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J. J. JENKINS

ART OF AND MEANS FOR DEODORIZING FABRICS AND GARMENTS CLEANSED BY VOLATILE LIQUIDS

Filed May 5, 1919. 2 Sheets-Sheet 1

Fig. 1.

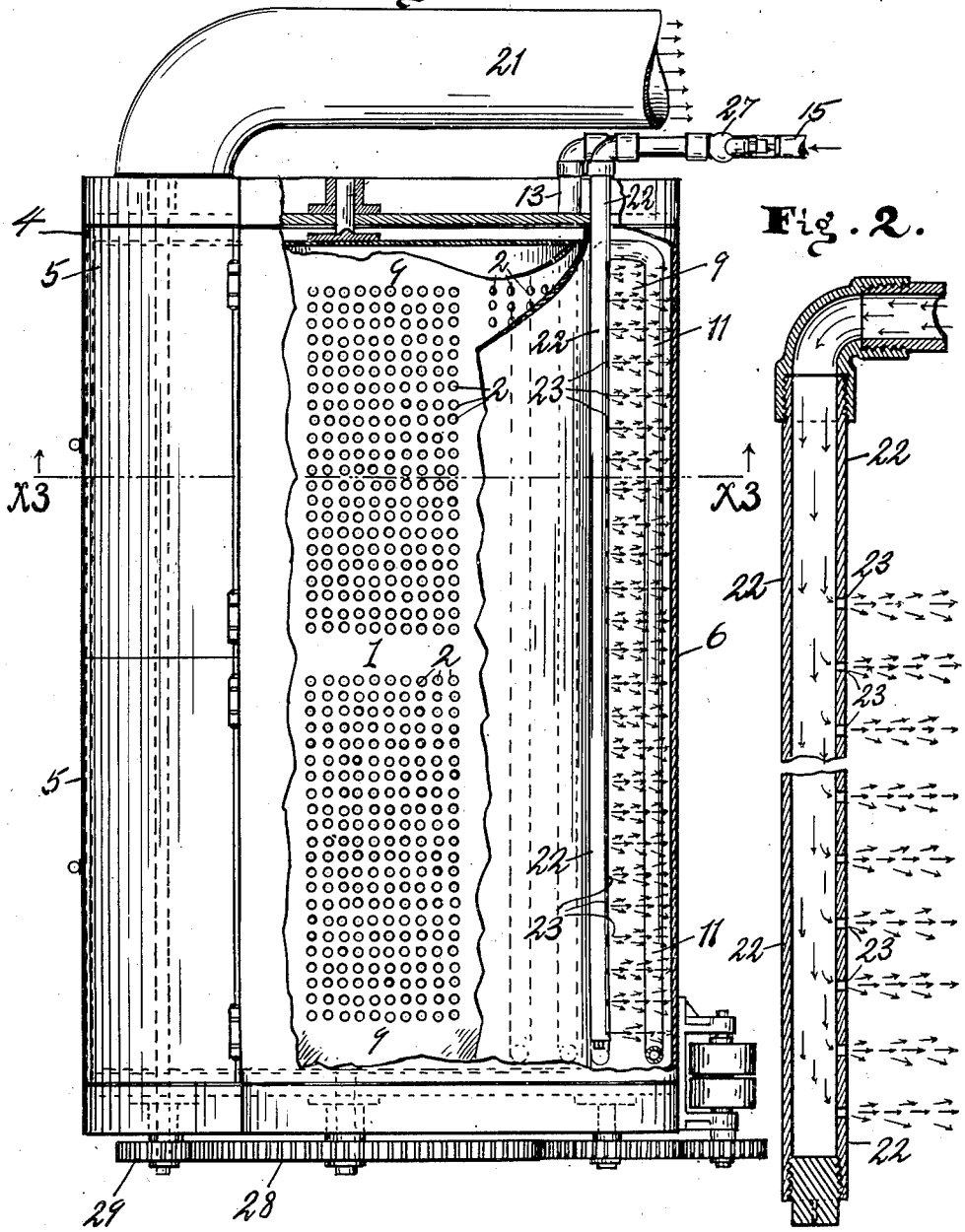


Fig. 2.

Witness:
W. M. Gentle.

Inventor.
John J. Jenkins.
By James R. Townsend
his Atty.

