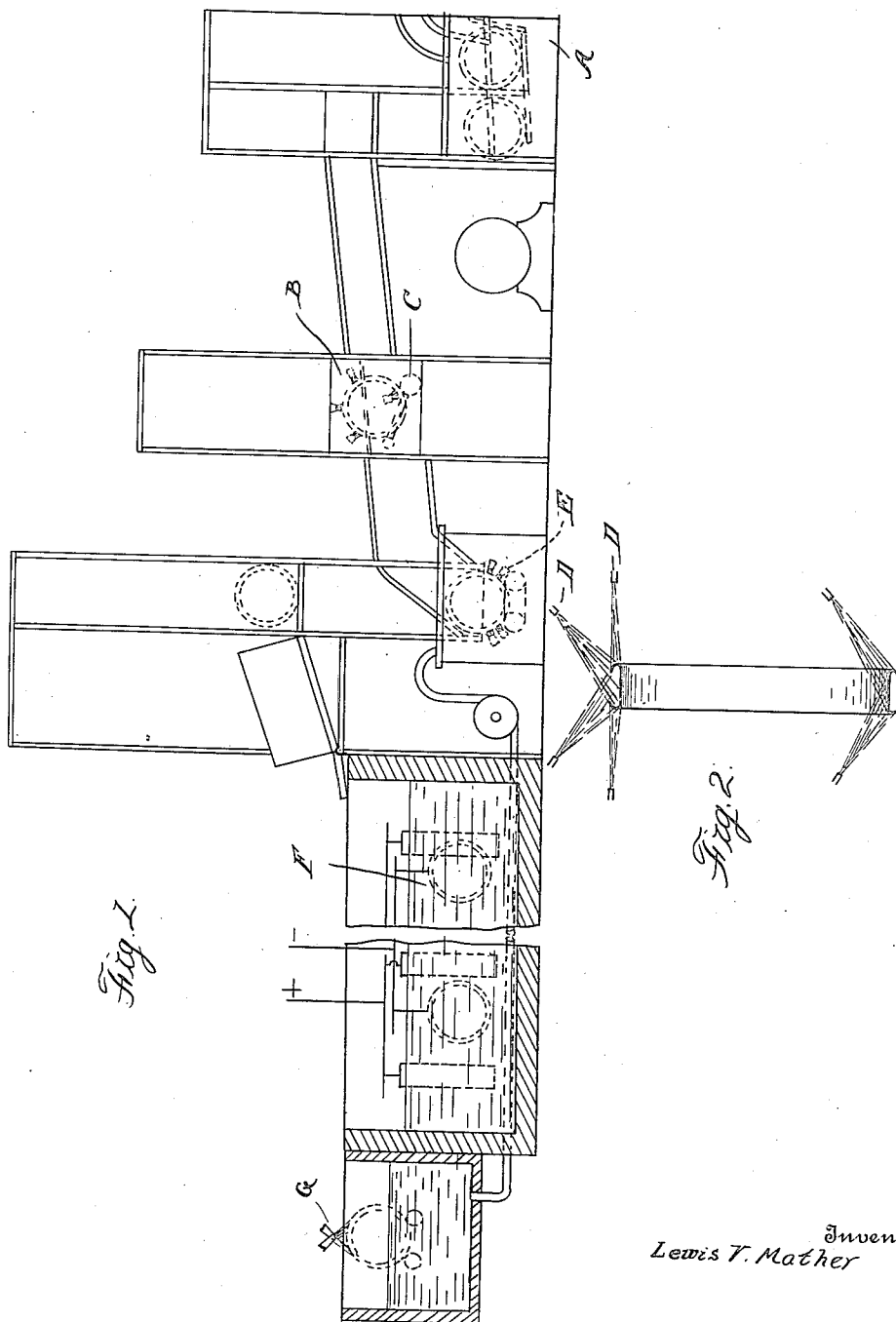


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L. V. MATHER.
PROCESS OF GALVANIZING WHEEL RIMS.
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UNITED STATES PATENT OFFICE.

