My invention relates to the solvent fractionation and purification of coal tar, coal tar fractions and partially refined coal tar products by means of liquefied normally gaseous hydrocarbons. It is to be understood that in many cases my invention in certain of its various forms can also be applied to other direct or indirect products of the destructive distillation of coal-like materials, for instance, tar from the low temperature carbonization of coal, producer gas tar, blast furnace tar, water gas tar, oil gas tar, distillates and fractions of these various tars and partially refined products thereof. All of these various materials will be referred to collectively as coal tar materials.

An object of my invention is to provide a process for the fractionation of coal tar materials into two or more materials differing from each other and from the original coal tar material in chemical and physical properties. Another object is to provide a process for the purification of coal tar materials in order to render them more suitable for various types of uses. A further object is to provide a process capable of accomplishing the aforementioned objects efficiently, inexpensively and with substantially no loss or destruction of any of the constituents of the coal tar material to which the process is applied.

Still further objects of my invention will become apparent as the description thereof proceeds.

Although it will be apparent that my process, and the apparatus suitable for practicing it, is subject to many modifications as applied to various types of coal tar materials for various purposes, I will first describe the process and apparatus in general terms by reference to the accompanying drawing which is a conventionalized flow diagram and then proceed to a description of some representative specific applications.

Referring now more particularly to the drawing, receptacle 1 is a storage receptacle for the solvent used in my process which may suitably be a liquefied normally gaseous hydrocarbon such as ethane, propane, butane, isobutane, propylene, butylene or a mixture of two or more of these. It will be understood that other liquefied normally gaseous substances may sometimes suitably be used. Receptacle 1 is placed under pressure and/or provided with refrigeration and insulation in order to retain the solvent in the liquid phase. The solvent from receptacle 1 is withdrawn through valve 2, line 3, pump 4, and valve 5 into mixer 6, which may be of any type, continuous or batch, for instance, a multiple orifice mixer, where it is mixed with the coal tar material to be treated which is simultaneously introduced into mixer 6 by means of pump 7 from suitable storage not shown.

It is generally, but by no means always, desirable to lower the temperature of the material coming out of mixer 6 in order to promote its separation into its desired fractions. This cooling can, at least in part, be obtained efficiently by passing the material from mixer 6 through valve 8 and heat exchanger 9, shown as a tubular heat exchanger cooled by one of the intermediate products of the process. However, by closing valves 8 and 10 and opening valve 11, heat exchanger 9 may be by-passed if it is not desired to use this indirect cooling. In either case the stream passes through valve 12 and/or valve 13 for further treatment as desired.

It is to be understood that the temperature of the materials undergoing mixing and the ratio of solvent to coal tar material can be so adjusted as to produce a completely homogeneous solution which is separated into fractions by the subsequent cooling or, alternatively, the process can be operated so that the solvent merely extracts a portion of the original coal tar material and at no time completely dissolves it.

The material passing through valve 12 is, in general, passed through valve 14 and, if desired, expansion valve 15, into chiller 16 where a temperature reduction is obtained by withdrawing a portion of the solvent in vapor form through valve 17. Baffles 18 are used to prevent the carrying over of liquid material with the vapors withdrawn through valve 17. The chilled material from the bottom of chiller 16 is withdrawn therefrom through valve 19 by means of pump 20 and passed through valve 21 and, if desired, expansion valve 22 into separator 23 where, in general, there is a separation into two layers, the heavier being withdrawn through valve 24 by means of pump 25 and the lighter being withdrawn through valve 26 by means of pump 27. Solvent vapors can be withdrawn from separator 23, if desired, through valve 28, thereby accomplishing a further chilling. If this is done it is desirable to use baffles 29 similar to baffles 18.

If a separate evaporative chilling step is not desired, chiller 16 is by-passed by closing valves 14, 15, 17, 19 and 30 and opening valves 31 and 32, thereby introducing the material from mixer 6 or heat exchanger 9 directly into separator 23.

The material withdrawn through valve 24 is introduced through expansion valve 33, if desired, into flash drum 34 where the solvent vapors are removed by the application of heat through steam.
colls 35 and/or by reducing the pressure by adjustment of valves 33, 36 and 38. Baffles 37 can suitably be used in the upper part of flash drum 34 to prevent entrainment. This fraction of the original coal tar material, stripped of solvent, is withdrawn from flash drum 34 through valve 38 and passed to storage receptacle 39 from which it can be withdrawn as desired through valve 40 for further treatment or use.

