

UNITED STATES PATENT OFFICE.

CASSIUS F. BLACKLIDGE, OF WASHINGTON, DISTRICT OF COLUMBIA.

PROCESS OF DEPOSITING METAL ON NON-METALLIC BODIES.

No. 799,218.

Specification of Letters Patent.

Patented Sept. 12, 1905.

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To all whom it may concern:

Be it known that I, CASSIUS F. BLACKLIDGE, a citizen of the United States, residing at Washington, in the District of Columbia, have
5 invented new and useful Improvements in Processes of Depositing Metal on Non-Metallic Bodies, of which the following is a specification.

My invention pertains to depositing or precipitating metal on non-metallic bodies; and it contemplates the provision of a process calculated to assure the quick deposition or precipitation of a compact and uniform surface of metallic silver upon a wax or other non-metallic mold with a view of making the mold electrically conductive, and thereby accelerating and rendering certain and perfect a subsequent operation of depositing metal, preferably nickel, on the mold by electrolysis to
20 make an electrotype or the like.

In the preferable practice of my invention I prepare a silver solution by adding nitrate of silver to water in about the proportions of twenty grains of the former to one ounce of
25 the latter and adding liquid ammonia until the precipitate is redissolved. I also prepare a reducing agent consisting of forty per cent. formaldehyde or formalin or the chemical equivalent thereof diluted with water in
30 about the proportions of one ounce of the former to three ounces of the latter. The wax or other non-metallic mold to be coated with silver is prepared, precedent to the application of the commingled silver and reducing agent, by applying to the mold an alcoholic substratum of collodion. This latter is made by dissolving about one grain of gun-cotton (pyroxylin) in about one-fourth of an
40 ounce of sulfuric ether and about three-fourths of an ounce of ninety-five per cent. alcohol. It is flowed over the mold or is applied to the same with a brush or in any other approved manner, and after the application the mold is permitted to dry. The said substratum of collodion conduces to the proper
45 deposition or precipitation of the metallic silver on the mold and is preferably employed for such reason. I desire it distinctly understood, however, that I do not confine myself
50 to the use of collodion, as any other substance compatible with the purpose of my invention may be employed; also, that I do not confine myself to treating the mold in any manner whatsoever precedent to the deposition of the

silver thereon, inasmuch as good results are obtainable without so treating the mold.

In practicing my novel process I add the reducing agent described to the ammonia nitrate-of-silver solution in about the proportions of six drams of the former to two ounces
60 of the latter and immediately thereafter apply the mixture to the mold, preferably by pouring it on the face of the mold and manipulating the mold so that the mixture is spread evenly over the face. The mold is
65 gently oscillated until the metallic silver is reduced upon its face, which takes place in a very short time—i. e., from two to five minutes—when the mold will have a compact and uniform metallic surface.

My novel process is designed more particularly for depositing nickel on a mold of non-conductive material by electrolysis, and when the mold is provided with a compact and uniform metallic surface in the manner just
75 stated the quick and perfect deposition of the nickel by electrolysis is assured and the nickel is not liable to peel during the use of the electrotype.

I have entered into a detailed description
80 of my novel process as I prefer to practice it in order to impart a full, clear, and exact understanding of the same. I do not desire, however, to be understood as confining myself to the specific practice hereinbefore
85 pointed out or to the proportions of the ingredients entering into the several compositions or to the specific ingredients, as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The electrotyping process which consists
95 in preparing a mold of non-conductive material, coating the mold with substance that will conduce to the precipitation of metallic silver on the mold, adding liquid ammonia to a nitrate-of-silver solution until the precipitate
100 is redissolved and adding formaldehyde to the mixture, applying this mixture to the coated mold, and depositing metal on the silver surface of the mold by electrolysis.

2. The electrotyping process which consists
105 in preparing a mold of non-conductive material, coating the mold with substance that will conduce to the precipitation of metallic silver

on the mold, adding liquid ammonia to a nitrate-of-silver solution until the precipitate is redissolved and adding formaldehyde to the mixture, applying this mixture to the coated
5 mold and depositing nickel on the silver surface of the mold by electrolysis.

In testimony whereof I have hereunto set

my hand in presence of two subscribing witnesses.

CASSIUS F. BLACKLIDGE.

Witnesses:

THOS. G. LEWIS,
WM. BERRY.