O. YAMASHITA.

PAINT SHOP INSTALLATION FOR RAILROADS OR THE LIKE.

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1,285,542.

Patented Nov. 19, 1918.

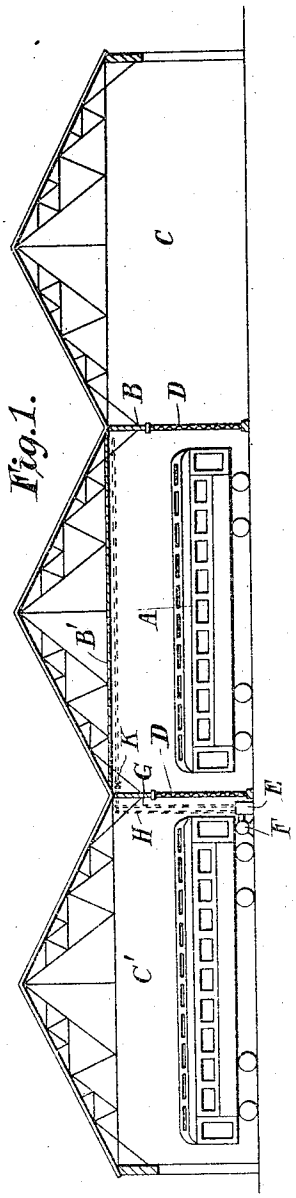


Fig. 1.

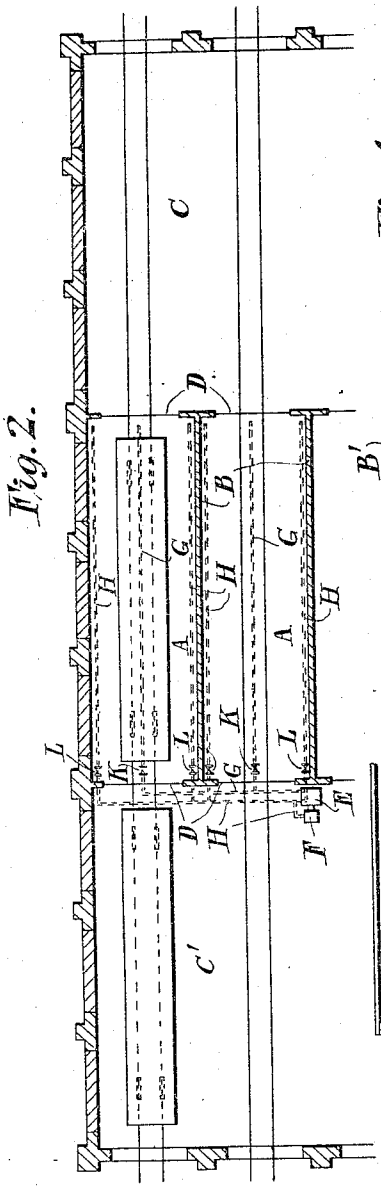


Fig. 2.

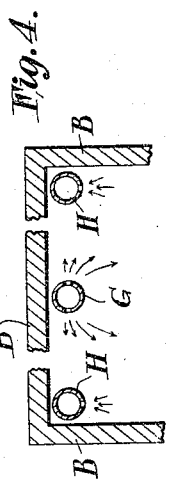


Fig. 4.

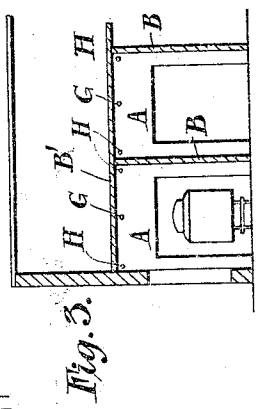


Fig. 3.

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By his Attorney

UNITED STATES PATENT OFFICE.

OKIYE YAMASHITA, OF TOKYO, JAPAN.

PAINT-SHOP INSTALLATION FOR RAILROADS OR THE LIKE.

1,285,542. Specification of Letters Patent. Patented Nov. 19, 1918.

Application filed April 20, 1917. Serial No. 163,356.

To all whom it may concern:

Be it known that I, OKIYE YAMASHITA, subject of the Emperor of Japan, residing at No. 3, 4-Chome, Fujimi-cho, Tokyo, Japan, have invented certain new and useful Improvements in Paint-Shop Installations for Railroads or the like, of which the following is a specification.

My invention relates to the art of painting and more particularly to drying chambers used for drying painted articles. The invention is especially directed to an improved building and apparatus to be used in painting and drying railway coaches, but the same general construction and arrangement may be used in painting and drying various articles.

One of the objects of the invention is to provide an arrangement of compartments in which a drying chamber is interposed between two painting chambers, so that while the paint on one article is being dried in the drying chamber, a coat of paint may be applied to another article located in one of the painting chambers. When the coat of paint has been applied to the article in the painting chamber, the article in the drying chamber can be moved from the same into the second chamber, and the article just painted can be moved into the drying chamber. With this arrangement the articles may be expeditiously painted and dried.

A further object of the invention is to provide an apparatus for furnishing a drying agent to the drying chamber, and I have found that good results are obtained with an apparatus for simultaneously introducing ozone gas into, and exhausting air from, said drying chamber.

With the foregoing objects outlined and with other objects in view, the invention consists in the novel features hereinafter described in detail, reference being had to the accompanying drawings, in which I have shown one form of embodiment of the invention selected for the purposes of illustration, and the said invention is more fully disclosed in the following description and claims.

Referring to the drawings:

Figure 1 is a longitudinal sectional view of my improved paint shop and drying chambers for use in painting and drying railway cars.

Fig. 2 is a horizontal sectional view of a portion of the same.

Fig. 3 is a transverse sectional view of a portion of the same.