The lighter material from separator 23, containing, in general, the bulk of the solvent is, as aforementioned, withdrawn through valve 26 by means of pump 27. It is desired to utilize its capacity to absorb low temperature heat this material is then passed through valve 41 and heat exchanger 9 (valve 42 being closed) where it comes in indirect heat exchange relationship with the material entering the process. However, by closing valve 41 and opening valve 42, heat exchanger 9 can be by-passed. In either case the stream passes through valve 43 into flash drum 44, similar to flash drum 34, equipped with baffles 45 and steam coils 46. Solvent vapors are recovered from flash drum 44 through valve 47 just as from flash drum 34 and the stripped product is withdrawn through valve 48 to storage receptacle 49 from which it can be withdrawn through valve 50 for further treatment or use as desired.

It will be readily understood that should it be so desired, the heavier material from separator 23, i.e., the material withdrawn through valve 24 may be utilized to cool the material entering the process. However, the material withdrawn through valve 24 will, in general, be more viscous and of lesser volume than that withdrawn through valve 26, and for this reason it is preferred to utilize the capacity of the lighter material to absorb low temperature heat and to pass the heavier material from separator 23 directly to flash drum 34.

In order to make up for losses and/or to supply further solvent for refrigeration purposes, additional liquefied solvent from storage receptacle 1 can be introduced directly into chiller 16 and/or separator 23 by means of pump 4. To introduce additional solvent into chiller 16 valves 51 and 30 are opened and to introduce additional solvent into separator 23 valves 51, 52 and 53 are opened. The amount introduced can be controlled by regulation of these valves.

The hereinbefore described modes of procedure are particularly adapted to operation on a continuous basis, liquefied solvent and raw coal tar material being continuously fed to the process and the products of the process being continuously withdrawn. However, in certain cases it will be found desirable to operate at least partially on a batch basis and this can be accomplished by passing the material from mixer 6 or heat exchanger 9 through valve 13 instead of (or in addition to) through valve 12 and into settler 51. Sometimes it will be preferred to further chill the incoming material by self-refrigeration and in this case the incoming material can be passed through valves 12, 14 and 15 into chiller 16 and withdrawn therefrom by means of valve 19, pump 20 and valve 52 into settler 51.

In either case material will be introduced to settler 51 until the settler is filled to a convenient level. If further temperature reduction is desired, this can be accomplished by withdrawing vapors through valve 53 during and/or after the admission of material to settler 51.

The process according to this modification is so operated that the material in settler 51 will separate into two layers over a period of time, and when this has been accomplished the upper layer is withdrawn by means of pump 54 and either through valve 54 or by reducing the pressure by adjustment of valves 54 preferably that one which appears to be located just above the meniscus between the two layers. This material is then passed through valve 56 and, if desired, reduction valve 53 into flash drum 34 where the solvent is removed in vapor form through valve 47 as in the continuous modification of my process and the product is simultaneously withdrawn from flash drum 44 through valve 48 into storage receptacle 49 as before.

When this upper layer from settler 51 has been withdrawn, valve 57 is opened and the lower layer is withdrawn by means of pump 58 and passed through valves 59 and 60 and, if desired, reduction valve 53 into flash drum 34 where solvent vapors are removed through valve 45 and the product is withdrawn through valve 58 into storage receptacle 59 as before.

When working on certain types of coal tar material, the lower layer from settler 51 will be highly viscous and in this event it may be necessary to introduce steam to aid in driving off the solvent through pipe 61 to increase the temperature of the lower layer sufficiently to permit its withdrawal. Under some conditions it will be found advisable to introduce sufficient heat by means of steam coil 61 to completely drive off the solvent vapors through valve 53, and in this event, valve 59 is closed and valve 62 opened, thereby passing the stripped lower layer directly into storage receptacle 63 from which it can be removed through valve 64 for further treatment or use as desired, for example, as charging stock to a coke oven operation, asphalt manufacture or the like.

A still further alternative which can be applied to the material in settler 51 is to withdraw the lower layer first (without previously withdrawing the upper layer) through valve 57 by means of pump 58 and pass it through valves 59 and 60 and, if desired, reduction valve 53 into flash drum 34 where residual solvent is removed in vapor form. When the lower layer has thus been completely removed valve 57 is closed and valve 65 is opened, thereby passing the upper layer through valves 66, 67 and 68. Vapors are removed by means of pump 55 to flash drum 48 where residual solvent is removed in vapor form.