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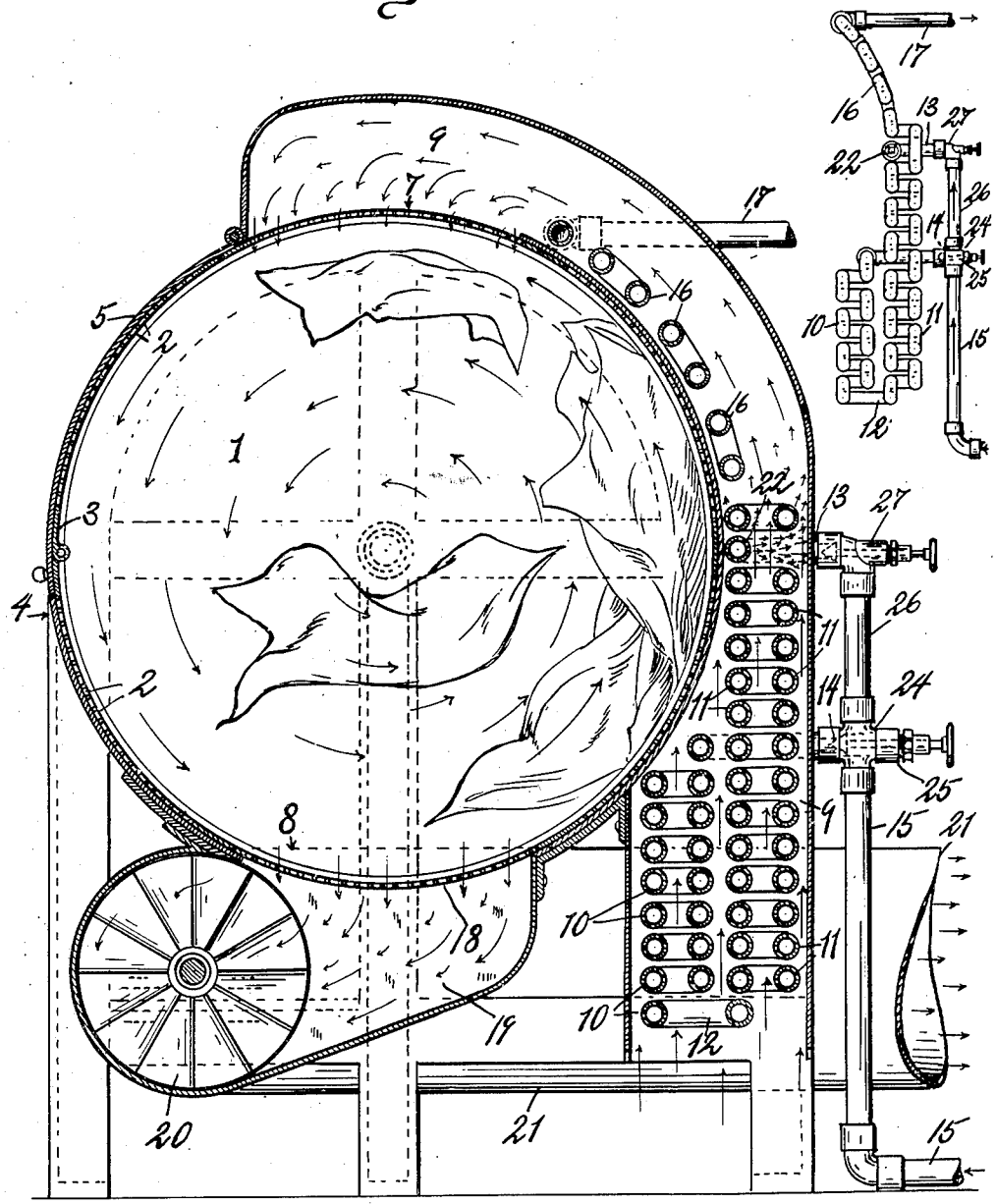
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Fig. 4.

Fig. 3.



Witness:
W. M. Gentle.

Inventor.
John. J. Jenkins.
by
James R. Townsend.
his Atty.

Patented Dec. 29, 1925. 1,567,443

UNITED STATES PATENT OFFICE.

JOHN J. JENKINS, OF LOS ANGELES, CALIFORNIA.

ART OF AND MEANS FOR DEODORIZING FABRICS AND GARMENTS CLEANSED BY VOLATILE LIQUIDS.

Application filed May 5, 1919. Serial No. 295,016.

To all whom it may concern:

Be it known that I, JOHN J. JENKINS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in the Art of and Means for Deodorizing Fabrics and Garments Cleansed by Volatile Liquids.