Fig. 4 is an enlarged detail showing the means for introducing ozone gas into, and exhausting air from, the drying chambers.

In the drawings I have shown a portion of a building used in painting and drying railway coaches, and this building, which may be of any width desired, is divided longitudinally into two painting compartments C and C^1 and an intermediate compartment which is subdivided into a number of drying chambers A.

There is a series of railway tracks extending through the building, which correspond in number to the drying chambers A and in practice two coaches are adapted to be placed on each track within the building, so that while one of the cars on each track is being painted, another car on the same track may occupy the drying chamber of the track. As the paint on the car within the drying chamber A will be dried in about the same length of time as it takes to paint the other car, it will be seen that after a coat of paint on the car within the drying chamber, has been dried, that said car can be moved into the unoccupied painting chamber to receive another coat of paint, and the car previously painted can be moved into the drying chamber for the purpose of drying the paint on that car.

With my arrangement one car may be painted while another on the same track is drying, and thus the painting is more expeditiously accomplished than with the arrangements heretofore known.

Each of the drying rooms A has side walls B and a ceiling B^1 preferably formed of reinforced concrete, and doors D, preferably of the rolled shutter type, are provided at the ends of said chambers for the purpose of closing the same.

An ozone generator E is located at a convenient place within the building, and the ozone gas generated thereby is introduced into the drying rooms through supply pipes *b*, which enter the drying rooms and extend centrally along the upper portion of the same throughout substantially their entire lengths. A fan F is employed to draw air from the drying rooms through the pipes H,

which extend along the ceilings of the rooms A, and the air thus withdrawn is forced back into the drying rooms through the generator.

The ozone gas being much heavier than air, has a tendency to descend into the drying rooms, while the air poorest in ozone gas has a tendency to rise.

To insure the thorough and uniform mixing of the ozone gas within the drying rooms, I have provided the supply and return pipes with perforations, which extend along the pipes throughout substantially their entire lengths, and the holes in the supply pipes G open horizontally, while the apertures in the pipes H open downwardly, as shown in Fig. 4. By this construction and arrangement the ozone gas will be evenly distributed over the entire surface of the car being dried, while the air poorest in ozone will rise and escape through the pipes H.

As shown in Figs. 1 and 2, a car, which has been previously painted, occupies one of the drying rooms A, while a car being painted rests in the painting chamber C^1. When the painting of the car in the compartment C^1 is finished and the paint on the car in the drying room A is completely dried, then the car in the drying room may be shifted into the unoccupied compartment C and the car in the compartment C^1 may be moved into the drying room.

The ozone gas introduced into the drying room will quickly dry the paint on the car occupying the drying room by oxidation, and thus the wet paint will be more expeditiously dried than with the apparatus and method heretofore used. The ozone generator may be of any type but preferably should be of large capacity and high efficiency, and as the speed of drying depends upon the density of ozone gas in the drying room, it will be seen that the best results may be produced with a generator of large capacity and high efficiency.

When the desired quantity of ozone gas, furnished to the drying room, has been reached, this quantity may be kept practically constant by regulating the electric current, voltage or frequency in the ozone generator. Should it be desired to independently regulate the quantity of gas furnished each drying room, the pipes G may be provided with suitable valves K. The pipes H are also provided with suitable valves L and when the drying chambers are unoccupied, the valves K and L are adapted to be closed.

The speed with which the drying takes place may be facilitated by the introduction of oxygen into the fan, whereby air much richer in ozone gas can be obtained.

By the use of the above described apparatus any desired degree of dryness of the paint may be obtained in a predetermined length of time, whereas with natural drying it is impossible to regulate the degree of dryness or the time necessary to obtain the same.

When natural drying is carried out hastily, imperfect drying consequently results and a short life for the painted surface is sure to follow. It has been the usual practice to add a paint drier or oxidizing agent to the paints to help the drying, and this is not only deterimental to the life of the painted surface but when the drier is of excessive quantity, it is very difficult to apply the paints.

The best results in painting are obtained with paint which is slow to dry while applying the same. With my apparatus the slow drying paint may be used and the artificial drying of the same will render the operation much quicker than with quick drying paint under natural drying. Moreover it should be noted that greater durability of the painted surface may be obtained with my apparatus, as the quantity of drier used in the paint may be considerably lessened.

By natural drying, it takes about three weeks to completely paint a railway coach or automobile, from the priming to the last coat of varnish, but this time can be reduced to a few days or practically any length of time by the use of my improved apparatus, and naturally the time required for manufacturing or repainting the mentioned articles may be shortened accordingly.

It is obvious to those skilled in the art that various details of the construction shown may be changed without departing from the spirit of the invention, and that while I have shown an apparatus designed specifically for use in painting railway cars that the same general construction may be used for painting various articles.

What I claim and desire to secure by Letters Patent is:—

1. A paint shop installation for use in painting comprising a drying chamber, and means for simultaneously introducing ozone gas into and drawing air from said drying chamber.

2. A paint shop installation for use in painting railway coaches and the like, comprising a plurality of chambers in which the painting may be done, a drying room interposed between said chambers, a track extending through said chambers and drying room for supporting the railway coaches, and means for simultaneously introducing ozone gas into and drawing air from said drying chamber.

3. A paint shop installation for use in painting railway coaches and the like, comprising a drying room, a painting compart-

ment located at each end of said drying room, an ozone generator, a pipe connected to said generator extending into said drying chamber and provided with horizontally arranged apertures to permit ozone gas to enter said drying room, a fan for furnishing air to said generator, and pipes connected to said fan, extending into the drying chamber and provided with downwardly directed apertures to permit the escape of air from said room.

In testimony whereof I affix my signature in presence of two witnesses.

OKIYE YAMASHITA.

Witnesses:
KIGORO WATUNAHO,
H. F. HAWLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."