In any of these alternative modifications to be applied to the material in settler 51, the original coal tar material will be separated into two fractions which, after removal of solvent, will pass either into storage receptacles 39 and 49 or into storage receptacles 39 and 63.

In the foregoing description of my process, no mention has been made of the so-called "overhead" system, i.e., the portion of my process and apparatus adapted to the withdrawal of solvent in vapor form from the various pieces of equipment; its compression, condensation and return to the process. It will be noted that solvent vapors can be withdrawn from any of the following pieces of equipment: chiller 16, separator 23, flash drum 34, flash drum 44 and/or settler 51. Vapors withdrawn from chiller 16 and/or separator 23 to pass to surge chamber 66 which is used to smooth out any unevenness which may occur in the withdrawal of vapors and at a reasonably constant supply of vapors for compressor 67 which is used to partially compress vapors from surge chamber 66 and pass them to surge chamber 68. Vapors withdrawn from flash drum 34, flash drum 44 and/or settler 51 will...
often be at a higher pressure than those withdrawn from chiller 16 and/or separator 23 due to the possibility of supplying heat to the first-mentioned pieces of equipment. In this case it is desirable to pass these vapors directly into surge chamber 68 by means of valve 69 without putting them through the relatively low pressure surge chamber 62. Edrocs if it is desired or if additional heat is not supplied in flash drum 34, flash drum 44 and/or separator 51 these vapors may be passed into surge chamber 66 by opening valve 70 and closing valve 69. It will also be readily comprehended that in some instances it is desirable in the interest of simplicity to do away with one of these surge chambers entirely, or even to do away with both of them and directly compress the solvent vapors directly as withdrawn from any or all of the various items of equipment aforementioned.

Material from surge chamber 68 is further compressed by means of compressor 71 and passed through condenser 72 which may suitably be an ordinary coil condenser, water cooled, and thence through valve 73 into storage receptacle 1, thereby becoming available for re-use.

Having thus described one process and apparatus in general terms I will now proceed to a description of a few typical specific embodiments as applied to various types of coal tar materials.

It is well known that coal tar is a complex mixture of hundreds of chemical compounds, including hydrocarbons, oxygenated compounds, sulfur derivatives and nitrogenous compounds. Furthermore, it is well known that the types of compounds present in any particular tar and their relative proportions are dependent on the type of coal from which the tar is derived, the process in which the tar is produced, etc. Thus, for example, it is known that tars produced at relatively low temperatures, for instance, by “low temperature carbonization” (1000° F. or even lower), are high in paraffinic hydrocarbons and other hydrocarbons having a high ratio of hydrogen to carbon as compared with tars produced at high temperatures (e.g., 1800° F. to 2000° F.). For this reason it will be understood that the exact procedure and working conditions to be used must be varied to suit the exigencies of any particular situation but this can readily be accomplished by simple experiment in the light of the principles herein discussed.

The liquefied normally gaseous hydrocarbons used in my process have a relatively high solvent power for the hydrocarbon constituents of a coal tar material as compared with their solvent power for the oxygen, sulfur and/or nitrogen-bearing constituents thereof. This fact is taken advantage of by treating the coal tar itself or a high-boiling product of the fractional distillation thereof with my solvents at ordinary or slightly elevated temperature under pressure sufficient to keep the solvent in the liquid state. Under these conditions the great bulk of the hydrocarbons will be dissolved (with the exception of very heavy or tarry hydrocarbons) and the great bulk of the residual coke will remain undissolved. By this means it is possible to separate the original coal tar material by solvent fractionation with a liquefied normally gaseous hydrocarbon into two products, one of which will contain the bulk of the hydrocarbons and the other the bulk of the tarry hydrocarbon constituents together with heavy tarry hydrocarbons. Each of these fractions can then be separated by fractional distillation or otherwise into constituents of various boiling points. Thus the soluble or hydrocarbon fraction can be separated into solvent naphtha, naphthalene, anthracene, etc.

