

UNITED STATES PATENT OFFICE.

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PROCESS FOR INTERNALLY COATING VESSELS SUITABLE FOR CONTAINING OIL AND OLEAGINOUS PRODUCTS.

1,049,626.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, CARL WENZELBURGER, a subject of the German Emperor, residing at Antwerp, Belgium, have invented certain new and useful Improvements in Processes for Internally Coating Vessels Suitable for Containing Oil and Oleaginous Products; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a process for internally coating vessels with glue or size, particularly wooden vessels, suitable for use in exporting oils and oleaginous products and liquids, such for example as petroleum, machinery oils, edible oils, turpentine, etc.

The process is useful not only for internally coating new vessels but also for internally coating vessels which have already been used, as it possesses considerable advantages over the methods hitherto employed.

For the purpose of simplifying the following description, wooden casks, which are the vessels commonly employed for the purpose indicated, will only be hereinafter mentioned, but the invention is nevertheless intended to extend to the coating of other vessels which can be employed for the exportation and carriage of the hereinbefore mentioned products.

As is well known casks are sized internally for the purpose of filling up the pores and joints in order to prevent the oil from leaking. The processes which for this purpose are in common use at present only attain this object very incompletely so that losses of oil during carriage often take place and this frequently leads to complaints and unpleasant differences between the vender and the purchaser which hitherto it has not been possible to avoid and which have been hitherto tacitly regarded in the commercial circles dealing in this class of goods as a matter of course. It has not heretofore been possible to obtain absolute fluid-tightness of the casks. Glue or size has proved to be the most suitable material for the purpose and cannot be replaced by any other desired product, such for example as pitch which is employed in the brewing trade for rendering casks fluid-tight, so that manipulation of both substances for the one

as well as the other purpose is necessarily different.

The internal sizing of new casks has hitherto been carried out in the following manner. After the casks have been sufficiently dried in the air liquid glue or size was poured into them with a scoop by hand the quantity employed being about from ten to twelve liters for each cask and the casks were then rotated, likewise by hand, and also repeatedly tilted in such a manner as to insure an efficient distribution of the glue or size over the internal surfaces. This method was dependent upon the dexterity of the workman, the use of a sufficient quantity of hot glue or size, and length of time during which the latter was kept within the casks. These constitute three very indispensable factors in the success of the process. The superfluous glue or size was finally allowed to flow out of bung holes after which the casks had to stand for a period amounting to as much as six days, according to the weather, for the purpose of drying the glue before they were capable of being used. In the case of casks which had been previously used the process was still more tedious, as such casks had to be steamed out, before they were coated internally with the glue or size, for the purpose of removing the old glue or size and any other residues from their former contents. Since however the steaming out operation rendered the interior of the casks damp, the steaming process had to be followed by drying the casks in the air for from two to three days before the internal coating thereof with the glue or size could be carried out. According to the coating methods previously employed therefore new casks require as many as six, and old casks as many as nine days before they are ready for use. At the same time the internal coating of the casks with the glue or size was exceedingly incomplete because the hot glue when poured into the cold casks cools too quickly and so rapidly becomes thick that it cannot be absorbed by the wood in sufficient quantity neither can a properly uniform distribution thereof take place. The result is that in some places the coating of glue or size is too thick while in others it is too thin, and others again have no coating at all. This explains the subsequent leakages from the cask because the cold surfaces of the wood receive, even under favorable

circumstances, only a skin-like coating without the glue or size properly penetrating into the pores, fibers and joints of the wood.

