

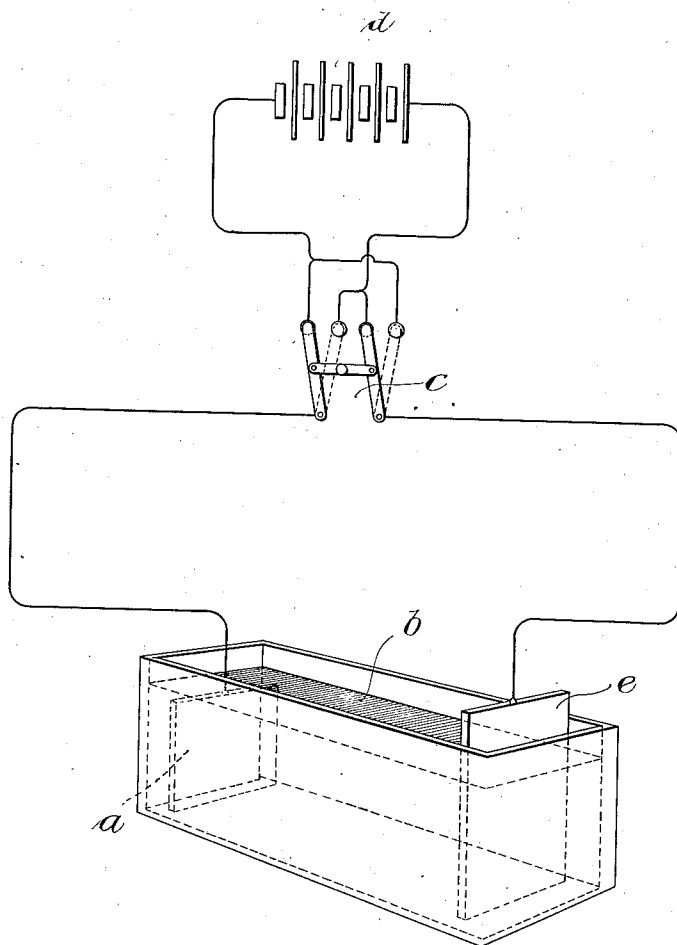
No. 827,802.

PATENTED AUG. 7, 1905.

H. L. HOLLIS.

PROCESS OF TREATING IRON OR STEEL OBJECTS.

APPLICATION FILED JULY 7, 1905.



Witnesses:

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HENRY L. HOLLIS, OF CHICAGO, ILLINOIS.

PROCESS OF TREATING IRON OR STEEL OBJECTS.

No. 827,802.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed July 7, 1905. Serial No. 268,801.

To all whom it may concern:

Be it known that I, HENRY L. HOLLIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in the Process for Treating Iron or Steel Objects, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to an improved method for treating iron or steel objects, which may be in the form of sheets, in order to provide them with a preservative coating.

In Patent No. 621,084, granted me March 14, 1899, I describe a method for applying a preservative coating to iron or steel objects, which consists in temporarily inserting the object to be treated in a solution of caustic alkali as an electrolyte, temporarily connecting said object as an anode, with a source of electricity, passing electric current from said source through the object and electrolyte, whereby oxidizing conditions will be furnished at the surface of the object and oxygen will there be united with the iron to form a protective coating, and then withdrawing the connected iron object from the solution.

In Patent No. 664,550, granted me December 25, 1900, a similar method of treatment is described. In this method the object is first made a cathode for the purpose of cleansing it from foreign material, whereafter the object is made an anode and the process carried out as described in the other patent mentioned. During the coating, however, of the object foreign substances are mechanically deposited thereon which interfere with the uniform appearance of the object or sheets, and if it is attempted to brush or rub these sheets off dry the surface thereof is likely to become marred. I find that by treating the objects with oil subsequent to the coating thereof they may readily be brushed and cleaned without marring or scratching them, and the oil treatment, furthermore, gives a much more uniform appearance and allows the objects to be packed and handled with much less danger of scratching. The objects also even after the oil is apparently completely and thoroughly rubbed off are found less liable to rust than without this oil treatment.