In the art as heretofore practiced, it has been customary to clean fabrics, wearing apparel, and the like, by washing with or immersing in a volatile liquid such as petroleum distillates, wood naphtha, benzol, carbon tetrachloride, and other liquids of a like nature.

After this step in the process, the textile fabrics and fibres have been extracted or wrung in a suitable device and have been deodorized and dryed by subjecting these materials to the action of heat in a suitable contrivance or machine.

Steam has also been employed in connection with the hot air. My improvement consists in treating the fabrics in the drum for a period with a blanket of live steam and then to drive off the live steam by hot air, and an object of this invention is to provide simple means adapted to serve this purpose and to be easily applied to old and also to new drying apparatus in which the revolving drum is used.

The invention is broadly new, basic and pioneer in that I apply to the fabrics to be dried and deodorized, a blanket of live steam as distinguished from a mixture of steam and hot air; and this I do by providing within a narrow portion or neck of the hot air pipe a perforated steam pipe so constructed, connected and arranged that when the steam is turned on in such pipe it will practically exclude air from the portion of the air pipe between the perforated pipe and the inlet to the perforated drum, so that for a portion of the treatment, the drum will be filled with a blanket of live steam to the exclusion of the hot air.

An object is to deodorize the cleaned particles and fabrics more effectively in a short period of time than by old processes and former apparatus.

An object of this invention is to make cheap and simple provision whereby well known apparatuses that are now on the market can be provided with a steam connection in the rear to allow steam at a certain pressure to enter the outer shell, thus forming a blanket of steam and, at the same time, replacing the molecules of volatile solvents left in the textile fabrics or fibres by the moisture produced by the condensing of the steam, eliminating fire risk, rejuvenating the textile fabrics or fibres, replacing the natural moisture originally contained in these, before they had been subjected to the action of the volatile solvents, giving them the proper "feel" or "hand" and making these textile materials absolutely odorless. But I do not limit myself to any particular point or part of the apparatuses to which I may apply my steam connection.

Other objects, advantages and features of invention may appear from the accompanying drawings, the subjoined detailed description and appended claims.

The accompanying drawings illustrate the invention as applied in a conventional apparatus for drying the cleaned materials.

Figure 1 is a plan of the improved apparatus, parts being broken away to expose construction.

Fig. 2 is an enlarged axial section of the steam pipe shown in Fig. 1.

Fig. 3 is a transverse section on line indicated at x^3 Fig. 1.

Fig. 4 is a view of the combined steam radiator and injector detached.

In the form of apparatus shown a drum 1 having perforations 2, and a hinged door 3 is mounted inside a housing, enclosing the drum and formed of a closed section 4 and a door 5 and a closed rear section 6, there being an air inlet 7 communicating with the drum 1 at the top and an outlet 8 at the bottom of the drum, and an air heating conduit 9 is arranged at the rear side of the housing and is provided with descending and ascending steam coils 10 and 11 connected by the bottom limb 12 and supplied with steam from the valved pipe 13 through a valve 14 opening from a live steam pipe 15, which is connected with a boiler, not shown.

Said heating steam flows through the downward and upward coils, the latter extending about half way up the side of the housing which practically fits the drum from this point upward. A single line of coils 16 are applied to the side of the hous-

ing, and the exhaust steam finds its escape through the pipe 17 at the top of said coils.

The heating conduit 9 extends upward and over the air inlet 7 to the drum, and a discharge outlet 18 at the bottom opens into a chamber 19 from which the air is exhausted by a fan 20 into an exhaust pipe 21. This construction is practically well known and my improvement consists in applying to the air conduit a steam injecting pipe 22, which is shown as being provided along one side with steam outlets 23, from which the steam is blown across the air passage in the conduit 19. By this means steam is mingled with the air which is allowed to pass through the drum at certain periods of my newly discovered process.

In order to apply the invention to former constructions in a simple and expeditious manner, I provide the steam supply pipe 15 with a cross pipe joint 24, one limb of which is screwed onto the steam supply pipe 15, another is supplied with the valve 14, and a third limb with the stuffing box 25. The fourth limb of the pipe joint 24 is supplied with a nipple 26 onto which is fitted the elbow valve 27 that supplies steam from the pipe 15 to the injecting pipe 22 between the heating coil and the inlet 7 to the drum.