Another, and very important, application of my process is to the purification of crude “light oils” produced directly from the destructive distillation of coal or from the distillation of coal tar. These light oils contain as their principal constituents, hydrocarbons, phenols and pyridine bases. By treating such a “light oil” with a liquefied normally gaseous hydrocarbon, for instance, two to three times its volume of liquid propane; lowering the temperature, preferably by vaporizing a portion of the solvent, to a point at which the non-hydrocarbon constituents are insoluble (say −10°F. to −60°F.); separating the two liquid layers and removing the solvent it is possible to fractionate the “light oil” into a substantially hydrocarbon fraction and a phenolic and pyridine fraction. This process has the advantage over those previously used that there is substantially no loss or destruction of material since the process is conducted at low temperature and is based on physical properties rather than on chemical reaction. Furthermore, the hydrocarbon fraction, being substantially free from the highly reactive phenolic and pyridine impurities is more stable than that usually produced, i.e., it does not as readily form gums or darken on exposure to light, on storage or during use. Similarly, the phenols produced are relatively pure and can be separated from the pyridine bases, if present, by means of a caustic wash more readily than if contaminated with inactive hydrocarbon impurities.

Instead of applying my process to a crude “light oil” containing a variety of phenolic hydrocarbons and nitrogenous substances it is sometimes preferable to apply it to partially purified or segregated materials, such as crude carbolic acid, crude cresylic acid, crude benzol and/or crude solvent naphtha which have been produced by fractional distillation and/or chemical treatment from the original coal tar material. Thus for instance, crude phenol, crude “tar acids” or crude cresylic acid, normally contains substantial quantities of impurities soluble in my liquefied normally gaseous hydrocarbons. By treating such a material with one of my solvents, preferably liquid propane, liquid ethane or a mixture of the two, and lowering the temperature to a point at which the phenolic substances are substantially completely insoluble (for instance −10°F. to −80°F.), it is possible to separate two liquid layers, the upper containing the bulk of the solvent together with the hydrocarbon impurities and the lower containing the phenolic constituents together with a small portion of the solvent. After separation of these two layers the solvent can be removed by “flashing” and it will be found that a highly purified phenol, cresol or mixture of the two has been recovered and that a useful portion of benzol or solvent naphtha has been obtained as a by-product substantially free of impurities. A similar process can be applied to the removal of impurities from crude pyridine.

Another coal tar material to which my process can suitably be applied is a hydrocarbon fraction such as crude benzol, crude toluol or crude solvent naphtha. These hydrocarbon constituents together with the tarry hydrocarbon substances tend to darken on exposure to light and/or air. They also tend to form gummy substances which decrease the value of the product.
uct and necessitate the use of expensive and de-
structive refining processes if it is desired to re-
move them. By treating such a material with
my solvents it is possible to precipitate the im-
purities at temperatures in the vicinity of -25
to -75° F. without any chemical destruction of
either the hydrocarbon material or the impu-
rities, thereby producing a highly purified and
stable benzol, toluol or naphtha and a valuable
by-product.

A somewhat similar process can be applied to
the purification of crude naphthenale and crude
anthracene. However, when working with these
materials it must be remembered that they are
much less soluble in the liquefied normally gas-
eous hydrocarbons than are the lighter hydro-
carbon materials such as benzo1, toluol and naph-
tha. For this reason, when working with them
it is preferable to use a relatively high tempera-
ture (atmospheric or above) and a solvent of
relatively high solvent power such as liquid
butane. In this connection it may be pointed
out that the solvent powers of the liquefied nor-
mally gaseous hydrocarbons increase with in-
creasing molecular weight so that liquid propane
is, in general, the best solvent for benzol, toluol
and liquid butane is, in general, a better solvent
than liquid propane. After impurities have been
separated from the naphthenale or anthracene
by solution and set1ng or filtration, the tem-
perature can be reduced by permitting a portion
of the solvent, e.g. butane, to evaporate, result-
ing in the crystallization of the naphthenale or
anthracene in a relatively pure state. This
may be settled out or filtered off and the filtrate
processed as previously described.

Although in the ordinary high temperature
crude tar the highly paraffin hydrocarbons which are
produced in quantities are the very high boiling
waxy hydrocarbons and there is little or no ma-
terial suitable for use as a lubricating oil, this is
not necessarily true of certain types of coal tar
materials made from selected coals or by certain
process operations. For example, there are many
products of distillation of the coal tar material contain substan-
tial quantities of better paraffin than the flue gas of oil
or gasoline. These constituents are, however, al-
ways contaminated with tarry, oxygenated, nitro-
genous and other constituents which render them
highly unsuitable for use as lubricants. By treat-
ing such a material with my liquefied normally
gaseous hydrocarbon solvent it is possible to
precipitate the contaminating constituents at
temperatures somewhat below atmospheric,
thereby making it possible to obtain a substan-
tially hydrocarbon material which, with little or
no chemical treatment, is suitable for use as a
lubricant.

