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APPARATUS FOR TREATING PAINTED OR VARNISHED ARTICLES,
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4 SHEETS—SHEET 1.

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To all whom it may concern:

Be it known that I, CICERO M. CUNLIFFE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Apparatus for Treating Painted or Varnished Articles, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an apparatus for treating articles having applied thereto an application of wet paint, varnish, enamel, or the like, whereby to properly dry, cool, and harden the painted, varnished, or enameled surfaces of such articles.

In the art to which the invention relates, many attempts have been made to properly and quickly dry freshly painted, varnished or enameled articles of furniture and the like, and while many of these efforts have been successful to an appreciable extent, none with which I am familiar have proven entirely satisfactory, because of certain disadvantages and objections, among which may be mentioned, the great loss of time and expense incident to treatment, the difficulty in obtaining clear and uniform coloring, the danger of streaking, the formation of globs, and the frequent sealing of the varnish, enamel, etc., from the completed articles.

One of the systems largely in use at the present time is what is commonly known as the "baking process", which includes the placing of the articles in a closed oven subjected to high heat, the vapors from the benzine and naphtha being retained in the oven, and these vapors, being all that really vaporize from the paint and varnish, frequently cause the finished article to have light and dark shades, regardless of the original color of the paint or varnish and also the coating is found to be more or less brittle, and frequently scales off in flakes.

It has also been largely the practice in the paint or varnish drying art to employ in connection with the drying chamber, both forced and natural circulation of air into and through the chamber, and in either case dust is often stirred up and brought in contact with the painted surfaces. Again, the draft or current coming in contact with the wet paint or varnish causes the formation of ripples or waves. Still further, the direct contact of the articles with the current of air tends to destroy the luster of the finished product; if not over the entire surface, over certain portions thereof, making it necessary to refinish the article until the proper finish and luster is acquired.

In all prior systems which have been considered more satisfactory for the desired purpose, the processes at best have been exceedingly slow, requiring considerable time for cooling the articles after the first coat before the same can be handled for a second coat, and after the last coat had been applied, it was the general rule to let the articles stand several days before the same could be wrapped or packed for shipment, and during certain times of the year, the finish would even then become sticky, thus leaving marks of the packing.

It is one of the primary objects of the present invention to provide an apparatus for the treatment of painted or varnished surfaces to overcome the above and other existing objections, and with a view to producing a tough, durable, elastic surface, with even luster, which will retain its color in any climate, and make possible the completion of the drying and hardening process in much less time than has heretofore been possible.

While it is contemplated by the present invention to treat painted or varnished articles generally, the apparatus has been extensively and satisfactorily employed for the finishing of metal beds, it having been ascertained that beds may be successfully enameled in pure white without any variation in color over the entire surface. It has also been ascertained that the present apparatus results in a great saving in time, and that the finished surface will have absolutely no tendency to scale under any pressure or under any condition of treatment or use. Then again, the finished surface will be continuous and smooth, and devoid of the customary streaks, globsules, etc.

In carrying out the present invention, it is contemplated to employ a drying chamber, and one of the objects of the invention is to provide means whereby the air for drying purposes is properly treated prior to its admission into the chamber whereby to cleanse the air from dust and dirt, and
whereby the proper temperature of said air for the most satisfactory results is maintained.

Another object of the invention is to provide means whereby the necessary volume of air is employed to carry off the volatile matter as fast as it vaporizes in the drying chamber.

By the improved apparatus, it is also contemplated to prevent the air admitted into the drying chamber from directly striking under force any of the painted surfaces of the article being treated during the process of drying or oxidizing, and, in this connection, it is proposed to allow the air as admitted into the drying chamber to expand into an unoccupied space of considerable area above the article to be treated, and allow the air after it has lost substantially all of its velocity to settle down in mass formation upon and gradually envelop the article to be treated in an atmosphere of even temperature and relative humidity with no perceptible movement.

In the successful drying of painted or varnished articles it has been proven to be absolutely necessary to avoid any apparent or appreciable velocity of the drying medium, usually treated air, as otherwise the paint or varnish will dry unevenly and delicate tints will be discolored in spots. A very important feature of the invention therefore resides in the provision of an air space of considerable area above the articles under process of treatment, and in providing means adjacent the point of admission of the air into the container for diffusing and throwing the air off in all directions horizontally whereby to cause the air to lose its velocity before it begins to settle down somewhat similar to the settling of a fog down in the atmosphere. This feature of the invention is also important in that it results in an equal distribution of temperature throughout the entire treating chamber whereby every portion of the surface of the article will be treated alike.

