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PROCESS OF PRODUCING RESINOUS COMPOUNDS AND PRODUCTS THEREFROM

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This invention relates to improvements in process of producing resinous compounds and products therefrom, and refers more particularly to the production of such resinous compounds from petroleum oils, as for example, cracked pressure distillate. The object of the invention is to produce such resinous compounds in an economical way, which compounds may be useful in the arts, as for example, in such uses to which materials similar to "Bakelite" are used. The invention may be carried out as follows:

I may take cracked pressure distillate produced from the cracking of California petroleum, which pressure distillate may have a Baumé gravity of say 48 to 50 degrees. Place it in a still, as for example, an ordinary shell type of still, and there add to it sulphur, as for example, 5 to 10 parts of sulphur by weight to 95 to 90 parts of the oil by weight. This still is preferably equipped with a reflux condenser or fractionating column, and may be operated under superatmospheric pressure, if desired.

One method of treating such oil so mixed with the sulphur would be to heat the contents of the still to an oil temperature of say 500° F. and throttle down the outlet from the top of the fractionating column to maintain a pressure of say 50 pounds on the still and fractionating column. As the heat treatment proceeds, a chemical reaction will take place between the sulphur and the cracked oil, the sulphur combining with the hydrocarbons to form sulphur hydrocarbons which have resinous characteristics. The gases and lighter vapors will escape out of the top of the fractionating column and may be condensed and collected, if desired, while the heavier fractions will be condensed and fall back into the still to be further acted upon by the sulphur. The time of reaction will depend upon the character of the oil being treated and, of course, to some extent the amount of sulphur being used. But often after a period of say six hours and upward, the reaction will be practically completed whereupon the fire may be cut out. There will be left in the still a pitchy like resinous material and also some oily material, which latter will tend to collect on the surface of the pitchy material and may be decanted off and the resinous pitch removed.

Instead of using pressure distillate, the so-called pressure distillate bottoms may be treated and instead of the above named temperature and pressure, different temperatures may be used and different pressures, or the process may, in some cases be carried out at atmospheric pressure, or under a vacuum.

An invention might also be carried out in any of the manners above described by using instead of sulphur, sulphur and chlorine, such as for example sulphuryl chloride.

An invention may be carried out in which the process instead of being essentially one of distillation may be more properly one of digestion in which the vaporized portions are shuttle cocked back and forth from a condenser to the still. Provision might be made, however, in such case to remove any excess incondensible gases to prevent too high a pressure.

An invention may be carried out similar to that described in the preceding paragraph where it was intended that the oil be under pressure, but in this case the digestion will take place at substantially atmospheric pressure, the condenser or cooling tower being maintained sufficiently cool to condense substantially the vapors (except incondensible gas) and return them to the still.

I claim as my invention:

1. A process for producing resin-like bodies from cracked hydrocarbon products comprising adding sulphur to the cracked hydrocarbon products, subjecting the commingled sulphur and hydrocarbon products to a temperature of substantially 500° F. while maintained under a pressure of substantially 50 pounds, taking off vaporous products, continuing the operation for approximately six hours, and recovering the residue as the resin-like bodies.

2. A process for producing resin-like bodies from cracked hydrocarbon products comprising adding sulphur to the cracked hydrocarbon products in the proportions of from 5 to 10 parts of sulphur to from 90 to 95 parts of hydrocarbon products, subjecting

the commingled sulphur and hydrocarbon products to distillation under a pressure of substantially 50 pounds per square inch and a cracking temperature, and recovering the residue of this distillation as the resin-like products of the process.

3. A process for recovering resin-like products from cracked hydrocarbon distillates comprising adding a cracked hydrocarbon distillate having a Baumé gravity of substantially 50° to sulphur in the proportions of from 5 to 10 parts of sulphur to from 90 to 95 parts of distillate, subjecting the commingled distillate and sulphur to pressure distillation at a temperature of substantially 500° F., and recovering the residue of this distillation operation as the resin-like products of the process.

4. A process for producing resinous bodies from cracked hydrocarbon distillates which comprises adding sulphur to the distillate, heating the resultant mixture to a temperature adequate to effect reaction between the sulphur and distillate and simultaneously distilling the mixture, refluxing the vapors evolved by the heating and distillation and returning resultant condensate to the mixture being heated, and continuing such heating and refluxing until a substantial portion of the distillate has been converted into resinous bodies.

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