A still further type of process to which my in-
vention can be applied is the treatment of resi-
dues from coal tar materials, for instance, road
oils and soft pitches, in order to recover valuable
by-products therefrom and produce a material
more suitable for use as a fuel. It is known
that these materials, when used on roads or as
water-proofing agents, should contain a high
proportion of alphanthanes and other highly ins-
soluble bodies. By treating such a road oil or
soft pitch fraction with my solvents, it is possible
to remove a soluble fraction as a by-product and at the same time to yield a
treated road oil or soft pitch having a greater
proportion of asphaltene and similar insoluble
bodies which render it superior for use as a road
treating material and/or water-proofing agent.

Although I have described my invention in
terms of certain specific embodiments thereof it
will readily be understood that numerous other
applications are possible within the scope of the
principles laid down and I do not wish to be lim-
ited except by the appended claims in which I
have set forth the novel features which I desire
to cover.

I claim:

1. The process of separating a coal tar ma-
terial into a fraction of relatively hydrocarbon
characteristics and a fraction of relatively non-
hydrocarbon characteristics, which comprises
treating said coal tar material with a liquefied
normally gaseous hydrocarbon solvent.

2. The process of separating a coal tar ma-
terial into a fraction of relatively hydrocarbon
characteristics and a fraction of relatively non-
hydrocarbon characteristics, which comprises
separating dissolved and undissolved material,
and removing dissolved and undissolved materials by distillation therefrom.

3. The process of separating a coal tar ma-
terial into a fraction of relatively hydrocarbon
caracteristics and a fraction of relatively non-
hydrocarbon characteristics, which comprises
contacting said coal tar material with a liquefied
normally gaseous solvent lowering the tempera-
ture of the system by evaporating a portion of
said solvent to a point at which immiscible phases
are formed, separating said immiscible phases,
and removing solvent from each of said phases by
distillation.

4. The method of separating a coal tar ma-
terial into a fraction of relatively hydrocarbon
characteristics and a fraction of relatively non-
hydrocarbon characteristics, which comprises
treating said coal tar material with a liquefied
normally gaseous hydrocarbon solvent to sub-
stantially dissolve said first-mentioned fraction
without substantially dissolving said second-
mentioned fraction, separating said first-menti-
oned fraction from said second-mentioned frac-
tion, and removing the solvent in vapor form from
each of said fractions.

5. The method of separating a coal tar ma-
terial into a fraction of relatively hydrocarbon
characteristics and a fraction of relatively non-
hydrocarbon characteristics, which comprises
treating said coal tar material with a liquefied
normally gaseous hydrocarbon solvent at a low
temperature to substantially dissolve said first-
mentioned fraction without substantially dissolv-
ing said second-mentioned fraction, separating
said first-mentioned fraction from said second-mentioned fraction, and removing the solvent in vapor form from each of said fractions.

6. The method of purifying crude coal tar
materials, containing both phenolic and non-
phenolic materials, which comprises treating said
material with a liquefied normally gaseous hy-
drocarbon solvent at a red temperature to dis-
solve non-phenolic materials, removing the dis-
solved non-phenolic materials, and separately re-
covering the purified phenolic coal tar material
and the non-phenolic materials by removal of
solvent therefrom.

7. The method of separating a coal tar ma-
terial into a plurality of fractions which comprises
mixing said material with a liquefied normally
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gaseous hydrocarbon, effecting a separation of the mixture into two liquid phases, one of substantial hydrocarbon characteristics and the other of characteristics of hydrocarbon derivatives containing substances of the class consisting of oxygen, sulfur and nitrogen compounds, removing one liquid phase from the other, and removing the liquefied normally gaseous hydrocarbon from each phase.

8. The method of separating crude coal tar material into a fraction of relatively hydrocarbon characteristics and a fraction of relatively non-hydrocarbon characteristics, which comprises treating said coal tar material with a liquefied normally gaseous solvent consisting substantially of at least one hydrocarbon selected from the group consisting of ethane, propane, butane, isobutane, propylene and butylene, evaporating a substantial portion but substantially less than all of said solvent to lower the temperature of the material undergoing treatment and the residue of said solvent to produce two liquid phases, one of said phases containing said first-mentioned fraction and the greater part of said residue of said solvent, and the other containing said second-mentioned fraction and a lesser amount of said solvent, separating said phases from each other, and removing solvent in vapor form from each of said phases.

