

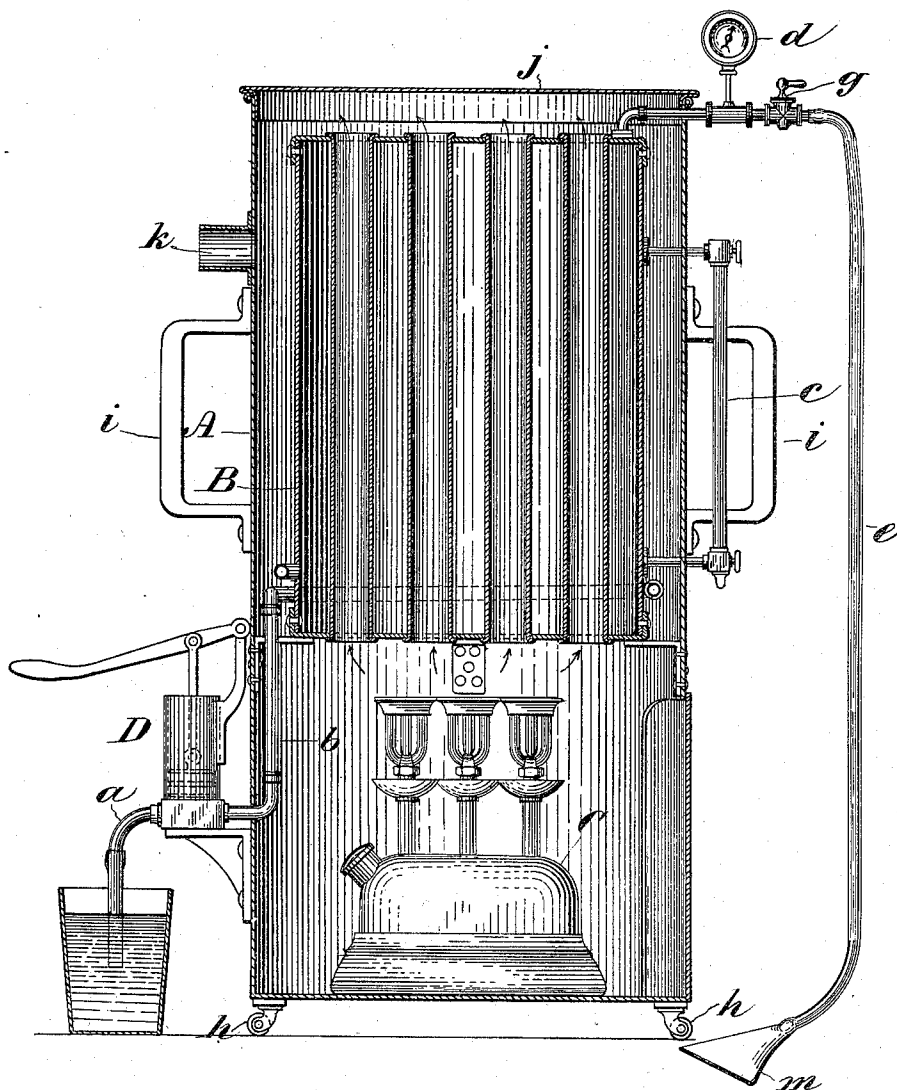
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A. W. BARNARD & W. E. BUTLER.
PROCESS OF REMOVING PAINT AND VARNISH.

(No Model.)

(Application filed Sept. 29, 1897.)



Witnesses:

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UNITED STATES PATENT OFFICE.

ARTHUR W. BARNARD AND WILLIAM E. BUTLER, OF NEW YORK, N. Y.

PROCESS OF REMOVING PAINT AND VARNISH.

SPECIFICATION forming part of Letters Patent No. 608,948, dated August 9, 1898.

Application filed September 29, 1897. Serial No. 653,418. (No specimens.)

To all whom it may concern:

Be it known that we, ARTHUR W. BARNARD and WILLIAM E. BUTLER, citizens of the United States, residing at New York, (Brooklyn,) Kings county, New York, have invented certain new and useful Improvements in Removing Paint, Varnish, and the Like, of which the following is a specification.

This invention relates to the removal of old and dry paint, varnish, and the like from wood and metal work with the aid of a mixture of ammonia-vapor and aqueous vapor under pressure and heat; and the object is to properly effect the mixture of these vapors under pressure, so that a predetermined proportion of the highly-volatile ammonia may be applied to the surface in a continuous manner in intimate mixture with steam or water-vapor under heat and pressure.

