This invention relates to cleaning and coating of metal drums such as are used to contain various liquids as alcohol and other liquids. More particularly the invention relates to a process for reconditioning such iron and steel shipping drums which have become rusty on their interior from use or abuse. It is a well understood fact that drums of this character are liable to have their interiors very badly rusted and in many instances these drums cannot be used a second time until all such rust has been removed. Among the important objects of the present invention is to provide an improved process whereby not only will the rust be removed from the drums but a coating will be provided on the interior which is rust proof and insoluble in ordinary liquids. A second important object of the invention is to provide an improved process whereby the cleaning and coating will be performed in a single operation. With the above and other objects in view as will be hereinafter understood, the invention in its present embodiment is carried out in the following manner:

In the rusty drum is placed an aqueous solution of oxalic acid which unites with the rust to form an iron oxalate. After the formation of the oxalate there is placed in the drum an aqueous solution of a metallic acetate in which the metallic element is replaceable by the iron of the oxalate when the acetate and oxalate are brought into contact. This will form one of the basic acetates of iron and the process may be expedited by the application of heat either dry or in the form of steam.

As a specific example of the method in which the process is carried out, in the rusty drum, which has been emptied of its contents, is placed an aqueous solution of oxalic acid. It is found that a suitable strength of such solution may be obtained by dissolving 17 pounds of oxalic acid in 40 gallons of water. It is to be noted that while this solution is a suitable one I do not confine myself in all instances to the precise strength of solution herein set forth as this may vary in accordance with the conditions of the drums being treated. Ordinarily there is placed in a drum of the 55 gallon-size about 1 quart of this solution, the quantity of the solution varying somewhat with the extent of rusting and, of course, varying with the size of the drum. This solution, by some suitable means, is distributed or spread all over the interior surface of the drum. The solution of oxalic acid in contact with the oxide of iron forms with such oxide an iron oxalate, such as ferrous oxalate, ferric oxalate or complex ions of ferrous and ferric oxalate. After the oxalic acid has been spread over the interior the drum is heated by the application of live steam and this may be done in any convenient manner such as the filling of a chamber in which the drum is inclosed by such live steam, the drum being open so that the steam may enter the interior. Next the aqueous solution of aluminum acetate is placed in the drum and spread around the walls to cover the entire inner surface. This aluminum acetate unites with the oxalate on the walls to form a rust resisting, water proof coating covering the entire interior of the drum. It is a well-known fact that under certain conditions the mixture of an acetate such as aluminum acetate with an oxalate of iron will form a basic acetate of iron of which there are several forms and some of these forms are highly insoluble and when dried present a glassy appearance. The presence of such a basic acetate is somewhat difficult to determine but it is probable that the coating thus formed consists largely of a basic ferrous acetate the exact composition of which is not deemed necessary to be set forth since it is the physical qualities of insolubility and rust proofing that are desired. Thus in the one operation the iron rust is dissolved and united with the other chemicals to form a rust resisting and water proof coating.
Having thus described the invention, what is claimed as new, is:

1. That process of reconditioning interiorly rusted drums which consists in applying a solution of oxalic acid evenly over the interior surface of the drum, and then applying aluminum acetate to the treated surface.

2. That process of reconditioning interiorly rusted drums which consists in applying a solution of oxalic acid evenly over the interior surface of the drum, heating the drum, and then applying aluminum acetate to the treated surface.

3. That process of reconditioning interiorly rusted drums which consists in applying a solution of oxalic acid evenly over the interior surface of the drum, filling the drum with live steam, and then applying aluminum acetate to the treated surface.

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