The invention further embodies means whereby the air, so soon as it becomes saturated or chilled, is rapidly removed from the drying chamber, and in a manner to prevent any stirring up of dust or the like within said chamber.

In carrying out this feature of the invention, it is contemplated to provide an extended outlet or outlets at the base of the container adapted to deliver the air into a chamber surrounding the container, from which, through the medium of an exhaust fan or the like the air is ejected. This chamber, assuming a plurality of abutting treating containers are employed, acts as an insulating medium with the result that one treating room or container will be substantially independent of its neighbor and while one room is being heated to its highest temperature in the midst of the drying process, the adjacent room may have injected into it at the same time cold humid air in the process of cooling the articles for the purpose of setting the paint and varnish and increasing its juster.

More particularly, the invention includes means for accurately regulating the air both as to volume and temperature, and means for the independent release of the humidity in any drying chamber of the series employed, whereby any of said chambers may be used at will for drying, oxidizing and cooling.

The invention further embraces a substantially closed drying chamber for the painted or varnished articles, said chamber having an air inlet adjacent the top thereof and an air outlet adjacent the base thereof, means whereby the air prior to the introduction into the chamber is subjected to washing and purification, subsequent heating, and means whereby the treated air as introduced into the chamber is caused to settle in mass formation without velocity upon the article, together with means whereby cooled air may be directly introduced into said chamber.

In this way, the heated air will volatilize the oils in the paint or varnish, with the proper degree of humidity to keep the surface moist until all of the oils are volatilized, and after sufficient time has elapsed to evaporate the oils, chilled humid air may be directly discharged into the chamber to quickly harden the finish after it has a chance to again absorb any of the volatile oils. This treatment results in producing a fine luster, retaining the same perfection of the colors as when applied, and still maintains the desirable elasticity of the finish with the hardness, so that it will not crack by expansion or contraction when subsequently subjected to heat or cold.

Still other and further objects and improvements and novel details in the construction and arrangement of the various parts of the apparatus will be understood by those skilled in the art from the description to follow, which, for a clear understanding of the invention is to be considered in connection with the accompanying drawings, which form a part hereof, and wherein is disclosed for the purpose of illustration, a convenient and satisfactory embodiment of the invention, though it is to be borne in mind in this connection, that many minor changes may be made in the construction and arrangement of parts without departing from the spirit of the invention.

While it is one of the main objects of the invention to provide an apparatus useful primarily in the treating of metal articles, for instance, beds having wet paint, varnish, or enamel applied thereto, still the invention...
tion is useful in many other connections and has proven highly satisfactory in the drying of painted or varnished automobiles and parts thereof, and various articles of furniture.

In the description, and claims, wherein the terms "paint", "varnish", "enamel" and the like are employed, it is understood that these terms are general, and are not to be construed in a limited sense, but rather to include any painting or finishing preparation or material for beds, articles of furniture, etc.

In the drawings:

15 Figure 1 is a side elevation of my improvements.

Fig. 2 is a top plan view of the same.

Fig. 3 is a sectional view.

Figs. 4 is a front elevation; and

Figs. 5 and 6 are detail views.

With more particular reference to the drawings, wherein like reference numerals refer to corresponding parts throughout the several views, one or more drying chambers are provided, two being shown for the purpose of illustration, it being desirable at times to dry articles in one chamber while certain of the finished articles are simultaneously subjected to a cooling action in the other chamber. These chambers are preferably elongated and have a bottom wall, a top wall and side walls. Suitable end walls and 5 are provided, one or both of which preferably take the form of movable doors whereby to permit of entrance and delivery of articles before and after treatment.

