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PROCESS OF PRODUCING LARGE SIZE COKE FROM BROWN COAL

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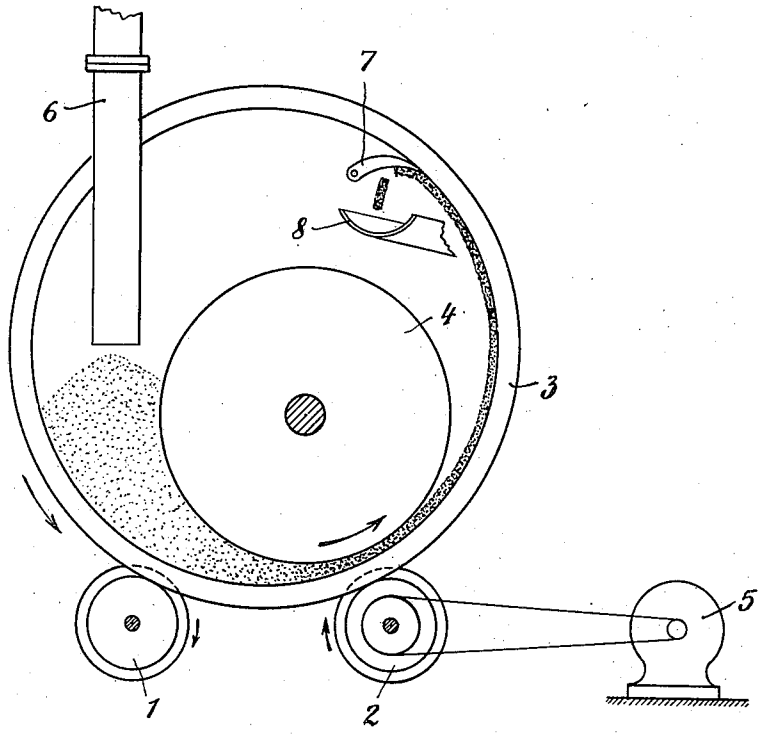

Inventor:
Franz Herglotz
By Fleit & Heckelman
Attorneys

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PROCESS OF PRODUCING LARGE SIZE COKE FROM BROWN COAL

Franz Herglotz, Karlsbad, Czechoslovakia

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1 Claim. (Cl. 202—26)

For many years the carbonization of brown coal always left a grained or pulverized coke of loose and crumbly condition as a solid residue. That is why brown coal coke until some time ago could not be successfully used except with special furnaces thus considerably limiting its sale.

Only a few years ago, by employing the expedient of an intermediate molding of the brown coal into briquettes was it possible to successfully produce large size and pressure resistant coke constituting a fuel quite suitable to replace ordinary coke in every regard because of its outer condition as well as its permanence in storage and transport. This success however requires certain treatments in the preparation of the briquette material i. e. when grinding and drying the brown coal to be pressed.

It has already been described that briquettes pressed from material dried or ground quite beyond usual degrees are more or less resistant to heating so that they more or less hold their briquette form and consistency when carbonized. Thus pressure resistant and large size coke from brown coal has been produced for instance from briquettes of which the material has been prepared by drying to a residual water content not exceeding 8% or by grinding such coal to grades of not more than .08 inch in diameter. This means an additional application of heat or power for the drying or grinding process of the coal, if compared with the usual methods in the briquette industry, meaning considerably more cost because in the briquette production brown coal is generally dried unto a residual water content of about 15% and is ground so that the grain of briquette material is up to .24 inch in diameter and more.

My invention has for its object to produce carbonization resistant briquettes from brown coal and from such briquettes to produce large sized and highly pressure-resistant coke without making it necessary to dry the brown coal to a residual water content not exceeding 8% or to grind it to an extreme degree of fineness or to submit it to any other special preparation before pressing. My method is characterized by pressing the briquette material in such a manner and under such pressure that briquettes are obtained of a pressure resistance of at least 1700 pounds per square inch, these to be fed into a customary coking oven.

According to my invention the indicated pressure resistance is given to the briquettes by rotating presses of a type hereafter described and with a pressure of at least 21,300 pounds per square inch. The graduation of pressure differs according to the qualities of the given raw coal and, with coal of different origin, must be altered suitably to meet different conditions. In difficult cases it may be advantageous to pulverize the briquette material for instance to a size in which the grains have a diameter of about .08 inch before feeding to the press.

The accompanying drawing shows a diagrammatic view in elevation with parts in section of a revolving press of the ring-disc type which preferably is employed in carrying out this invention for briquetting the brown coal.

The compressing disc 4 is eccentrically and rotatably arranged in the annular grooved ring 3, this being supported and rotated by the supporting rollers 1 and 2 so as to be vertically rotatable. The movement of the press is effected by the supporting rollers coupled for instance with an electric motor 5. In operation the rotation is in the direction of the arrows shown in connection with the different parts of the drawing. The compression of the briquetting material is carried on between the outer ring 3 and the inner disc 4 in the space between these two elements which space becomes narrow in the descending course. The feeding of the briquette material, stored in a hopper not shown in the drawing, is done by means of a feeding funnel 6. The string of briquettes is passed out in the upper part of the press by means of the deflector or stop 7 with which a delivery chute 8 leading out of the press is operatively combined.

Presses of this type may also be built so that the string of briquettes is not formed on the inner periphery of the ring but on the outer periphery of the disc. Instead of the outer ring the inner disc may be coupled to the motor. In any case the coupling of the two parts and transmission of power is developed by the friction with the compressed string of briquettes formed between them. Such presses have also been built in horizontally rotating form but the type is not essential in regard to its usefulness for the performance of this invention. It is essential only that the press be of the ring-disc type and delivers a pressure of at least 21,300 pounds per square inch and forms briquettes of a pressure resistance of at least 1,700 pounds per square inch.

The advantage of this invention in comparison to methods already known is the complete saving of the cost of specially fine disintegrating or drying, and of the addition of binder or solvent and the like, as older methods required. The

cost of coking being the last step of this method remains unaltered, the coking of briquettes made by the ring-disc press being performed in the usual way in one of the usual devices. Within the scope of this invention the low-temperature treatment as well as the high-temperature coking of briquettes may be applied.

The coke produced according to this invention from coking resistant brown coal briquettes is equal to coke made from pit coal and suitable for many purposes for which coke made from raw brown coal could not be used.

I claim as my invention:

The process of producing large size coke from brown coal, said coke being highly resistant to pressure and of equal quality as that produced from pit coal, which consists in molding dried brown coal having a residual water content exceeding 8% and finely disintegrated to contain grains of a diameter exceeding about .08 inch into briquettes having at least a pressure resistance of 1,700 pounds per square inch by applying a rolling pressure of at least 21,300 pounds per square inch, and heating said briquettes in order to coke the same.

FRANZ HERGLOTZ.