The entire process for treating the object is as follows: As shown in Fig. 1, the object *a*

to be treated is immersed in the solution *b*, which forms the electrolyte and is adapted through the switch *c* to be connected with either terminal of the source of current *d*, the plate *e* also in the electrolyte being connected with the current source to complete the circuit. If the object, such as the sheet shown, is sufficiently clean, it may at once be connected with the source to form the anode, and current then flowing from the object to the electrolyte causes oxidizing conditions to set in at the surface of the object and the oxygen will there be united with the iron to form the protective coating, whereupon the object may be withdrawn. If the object, however, requires cleaning, it is at first connected with the source to be the cathode, whereby foreign material is removed from the object, and when the object is sufficiently cleaned the current is reversed at the switch to make the object an anode, and the protective coating will be formed thereon, as above described. As before stated, during the formation of this protective coating foreign substances are apt to adhere to the object, and it is very difficult to brush these off without marring or scratching the objects. After the coating is applied I therefore dry the objects and then immerse them for a very short time in a bath of oil, which is preferably heated, the degree of heat depending on the kind of oil. With a mineral oil the temperature is kept below the flashing-point; but I find that very good results can be obtained by using palm-oil, the temperature thereof being raised to approximately 125° centigrade. After removing the objects from the oil-bath they are brushed or rubbed with bran or any other material that will not scratch the sheets, but will absorb and remove the oil. This treatment might also be carried on with oil at ordinary temperatures; but the use of heated oil is much more economical for the reason that the oil in a heated condition runs off the objects much more rapidly and completely, and thereby also lessens the labor in the cleaning treatment.

Objects treated in this manner require much less care in handling and packing, as the danger of marring or scratching is greatly lessened on account of the oil treatment, and the objects will also resist rust for a much longer time.

The electrolytic solution may be any suitable oxidizing and cleaning reagent, such as caustic soda or any other caustic alkali.

The drawing merely illustrates a simple means for carrying out my process, but forms no part of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The method of providing a protective coating for iron objects which consists in inserting the object to be treated in a suitable electrolyte, passing electric current through the electrolyte and object whereby oxidation will take place at the surface of the object and oxygen will there be united with the iron to form a protective coating, withdrawing the object from the solution and drying it, and then immersing the object in oil.

2. The method of providing a protective coating for iron objects which consists in immersing the object in a suitable electrolyte, passing current through the electrolyte and object to cause oxidizing conditions at the surface of the object, whereby oxygen will be united with the iron to form a coating, removing the object from the electrolyte and drying it, immersing the object for a short time in oil, and then rubbing off the oil with soft material.

3. The method of providing a preservative coating to iron objects which consists in subjecting the iron object to oxidizing conditions to form thereon a coating, thereafter immersing the object in oil, and then rubbing off the oil.

4. The method of treating an iron object to provide a protective coating therefor which consists in causing oxidation of the iron to form thereon a protective coating of iron oxid, thereafter immersing the object in oil, and then removing the oil therefrom.

5. The method of treating iron objects to provide a preservative coating therefor which consists in subjecting the iron to oxidizing influence to form thereon a coating of iron oxid, thereafter temporarily immersing the object in heated oil and then absorbing and rubbing off the oil.

6. The method of treating iron objects to

provide therefor a preservative coating which consists in electrolytically causing the formation of a coating of iron oxid thereon, drying the object, and immersing it in oil.

7. The method of treating iron objects to provide therefor a preservative coating which consists in electrolytically causing the formation of a coating of iron oxid thereon, drying the object, immersing it in oil, and then absorbing and rubbing off the oil.

8. The method of treating iron objects to provide a preservative coating therefor which consists in electrolytically causing the formation of a coating of iron oxid thereon, drying the object, immersing it temporarily in heated oil, and then absorbing and rubbing off superfluous oil.

9. The method of treating iron objects to provide a protective coating therefor which consists in immersing the object in an electrolyte, causing the passage of current through the electrolyte and object to cause the formation of a coating thereon, removing the object from the electrolyte and drying it, thereafter immersing the object temporarily in a bath of heated oil, and then rubbing the object with soft material to dry it from the oil.

10. The method of treating iron objects to provide a protective coating therefor which consists in immersing the object in an electrolyte consisting of caustic alkali, suitably passing a current of electricity through the electrolyte and object to cause formation of a coating on the object, removing the object from the electrolyte and drying it, thereafter immersing the object for a short time in a bath of heated oil, and then rubbing the object with bran, sawdust or other soft material to absorb and dry the oil therefrom.

In witness whereof I hereunto subscribe my name this 1st day of July, A. D. 1905.

HENRY L. HOLLIS.

Witnesses:

ALICE HUNTER,
CHARLES J. SCHMIDT.