The air to be delivered into the drying chambers, which latter may be given the reference characters a and b respectively, is first subjected to proper treatment to thoroughly wash and cleanse the same and regulate the temperature thereof, whereby to obtain the most satisfactory results, and with this in view, an inclosed casing 6 is preferably arranged at one side of the chamber a. A suitable power driven fan or blower 7 of any approved type is arranged adjacent one end of the casing 6, the same being adapted to force the air from the outside into and through the casing and into the drying chambers. The casing 6 is divided into various compartments, and adjacent the inlet end thereof is arranged to a suitable air washer and purifying means preferably including a tank 8 to which is connected a centrifugal pump or the like adapted to discharge water into a system of spray pipes 8 having discharge nozzles 8 whereby the water is atomized into a fine mist and the air current as it passes through this mist will become saturated. The saturated air then comes into contact with deflecting plates 8 conveniently zig-zag in construction and arrangement, whereby the air will become freed of dust, dirt or other foreign matter which will stick or cling to the plates to be thereafter washed down into the sump tank therebeneath. Other types of purifiers and washers adapted to cleanse and saturate the air up to the dew point may be employed with satisfactory results if desired. Arranged rearwardly of the washing and purifying chamber is a suitable temperature regulating chamber preferably having therein a heating coil or coils 9 around which the air passes, whereby the temperature of the air is raised above the freezing point in zero weather. The air as it leaves the temperature regulating chamber 9 is adapted to follow one of two courses, and to this end the forward end of the casing 6 is divided by a horizontally extending partition 10 thereby dividing the casing at this end into an upper heating chamber and a lower cooling chamber. The upper heating chamber 11 is provided with re-heating temperature transmitting coils 12.

Leaving from the forward outlet end of the casing 6 and adapted to communicate with the chamber 13 beneath the partition 10 is a suitable duct or conduit 14 projecting upwardly over the side of the heating chamber a, and thence across the top of the chamber and adapted to communicate at 15 with a horizontally extending chamber 16 arranged substantially midway between the sides of the chamber b, and forming with the top of said chamber b a closed conduit substantially coextensive with the top of the chamber b. An auxiliary conduit 17 is arranged at the side of the conduit 14 and leads from the lower chamber 13 of the casing 6 upwardly over the side of the heating chamber a and thence over the top of said heating chamber and communicates at its end with a horizontally disposed chamber 18 similar in construction to the chamber 16 heretofore described.

Conduits 19 and 20 project upwardly from the top of the casing 6 at a point in communication with the heating chamber 11, the said conduits connecting the one with the conduit 14 at the point 14a and the other with the conduit 17 at the point 17a. A suitable valve 20a of any desirable construction is adapted to regulate the air admitted from the chamber 13 into the conduit 14, or to entirely close communication between these members. A similar valve 21 is adapted to control or regulate the air admitted from the conduit 19 into the conduit 14 or to entirely close this means of communication between these members.

Likewise, valves 22 and 23 respectively are arranged in the conduits 17 and 20, being the same in principle and operation as the valves 20a and 21 respectively heretofore described. Extending longitudinally of the chambers a and b upon the top walls there-
of are suitable outlet air conduits 24 adapted to discharge into a chamber 25 projecting transversely over the top walls 2 of the drying chambers and communicating with an outlet pipe 26, which may communicate with the outside, or may have draft appliances of any approved type, and not necessary to illustrate herein. Arranged within the chambers 2 and 6 are suitable auxiliary side walls, flanges or diaphragms 27, the latter being arranged adjacent to, but spaced from the side walls 3 and extending from the top wall 2 to a point adjacent the bottom wall 1, the space between the lower edge of the side walls 27 and bottom wall 1 being relatively narrow, whereby to provide a restricted by-pass between the chambers 2 and 6 and the chambers 27* formed by the walls 3 and 27. The chambers 27* are adapted to have communication with the conduits 24 through the medium of suitable apertures in the top walls 2 of the chambers 2 and 6, the said apertures being illustrated at 28 and being arranged at suitable intervals throughout the length of the top walls 2.

The top walls 2 are provided with suitable openings 29 arranged at suitable intervals throughout the length of the sides thereof, whereby to establish communication between the chambers 2 and 6 and the chambers 18 and 16 respectively. The openings 29 are so spaced as to give the most even distribution of the air into the chambers 2 and 6 that is obtainable. Arranged below each of the openings 29 is a suitable horizontally disposed disk 30 of a diameter somewhat greater than the diameter of the openings 29 and preferably cone-shaped. The disk members 30 are preferably justly supported through the medium of a stem 31 threaded into a suitable bracket 32 upon the top walls 2 of the heating chambers whereby to regulate the entrance of the air into the chambers 2 and 6 through the openings 29.

It being understood that the drying chambers 2 and 6 are of a height considerably above that of the articles to be treated, whereby to provide thereabove an extended distribution space of considerable area, said space being generally represented above the dotted lines c, the operation of the invention herein contemplated may be described as being substantially the following.