LEWIS V. MATHER, OF DETROIT, MICHIGAN.

PROCESS OF GALVANIZING WHEEL RIMS.

Application filed November 12, 1920. Serial No. 423,506.

To all whom it may concern:

Be it known that I, LEWIS V. MATHER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Processes of Galvanizing Wheel Rims, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to the art of electrolytic depositions of metal to form a protecting coating, and the present invention is more particularly designed for use in the coating of metallic wheel rims with a protecting metal, although the same method is applicable to other articles. In the present state of the art of galvanizing or electroplating, it is usual to subject the articles to be coated to a pickling process in which the scale or oxide on the surface of the article is removed and this process is one which frequently is injurious to the metal and is also one requiring considerable time. Furthermore, it frequently happens that the surface is not fully cleaned and as a result some portion of the protecting electrolytic deposit will subsequently peel off.

It is one of the objects of the present invention to eliminate this pickling process and to effect the cleaning of the surface chiefly by a mechanical process. This mechanical cleaning is, however, preferably combined with a pre-cleansing step in which the oil or grease on the surface is largely removed.

Another important feature of improvement is the performance of all of the necessary operations upon the articles to be coated during the continuous advancement of the same, thereby rendering the process automatic. Other features of improvement will be referred to more specifically hereinafter.

In the drawings:

Figure 1 is a diagrammatic sectional elevation of an apparatus for carrying out the method;

Figure 2 is a cross section.

Generally described, my improved process comprises the cleaning of the surface to be coated by sand blasting, the thorough removal of all dust from the sand-blasted surface and in then electrolytically depositing the metal thereon. In carrying out the process it is of advantage to introduce certain auxiliary steps, one of which is the re-

moval to a large extent of the grease or oil from the surface of the metal before the sand blasting operation. As an incident in the manufacture of the wheel rims, or other articles, to be coated, the surface is subjected to oil or grease and most frequently non-saponifying mineral oils are used. Such oils or grease cannot readily be removed by an alkaline bath, but if they are mixed with a saponifying oil or grease and then treated with alkali, all or the greater part of the grease can be readily removed. One step of my improved process is therefore the mixing with the mineral oils used in connection with the mechanical operations of manufacture a small percentage of vegetable or animal oil, which is saponifying.

The first step directly connected with the coating process is the subjecting of the articles to a hot alkaline bath. This is preferably accomplished by feeding the articles successively into, through and out from a vat A containing a hot solution of alkali. By reason of the fact that the saponifying oil or grease is mixed with the mineral oil, this alkali treatment will remove the greater part of the grease.

Upon passing out from the alkaline bath the articles are successively fed to a sand-blasting apparatus B. This, when used for wheel rims, preferably consists of means C for slowly revolving each rim together with a series of sand blasting nozzles D, which are so directed as to entirely cover the perimeter of the cross-section of the rim. Therefore, after one complete revolution all of the surface will be thoroughly cleaned.

The sand blasting will leave upon the surface a deposit of fine dust, which, if permitted to remain, would interfere with the adhesion of the electrolytic metal. I therefore subject each article, after passing out of the sand blasting apparatus, to a wash, preferably by needle jets E. The jets are so arranged as to impinge against all portions of the surface during the rotation of the same with the result that all dust is removed.

The rims are then fed into the electrolytic bath F and during the time in which they are passing through this bath they are in electrical contact with the cathode and therefore receive the electrolytic deposit. The time of treatment is such as to make a deposit of the desired thickness and during treatment the point of contact with the electrical sur-

face is changed one or more times so that no portion of the surface remains without coating.

After removal from the electrolytic bath, the articles are thoroughly cleansed from the electrolyte by washing. Preferably they are first subjected to a needle wash G, which removes the greater part of the adhering electrolyte and this wash-water commingled with the electrolyte which has been removed is used for the needle wash previously mentioned, which removes the dust from the surface. The advantage of this step is that the wetting of the surface of the metal with a weak electrolyte prepares the same for the electrolytic deposit as it enters the bath, and avoids the leaving of any pin holes in the coating metal.

