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PROCESS OF WORKING UP PIT COAL

Franz Herglotz, Karlsbad, Czechoslovakia

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This invention relates to a process of working up pit coal and more particularly to a process of treating pit coal to briquetting.

For the purpose of briquetting coal without the aid of binders, such coal which usually has a low water content is finely comminuted. In cases where the coal is wet, it is usually dried to a water content of below 2% prior to comminution. Such drying can advantageously be combined with the fine comminution that is to say the drying may be effected simultaneously with the grinding operation.

I have now discovered that a material particularly suitable for moulding into briquettes and the like without the aid of binders can be produced by moistening the coal before the fine comminution, (that is to say by increasing its water content) and then drying it again.

Based on the foregoing discovery, the present invention provides a process of working up coal for briquetting without the aid of binders, which comprises preliminarily moistening said coal and thereupon drying it again.

In carrying out the invention, the drying of the moistened pit coal can take place before or during the fine comminution of else partly before and partly during the fine comminution. The moistening can be effected directly or indirectly, for example by spraying water through nozzles on to the coal or by treating the coal with steam to deposit the condensing water thereon.

The aforescribed steam treatment of the coal produces a rise in temperature of the coal which has a particularly favourable effect both on the grinding and on the briquettes produced. It has been found that the pit coal gains in mouldability through the moistening and re-drying, in such a way that not only is the moulding facilitated but the moulded products obtained are also firmer and have a glossy surface of better appearance than was hitherto possible when briquetting without binders. The invention also enables defective mouldings, especially so-called "splitters" to be avoided.

The moulding of the pit coal pretreated in accordance with the invention can be carried out in any moulding or briquetting press customary for such purposes, but with particular advantage in ring-roller moulding presses.

The invention will hereinafter be illustrated by the following examples:

Example I

A lean coal containing 1.05% of moisture, 6.60% of ash and 12.65% of volatile constituents

is preliminarily crushed in a hammer mill, whereupon water is sprayed thereon through nozzles until it is completely saturated with water. The wet coal is then rapidly dried in a drum dryer down to a water content of about 1%. The thus treated coal is then finely ground and transferred directly into a briquetting press without any admixture of binder and is there converted into high grade briquettes.

Example II

A bituminous coal containing 0.76% of moisture, 4.4% of ash and 23.76% of volatiles is coarsely comminuted and then treated with steam. The steam condenses on the pieces of coal and moistens the latter. Due to the heat liberated in the condensation of the steam the coal becomes warm. The warm moist coal is then transferred to a ball mill, wherein it is finely ground. During the grinding operation there are passed through the ball mill hot waste gases of a sufficiently high CO₂ content to prevent explosion. By virtue of this, the water deposited on the coal is evaporated and led off with the waste gases so that the coal is dried down to approximately its initial moisture content. The dry hot finely ground coal is transferred by the waste gases into dust collectors and led directly from thence while still in a hot state, into a ring-roller moulding press without the addition of any binder. Glossy black briquettes of high mechanical strength are thus obtained.

I claim:

1. A process of producing briquette from pit coal, which comprises preliminarily moistening said pit coal, drying and finely comminuting said moistened pit coal and thereupon cold pressing said coal to form a briquette without the addition of an extraneous binder.

2. A process of producing briquette from pit coal, which comprises preliminarily moistening said pit coal, finely comminuting and simultaneously drying said moistened pit coal and thereupon cold pressing said coal to form a briquette without the addition of an extraneous binder.

3. A process of producing briquette from pit coal, which comprises preliminarily subjecting said pit coal to a treatment with steam for the purpose of moistening and warming the same, drying and finely comminuting said moistened pit coal and thereupon cold pressing said coal to form a briquette without the addition of an extraneous binder.

4. A process of producing briquette from pit coal, which comprises preliminarily coarsely com-

minuting said pit coal, moistening said coarsely comminuted pit coal, drying and finely comminuting said moistened coarsely comminuted pit coal and thereupon cold pressing said coal to form a briquette without the addition of an extraneous binder.

5. A process of producing briquette from pit coal, which comprises preliminarily coarsely com-

minuting said pit coal, subjecting said coarsely comminuted pit coal to a treatment with steam for the purpose of moistening and warming the same, drying and finely comminuting said moistened pit coal and thereupon cold pressing said coal to form a briquette without the addition of an extraneous binder.

FRANZ HERGLOTZ.