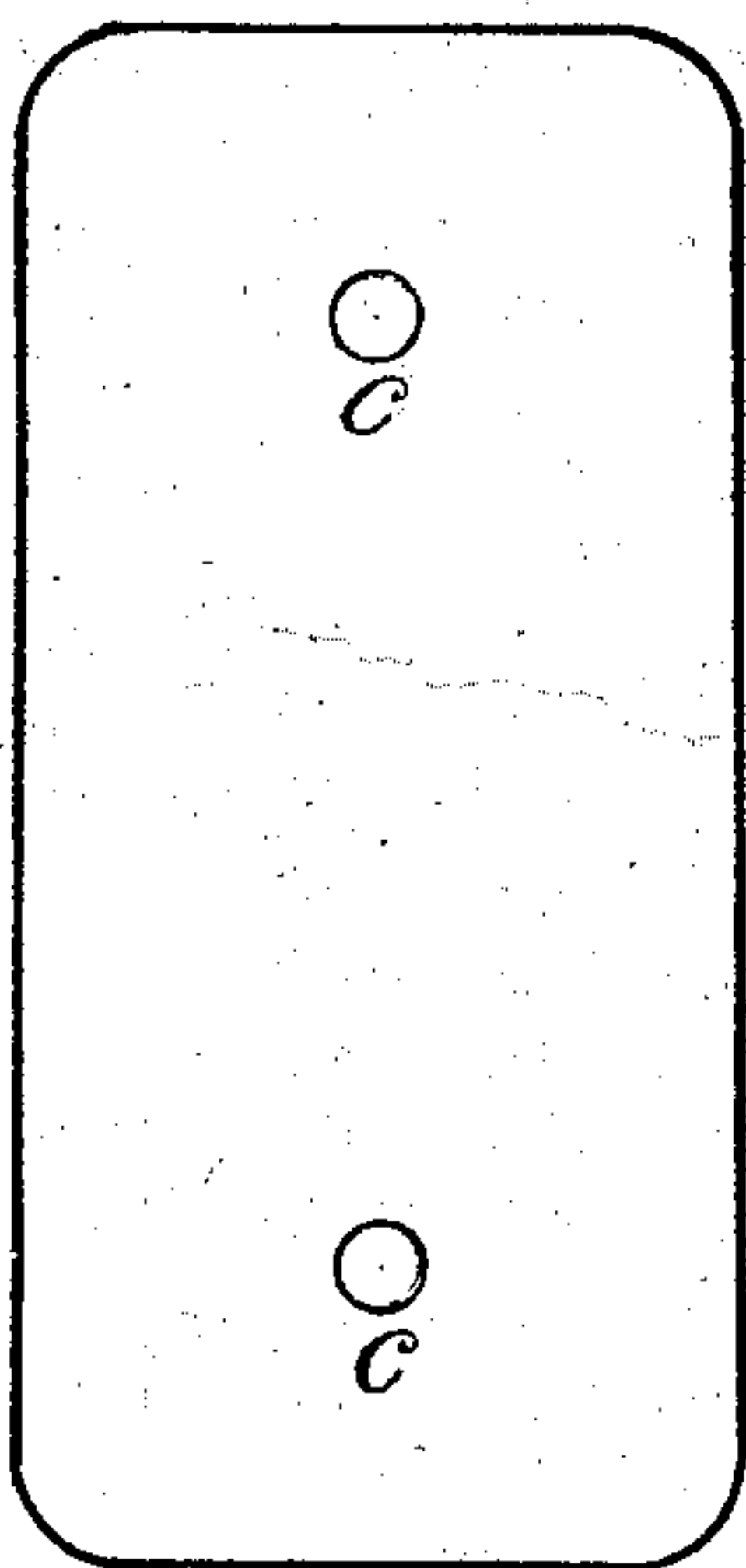


Fig 2



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOSEPH H. ROBINSON, OF LIVERPOOL, ENGLAND.

IMPROVEMENT IN THE MANUFACTURE OF ENAMELED DIAL AND OTHER PLATES.

