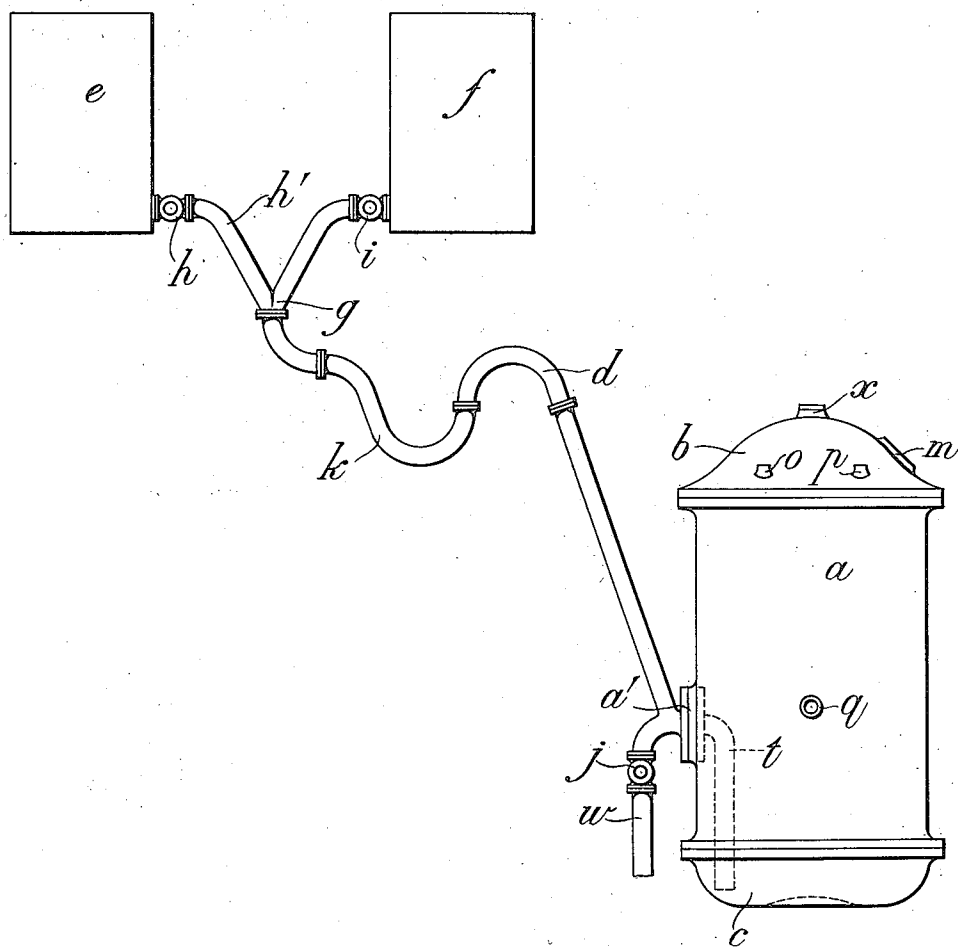


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METHOD AND APPARATUS FOR THE PREPARATION OF OILS FOR VARNISHES,
PRINTING INKS, PAINTS, LINOLEUMS, AND THE LIKE
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METHOD AND APPARATUS FOR THE PREPARATION OF OILS FOR VARNISHES, PRINT-
ING INKS, PAINTS, LINOLEUMS, AND THE LIKE.

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To all whom it may concern:

Be it known that we, WILLIAM CALDERWOOD, ALFRED EDWARD WEBB, and CHARLES ALWIN REIHL, subjects of the King of Eng-
land and a citizen of the German Republic, respectively, residing at Forest Gate, Great Missenden, and London, all in the Kingdom of England, have invented a certain new and useful Improved Method and Apparatus for the Preparation of Oils for Varnishes, Printing Inks, Paints, Linoleums, and the like, of which the following is a specification.

This invention refers to an improved method and apparatus for the preparation of oils, and it has for its object to provide a means of preparing in large or small quantities so-called litho varnishes and oils used in the manufacture of printing inks, also thickened oils used in the manufacture of paints, linoleums and similar products.

The invention has more particular reference to the method of preparing or thickening oils, according to which the oil is heated and subsequently cooled in a sealed vessel from which the excess of oil due to expansion during the heating process is allowed to escape, and the deficiency on cooling is supplied by the addition of previously prepared oil. Now the object of the present invention is the provision of improved apparatus whereby said method may be carried out in a simplified and more expeditious manner than heretofore.

Now according to the present invention we provide apparatus for carrying out the method described comprising a sealed vessel communicating by way of an oil seal and a branch pipe and cocks with two other receptacles disposed above the level of the said sealed vessel and so arranged that one will serve to receive the excess of oil arising during the heating process and the other will supply the requisite quantity of previously prepared oil during the cooling process.

In carrying the present invention into effect we employ a vessel of any approved design, but so constructed that the contents can be sealed during the process, thereby entirely excluding the atmosphere. As the contents of the vessel are subjected to a very great heat we prefer to make of copper that portion which comes in contact with fire or

gases, the upper portions of the vessel and connections being made of aluminium or alloy, although we do not confine ourselves to these materials only. The sides of the vessel may also be constructed with an annular space providing means for rapidly cooling the contents if desired. Other means of cooling, such as internal aluminium or alloy coils may also be employed.

