

No. 644,906.

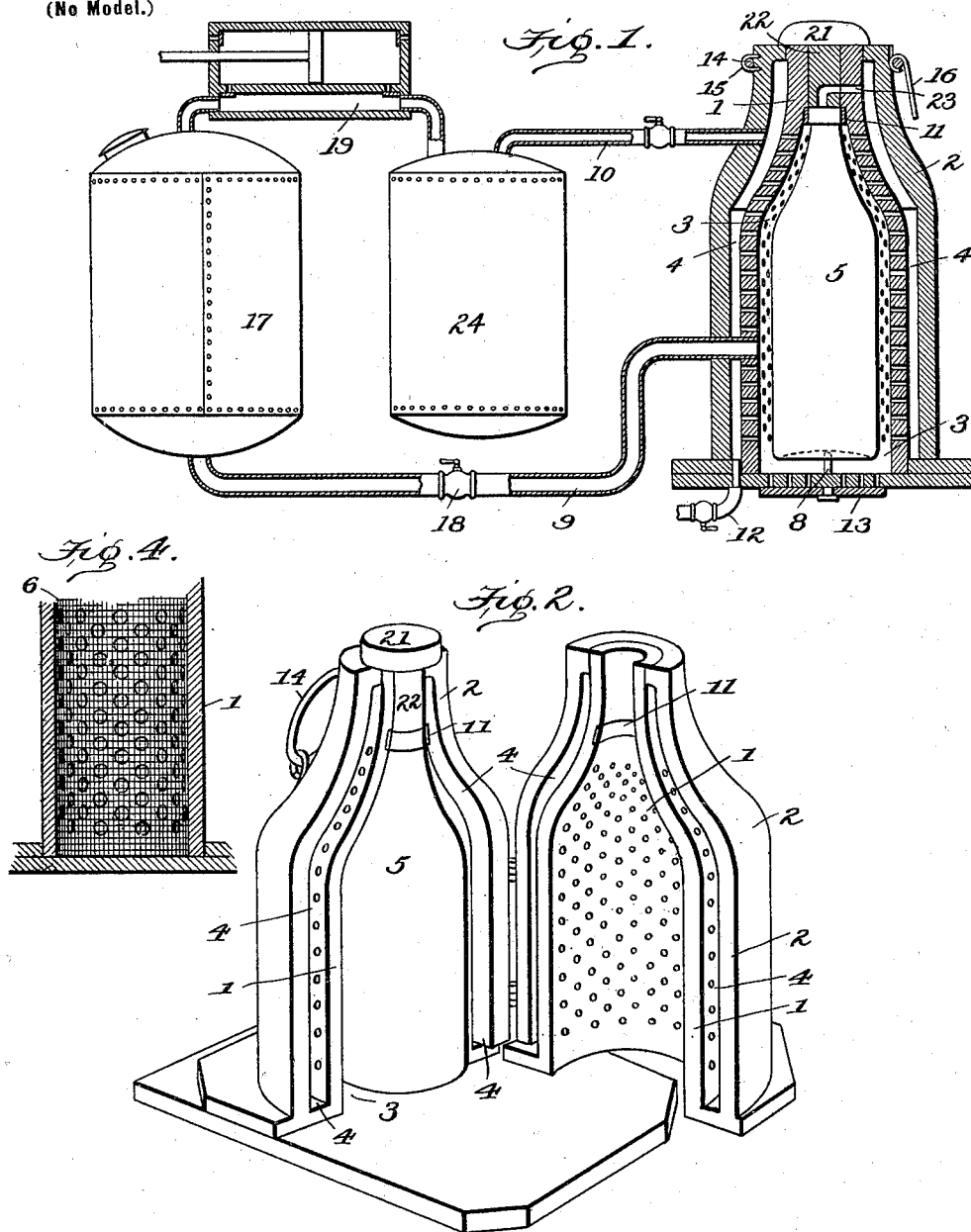
Patented Mar. 6, 1900.

W. W. GARIS.

APPARATUS FOR COATING FRAGILE VESSELS.

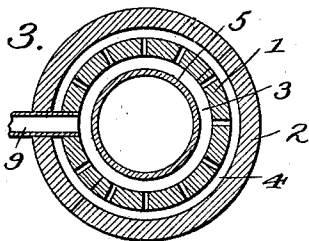
(Application filed Oct. 23, 1899.)

(No Model.)



WITNESSES:

Edwin L. Bradford
 Geo. M. Copenhagen.



INVENTOR.
 Webb W. Garis

BY
 Johnson & Johnson
 ATTORNEYS

UNITED STATES PATENT OFFICE.

WEBB W. GARIS, OF EAST STROUDSBURG, PENNSYLVANIA.

APPARATUS FOR COATING FRAGILE VESSELS.