9. The method of separating a crude coal tar material into a fraction of relatively hydrocarbon characteristics and a fraction of relatively non-hydrocarbon characteristics, which comprises mixing said coal tar material with a liquefied normally gaseous hydrocarbon solvent, cooling said material by evaporating a substantial portion but substantially less than all of said solvent, settling said cooled material containing the unevaporated residue of said solvent to produce an upper layer containing said first-mentioned fraction and at least the greater part of said residue of said solvent and a lower layer containing said second-mentioned fraction, drawing off one of said layers from the other, and distilling each of said layers separately to recover each of said fractions substantially uncontaminated with solvent.

10. The method of separating a crude coal tar light oil into a fraction of relatively hydrocarbon characteristics and a fraction of relatively non-hydrocarbon characteristics, which comprises treating said crude coal tar light oil with a liquefied normally gaseous hydrocarbon solvent at a low temperature to substantially dissolve said first-mentioned fraction without substantially dissolving said second-mentioned fraction, separating said first-mentioned fraction from said second-mentioned fraction, and removing said solvent in vapor form from each of said fractions.

11. The method of purifying a crude coal tar light oil containing hydrocarbons, phenols and pyridine bases which comprises treating said crude coal tar light oil with an excess of liquid propane, evaporating a portion but substantially less than all of said liquid propane to lower the temperature of said crude coal tar light oil and the unevaporated residue of said propane to a temperature substantially within the range from about -10°F. to about -90°F. at which substantial less than two of said liquid phases are formed, one of said liquid phases predominantly containing the hydrocarbon constituents of said crude coal tar light oil and the other of said liquid phases predominantly containing the phenolic and pyridine base constituents of said crude coal tar light oil, separating said two liquid phases from each other and removing said propane from each of said liquid phases by distillation.

12. The process of separating a coal tar material into a fraction of relatively hydrocarbon characteristics and a fraction of relatively non-hydrocarbon characteristics, which comprises treating said coal tar material with liquefied propane, lowering the temperature by evaporating a portion of said propane to a point at which immiscible phases are formed, separating said immiscible phases, and removing said propane from each of said phases by distillation.

13. The process of separating a coal tar material into a fraction of relatively hydrocarbon characteristics and a fraction of relatively non-hydrocarbon characteristics, which comprises contacting said coal tar material with liquefied propane, separating the solution from the undissolved material and removing said solvent from said solution.

14. The method of purifying a coal tar material containing hydrocarbons boiling within the lubricating oil range contaminated with impurities of relatively non-hydrocarbon characteristics, which comprises treating said coal tar material with a liquefied normally gaseous hydrocarbon solvent at a temperature adapted to dissolve hydrocarbons in preference to said non-hydrocarbon impurities, separating the solution from the undissolved material and removing said solvent from said solution.

15. The method of purifying a coal tar material containing hydrocarbons boiling within the lubricating oil range contaminated with impurities of relatively non-hydrocarbon characteristics, which comprises treating said coal tar material with a liquefied normally gaseous hydrocarbon solvent at a temperature adapted to dissolve said hydrocarbons in preference to said impurities, separating the solution from the undissolved material and removing said propane from said solution.

16. The method of purifying a crude phenolic tar material selected from the group exemplified by crude phenol, crude tar acids and crude cresylic acid, contaminated with hydrocarbon soluble impurities, which comprises treating said material with a liquefied normally gaseous hydrocarbon solvent at a temperature adapted to dissolve at least a substantial amount of said impurities but not to dissolve the phenolic constituents and removing the dissolved impurities from the undissolved phenolic constituents.

17. The method of purifying crude coal tar pyridine contaminated with hydrocarbon impurities which comprises treating said crude coal tar pyridine with a liquefied normally gaseous hydrocarbon solvent at a temperature adapted to dissolve said hydrocarbon impurities but not to dissolve said pyridine and separating the dissolved impurities from the undissolved pyridine.

18. The method of purifying light coal tar hydrocarbons contaminated with minor quantities of non-hydrocarbon impurities which comprises treating said material with a liquefied normally gaseous hydrocarbon solvent at a temperature adapted to dissolve said hydrocarbons but not to dissolve said pyridine, separating the undissolved impurities from the solution containing the dissolved hydrocarbons and recovering said hydrocarbons by distilling off the solvent from said solution.

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