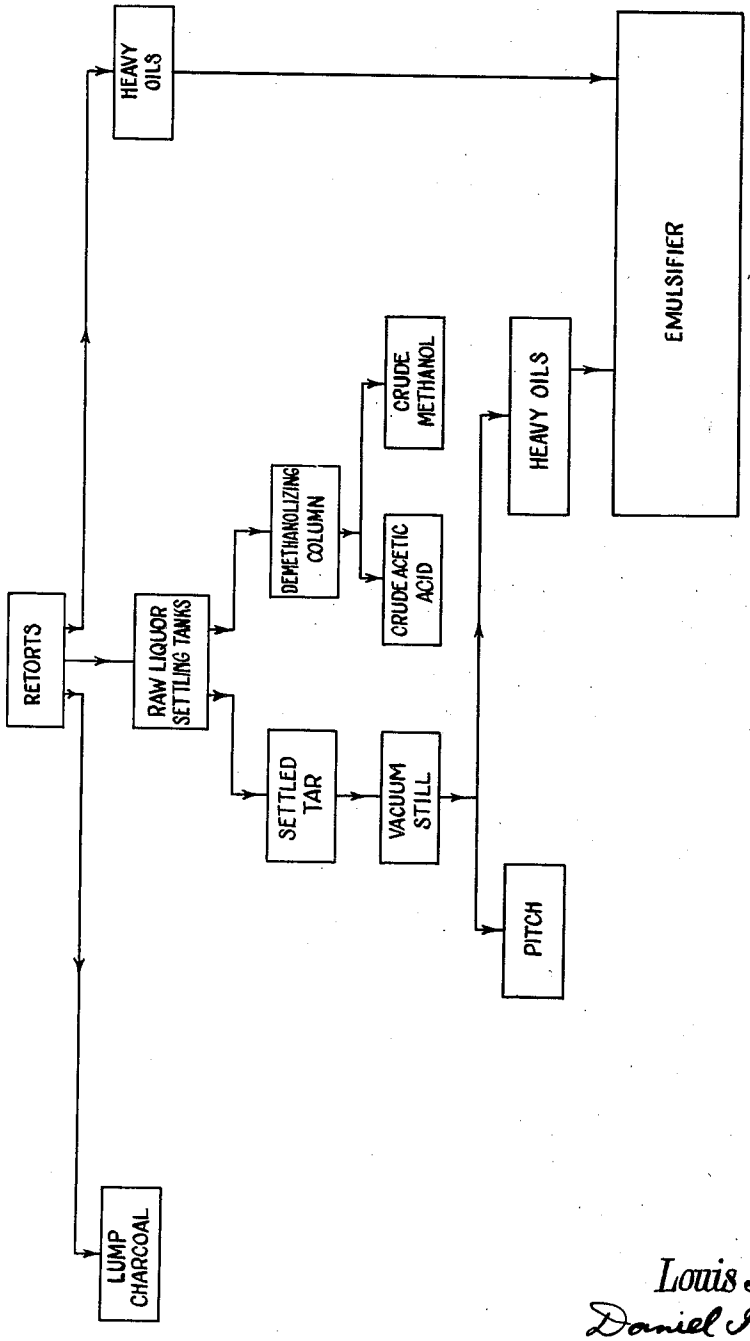
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EMULSIFIED WOOD OILS

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EMULSIFIED WOOD OILS

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4 Claims. (Cl. 167—27)

This invention relates to emulsified wood oils. One object of my invention is to provide stable, liquid, aqueous emulsions of the oils obtained in the production and refining of pyroligneous acid. Other objects will hereinafter appear.

