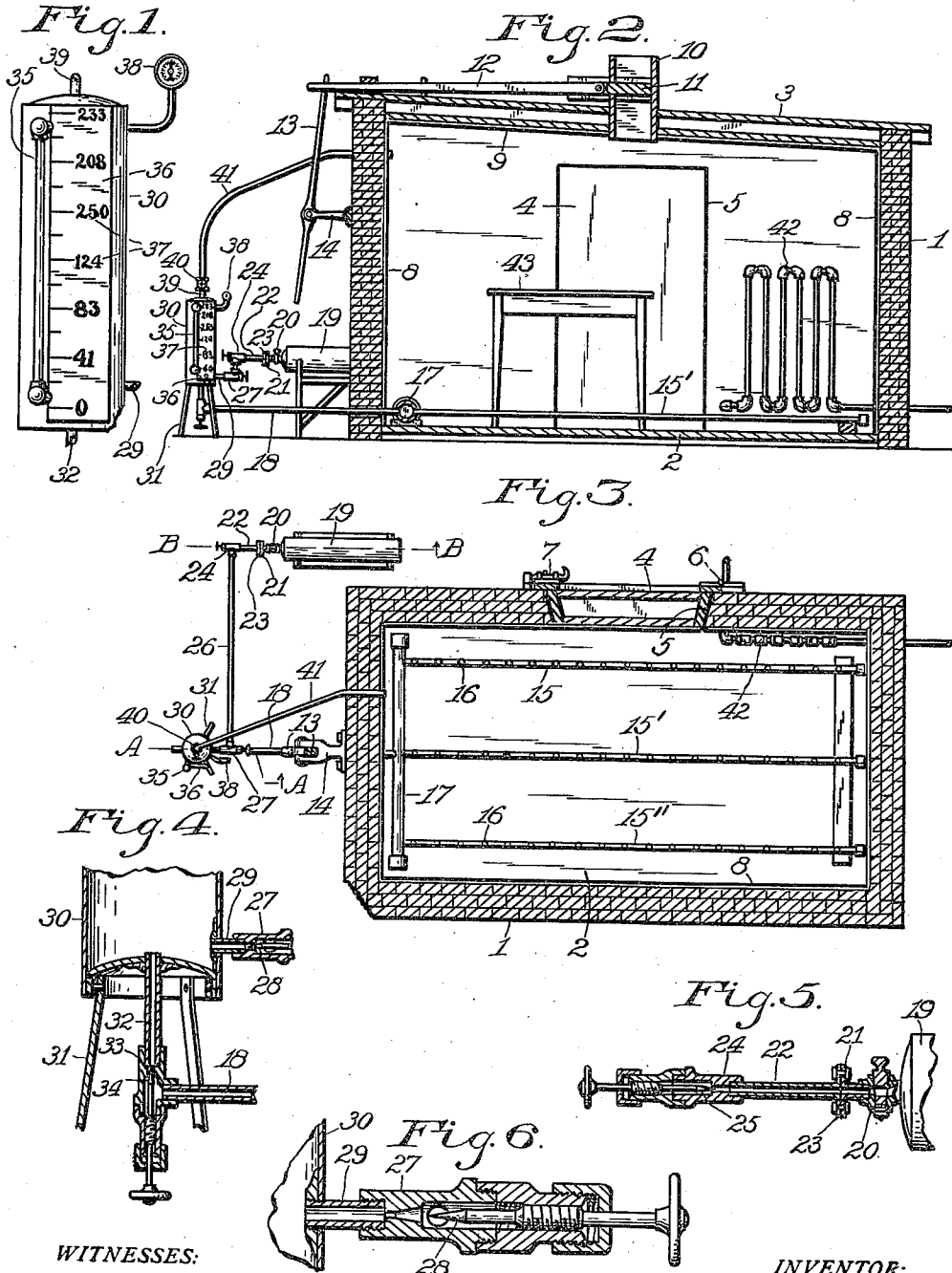


H. W. DE PREZ,
 APPARATUS FOR FUMING WOOD.
 APPLICATION FILED SEPT. 6, 1910.

1,015,008.

Patented Jan. 16, 1912.