The articles to be treated, say for instance, bed frames, having applied thereto a coating of paint, varnish, enamel or the like, are placed within the chambers 2 and 6 when the end doors are closed, whereby to provide substantially air tight compartments. The air to be used in the drying process is properly conditioned by passing through the air washer or purifier which removes any dirt or dust, and the air becoming saturated up to the dew point, passes around the primary heating or tempering coil 9, where the temperature is raised above the freezing point in zero weather. Assuming the valves 20 and 22 to be closed and the valves 21 and 23 open, the air is forced through the heating chamber 11 having therein the re-heating coils from whence the same is discharged through the conduits 19 and 20 into the conduits 14 and 17, which latter communicate with the longitudinally extending conduits 16 and 18. From the conduits 16 and 18, the air is forced through the openings 29 into the treating chambers, the air being of the proper temperature to accomplish the evaporating functions. As the air leaves the openings 29 in the top of the drying chambers, it is immediately deflected horizontally, through the medium of the deflecting members 30 and allowed to expand into the large space or expanding chamber above the articles to be treated. In the said expanding chamber, the air will become thoroughly distributed and will expand its velocity with the result that the same will settle down gradually, in mass formation and envelop the articles without any perceptible velocity, and without any tendency to stir up any dust that may be in the treating chamber. The heated air as it is brought into association with the articles to be treated is preferably saturated at about the same temperature as the articles when they are placed within the treating chambers and said articles have a tendency to lower the temperature of the air, thus bringing it down nearer to the point of saturation. This prevents the paint or varnish coating from forming a skin, and causes any drips or unequal flow in the application of the paints or varnishes to flow and spread out into an even coating. The outlet between the heating chambers 2 and 6 and the chambers 27* between the side walls 3 and the vertical diaphragms or aprons 27, 110 is arranged in depth so as to maintain slight static pressure in the drying chamber, and, with the arrangement illustrated the pressure being equalized, the velocity down and over the article is not perceptible until it comes to the narrow outlet at the base of the side walls or flanges 27, when the air due to the action of the draft appliances smoothly moves rapidly through the chambers 27*, conduits 24, and outlet 26 to the point of discharge.

The air outlet space provided between the walls 3 and 27 of the drying chamber acts as an insulation against adjoining chambers or the surrounding room, and does not affect the temperature in either of the drying chambers, so that cold air may be forced into one drying chamber while hot air is being forced into the next adjacent chamber without reducing the temperature in the drying chamber. The diaphragms 27 like...
the walls of the drying chambers a and b are preferably formed of sheet metal. By providing a number of closely associated openings 29 in the top wall of the chambers a and b for the admission of air and having the elongated slots along the floor for the escape of air, there results a thoroughly even distribution of the air and an even temperature in all parts of the drying chamber.

The air space between the chambers has the effect of insulating one chamber from the other with the result that one chamber may be heated while the other is cooled without affecting the desired treatment in the respective chambers. Then again, the desired treatment may be continued in one chamber while another chamber is open for the purpose of introducing into, or removing therefrom, the articles to be, or which have been treated.

The articles to be treated are maintained in the closed chamber and subjected to the drying operation of the heated air, say from two to three hours, according to the particular application, when the valves 21 and 23 are closed and the valves 20° and 22 are opened, thereby admitting the cool air directly from the chamber 13 into the chambers a and b through the inlets 29 heretofore described.

The cool air being nearly saturated when it comes in contact with the articles, the painted or varnished surfaces are rapidly cooled, thereby producing a very fine finish and increasing the luster and hardness of the surface.

Very satisfactory results have been accomplished by having the air leave the washer or purifier at a relatively low temperature, say from sixty to seventy degrees and saturated, and when the heated air leaves the heating chamber and enters the drying chamber, the same may be and preferably is approximately 240° or thereabouts. In prior systems adapted for the purpose to which the present invention is intended, it was considered impossible to subject the varnished articles in the drying process to a higher temperature than 190°, owing to the tendency to cause discoloration of the lighter tints, resulting in streaking, etc. In the present system, while the oils in the varnish may be vaporized at about 180° with fairly satisfactory results, it is possible to carry the temperature as far as 240°, and the character of the finish is just as perfect as when treated at a lower temperature, and because of the high temperature, there results a considerable reduction of the time necessary to dry the varnish, approximately 50% of the time usually required for this purpose.

When the heated air comes in contact with the article, say at a temperature of about 70°, the temperature will drop and the relative humidity be increased. This dropping in temperature and rise in humidity prevents the paint from skinning, and allows the same to run out evenly over the article. In the cooling operation, the saturated air tends to give the article a finer and better gloss or finish.

