

W. E. WORTHEN & R. S. GILLESPIE.  
ELECTROPLATING STATUETTES, &c.

No. 171,464.

Patented Dec. 21, 1875.

Fig:1

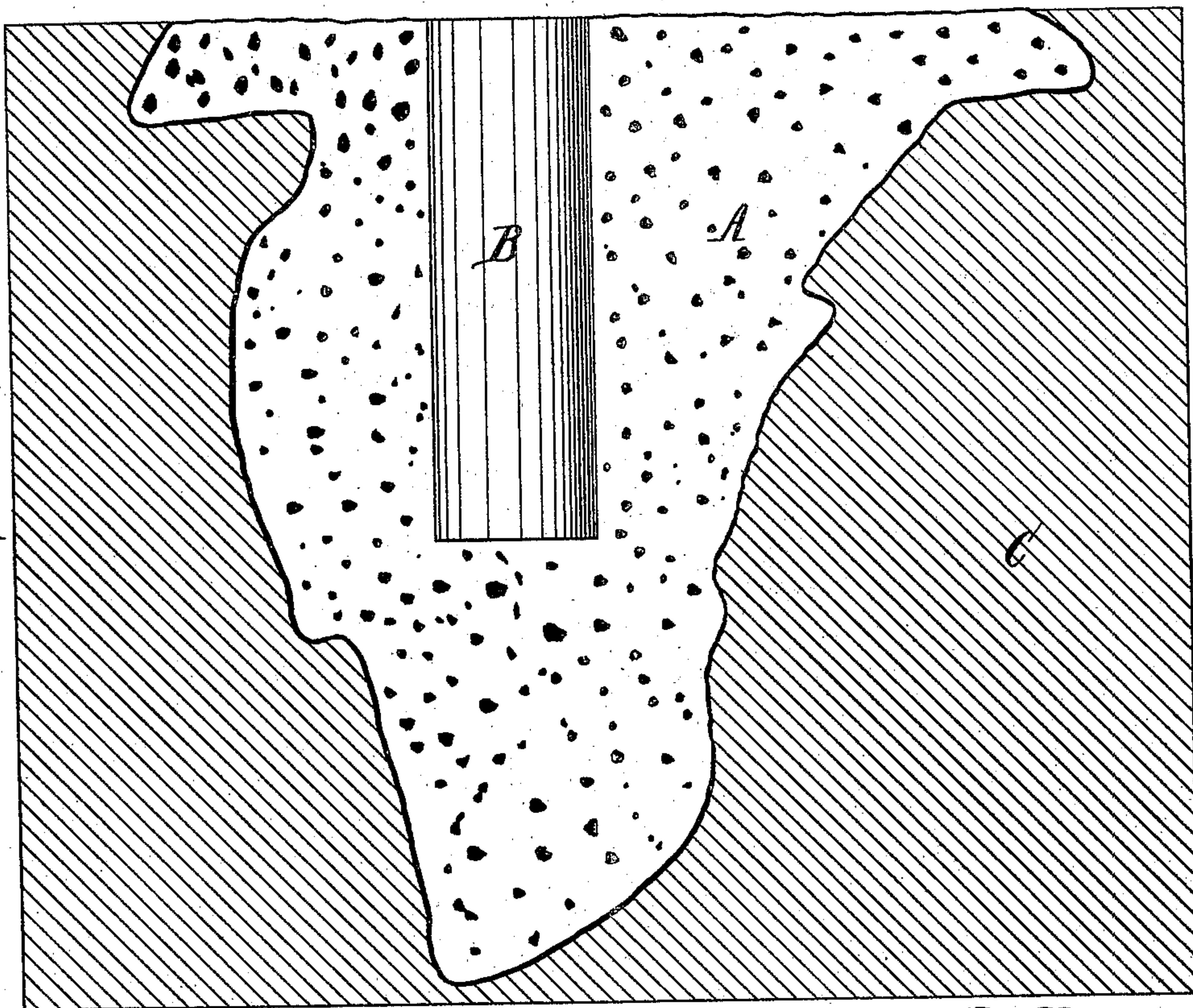
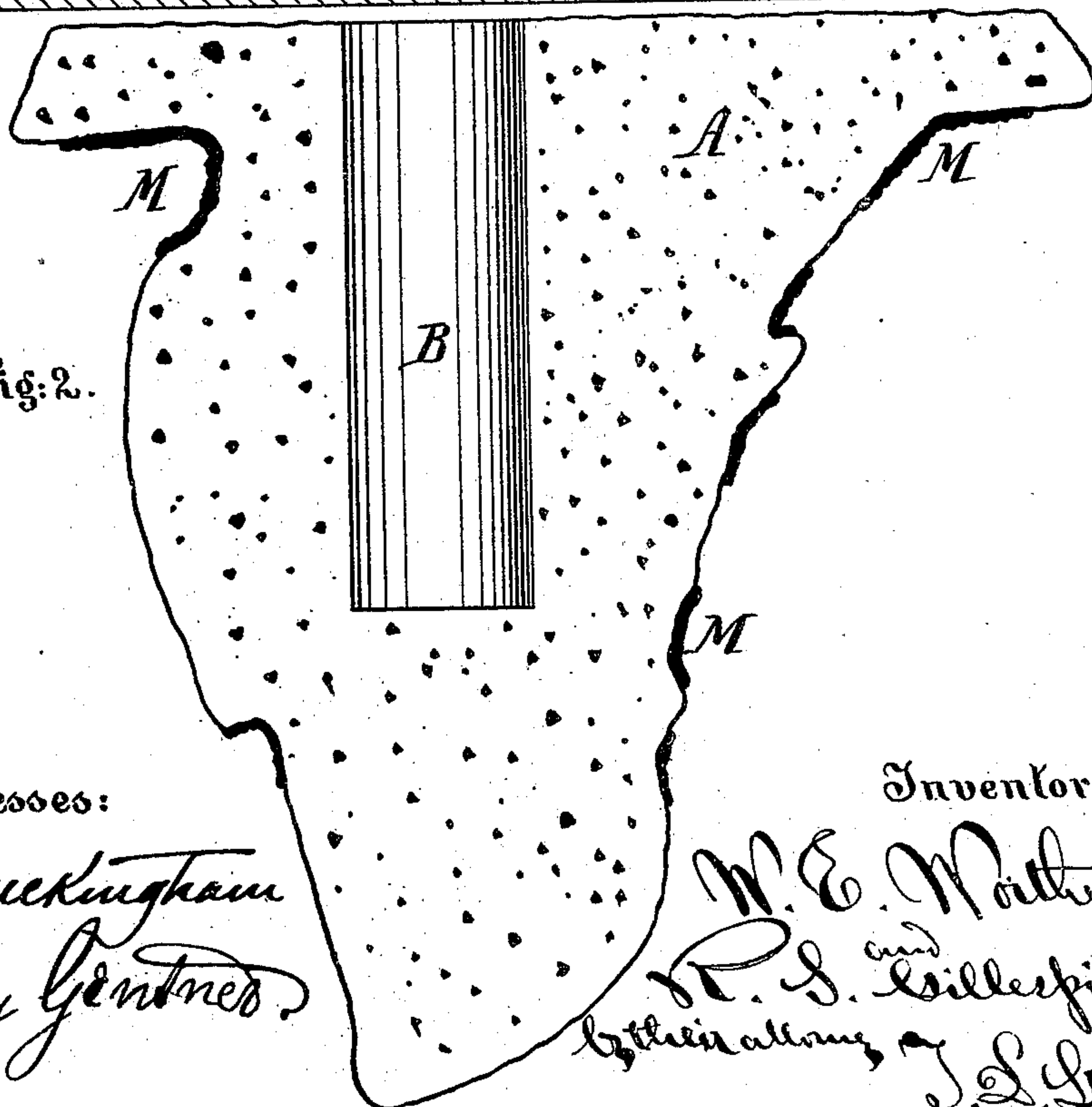