WITNESSES:

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APPARATUS FOR FUMING WOOD.

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To all whom it may concern:

Be it known that I, HARRY W. DE PREZ, a citizen of the United States, residing at Shelbyville, in the county of Shelby and State of Indiana, have invented certain new and useful Improvements in Means for Treating Wood; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to the treatment of wood or wooden articles after the surfaces have been dressed and before applying the finishing coatings, for improving the natural surfaces by heightening grain effects of the wood.

The object of the invention is to provide an improved means for treating articles manufactured of wood, such as household furniture, for the purpose of obtaining sharply defined grain effects without detriment to the smoothed surfaces that would result from exposure thereof to moisture.

With the above mentioned and other objects in view, the invention consists in an improved and simple means for applying fumes, especially from anhydrous ammonia, to wood or wooden articles; and the invention consists further in the parts and combinations and arrangements of parts as hereinafter particularly described and claimed.

Referring to the drawings Figure 1 is an elevation of a receiver for liquefied ammonia and qualified to indicate the quantity therein by weight, being one of the elements of the apparatus for practically carrying out the objects of the invention; Fig. 2, a vertical sectional elevation illustrating the complete apparatus comprised in the invention; Fig. 3, a sectional plan view of the apparatus including the fuming-kiln; Fig. 4, a fragmentary section on the line A A in Fig. 3; Fig. 5, a fragmentary section on the line B B in Fig. 3, and, Fig. 6 is a reproduction of portions of the apparatus also on the line A A in Fig. 3 on an enlarged scale.

Similar reference characters throughout the drawings indicate corresponding ele-

ments or features of construction referred to herein.

The method of treating the wood to brighten and thus improve the surface grain effect without subjecting the wood to the injurious effects of moisture consists in inclosing the wood or wooden articles to be treated in a substantially tight kiln or chamber, in expanding anhydrous ammonia from a high pressure reservoir or contained into a closed receiver in a liquefied state and then admitting the fumes of the anhydrous ammonia in a measured quantity into the kiln or chamber so as to accurately produce uniformity of effect as may be predetermined, the effect of the fuming process being modified with considerable precision by varying the quantity of the ammonia admitted into the fuming-kiln, and the length of time the articles are subjected to the fumes.

In order to economically carry out the objects of the invention in a practical manner, physical means is provided comprising a fuming-kiln of suitable construction which preferably comprises a side wall 1, a floor 2, a roof 3, a door 4 provided with packing 5 and mounted on hinges 6, the door being normally closed and held by a suitable latch 7. The interior of the fuming-kiln preferably has a lining 8 on the wall and a ceiling 9 under the roof for retaining the fumes effectually, the roof being provided with a flue 10 provided with a sliding gate 11 which is provided with an operating rod 12, the rod preferably being connected to an operating lever 13 mounted pivotally on a bracket 14 secured to the wall, so that the fumes may be permitted to escape from the fuming-kiln to permit attendants to enter and remove the treated articles. A suitable number of distributing pipes 15, 15', 15'', are arranged on the floor of the fuming-kiln, each pipe having a suitable number of perforations 16 in the upper-portion thereof. The pipes are connected to a header 17 to which a supply pipe 18 is connected.

A container or reservoir 19 is provided of sufficient capacity and strength to hold anhydrous ammonia under great pressure, and the container is preferably adapted to be shipped and filled or refilled at any