The finished product treated substantially as above described will be found to have a continuous smooth and even distribution of the finishing material, entirely free from spots, streaks, blemishes or discoloration, and regardless of the uses to which the articles are put there is no likelihood of the paint or varnish scaling. Then again, because of the thorough drying and cooling process contemplated, the articles may be finished in a much shorter period than is possible in prior methods, and are in condition on completion of the treatment either to be stored, or wrapped and shipped, regardless of the temperature, without any resultant injurious effect upon the finish. The above meritorious results are largely due to the large air space provided by the heating chambers above the articles positioned in the chambers, and the diffusion of the air in all directions horizontally into said vacant space, whereby the air settles down without velocity and envelops the articles under the treatment. Then again, by reason of the surrounding air chambers, the treating chambers are insulated from the effect of outside temperatures, or from the effect of a neighboring chamber, assuming it is desired to continue the drying operation in one chamber simultaneously with the cooling operation in the adjacent chamber. While the treated air falls down and envelops the articles in the treating chamber without velocity, the elongated outlet at the floor or base of the chamber permits the spent air to be rapidly removed through the medium of the fan as referred to.

The volume of air introduced into each chamber may be controlled independently of the volume of air introduced into another chamber through the medium of the valves or dampers and also by regulating the speed of the fan which forces the air into the chambers. Likewise, the temperature of the air may be nicely regulated by the controlling dampers as well as by the regulation of steam pressure in the heating pipes.

Because of the peculiar arrangement of conduits, and the regulating valves, it will be appreciated that the varnished articles may be first subjected to the heating process whereby to volatilize the oils, and without removing the articles from the chamber, chilled humid air may be discharged into the chamber to thereby quickly harden the finish resulting in producing the desirable luster, etc.

The apparatus herein described may be found useful in carrying out the method described and claimed in my copending appli-
cation for Letters Patent filed December 27, 1916, Serial No. 139202, entitled Art of treating painted or varnished articles, and in view of such application the claims herein are directed to an apparatus such as described and contemplated rather than the method.

What is claimed is:

1. In an apparatus for drying varnished articles, the combination of a treating chamber having an air inlet adjacent the top thereof, means within the chamber for introducing air into said chamber through said inlet, and means for deflecting horizontally said air so introduced whereby the same will settle down in mass formation upon the article within the container, the top wall of the container being spaced vertically from the article to be treated and the space below the deflecting means being unobstructed whereby said air after losing substantially all of its velocity contacts with the article.

2. In an apparatus of the character described, the combination of a substantially closed container having an air inlet at the center of the top thereof and an air outlet at the base thereof at a point spaced laterally from the inlet, said container being provided with an unobstructed space of considerable area above the article to be treated, means for deflecting the air laterally in said space, said means constructed and arranged to permit the air to thereafter settle without velocity upon and over the article to be treated, and means for causing the air after treatment to rapidly escape through the outlet opening.

3. In an apparatus for treating varnished articles, the combination of a closed container having an air inlet at the top thereof, said container being provided with an unobstructed space of considerable area above the article to be treated, means for deflecting the air laterally in said space at a point adjacent the inlet, and means for washing and purifying the air prior to its introduction through said inlet, said container having an air outlet at the base thereof at a point spaced laterally from the inlet.

4. In an apparatus for treating varnished articles, the combination of a closed container having an air inlet at the top thereof, said container being provided with an unobstructed space of considerable area above the article to be treated, means for deflecting the air laterally in said space at a point adjacent the inlet, and means for washing and purifying the air prior to its introduction through said inlet, said container having an air outlet at the base thereof, and means for heating said washed and purified air prior to its introduction into the container.

5. In an apparatus for treating varnished articles, the combination of a substantially closed drying chamber having an air inlet adjacent the top thereof, said container being provided with an unobstructed space of considerable area above the article to be treated, means for deflecting the air laterally in said space at a point adjacent the inlet, and an air outlet adjacent the base thereof, air purification means arranged without the container and adapted to act on the air prior to its introduction into the container, and means interposed between said air purification means and the container for acting upon the purified air.

6. In an apparatus for treating varnished articles, the combination of a substantially closed drying chamber having an air inlet adjacent the top thereof, and an air outlet adjacent the base thereof, air purification means arranged without the container and adapted to act on the air prior to its introduction into the container, heating means interposed between said air purification means and the container for acting upon the purified air, and a deflector in the chamber immediately below the inlet and spaced a considerable distance above the article under treatment.