The wide difference between the boiling-points of ammonia and water has up to the present time prevented their combined use for the purpose stated, although such use has been suggested in connection with an apparatus for removing wall-paper, as will be noted in the patent to Blaisdell, No. 546,504, of September 17, 1895. In the ordinary mode of using an apparatus adapted for the removal of wall-paper by steam alone the heat applied for generating steam in the boiler drives off the gaseous ammonia before the water begins to evaporate and no combination of the vapors is produced. Hence, so far as we are aware, up to this time the combined vapors or gases of ammonia and water under pressure have not been utilized for the purpose stated. Our practice has satisfied us that the only practical mode of effecting the object sought is to mix the ammonia in the desired proportion with the water in the boiler.

In carrying out the invention an apparatus is employed, and that illustrated in vertical mid-section in the accompanying drawing will serve.

In the drawing, A represents an outer upright shell or casing inclosing an upright tubular boiler B, supported within the casing, as shown. Under the boiler is a lamp C, which will supply an intense heat. What is known to the trade as a "Primus" lamp is preferred. The particular kind of heating means is not important, however, so long as it is effective

and will maintain sufficient pressure in the generator while the vapors are being drawn off for use. The water and aqua-ammonia are supplied to the boiler B by a pump D, which takes in the liquid through a pipe *a* and forces it into the boiler through a pipe *b*. A water-gage *c* shows the level of the liquid in the boiler, and a pressure-gage *d* on the delivery-pipe *e* shows the pressure or tension of the mixed vapors within the boiler. A cock or valve *g* in the delivery-pipe serves to cut off the outflow or waste of the vapor and to regulate it.

The apparatus shown is designed especially for portability and is provided with casters *h* and a suitable handle or handles *i*. The cover *j* of the casing is made removable, and the outlet *k* for the products of combustion is placed by preference at the side.

In order to heat the liquid-supply before it enters the boiler, the pipe *b* is passed about the generator or boiler B in the manner of a coil. On the end of the delivery-pipe *e* will be fitted a suitable nozzle *m* for applying the mixed vapors from the boiler to the paint or varnish to be removed.

The operation is as follows: The mixture of water and aqua-ammonia in the proper proportions is put into the boiler, the cock *g* closed, and the heat applied, so as to vaporize the water and ammonia or produce mixed steam and ammonia-gas, the cock *g* being kept closed until the pressure reaches by preference about seven or eight pounds, as will be shown on the gage *d*. Some of the ammonia will be first driven off, but it cannot escape, and when the temperature increases sufficiently to generate steam this latter will rise and mix with the ammonia-gas in due proportion. The gaseous pressure on the mixture of liquids in the boiler prevents the ammonia from being vaporized and all driven off at once, and it is found that the proportion of the water and ammonia in the hot vapor under pressure is substantially the same as that existing in the liquid in the boiler. The cock *g* is now opened very gradually, care being taken that the heat shall be maintained under the boiler with sufficient intensity to produce such rapid generation that a proper pressure is maintained in the boiler while the mixed vapors are being drawn off for use. This will

serve to assure the desired proportion of ammonia-gas in the steam.

As the liquid in the boiler is vaporized it may be renewed by means of the pump; but care must be taken not to reduce the temperature of the contents of the boiler to an extent sufficient to lower the pressure therein too much.

The hot vapors emerging from the nozzle *m* are directed upon the painted or varnished surface to be cleaned, and they act to soften the dry coat to a pulp, the ammonia, aided by the steam and heat, serving to cut or dissolve the oxidized oil and gums of which the coat is mainly composed and reduce it to such a pulpy condition that it may be readily rubbed up and washed away.

The essentially novel feature of the invention consists in the mode of operation whereby a hot vapor consisting of ammonia-gas and steam or watery vapor combined in the desired proportion is produced and furnished in a continuous manner, the difficulty overcome being that arising from the great difference in volatility or boiling-point of the water and ammonia. The preferred proportion will be about one of stronger aqua-ammonia to fifteen of water, by measure; but this proportion is of course subject to variation. By "stronger" aqua-ammonia is meant the strong aqua-ammonia of commerce, containing about twenty-eight per cent., by volume,

of liquid ammonia. The latter may be used in this process, but it would be much more expensive than the use of the aqua-ammonia of commerce.

The boiler B and its casing will be cylindrical by preference; but this is not essential to the present invention, nor is the portability of the boiler and apparatus essential.

Having thus described our invention, we claim—

The improvement in the art of removing dry paint and the like with hot vapor of water and ammonia, which consists in heating a mixture of water and ammonia, while inclosed, until steam is generated and gaseous pressure on surface of the liquid is produced, and then maintaining the heat while the mixed vapors are gradually drawn off for use, to an extent sufficient to generate the vapors as fast as used and to maintain the pressure on the surface of the liquid, and finally forcing the vapors onto the surface from which the paint or the like is to be removed, substantially as set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

ARTHUR W. BARNARD.
WM. E. BUTLER.

Witnesses:

HENRY CONNETT,
PETER A. ROSS.