establishment that may be equipped for producing and compressing the ammonia therein; or, the charging of the container may be done at the establishment where used, if desired, and it should be understood that a number of containers may be provided so that one may be in use while others are being recharged with ammonia. The container is suitably supported in a convenient position and is provided with a stop-cock 20 and a union-flange 21 so that a pipe 22 provided with a union-flange 23 is securely connected thereby with the container. A valve-body 24 is connected to the pipe 22 and it has a needle-valve 25 therein, another pipe 26 being connected to the valve-body for conducting the ammonia to the receiver. Preferably a valve-body 27 is connected to the pipe 26 and it has a needle-valve 28 therein, the valve-body having preferably a short pipe 29 connected thereto, or the valve-body may be otherwise connected to the lower portion of a receiver 30 which is closed and preferably is provided with supporting legs 31. A short pipe 32 is connected to the lower portion of the receiver and has a valve-body 33 connected thereto in which is a needle-valve 34, the valve-body being connected to the supply pipe 18. The receiver is provided with a gage-glass 35 so that the level of the liquid in the receiver may be ascertained. A scale-plate 36 is mounted on the exterior of the receiver adjacent to the gage-glass and is suitably divided and marked so as to indicate a quantity of liquid in the receiver by weight and to be ascertained by reference to numerals 37 of the required denominations arranged on the scale-plate. The receiver has also a pressure-gage 38 connected therewith. The receiver 30 has a vent-pipe 39 connected to its top in order to permit the escape of air, if any be in the receiver previous to being charged, the vent-pipe normally being closed by a stop-cock 40 to which is connected an escape-pipe 41 which extends into the upper portion of the fuming-kiln in order to save any gas that may be inadvertently permitted to escape from the receiver.

Preferably a heating-coil 42 is arranged in the fuming-kiln and it may be suitably connected with a steam boiler, in order to dry the atmospheric air if found desirable when not naturally dry; or to be used for heating and expanding the fumes during operations, if found desirable. A table 43 is shown in the fuming-kiln as illustrating the purposes of the invention.

In carrying out the practical operations the stop-cock 20 is opened completely and the valves 25 and 28 are opened slightly and regulated so as to permit the anhydrous ammonia to escape from the retainer 19 and

expand and become liquefied in the receiver 30, the vent-cock 40 being opened if necessary at first to permit air to escape. The receiver may be filled either entirely or partially as may be required for one charging of the fuming-kiln, it being predetermined as to the quantity of the liquefied ammonia that may be properly used in a fuming-kiln of certain dimensions and for treating wood of certain characters. When the receiver contains a sufficient quantity of the liquefied ammonia for the purpose the charging operations are discontinued, and then the valve 34 is opened and the liquid permitted to flow out of the apertured distributing pipes and expand into the chamber as gaseous fumes, the operator observing the gage-glass so as to ascertain when the requisite quantity has been discharged from the receiver, and then the valve 34 is closed. After the articles have been satisfactorily treated the gate 11 may be opened to permit the escape of the fumes, and the door 4 is opened for removing the articles and placing other articles in the fuming-kiln. When it is found desirable to use the heating-coil in order to eliminate moisture in the fuming-kiln the fumes may be somewhat under pressure, being slightly expanded by the heat so that the most satisfactory results are obtained in the treatment of the wood, particularly in treating articles made of thoroughly dried wood which may have glued joints.

Having thus described the invention what is claimed as new, is—

1. Means for treating wood with fumes including a fuming-kiln, a distributing-pipe in the lower portion of the fuming-kiln, a valve connected with the distributing-pipe, a closed receiver connected with the valve, a container, and a pipe connected with the container and the receiver and having a needle-valve therein.

2. Means for treating wood with fumes including a fuming-kiln, a container for anhydrous ammonia under pressure, a closed receiver having a scale-plate thereon and provided also with a gage-glass adjacent to the scale-plate, means for conducting the anhydrous ammonia from the container and discharging it in liquefied state into the receiver, and means for conducting the liquefied ammonia from the receiver and converting it into fumes discharged into the fuming-kiln.

3. Means for treating wood including a fuming-kiln, a container, a closed receiver having a graduated scale thereon and provided with a gage-glass adjacent to the scale, a pipe connected with the container and the receiver and having a stop-cock and also two needle-valves therein, one needle-valve being near the stop-cock and the other

near the receiver, a header, a supply-pipe
connected with the receiver and the header
and having a needle-valve therein near the
receiver, perforate distributing-pipes con-
5 nected to the header and extending along
the floor of the fuming-kiln, a pressure-gage
connected with the receiver, a vent-cock
connected with the receiver, and a pipe con-
nected with the vent-cock and extending
into the upper portion of the fuming-kiln. 10
In testimony whereof, I affix my signature
in presence of two witnesses.
HARRY W. DE PREZ.

Witnesses:

WILLIAM PRYOR,
ALONZO BLAIR.

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