In order that the present invention may be more clearly understood and more readily carried into effect it is hereinafter described with reference to the accompanying drawing which shows more or less diagrammatically one convenient form of apparatus in outside elevation. In this drawing the vessel *a* which is assumed to be made of aluminium is provided with a bolted-on cover *b* of similar metal. The base *c* which is of copper is also bolted thereon. A sinuous connection *d* leads from a facing *a'* on the main vessel *a* to the receivers *e, f* having a branch pipe *g* and cocks *h, i* for controlling the material. An oil seal *k* is provided in the connection *d*. One of the receivers *e* is for taking off the surplus oil on expansion of the material in the vessel *a*, and the other one *f* is for supplying the necessary finished oil to the vessel *a* when cooling under vacuum. A manhole is provided at *m* for cleaning purposes. The vessel *a* is also provided with a thermometer *o*, pressure or vacuum gauge *p* and a pet cock *q* for sampling purposes.

An internal siphon pipe *t* is provided on the facing *a'* at the side of the vessel *a* leading to the bottom of said vessel *a*, and a similar siphon pipe *w* is attached to the said facing *a'* on the outside of the said vessel *a*. The connection *d* leading to the receptacles *e, f* is also made to the outside of said facing *a'*. The said connections are so designed that at will, by the manipulation of suitable cocks *h, i* and *j*, the contents of the main vessel *c* can be sealed, while at the same time a free passage can be obtained to the respective receptacles *e, f*, one of which serves for receiving the excess oil during manufacture and the other for supplying the necessary oil during the cooling operation or during emptying the contents of the main vessel *a*. The receptacles *e, f* into which the excess oil is forced by the expansion of the oil in the vessel *a* when heated, or from which previ-

ously prepared oil is drawn for cooling, are placed in such a position above the level of the vessel *a* as to break any siphon. The siphon pipe *w* is arranged for emptying the contents of the vessel *a* when the material is finished. To assist in the removal of the air in the upper portion of the main vessel *a* the relief cock *x* is provided on the cover *b* which remains open during the expansion and heating of the oil in the chamber *a*, until all the air is exhausted. By the improved construction whereby the connections are made to the side of the vessel *a* instead of to the cover, the latter can be easily removed for cleaning purposes without in any way interfering with the said connections. Also it will be seen that by placing the two receptacles *e*, *f* above the height of the vessel *a*, it is possible to obtain a gravity feed which can be used for filling the apparatus *a* from one of the vessels *e* or *f*, and also for assisting the vacuum when the second vessel *e* or *f* is in use for replacing the material required in the vessel *a* on cooling to exclude the air. A further advantage is that no pump is required for filling or emptying the vessel *a*.

Such an apparatus as herein described enables the manufacturer to manipulate any quantity of material at one time, without danger of fire, loss of material or obnoxious fumes. The apparatus also being foolproof less labour is necessary and when a battery of furnaces are desired the settings may be made permanent, combining the battery into one unit for easy supervision.

Having now described the vessel *a* the process of manufacture with the apparatus is as follows:—The requisite quantity of oil is fed into the apparatus from storage tanks or otherwise, and as the exclusion of air is of primary importance during the thickening process, only sufficient space is left between the level of the raw oil and the top *b* of the vessel *a* to permit of this space being completely filled when the maximum heat has expanded the oil. Any excess of oil introduced into the vessel *a* will be driven by expansion, as the temperature rises, through the special connection *d*, *g* and *h* into the receiver *e* for future use, and on its passage to the receiver it forms in the connection *d* an oil seal *k* completely excluding the entry of air to the vessel *a*.

The oil in the vessel *a* is now maintained

for several hours at an even temperature, the time under this process being much shorter than heretofore. When the required viscosity has been attained the pipe or connection *h'* leading to the first receiver *e* is closed and the second receiver *f* is put into circuit. This receiver *f* contains some previously prepared oil of similar density.

The fire or other heating arrangement is now withdrawn or the heat shut off from the vessel *a* and cooling commences. During the process of cooling, oil from the second receiver *f* is drawn into the vessel *a* by the vacuum produced by cooling air being excluded by the oil seal *k* in the connection *d*. If necessary the cooling may be more rapidly performed by passing water through an annular space provided in the vessel *a* or otherwise. When the contents of the vessel *a* have been cooled sufficiently, the colour of the product is no longer affected by the temperature, and there is no further danger of spontaneous combustion. The oil can therefore now be run from the siphon pipe *w* into storage tanks or other receptacles ready for the use for which the material has been prepared.

By the improved method and apparatus for preparing oils it is possible to produce pale coloured litho varnishes and stand oils without the usual risk of spontaneous ignition, loss of material, obnoxious fumes and having lower acidity than is possible with the present methods and apparatus.

What we claim is:—

1. Apparatus for carrying out the method described comprising a sealed vessel communicating by way of an oil seal and a branch pipe and cocks with two other receptacles disposed above the level of the said sealed vessel and so arranged that one will serve to receive the excess of oil arising during the heating process, and the other will supply the requisite quantity of previously prepared oil during the cooling process.

2. Apparatus according to claim 1, in which the sealed vessel is provided with an internal and external siphon pipe connected to a facing to which the connection to the elevated receptacles may also conveniently be connected.

In testimony whereof we have hereunto signed our names.

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ALFRED E. WEBB.
CHARLES ALWIN REIHL.