7. In an apparatus for treating varnished articles, the combination of a container having an air inlet at the top thereof and an air outlet at the base thereof, means for introducing at will through said inlet purified air in either a heated or cool state, and means for deflecting the air laterally as introduced into the container, which said means is disposed at a considerable distance above the normal position of the article to be treated in the container, and means for introducing at will through said inlet purified air in either a heated or cool state.

8. In an apparatus for treating varnished articles, the combination of a container having an air inlet at the top thereof and an air outlet at the base thereof, means for introducing at will through said inlet purified air in either a heated or cool state, and means for laterally deflecting said air so soon as introduced and said means being constructed and arranged to permit the air to thereafter envelop the article to be treated without perceptible velocity, the deflecting means being disposed at a considerable distance above the normal position of the article under treatment.

9. In an apparatus for treating varnished articles, the combination of a container having an air inlet at the top thereof and an air outlet at the base thereof, means for introducing at will through said inlet purified air in either a heated or cool state, and a deflector means for causing said air as introduced to move first laterally and thereafter pass downwardly, and envelop the article to be treated without perceptible velocity,
the outlet at the base of the container extending substantially throughout one of the sides thereof.

10. In an apparatus for treating varnished articles, the combination of a container having an air inlet at the top thereof and an air outlet at the base thereof, means for introducing at will through said inlet purified air in either a heated or cool state, deflector means for causing said air as introduced to move laterally and thereafter fall downwardly and envelop the article to be treated without perceptible velocity, the outlet at the base of the container extending substantially throughout one of the sides thereof, and an air chamber projecting over one wall of the container in communication with said air outlet.

11. In an apparatus for treating varnished articles, the combination of a container having an air inlet at the top thereof and air outlet at the base thereof, means for introducing at will through said inlet purified air in either a heated or cool state, means for laterally deflecting said air as introduced, said means permitting the air thereafter enveloping the article to be treated without perceptible velocity, the outlet at the base of the container extending substantially throughout one of the sides thereof, an air chamber projecting over one wall of the container in communication with said air outlet, and suction means in communication with said air chamber.

12. In an apparatus for treating varnished articles, the combination of a substantially closed container for the article, the top wall of which is removed a considerable distance from the top of the article to be treated, an inlet in the top wall of the container, diffusing means at said inlet causing the air to deflect laterally and lose its velocity, an air chamber projecting over one wall of the container, draft appliances operatively associated with said air chamber, and one wall of the container having an opening at the base thereof in communication with said air chamber.

13. In an apparatus for treating varnished articles, the combination of a container for the article to be treated having an inlet adjacent the top thereof, means forming an air chamber in communication with said inlet, air cooling and moistening means arranged within said chamber, air deflector means for causing the air as introduced to diffuse the air when introduced thereinto in either a heated or cooled state whereby

14. In an apparatus for treating varnished articles, the combination of a container for the article to be treated having an inlet adjacent the top thereof, means forming an air chamber in communication with said inlet, air cooling and moistening means arranged within said chamber, temperature increasing means arranged within said chamber, valve control means whereby the air may be introduced into the chamber without being subjected to the action of the temperature increasing means in the path of said cooled and moistened air, and a deflector directly underlying the inlet and separated by an unobstructed space a considerable distance above the normal position of the article in the container.

15. In an apparatus for treating varnished articles, the combination of a container for the article to be treated having an air inlet adjacent the top thereof, the treatment chamber formed by the container being constructed and arranged whereby to leave an unobstructed space of considerable area above the article, a horizontally disposed deflector within the chamber adjacent the inlet, means forming an air chamber in communication with said inlet, air cooling and moistening means arranged within said chamber, temperature increasing means arranged within said chamber, and a pump at the inlet end of said air chamber.

16. In an apparatus for treating varnished articles, the combination of a closed treating chamber, an air chamber having washing and drying means therewithin, means for introducing the treated air under force into the upper portion of the container, air deflector means for rapidly discharging the saturated or chilled air from the base at the side of the chamber.

17. In an apparatus for treating varnished articles, the combination of a closed treating chamber, of a height to provide an unobstructed space of considerable area above the normal position of the article to be treated therein, an air chamber having washing and drying means therewithin, means for introducing the treated air under force into the upper portion of the treating chamber and for rapidly discharging the saturated or chilled air from the lower portion of the chamber, and means within the treating chamber for causing the air as introduced to lose its velocity in said space before enveloping the article to be treated.