SPECIFICATION forming part of Letters Patent No. 644,906, dated March 6, 1900.

Application filed October 23, 1899. Serial No. 734,559. (No model.)

To all whom it may concern:

Be it known that I, WEBB W. GARIS, a citizen of the United States, residing at East Stroudsburg, in the county of Monroe and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Coating Fragile Vessels, of which the following is a specification.

For externally protecting fragile vessels I have invented a new apparatus or device in which an inner perforated wall forms the molding closure-space provided with means for centering the vessel; and my invention resides in a construction and combination whereby the vessel is supported and the coating is effected by injecting fluid pulp within a sealed molding-space which determines the thickness and form of the coating. Within this sealed metal flask there is provision whereby the vessel to be coated is centrally supported, so that its side walls and bottom will be surrounded by a space having the exact shape of the inner walls of the flask and the correspondingly-shaped walls to be coated, so that the vessel itself and the flask form the molding-space within which the protecting-coating is forced.

The following description, read in connection with the accompanying drawings, will enable any person skilled in the art to which my invention relates to understand its nature and to practice it in the form which I prefer to employ it; but it will be understood that my invention is not limited to the precise form and construction herein illustrated and described, as various modifications and changes may be made without exceeding the scope of the claims in which my invention is set out.

Referring to the drawings, Figure 1 illustrates the apparatus for coating a vessel with paper-pulp, wherein a vessel, centered within a double-walled metal flask, forms one of the walls of a coating-space, the flask being shown in section and containing the vessel. Fig. 2 shows the flask parts open and the vessel in one of the half parts. Fig. 3 is a horizontal section of the same, and Fig. 4 is a detail of the perforated flask.

As illustrated, the coating device is constructed of a double flask constituting an inner perforated wall 1, forming the coating-

space and mold 3, and an outer wall 2, forming an air-intervening space 4, both parts having the same shape and the shape of the article to be coated. With this device the pulp is forced within the inner space 3 around the vessel 5 to be covered. The inner walls and bottom are full of perforations and the flask parts will be made of steel or iron, the inner surface of which may be polished. The perforations can be quite large, and in such case the inner walls may be lined with fine wire-cloth 6. (Seen in Fig. 4.)

Preferably the flask is made of two equal parts, the split being vertical and the outer parts hinged, so as to be opened and closed for the placing and removal of the vessel, and when closed they are fastened together by a suitable catch at or about midway from the bottom. The vessel 5 to be coated is centrally supported within the inner wall by a bottom pin 8, which engages the hollow or center of the bottom cavity of the vessel, while the neck of the latter forms a close joint with the shouldered neck-walls, and the coating-space 3 is thereby formed between the bottom and side walls of the vessel and flask, into which the pulp is forced to coat the vessel to the shoulder formed exteriorly of its mouth. The space 3 may be formed to produce a thicker coating at the bottom and a thinner coating around the neck. A pipe 9 for introducing the pulp passes through the double walls into the coating-space 3 either at a point near the shoulder of the body of the vessel or at any other point, while a pipe 10 for introducing air enters the space formed between the two walls, preferably at or near the top of the flask. A ring or band packing 11, of two parts, is seated in a groove in the inner wall at the shouldered mouth of the vessel and seals the coating-space when the flask is closed. A cock 12 enters the bottom of the air-space 4, whereby the water pressed from the pulp outward through the perforations of the inner wall into said space 4 is drawn off. The bottom of the inner wall is also perforated for draining off the water forced down beneath the vessel, and to close these bottom perforations a slide-valve 13 may be provided below the bed-plate of the device. The drawing-off cock 12 is closed when the air is introduced under pres-

sure into the space formed between the walls for the purpose of forcing out by pressure through the perforations any water that may still remain in the coating and for drying the same. For this purpose the air may be hot, and what water may gather at the perforated bottom under such air-pressure can be drained off by opening the slide-valve.

When the flask is closed, its neck part is firmly sealed by a ring 14, secured to the flask by an eye 15, so that the ring can be put over the neck of the flask and drawn tight by a swing-arm 16, binding against the wall of the flask like an eccentric.

For supplying the pulp a tank 17 is provided and connected to the pipe 9 at the bottom of the tank, which has a removable top for filling the pulp in a proper degree of fluidity. The cover is suitably fastened to resist the pressure in the tank, while a cock 18 controls the communication between the tank and the coating-space of the flask.

