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FRITZ LUDWIG KÜHLWEIN, OF BILLWARDER, HAMBURG, ASSIGNOR TO THE FIRM CHEMISCHE FABRIK IN BILLWÄRDER VORM. HELL & STHAMER A. G., OF HAMBURG-BILLBROOK, GERMANY.

PROCESS OF OBTAINING HIGH-GRADE PRODUCTS FROM RAW COAL.

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My invention relates to a process of obtaining high grade products from raw coal of a high percentage of ashes, coal sludge or coal-containing residues.

It is known that for coal refining by floatation and other chemical processes the coal is purified from ashes. This is effected in the floatation process by scumming the coal by means of oil and in the other processes by an addition of precipitating bodies (such as silicate compounds) and water-glass.

In this way it is possible to obtain products with about 10% of ashes, the witness of which it is difficult to reduce, because hitherto it was impossible to remove the clay completely from the coal by these processes.

It has now been ascertained that substantially better results can be obtained by the substitution of the above chemical reagents by xanthogenates in weak alkaline or alkaline earth solution. This may primarily be accounted for by the fact that the addition of the xanthogenates holds the clayey constituents in very fine suspension and therefore prevents the clay from balling into lumps or globules and thus prevents the loss of the coal which is otherwise enveloped by the clay and deposited with the shale. This medium also detains the clay so that it does not pass into the foam or scum products. In this way coal of great purity is obtained and above all the advantage that the wetness is reduced to a hitherto unattained low value owing to the complete separation of the clay.

The following examples may serve to illustrate the carrying out of the process:

Example I.

If a floatation plant is in use the xanthogenate is added in the same manner as the other floatation agents. It was found that with a coal sludge of more than 25 per cent ashes the ashes were reduced to about 10 per cent by an addition of oil of about 600 g per ton of raw coal. If, however, about $\frac{1}{10}$ per thousand, referred to the quantity of raw coal, of xanthogenate is added the contents of ashes in the refined coal is reduced by another 50 per cent i. e. to 5% altogether. It was, furthermore, found that the floatation sludge after mechanical drying on a vacuum filter had the low contents of water of less than 10 per cent.

Example II.

Very similar results were also obtained when in the hitherto employed douching process an addition of xanthogenates was made. This reagent is preferably charged into the thickening funnel located in front of the douche sieves or screens. The final result of 8 per cent ashes in this process may according to the above statements be traced to the property of the xanthogenates to disperse the clay particles to such an extraordinary fineness that these are easily douched through the fine gage texture when the screen is charged with the coal, which effect could hitherto not be attained, because the formation of larger clay lumps than the screen gage could not be prevented so that these were separated together with the coal products as screen tailings.

Example III.

An equally favorable result was obtained with the simple so-called fine coal dehydration, the xanthogenate being then added either to the washing water or to the conveyor water on its path to the dehydration apparatus.

Various modifications and changes may be made without departing from the spirit and the scope of the invention, and I desire, therefore, that only such limitations shall be placed thereon as are imposed by the prior art.

I claim as my invention:—

1. The process of treating substances containing coal and clayey ingredients which consists in adding an xanthogenate in weakly alkaline solution to such substances in quantity sufficient to disperse the clayey ingredients and thereafter separating the coal and clayey ingredients.

2. The process of treating substances containing coal and clayey ingredients which consists in adding an xanthogenate in earth alkaline solution to such substances in quantity sufficient to disperse the clayey ingredients and thereafter separating the coal and clayey ingredients.

In testimony whereof I affix my signature.

FRITZ LUDWIG KÜHLWEIN.