Now in the new process according to the present invention not only is the time necessary for the internal coating and drying of the casks reduced to a minimum but the process insures that the interiors of the casks shall receive an efficient coating of glue or size which will render them thoroughly fluid-tight. New casks, as soon as they are finished, and used casks as soon as they have been steamed out and the liquefied residues removed, are treated, without requiring the before mentioned drying in air for several days, with hot dry air which is introduced into the cask for several minutes at a suitably high temperature of several hundred degrees Celsius and under a high pressure above that of the atmosphere, amounting say to from one to two atmospheres. By this means the wooden staves of the cask are thoroughly dried on their interior and the fibers, pores and joints are, so to speak, slightly opened by the heat and thereby favorably prepared for the reception of the glue or size. From 30 to 50 (thirty to fifty) liters or thereabout of boiling glue or size then forced through the bung hole into the cask and by centrifugal force and while still subjected to hot air at high pressure the interior of the cask is subjected to the hot glue or size in such a manner that every part of the internal surface comes into contact with the heated glue or size. This operation can be carried out while the cask is horizontal and takes a few minutes to effect. In consequence of the interior of the cask being well heated by the use of the hot air current, the hot glue will be thoroughly absorbed by the opened layers of fiber and the pores and joints of the wood, and in consequence also of the coating being effected by centrifugal force under pressure the glue penetrates more deeply into the wood and the joints than is possible by the simple rinsing around hitherto commonly practised. That a better coating of the interior of the cask with the glue or size is actually effected is manifest from the fact that the consumption of glue or size is greater for a given size of cask, in the new process than in the old one, from which it follows that the former yields a better and thicker layer of glue or size. The slight additional expense caused by the greater consumption of glue is amply covered by the absence of the compensations which have hitherto had to be made for leakages. The superfluous glue or size introduced into the cask as described is finally allowed to flow out and the cask is then again treated with hot air for the purpose of drying it and still more efficiently forcing the layer of glue or size into the pores of the wood, the

hot air being introduced into the cask through the bung hole at a high pressure above that of the atmosphere (say one and a half to two atmospheres for example) and at a high temperature such as 400 (four hundred) degrees Celsius for example. After a few minutes, (say from four to six minutes for example) the drying complete and the cask is ready to be filled with the product to be exported.

The entire process as hereinbefore described, from the commencement of the preliminary heating of the cask, including the coating of it internally with the glue or size, the removal of the superfluous quantity of the latter and the drying of the cask, takes barely an hour to carry out in order to render the cask ready for use and for which similar operations, as has been hereinbefore stated, a period of from six to nine days has hitherto been necessary. The time of about one hour might still be considerably reduced to about a quarter of an hour, were it not for the fact of the time necessary to allow the superfluous portion of the glue or size to thoroughly drain out of the cask after being forced into it. In the drying of casks according to the new process any faults in the manufacture of, and any leaky places in, the cask will at the same time be brought to notice, because the high air pressure immediately makes them apparent. This is an important, even if a secondary circumstance and one which increases the advantage of the new process.

The advantages of the improved process in comparison with the old methods of internally coating casks with glue or size are obvious, for, apart from the more rapid manufacture and the better internal coating of the casks with the glue or size thereby excluding all leakages a considerable economy in space and room taken up in the factory during the carrying out of the process is effected and also in the storage yards, for the reason that the finished casks can be immediately sent away and special accommodation therefor is no longer required, whereas according to the old process a definite storage place had to be provided for each series of casks according to the longer or shorter period of time prescribed for the treatment and storage for drying purposes, the various casks being specially arranged according to their time of drying and the storage of the casks calculated for one, two days, etc.

The kind of the appliances employed for heating and introducing the air and the glue or size into the casks is perfectly immaterial as far as the carrying out of the new process is concerned, as they will have to be suited to the particular local conditions, and the means suitable for attaining the desired purpose are so numerous that it

appears unnecessary to describe any particular constructions of such. Thus for example there are so many different possible ways and means of heating the air and the glue or size and introducing them into the cask that the present invention only relates to the hereinbefore described, complete and general process which has hitherto found no application as a gluing or sizing process for lining casks and has not hitherto been applied in the same way.

Similar methods may be partially used in other trades, and other materials for producing fluid-tightness may be employed, but the herein described process has, in its composition and the succession of the several operations, not been used hitherto for the internal coating with glue or size and the drying out vessels suitable for the exportation of oil and the like.

Having now particularly described and ascertained the nature of the said invention

and in what manner the same is to be performed I declare that what I claim is:—

The herein described process of coating receptacles consisting in forcing hot dry air under high pressure into the receptacles to absorb the moisture and open the pores of the material, then introducing an overcharge of hot size in the receptacle and centrifugally distributing the hot size with hot air under pressure to the walls of the receptacle, then draining the surplus size from the receptacle and finally forcing highly heated dry air to the interior of the receptacle to dry the size.

Dated this 10 day of January 1912.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL WENZELBURGER.

Witnesses:

KARL GOETZE,
G. DE LERKY.