For forcing the pulp from the tank into the space around and upon the walls of the vessel an air-pump 19 is provided and is connected with the top of the tank and maintains therein a high pressure, so that when the tank is in direct communication with the coating-space the pulp will be forced all around the walls of the vessel and caused to stick and firmly adhere thereto; but the pulp will not stick to the polished walls of the flask nor to the wire-gauze which may be used as a lining to the flask. The air-pressure must be sufficient to give the proper compactness to the coating as the pulp is forced into the space. The adhesion of the coating to the vessel allows the flask to be opened without any pulling action upon the coating. As the pulp will be sufficiently fluid to flow freely by force, I provide the air-pump with one or more pipes 10 for forcing air into the outer space, from which it presses inward through the perforations upon the pulp to give it the proper compression to expel any water that may remain through the perforations into the outer space.

While I propose air-pressure within the outer space, yet such pressure may not be found necessary.

When the pulp is forced into the coating-space, the water will be forced out of said space through the perforations into the outer space and can be drawn off at intervals or continuously. When this is done, the cock is closed and air hot or cold may be forced into the outer space and through the perforations to finish the drainage and to dry the coating. For this independent air-supply I provide a tank for supplying hot air, and this tank has a valved connection with the air-pipe 10 and may be supplied from the same pump which supplies compressed air to the pump-tank by which the pulp is forced therefrom.

It is important to note that my improvement gives the advantage of coating any form and size of vessel, and particularly demi-

johns and carboys, and so far as I know and can find the vessel itself has never been used as an element contained within a closure to form one of the walls of a space within which pulp has been forced upon and around such vessel to coat it with a protecting-cover and in which the thickness of the cover is determined by the space formed by the closure-walls and the walls of the coated vessel. The closure-space of the inner perforated wall may be closed at its upper end; but I prefer to make it open-necked like a bottle and to close the opening by a stopper or cap 21, having a suitable cork 22, extending down on the top of the mouth of the vessel with sufficient pressure to hold it upon its central bearing, and thereby prevent its displacement by the pressure of the inflowing pulp. The bottom centering device, however, may be such as to afford lateral support at the sides of the seated vessel. The pulp may be forced by a pump or by steam or other power or pressure into the mold.

The use of hot air for drying the coating will act to prevent the cracking of the coating, and to provide against breaking of the vessel by pressure while being coated I make provision preferably by an air-duct 23 in the neck of the inner wall, so that the air entering the outer air-space will be forced into the mouth of the vessel, and thereby equalize the pressure on its inner and on the outer sides.

Water may be used in the vessel or any other means that will give an interior supporting pressure against the external coating pressure.

It may be advantageous under some conditions to heat the pulp which is to coat the vessel, and in such case heat may be conveniently applied to the pulp-tank.

I claim—

1. In apparatus for coating fragile vessels with pulp, the combination of a flask having an inner perforated wall inclosing a closure-space open at the top and provided with a stopper, of means for centering a vessel within said closure-space and means for injecting pulp under pressure into said closure-space.

2. In apparatus for coating fragile vessels with pulp, the combination of a flask provided with an inner perforated wall forming an inner closure-space and an outer closed wall, an intervening space, means within the closure-space for centrally supporting a vessel, means for injecting pulp through said inner perforated wall, means for injecting air into the intervening space, and means for draining the said spaces.

3. In apparatus for coating fragile vessels a double-walled flask the inner wall inclosing a closure-space and having perforations and open at its top, the outer wall closed and forming with the inner wall an intervening space, in combination with a bottom centering-support in the closure-space and a stopper for the open top, a valved pipe for supplying pulp under pressure into the closure-

space, and a valved pipe for supplying air under pressure into the intervening space.

4. In apparatus for coating fragile vessels, a double-walled flask forming an inner closure-space, an intervening space, the inner wall perforated and open at its top and the outer wall closed, in combination with means for centering a vessel within said closure-space, a stopper for the open top, an interior wall-packing at the inner end of the stopper, means for supplying pulp under pressure into the closure-space and means whereby air is supplied under pressure into the intervening space.

5. In apparatus for coating fragile vessels, a double-walled flask forming an inner closure-space, and an intervening space, the inner wall perforated and open at its top and the outer wall closed, a stopper for the open top, an interior wall-packing at the inner end of the stopper, means for supplying pulp under pressure into the closure-space, means for supplying air under pressure into the intervening space, and a duct or passage in the inner wall having communication with the closure-space and the intervening spaces.

6. In apparatus for coating fragile vessels, a double-walled flask the inner wall inclosing a closure-space and having perforations and an interior polished surface, open and contracted at its top, the outer closed wall forming with the inner wall an intervening space, and a stopper for said open top, in combination with a bottom center pin in said closure-space, a tank for containing pulp, a valved pipe for connecting the tank and the closure-space, and an air-pump connecting the intervening space.

7. In apparatus for coating fragile vessels, the combination of a flask forming a closure-space the wall whereof has perforations, means within the closure-space for securing and centering a vessel, and means for injecting pulp under pressure through the perforated wall.

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

WEBB W. GARIS.

Witnesses:

STEWART S. SHAFER,
DANIEL H. SHAFER.