Fig:2.



Witnesses:

*John Buckingham*  
*Henry Gentner*

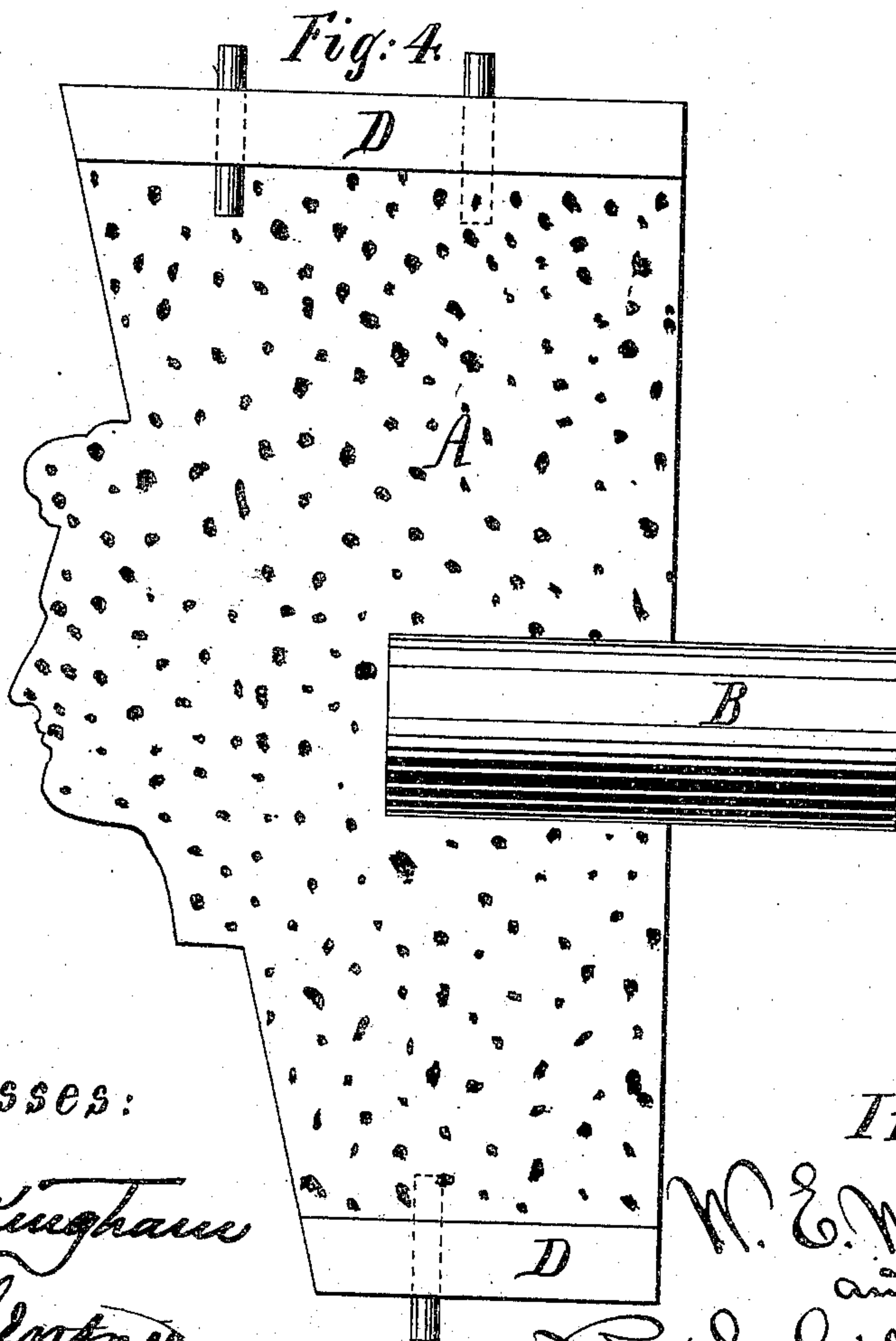
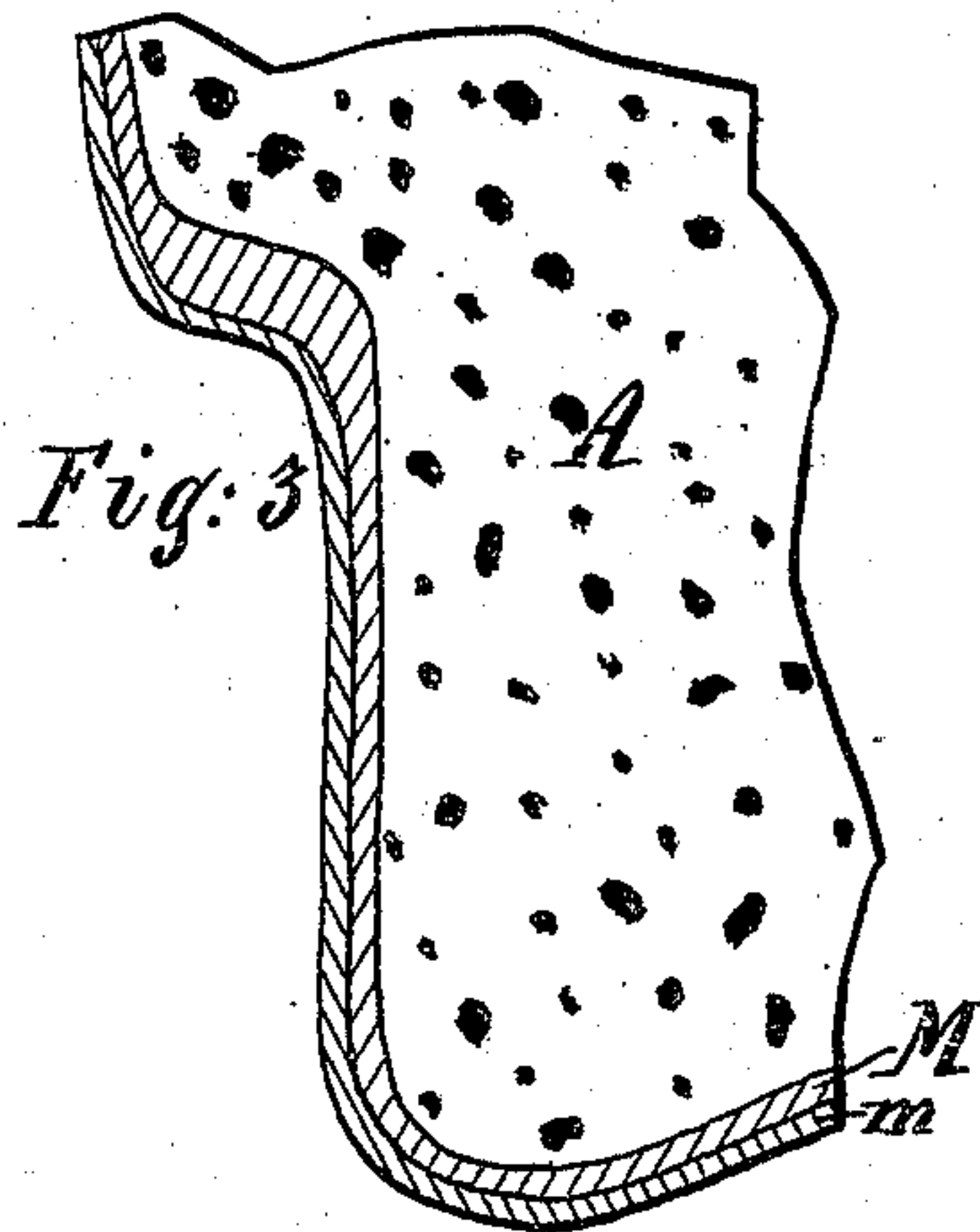
Inventor:

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*R. S. Gillespie*  
*by their attorney, J. L. Sutton*

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by their atty. J. S. Nelson



# UNITED STATES PATENT OFFICE

WILLIAM E. WORTHEN AND RICHARD S. GILLESPIE, OF NEW YORK, N. Y.

## IMPROVEMENT IN ELECTROPLATING STATUETTES, &c.

Specification forming part of Letters Patent No. **171,464**, dated December 21, 1875; application filed February 19, 1875.

### CASE A.

*To all whom it may concern:*

Be it known that we, WILLIAM E. WORTHEN and RICHARD S. GILLESPIE, both of the city, county, and State of New York, have invented certain new and useful Improvements relating to Electroplated Statuettes, Architectural Ornaments, and analogous art manufactures.

The following is a full description of our improved article, and of the novel means employed in its manufacture.

We have discovered and applied to this use a method of cheaply and rapidly producing non-absorbent castings of a high conducting power, and subsequently coat such by the electrotype process. We have introduced improvements in the preparation and treatment, which produce novel and very perfect figures.

It has been long desirable to produce ornamental and artistic figures in some cheap material coated by the electroplate process. The practice at present in most common use is to cast the articles in zinc, and then cover them with copper by what is generally known as the cyanide process. This is expensive in the casting, and of little endurance. In most cases the bronze cover is but a mere wash. Electro-bronzes having a thicker coating have been made by coating an article cast in wax, and then melting out the wax and filling up the same with plaster, hydraulic cement, or resin.

Attempts have been made to produce such articles by means analogous to ours, but without success. When the article is molded or cast in plaster or cement first, and is afterward coated with plumbago and subjected to the bath, it is almost impossible to protect the plaster from the absorption of the sulphate and water of the bath. When such absorption takes place it results that after the deposit has been formed and the article removed from the bath the sulphate will exude, defacing and destroying the metallic coating. Furthermore, the deposit is liable, or almost certain, on such a casting to become a loose flexible shell, without adhesion, or even a close fit. Coating or soaking in wax has been tried as a preventive of the absorption; but the chances of failure are serious, even with a great degree of care and labor, and we are aware of

no remedy for the looseness of the coating referred to.

