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PROCESS FOR THE PRODUCTION OF ELECTRODES.

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My invention refers to electrodes and more especially carbon electrodes for use in connection with electric furnaces or lamps and the like. It is an object of my invention to provide means whereby electrodes are obtained which are more homogeneous and of a more uniform structure than similar electrodes hitherto produced.

With this and other objects in view I will now describe the novel process in detail.

In the manufacture of electrodes as hitherto practised mostly tar, but in some cases also pitch or a mixture of both is employed as a binder or agglutinant for the carbon. In selecting the binder care must be taken to employ a substance or mixture which can be uniformly distributed in the mass, for the better such distribution can be effected, the less agglutinant is required and the better the electrodes can be formed, pressed and freed of gases. It has been suggested, for instance, to liquefy the tar or pitch before admixing it to the carbon, in order to obtain a more uniform distribution, however the results obtained were not satisfactory inasmuch as the molten pitch or the like does not mix sufficiently uniformly and intimately with the material to be agglomerated, lumps being formed so that a non-uniform structure results. If the binders in question are comminuted by grinding, the powder obtained will be irregular as regards the size of the particles and moreover grinding is an expensive operation.

I have now ascertained that an excellent binder or agglutinant for use in the manufacture of electrodes is obtained if tar, pitch, asphalt, resins, for instance the so-called acid resins, which may be refined and may have been recovered in the distillation of coal or petroleum, but also cumaron resins and the like are reduced to an impalpable powder, either by treating them in the air sifter or by atomizing the substances by means of spray nozzles. The impalpable powder thus obtained, which may have been cooled and dried previously, can be mixed with the raw materials such as graphite, anthracite, baking coal, retort coal, soot, half coke and the like during its formation, so as to uniformly coat the single particles of the raw material with a thin layer of the agglutinant, the impalpable powder leaving the air sifter or the spray nozzle, instead of being collected as such, being directly admixed to the raw materials. I hereby obtain the advantage that by correspondingly adjusting the nozzle, if such nozzle is used for the atomization, I am in a position to exactly dose the quantity of agglutinant admixed to the raw materials, so that the agglomeration obtained, when subjecting the mixture to pressure, is a most perfect one, and less agglutinant can be used, while the mechanical strength of the electrodes thus obtained is superior to that of electrodes hitherto produced.

The invention offers the further advantage that mixtures of different agglutinants can easily be used. Additions of other by-products, such as for instance the anthracene residues resulting in the production of tar lubricating oil as well as crude naphthaline and the like can be made to the agglutinants proper, such as tar, pitch and the like. It has been found that in order to increase the binding power of the agglutinant it is preferable to add these residues such as anthracene or crude naphthaline directly to the fluid pitch tar and the like and to combine the mass, from which the residues have been removed by means of suitable solvent, with the raw materials by spraying or atomization.

It has further been ascertained that it is also possible to subject all or part of the materials used in the production of electrodes together to atomization by introducing them into the mixing chamber under the action of compressed air.

I wish it to be understood that I do not desire to be limited to the particular substances nor to the exact details of operation above described for obvious modifications will occur to a person skilled in the art.

The term "agglutinant" as used in the claims is intended to cover tar, pitch, asphalt, residual or acid resins, cumaron or other resins and other suitable agglutinants either singly or in any desired combination.

I claim:—

1. The process of manufacturing carbon electrodes comprising reducing an agglutinant to an impalpable powder and admixing such powder to the raw material from which the electrodes shall be formed.

2. The process of manufacturing carbon electrodes comprising reducing a mixture of

an agglutinant and the other materials, from which the electrodes shall be formed, to an impalpable powder.

3. The process of manufacturing carbon electrodes comprising atomizing an agglutinant and then admixing same to the raw material from which the electrodes shall be formed.

4. The process of manufacturing carbon electrodes comprising atomizing a mixture of an agglutinant and the raw material, from which the electrodes shall be formed, compressed air being used in such atomization.

5. The process of manufacturing carbon electrodes comprising atomizing an agglutinant in such manner that the agglutinant in course of atomization is directly deposited on the raw materials from which the electrodes shall be formed.

In testimony whereof I affix my signature.

EMIL KLEINSCHMIDT.