Specification forming part of Letters Patent No. **152,689**, dated June 30, 1874; application filed May 26, 1874.

To all whom it may concern:

Be it known that I, JOSEPH HENRY ROBINSON, of Liverpool, in the county of Lancaster, England, have invented a new and useful Improvement in the Manufacture of Enameled Dial and other Plates; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a plan view; Fig. 2, a longitudinal section.

My invention relates to the manufacture of enameled iron dials for gas and water meters, clocks, and other purposes, number-plates, address and other plates, labels, or tablets, which, by my invention, I am enabled to produce more cheaply and quickly than heretofore.

According to my invention, I make the foundation of the dial or plate of thin sheet-iron, which is stamped out by means of a press, and suitable dies of the size and shape required, according to the purpose for which it is intended, with the edges turned up all round, so as to form a kind of shallow tray to hold the enamel on the face of the plate.

The necessary holes for the passage of the index-spindle in the case of a meter or clock dial, or for the screws by which it is fixed in position, are punched at the same time, and also have their edges turned up for the same purpose.

The annexed drawing shows a face and section of a meter-dial.

a is the sheet-metal backing or foundation, with turned-up edges. *b c* are screw-holes, also with turned-up edges to hold the enamel *d*, with which the plate is faced.

The plate is preferably made slightly concave at back, as shown, to hold a thin coating of coarse enamel to protect it from rust. The plate, having been made chemically clean by pickling in acid, is then ready for the application of an enamel composed of the ingredients hereafter mentioned.

I find these proportions are such as answer the purpose; but it will be understood that I do not confine myself to the precise proportions named, as such may be varied without

departing from my invention. White lead, twelve ounces; arsenic, two and a half ounces; flint-glass, eight ounces; saltpeter, three ounces; borax, six and three-fourths ounces; and ground flint, two ounces. These substances, having been all reduced to powder, are mixed together and melted in a crucible.

When thoroughly fused together the contents of the crucible are poured out in the form of cakes, which, before cooling, are plunged in cold water to render them brittle. The cakes of enamel are then pounded in a mortar to the fineness of coarse sand, and the powdered enamel is then washed, and when dried is ready for use as follows:

A sufficient quantity of the dry pulverized enamel is sprinkled on the face of the plate, which is then placed in a muffle to fuse the enamel. The raised edges of the plate retain the enamel which adheres without the aid of any adhesive material.

When the enamel is fused the plate is withdrawn from the muffle, and allowed to cool, and when cold it will have a hard, white, glazed surface, and is then ready for receiving the lettering and figuring.

If desired to enamel the back of the plate, this is applied before the face is enameled. For this purpose the "pulp" obtained from the washings of the enamel is mixed with powdered glass and sand, and applied in a liquid state to form a thin coat on the concave back of the plate and allowed to dry. The dry pulverized enamel is then sprinkled on the face of the plate, and the latter placed in a muffle, as before mentioned.

The lettering or figuring is applied by printing with soft black enamel from engraved plates, an impression being first taken on paper, and thence transferred to the enameled surface of the dial or plate in the ordinary way, after which the plate is replaced in the muffle to fuse the enamel forming the body of the lettering and figuring.

The great advantage of my invention is, that the enameling can be performed much more quickly and cheaply, in consequence of the enamel being applied in a dry pulverized state; moreover, the enamel, being applied in a dry state, is free from specks and dirt, all

the impurities having been washed away, and the iron backing or foundation is much more durable than those of copper.

Having thus described my invention, what I claim as new is—

The manufacture of enameled dial and other plates, labels, or tablets of thin sheet-iron, stamped out with turned-up edges, and an enamel composition prepared as herein speci-

fied, and applied in a dry coarsely-powdered state, substantially as set forth.

The above specification of my invention signed by me this 22d day of April, 1874.

JOSEPH HENRY ROBINSON.

Witnesses:

JOS. J. RELSON, *Solr., Liverpool.*

JOHN HAMPTON, *His clerk.*