In carrying out our improvements we have poured into a metallic mold, such as is used in the manufacture of the finest castings of zinc, a hot mixture of a good conductor of electricity, as coke, charcoal, or plumbago, in a powdered state, united by a cementing material which is practically non-absorbent of water or solutions. From our experiments we prefer, for cheapness, strength, and conductivity, pulverized coke and asphalt. These materials are mixed, while hot, in proportions somewhat dependent on the fineness of the coke-dust and sharpness required in the casting—the greater the proportion of the coke, with a free flow of the mixture, the more the conductivity of the surface of the article under the process of electroplating. When the figures are to be used for architectural decoration, or are for any reason to be secured to panels or walls, a piece of wood, previously saturated in coal-tar, if preferred, is introduced, say, half its length into the mold. Afterward, by means of the wood, or by the use of screws, nails, or hooks driven into such wood, the figures may be conveniently secured in position.

In preparing the articles for the bath we at first coat only the re-entering angles or the recessed surfaces with plumbago, thus making only those portions highly conductive, and by this means securing first a deposit on those places most difficult to cover. When the pieces are large we make at first only a partial immersion, and then gradually increase it, moving up the electrodes as we proceed. We do this because it is difficult with a moderate battery—as, for example, an “inside” battery—to secure a uniform deposit over a large surface. When we cover a large piece which is already erected—as, for instance, a fountain—we inclose it in a suitable tank and gradually allow the solution to rise, at the same time moving up the battery and the electrodes.

Our process, so far as the mere deposition of the shell is concerned, is conducted as usual. The shell so deposited is thicker than



that of the usual cyanide process, ours being generally about one-fiftieth to one-thirty-second of an inch thick. It can be made much heavier on some subjects, care being taken not to destroy the artistic expression of the figure. The deposit is firm and glove-like in its close fit.

When the objects are figures of animals and the like, where parts like the legs and tails, or, in architectural ornament, brackets and arrises, would not be of sufficient strength, we form these parts in cast or wrought metals, and insert them in the mold, or make such metal frame serve as the exterior of the mold, to remain with and form a part of the casting. The strong metal must be extended sufficiently into or around the body of the article to become part of it, and to give, when necessary, an efficient support or protection to the figures.

The accompanying two sheets of drawings form a part of the specification, similar letters representing identical parts throughout.

Figure 1 is a section, showing the material in the mold, with the wood plug forced down into position. A is the conducting and non-absorbent composition. B is the plug fixed therein. C is the mold.

Fig. 2 shows the first preparation for the bath, by coating only the hollow portions. M is the partial coating of plumbago. (The thickness is exaggerated.)

Fig. 3 is a magnified section of a portion near the surface of the completed figure. A is the composition, M is the plumbago coating, and *m* is the electroplate coating.

Fig. 4 shows, in vertical section, a "key-stone" made according to my invention, with a strong frame of metal to receive the pressure of the building. A is the conducting and non-absorbent material. B is the wood plug,

and D is the metal frame, joined by being previously placed in a suitable mold, and the hot composition A poured in and firmly united therewith.

We claim as our invention—

1. A casting composed of conducting particles, united together with a non-absorbent cement, and covered with a close-fitting electroplate shell, as herein specified.

2. The conducting and non-absorbent casting A, in combination with the metal part or parts D, the whole covered with the electroplate shell *m*, as and for the purposes herein specified.

3. The process of forming electroplate figures herein described, consisting, first, of pouring a heated conducting and non-absorbent material into a mold, afterward inserting therein a mass of wood, and finally covering it with a tight-fitting electrotype coating, as herein specified.

4. The within-described process of electroplating figures by first applying only the partial coating M of conducting material, and, after subjecting the article to the bath with such partial coating on only the recessed and most difficult portions, to subsequently apply the coating on the projecting portions, and finally to allow the deposit to be received thereon, as and for the purposes herein specified.

In testimony whereof we have hereunto set our hands this 2d day of February, 1875, in the presence of two subscribing witnesses.

WILLIAM E. WORTHEN.  
RICHARD S. GILLESPIE.

Witnesses:

EUGENE LEBEUF,  
JEAN-BAPTISTE MERGET.