In shipping transformer oil in tank cars it is customary to thoroughly clean the car and then load it with the oil. Cleaning with transformer oil produces apparently clean surfaces, but it does not thoroughly clean the surface of oxides. Upon subsequent exposure of the oil to oxidizing conditions, the iron oxide which is suspended in the oil acts as a catalyst furthuring oxidation, with resultant decomposition of the oil.

After being emptied of its contents and returned to the refinery, the sides of the car, due to the cleaning effect of the oil, are very susceptible to further oxidation and it is practically impossible to clean the car thoroughly before reloading. The conditions are especially favorable for the absorption by the second load of oil of the poisonous catalytic iron oxides.

The object of the invention is to subject the car to such treatment that its interior surface will prevent formation of catalytic oxides, such as iron oxide, that would otherwise be taken up by the contained oil.

In describing the process we shall set forth all the desirable, as well as the necessary, treatments to which the car is subjected preparatory to loading it with transformer oil intended for shipment to the user. In this description certain details are recited which are or may be unnecessary, but which we prefer to practice in order to absolutely insure the proper conditioning of the car for the reception of the oil.

The inside of the car is first thoroughly steamed to insure the removal of all gases that might otherwise be ignited, with destructive results to life and property, in the operation that immediately follows. In treating a 10,000 gallon car, it is preferred to continue the steaming for about four hours, although this time may be shortened or lengthened.

The inside of the car is then subjected to a sand-blasting operation. It is preferred to conduct this operation in stages so as to allow settlement of the dust and removal of some of the sand between stages. Moreover, when it is attempted to complete the sand-blasting operation in one operation, it is usually found that the inside shell of the car, including the inside of the dome cover, inside of the outlet chamber, valve mechanism, etc., contain traces of rust, which render a second sand-blasting operation advisable if not necessary.

In place of sand-blasting may be substituted other processes which will put the interior of the car into condition for the subsequent spraying or coating operation. Thus, resort may be had to pickling by a suitable acid followed by an alkaline wash, as is commonly done in removing mill scale from steel plates. If this procedure is followed, the inside of the tank or car should then be thoroughly water-washed.

The interior of the car is then covered with a protective coating. Since the sand-blasting operation produces a bright, clean metallic surface which starts rusting almost immediately, it is desirable, if not necessary, to apply the coating as quickly as possible after the removal of all sand and dirt from the car. It is also desirable to first thoroughly dry the air within the car to avoid a humid atmosphere with consequent condensation of moisture on the sides of the tank, which in turn would cause quick formation of rust. An especially efficient coating is any of the commercial aluminum paints. It is preferred to use a paint comprising a mixture of two pounds of polished aluminum powder to one gallon of varnish. It is preferred, in order to expedite the process, to apply the paint by means of one of the known commercial sprayers. It is desirable to apply two or more coats. The first coat should be allowed to dry, say for a period of about two days, after which the second coat is applied. This insures a coating of substantially uniform thickness and the complete covering of all surfaces. The tank should then be allowed to dry for several days. At the end of this period the paint will have completely dried, but if it is desired to remove all odor of paint, the tank should be completely filled with clean, cold water.

Instead of using an aluminum paint, it is possible to use cellulose lacquers, shellacs and other special varnishes which do not dissolve in, or change the virgin electrical characteristics of, the mineral oil or compound. In specifying the application of aluminum paint as a step of the process, it will be understood that we mean to include the use of any varnish or paint having the specified necessary characteristic.

After the car is emptied of water, it should be washed and thoroughly wiped down with a suit- 10 able oil. This oil must be a properly refined oil, such as transformer, switch or cable oil. It should be the same quality of oil, and preferably oil of precisely the same character, as that which it is intended to ship in the tank car.

The car is now ready for the reception of the transformer oil to be shipped to the user. However, where it is desired to absolutely insure the customer against receiving oil that has undergone the slightest deterioration or decomposition, the
tank may be filled with oil of the same quality, and preferably of the same character, as the oil to be shipped. This oil should be allowed to remain in the tank for a substantial length of time, say for two weeks, although the time may be greatly varied. During this period, if opportunity affords, the car may be coupled to a shifting locomotive and run back and forth so as to insure the rinsing and washing of every part of the car, particularly rivet heads and the other parts whose cleaning is not readily effected. This insures the removal of every trace of material which might lower the life test values of the oil to be shipped. The oil thus used for final cleaning is afterward pumped to slop oil.

The oil that is shipped to the user is, when received by the user, absolutely free of catalytic oxides.

The process is not only applicable to tank cars and not only to containers for transformer oil, but is applicable to all containers used in the storage or transportation of transformer oil, switch oil, capacitor oil, cable oil, impregnating oil, and in fact of any oil or compound used in the electrical industry where a slight change in the composition of the mineral oil or compound would result in such deterioration of the product as would make it unfit for the electrical use to which it is intended. In specifying transformer oil in the claims, we intend to be understood as including the treatment of the other oils and compounds above specified.

It will be understood that the details of the process may be varied, and that omission of certain steps and the simplification of other steps are especially feasible in treating containers of small capacity.

Having now fully described our invention, what we claim and desire to protect by Letters Patent is:

1. The process of preparing containers to receive transformer oil for shipment or storage thereof, which comprises removing all oxides from the interior of the container, applying a protective coating to the cleaned surface and washing the coated surface with a refined oil selected from the group consisting of transformer, switch or cable oils.

2. The process of preparing containers to receive transformer oil for shipment or storage thereof, which comprises oxidizing the oil by removing all oxides from the interior of the container, applying a coating of paint to the cleaned surface and washing the coated surface with a refined oil selected from the group consisting of transformer, switch or cable oils.

3. The process of preparing containers to receive transformer oil for shipment or storage thereof, which comprises removing all oxides from the interior of the container, applying a protective coating to the interior of the container and drying, washing the coated surface with a refined oil selected from the group of transformer, switch or cable oils, filling the container with a refined oil selected from the same group and discharging said refined oil from the container.

4. The process of preparing containers to receive transformer oil for shipment or storage thereof, which comprises removing all oxides from the interior of the container, applying a protective coating to the interior of the container and drying, washing the coated surface with a refined oil selected from the group of transformer, switch or cable oils, filling the container with a refined oil selected from the same group and discharging said refined oil from the container.

5. The process of preparing containers to receive transformer oil for shipment or storage thereof, which comprises removing all oxides from the interior of the container, applying a protective coating to the interior of the container and drying, washing the coated surface with a refined oil selected from the group of transformer, switch or cable oils, filling the container with a refined oil selected from the same group and discharging said refined oil from the container.

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