18. In an apparatus for treating varnished articles, the combination of a closed container, means for introducing heated air into the container, means for interrupting the flow of said heated air into the container, and means for introducing cool air into the container, and a deflector positioned within the container and adapted to diffuse the air when introduced thereinto in either a heated or cooled state whereby
the air will envelop the article only after it has lost its velocity.

19. In an apparatus for treating varnished or enameled articles such as metal bedsteads and the like, the combination of a container having an air inlet at the top thereof, and an air outlet at the base thereof, means for introducing at will through said inlet air in either a heated or cooled state, means within the container adjacent the inlet for first deflecting the air laterally and then permitting the same to fall downwardly into contact with the article, and an air chamber projecting over one wall of the container in communication with said air outlet.

20. In an apparatus for treating varnished articles, the combination of a container, an air conduit communicating with the top of the container, an air chamber for both heated and cool air, and means for introducing at will heated or cool air into said conduit from said chamber, said container having an outlet at the base thereof and means for causing the air discharged from the outlet to travel over the outside of one of the walls of the container.

21. In an apparatus for treating varnished articles, the combination of a container having an inlet in the top thereof substantially midway between the sides of the same, the top wall of the container being spaced upwardly a considerable distance above the normal position of the article to be treated, an adjustable diffusing element underlying the inlet opening of the container, and said container having an air outlet adjacent the base thereof at a point removed laterally from the inlet at the top thereof.

22. In an apparatus for treating varnished or enameled articles such as metal bedsteads, the combination of a container having an inlet in the top thereof substantially at its center, the top wall of the container being spaced upwardly a considerable distance above the normal position of the article to be treated, a diffusing element underlying the inlet opening of the container and adjacent thereto, an air chamber overlying a side wall of the container, and the container having an outlet in the lower portion thereof leading directly into said air chamber.

23. In an apparatus for treating varnished articles, the combination of a substantially closed container for the article, an air chamber, means within the chamber dividing the same into a heating and cooling chamber, a conduit in communication with the top of the container, a branch pipe leading from the heated air chamber to the conduit, an auxiliary branch pipe leading from the cool air chamber to the conduit, valve controlled means for said pipes, and a diffusing element arranged at the inlet of the container for deflecting laterally the air as introduced into the container, said deflector being arranged at a point considerably above the space to be occupied by the article under treatment.

24. In an apparatus for treating varnished articles, the combination of a substantially closed container for the article, an air chamber, means within the chamber dividing the same into a heating and cooling chamber, a conduit in communication with the top of the container, a branch pipe leading from the heated air chamber to the conduit, an auxiliary branch pipe leading from the cool air chamber to the conduit, valve controlled means for said pipes, a diffusing element arranged at the inlet of the container adapted to intercept and laterally deflect the air on its introduction into the container, said element being positioned a considerable distance above the normal position of the article, and air purifying means at the inlet end of the air chamber.

25. In an apparatus for treating varnished articles, the combination of a container having an inlet in the top thereof substantially midway between the sides thereof, the top wall of the container being spaced upwardly a considerable distance above the article to be treated and a diffusing element underlying the inlet opening of the container, substantially as and for the purpose described, and means for discharging the air introduced at the top at a point adjacent the base and causing the same to move over the outer surface of the wall of the container.

26. In an apparatus for treating varnished articles, the combination of a container having an inlet in the top thereof substantially midway between the sides thereof, the top wall of the container being spaced upwardly a considerable distance above the article to be treated and a diffusing element underlying the inlet opening of the container, substantially as and for the purpose described, and means for adjusting said diffusing element.

27. In an apparatus for treating varnished articles, the combination of a container having an inlet in the top thereof substantially midway between the sides thereof, the top wall of the container being spaced upwardly a considerable distance above the article to be treated and a diffusing element underlying the inlet opening of the container, substantially as and for the purpose described, and means for adjustably supporting said diffusing element.

28. In an apparatus for treating varnished articles, the combination of a container having an inlet in the top thereof substantially midway between the sides thereof, the top wall of the container being spaced upwardly a considerable distance above the article to be treated and a diffusing element underlying the inlet opening of the container, substantially as and for the purpose described, inclosing walls for the side walls of the container spaced a considerable distance from the base thereof leading to extend passages.

