

# UNITED STATES PATENT OFFICE.

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## ELECTROPLATING PROCESS.

973,951.

Specification of Letters Patent.

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No. Drawing.

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To all whom it may concern:

Be it known that I, FRANCIS J. McELHONE, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Electroplating Process, of which the following is a full, clear, and exact description.

This invention relates to electroplating or electrotyping.

In the preparation of electrotypes, the molds or cases of wax or similar material are covered with graphite or "black lead" and are usually treated with a solution of copper-sulfate and iron filings. This has the effect of increasing the conductivity of the case so that plating begins almost immediately upon immersion in the plating bath. The use of blue-stone or copper sulfate and iron filings has many drawbacks, chief of which is a tendency to scratch the face of the case by the undissolved pieces of the iron filings. The solution is expensive and very destructive to plumbing when it is allowed to run off through the waste pipes.

The object of the invention is to produce an economical process which will facilitate the rapid electroplating of the case, while avoiding the defects, relatively high cost and disadvantages referred to above, the general purpose being to produce more perfect plates or electrotypes.

The invention consists in the process to be described more fully hereinafter and particularly set forth in the claims.

In practicing this process, a case of wax or similar material of the usual form is prepared and is brushed over with "black lead." The impression of the type or engraving is then made in the case. The case then receives another coat of "lead" and is then sprayed with water through a rose nozzle, which removes the air from the "leaded" face of the case. It is customary at this point to treat the case with a solution of copper sulfate referred to above. In practicing my process at this point, I immerse the case in a solution of pyrogallie acid, which is an organic acid and an oxygen acid of the carbocyclic series. I prefer to use pyrogallie acid, though I may use tannic acid, gallotannic acid or gallic acid for the same purpose. The acid is applied simply by immersing the case as described in the acid and brushing the face of the case with a soft brush. The solution of the acid used

contains about 80 grains to the gallon of water. After treating the case with the acid I spray it again with the nozzle, to rinse the acid from the face of the "lead." The case is then placed in the plating bath. It is very important that the cases should be thoroughly washed, so that all of the acid or its products will be removed. If this is not accomplished, the acid remains in the recesses of the type, increasing the resistance in its locality; this produces spots and destroys the uniformity of the resulting plate. For this reason it should be understood that it is the effect of the treatment with the acid which is desired rather than the presence of the acid itself. In this connection it should be understood that any local deposits on the face of the case have a tendency to produce spots. Such local deposits are produced at times by ink which adheres to the type after taking proof-sheets from the form. I believe, also, that the tendency to form spots is aggravated by the presence of lighter oils which come to the surface of the wax under the great pressure to which the cases are subjected. The acid dissolves these substances when applied to the case, and the surface of the case becomes thoroughly clean when rinsed with water as described. The action of the acid appears to be to prevent the appearance on the surface of the case of bubbles of occluded gas, and it is thought that it has a certain advantageous action upon the lighter oils which may be brought to the surface of the wax by the pressure.

What I claim and desire to secure by Letters Patent is:

1. The process which consists in treating the graphite covering for a type mold with an organic acid, and electro-plating thereafter.

2. The process which consists in wetting the graphite covering of a type case with an organic acid solution, removing the said acid solution thereafter, and electro-plating.

3. The process which consists in covering a mold with graphite, wetting said graphite with an organic acid solution, rinsing said case to remove said solution, and electro-plating thereafter.

4. The process of preparing a type case which consists in covering the case with graphite, wetting said case with an oxygen acid, rinsing the said case to remove the acid, and electro-plating thereafter.

5. The process of preparing a type case,

which consists in covering the case with graphite, wetting said case with an acid of the carbo-cyclic series, rinsing, and electro-plating thereafter.

- 5 6. The process which comprises wetting a type-case with an acid of the carbocyclic series, and electro-plating the case thereafter.

In testimony whereof I have signed my name to this specification in the presence of 10 two subscribing witnesses.

FRANCIS J. McELHONE.

Witnesses:

F. D. AMMEN,  
Jno. M. RITTER.