The fan 20 and the drum are connected by the spur and pinion gears 28 and 29 from power, not shown. In practical use, before the articles to be deodorized are placed in the drum 1, the valve 14 is opened long enough to assure perfect circulation of steam in the coils, while the valve 27 is closed. When such circulation is effected, the valve 14 is closed and the valve 27 is opened in order to blow out whatever steam may have been condensed in the pipe 22 and within the drum 1 and the housing therefor. As soon as the ejection of such condensed steam is fully assured, the valve 27 is closed and power is applied for a few moments in order to revolve the drum and thus to evaporate therefrom whatever moisture may have accumulated thereon or inside thereof. The door 3 of the drum is then opened; and the load of garments or fabrics which have been cleaned by the volatile liquds, and from which garments and fabrics the odors of the volatiles are to be removed, is deposited within the drum; after which the door 3 of the drum and the door 5 of the housing are again closed. The valves 27 and 14 are then again opened in the same order as above stated so as to insure a blanket of steam within the apparatus, and the power for revolving the drum is turned on. The result is that after treatment of this kind for twenty or thirty minutes the remnants or residue from the cleaning substances have all been bodily driven out from the materials. Thereupon the valve 27 is again closed and only a blast of air from the fan 20, which air is heated by the coils 10, 11 and 16, is introduced in the apparatus for a period of twenty or thirty minutes, more or less, during which time the drum is rotated with the result that when the door 5 is opened, there is no remnant of volatile cleansing liquid to become inflamed upon opening the drum; and the process is made perfectly safe.

The materials, after the treatment thus disclosed, are then removed and are found to have a superior softness to the touch and to be perfectly free from any odor of the cleansing liquids.

It is thus seen that all that is necessary to supply either a new or an old time drying apparatus of the character shown, with means for the purpose set forth, is to provide the steam coil in the conduit 9 with the steam projecting pipe 22 provided along one side with steam outlets from which the steam will be blown across the air passage in the conduit and to provide a valve connection between said pipe 22 and the live steam supply pipe 15. Said valved steam pipe 22 is brought into and out of action independently of the action of the heating coil and the heating coil is brought into and out of action independently of the perforated valved steam pipe 22. The hot air pipe 9 is arranged at its lower portion to extend underneath the bulging periphery of the cylindrical housing 4 and is wider at such portion as is clearly seen in Fig. 3 and is on a level with the axis of the drum contained in said housing; and the steam connection therein is formed of two coils 10 and 11 arranged front and back; the front coil 10 being composed of seven turns and the back coil extending above the level of the front coil for about the same number of turns. The rear wall of the air pipe is vertical and parallel to the front wall thereof so that the air pipe is narrow at the place where the perforated steam pipe 22 is applied.

By this construction and arrangement, when the elbow valve 27 is open, the passage through the pipe 9 is flooded with steam and the flow of air therethrough from around the coils below is practically suspended so that the contents of the drum are for the meantime treated with hot live steam without atmospheric air, and I term such steam a blanket of hot live steam as distinguished from atmospheric air saturated more or less with steam.

In other words, the drum is filled with hot live steam which excludes atmospheric air therefrom for a period of time; and each blanket of hot live steam penetrates the pores of the fabric materials in the drum and combines with the odiferous substances and when the steam is turned off from pipe

22 and the blast of hot air is again passed through the drum the hot steam in said pores will be carried off together with the odiferous substances.

I claim:

1. The improvement in the art of drying and deodorizing textile fabrics or fibers which consists in placing the fabrics or fibers in a drum; then practically excluding atmospheric air from the drum for a period of time by admitting to such drum, and subjecting the fabrics or fibers therein to the action of, a blanket of hot live steam; then rotating said drum; and then subjecting the fabrics or fibers to the action of hot air to drive the steam and odiferous substances from the drum and fabrics.

2. In a deodorizing apparatus of the character set forth the combination with the heated air conduit, the heating coil therein, the live steam pipe for said coil, and a valve for controlling the flow of steam from the live steam pipe to the heating coil; of a pipe arranged in the conduit above the main portion of said heating coil and provided with openings arranged to discharge steam across said conduit, and a valve connection between said steam pipe and the live steam pipe.

3. In a drying apparatus the combination with the revolving drum, the housing for said drum, and exhaust means; of an air supply pipe opening through said housing into said drum and having a contracted portion; means for heating air in the air pipe below said contracted portion, and controllable means for injecting live steam across the contracted portion for the purpose of excluding air from the drum for a period of time and for temporarily supplying the drum with hot steam to form a blanket of steam for the contents of the drum.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 22nd day of April, 1919.

JOHN J. JENKINS.