29. In an apparatus for treating varnished articles, the combination of a substantially closed container for the article, an air chamber, means within the container dividing the same into a heating and cooling chamber, a conduit in communication with the top of the container, a branch pipe leading from the heated air chamber to the conduit, an auxiliary branch pipe leading from the cool air chamber to the conduit, a diffusing element arranged at the inlet of the container for deflecting laterally the air as introduced into the container, said deflector being arranged at a point considerably above the space to be occupied by the article under treatment.
nished articles, the combination of an elongated horizontally disposed container, a longitudinally extending centrally disposed conduit arranged on the top wall of the container, means in communication with said conduit for introducing properly treated air thereinto, a plurality of inlet openings in the top wall of the container in communication with said conduit, and a deflector underlying each of said inlet openings substantially as and for the purpose described.

29. In an apparatus for treating varnished articles, the combination of an elongated horizontally disposed container, a longitudinally extending centrally disposed conduit arranged on the top wall of the container, means in communication with said conduit for introducing properly treated air thereinto, a plurality of inlet openings in the top wall of the container in communication with said conduit, and a deflector underlying each of said inlet openings substantially as and for the purpose described, auxiliary conduits arranged on the top of the container extending longitudinally thereof adjacent its sides, means forming air chambers extending over the sides of the container and in communication with the auxiliary conduits, the side walls of the container having outlet openings at the base thereof in communication with said air chambers.

30. In an apparatus for treating varnished articles, the combination of an elongated horizontally disposed container, a longitudinally extending centrally disposed conduit arranged on the top wall of the container, means in communication with said conduit for introducing properly treated air thereinto, a plurality of inlet openings in the top wall of the container in communication with said conduit, a deflector underlying each of said inlet openings substantially as and for the purpose described, auxiliary conduits arranged on the top of the container extending longitudinally thereof adjacent its sides, means forming air chambers extending over the sides of the container and in communication with the auxiliary conduits, the side walls of the container having outlet openings at the base thereof in communication with said air chambers.

31. In an apparatus for treating varnished articles, the combination of a pair of elongated horizontally disposed containers separated from one another by air spaces, a conduit positioned on the top wall of each container in communication with said conduits, an air chamber adjacent one end of the containers and a conduit in communication with the air chamber and with said longitudinally extending conduits, said containers having an outlet adjacent the base thereof in communication with the separating air spaces.

32. In an apparatus for treating varnished articles, the combination of a pair of horizontally disposed elongated containers, the top walls of which have a plurality of air inlet openings arranged intermediate the sides of the container, a longitudinally disposed conduit on the top wall of each container in communication with said openings, an air chamber, and means dividing said air chamber into a heating chamber and a cooling chamber, means establishing communication between the air heating chamber and said conduits and means establishing communication between the air cooled chamber and said conduits.

33. In an apparatus for treating varnished articles, the combination of a pair of horizontally disposed elongated containers, the top walls of which have a plurality of air inlet openings arranged intermediate the sides of the container, a longitudinally disposed conduit on the top wall of each container in communication with said openings, an air chamber, and means dividing said air chamber into a heating chamber and a cooling chamber, means establishing communication between the air heating chamber and said conduits and means establishing communication between the air cooled chamber and said conduits, a valve control for each of the two last mentioned means, an air space between the containers and an outlet adjacent the base of the containers communicating with said air space.

34. In an apparatus for treating varnished or enameled bedsteads and the like, the combination of a container of a height to receive the article in the lower portion thereof and constructed to leave an unobstructed air space thereupon, a horizontally extending conduit arranged on the top wall of the container, means in communication with said conduit for introducing properly treated air thereinto, the top wall having a substantially centrally disposed opening in communication with the conduit, a deflector, forming said opening, substantially as and for the purpose described, an auxiliary conduit on the top of the container adjacent its side, means forming an air chamber extending over one side of the container and in communication with the auxiliary conduit, the container having an outlet opening adjacent the base and communicating with said side air chamber.

35. In an apparatus for treating varnished or enameled bedsteads and the like, the combination of a pair of containers, the top walls of each of which having an air inlet opening adjacent the center thereof, a
conduit positioned on the top wall in communication with said inlet opening, an air chamber, means dividing said air chamber into a heating chamber and a cooling chamber, means establishing communication between the air heating chamber and said conduits, and means establishing communication between the air cooled chamber and said conduits, the said containers having an air space therebetween and an air outlet adjacent the base thereof in communication with said air space.

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

CICERO M. CUNLIFFE.

Witnesses:

H. M. ZERBE,

W. E. SMITH.