In the distillation of hardwood and the refining of the resulting pyroligneous acid, heavy oils known as wood creosote oils are obtained. The flow sheet attached to and forming a part of this specification shows how these oils are obtained. When hardwood is distilled, three products are obtained directly: charcoal, raw pyroligneous acid, and heavy oils. These heavy oils may be used alone in carrying out my invention, or they may be mixed with the heavy oils whose preparation I shall now describe. The raw pyroligneous acid is allowed to stand in settling tanks, and tar, known as settled tar, settles out. This tar is first stripped of water and acetic acid which it contains, and is then subjected to vacuum distillation, as is well known in the art. Heavy oils with a boiling range of approximately 150–310° C., at atmospheric pressure, distill off, and hardwood pitch is left in the retort. These heavy oils may be used alone in carrying out my invention, or they may be mixed with the heavy oils described above. In addition I may employ, either alone or mixed with either or both of the heavy oils described, the lighter oils obtained in the further purification of the crude methanol and crude acetic acid obtained as shown in the flow sheet. However, these lighter oils have properties which suit them for other purposes, and where economic conditions are such as to favor their use for these other purposes, I prefer not to employ them for carrying out my present invention.

As is well known, the oils described above are composed of a caustic-soluble portion and a so-called neutral portion which does not react with caustic. If the oils are treated with a dilute solution of caustic, such as dilute sodium hydroxide solution, two distinct and separate layers are formed. The lower layer consists of a solution of the caustic-soluble portion in the aqueous caustic solution, while the upper layer is composed of the "neutral" oils which do not enter into reaction with the caustic solution. If a more concentrated solution of caustic is used, separation does not occur, but the emulsion formed is not a stable liquid emulsion, for upon standing it solidifies into a soft, solid mass.

I have discovered that a stable, liquid aqueous emulsion of heavy wood oils can be formed if a certain critical range of alkali concentration is used. When sodium hydroxide is the alkali employed, this range is from 3 to 5 grams, approximately, of sodium hydroxide per 100 cc. of wood oil and water. Below this concentration range, two layers are formed. Above this concentration range, the emulsion formed is not a stable liquid emulsion, but becomes lumpy and will solidify into a soft mass on standing.

Within this critical concentration range, the amount of sodium hydroxide to be used varies according to the ratio of the volume of wood oil to the volume of water used. The following table shows this variation.

Percent water by volume	Percent wood oil by volume	Grams of solid sodium hydroxide per 100 cc. total volume of liquids
50	50	5.0
60	40	4.0
70	30	3.0
80	20	3.0
90	10	3.0
95	5	3.0

Other alkalies may be used instead of sodium hydroxide, such as potassium hydroxide, sodium carbonate, or potassium carbonate, but I prefer to use sodium hydroxide because it is more economical. The critical concentration ranges vary with the alkali used.

As an example of the method of carrying out my invention, I may dissolve 5.0 grams of flaked sodium hydroxide in 50 cc. of water, and stir into the solution 50 cc. of wood oil. After about 10 minutes of stirring, a stable, liquid emulsion results.

My novel wood oil emulsions are useful as weed-killers, for instance for keeping railroad tracks free from weeds, grass, etc.

While I have described certain wood oils which may be employed in carrying out my invention, it will be understood that there are other wood oils which I may use. In the claims, when I use the term "wood oil", I mean any oil derived from the distillation of hardwood and comprising a caustic-soluble portion and a caustic-insoluble portion.

What I claim as my invention and desire to be secured by Letters Patent of the United States is:

1. A stable, liquid emulsion of wood oil with an aqueous solution of caustic soda, resulting from the addition of from 3 to 5 grams, approximately, of caustic soda per 100 cc. of wood oil and water,

the wood oil constituting from 5 to 50%, approximately, of the total volume of wood oil and water.

2. A stable, liquid emulsion of wood oil with an aqueous solution of caustic soda, resulting from the addition of approximately 3 grams of caustic soda per 100 cc. of wood oil and water, the wood oil constituting from 5 to 30%, approximately, of the total volume of wood oil and water.

3. A stable, liquid emulsion of wood oil with an aqueous solution of caustic soda, resulting from the addition of approximately 4 grams of caustic soda per 100 cc. of wood oil and water, the wood oil constituting approximately 40% of the total volume of wood oil and water.

4. A stable, liquid emulsion of wood oil with an aqueous solution of caustic soda, resulting from the addition of approximately 5 grams of caustic soda per 100 cc. of wood oil and water, the wood oil constituting approximately 50% of the total volume of wood oil and water.

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