After the needle wash for removing the electrolyte, the articles are preferably subjected to a second wash in hot water and the heat thus communicated to the metal will effect a quick drying when removed from the bath.

What I claim as my invention is:

1. The method of preparing the surface of articles for electrolytic deposits, comprising the incorporation of a saponifying oil in the grease on the surface of the article, subjecting the article to a caustic alkaline bath and subsequently removing the scale by sand-blasting.

2. The process of preparing the surface of articles for electrolytic deposits, comprising the incorporation of a saponifying oil in the grease on the surface of the article, subjecting the article to a hot caustic alkaline bath, permitting the surface of the article to dry, and removing the scale by sand-blasting.

3. The process of preparing the surface of articles for electrolytic deposits, comprising the incorporation of a saponifying oil in the grease on the surface of the article, subjecting the article to a caustic alkaline bath, removing the scale from the surface by sand-blasting, and thoroughly removing the dust from the sand-blasted surface and immersing in the electrolyte.

4. The process of preparing the surface of articles for electrolytic deposits, comprising sand-blasting the surface, subjecting the blasted surface to the impact of a liquid stream to thoroughly remove the dust and to wet the surface and immersing in the electrolyte.

5. The process of preparing the surface of articles for electrolytic deposits, comprising sand-blasting the surface to remove the scale therefrom, subjecting the blasted surface to the impact of a stream of dilute electrolyte to remove the dust and to wet the surface, and immersing in the electrolytic bath.

6. The process of preparing the surface of

articles for electrolytic deposits, comprising subjecting the article to the action of a plurality of sand-blast jets, together covering all portions of the cross-sectional contour, and progressively advancing the area of operation to cover all portions of the surface.

7. The process of preparing the surface of articles for electrolytic deposits, comprising subjecting a zone of the surface to the action of a plurality of sand-blast jets, together covering all portions of said zone, and advancing the zone of action to cover the entire surface of the article.

8. The process of preparing the surface of circular articles for electrolytic deposits, comprising the subjecting of a zone of the surface to a plurality of sand-blast jets, and rotating the article to advance the zone of action until the whole surface is covered.

9. The process of preparing the surface of annular articles for electrolytic deposits, comprising the subjecting of a zone of the surface to the action of a plurality of sand-blast jets, together covering all portions of the surface of said zone, and revolving the annular article to progressively advance the zone of application until the entire surface is covered.

10. The process of preparing wheel rims for electrolytic deposits, comprising subjecting the rim to the action of a plurality of sand-blast jets, together completely covering a zone of the rim, and rotating the rim to progressively advance the zone of treatment until the entire surface is covered.

11. The process of electrolytically coating the surface of articles, comprising sand-blasting the surface thereof to remove scale therefrom, subjecting the surface to a liquid stream of dilute electrolyte to remove all dust, and to wet the surface, immersing the article while the surface thereof is wet into the electrolytic bath, and forming the deposit thereon, washing the adhering electrolyte from the surface of the coated article, and utilizing the wash water for the cleaning and wetting of the surface.

12. The process of forming electrolytic deposits on articles, comprising incorporating the saponifying oil in the grease adhering to the surface of the article, immersing the article in hot caustic alkaline solution, permitting the surface to dry, sand-blasting the surface to remove all scale therefrom, subjecting the surface to a liquid stream of dilute electrolyte, immersing the wet surface into the electrolytic bath, washing off the adhering electrolyte from the article removed from the bath, and utilizing the wash water for wetting and cleaning the surface of other articles.

13. The method of preparing the surface of articles for electrolytic deposits, comprising

ing the incorporation of a saponifying oil in the grease on the surface of the article in the grease on the surface of the article subjecting the article to a caustic alkaline bath and subsequently removing the scale. 10

In testimony whereof I affix my signa-

5 14. The method of preparing the surface of articles for electrolytic deposits, comprising the incorporation of a saponifying oil

LEWIS V. MATHER.