

UNITED STATES PATENT OFFICE.

GEORGE F. SHEEHAN, OF SEATTLE, WASHINGTON.

FUEL BRIQUETTE.

No Drawing.

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My invention relates to improvements in fuel briquettes and the method of or the manufacture of briquettes from so called slack or finely ground bituminous coal and the primary object of my invention is to provide a briquette that will burn smoothly and will not crack, check or disintegrate while burning.

Another primary object is to provide a method for manufacturing briquettes in which the sulphur is added in such a manner that it will become thoroughly intermingled with the coal and a binder such as asphalt, tar, pitch or gilsonite and will cause the bituminous coal and binder to coke while burning.

Another object is to provide a method for manufacturing briquettes in which bituminous coal, binder, sulphur and crude oil are caused to coke thereby forming one solid mass while burning.

The method consists—heating the finely ground bituminous coal to approximately 85 degrees C., I then take one part sulphur and one part crude oil and thoroughly mix the same at a temperature of approximately 85 degrees C. I then take 90 percent coal and 4 percent of the above mixture and then add 6 percent of binding material which has been heated to a degree to cause it to be plastic and thoroughly mix the same while at a temperature of about 85 degrees C. This completed mixture is then conveyed to the briquetting machine where it is formed into briquettes.

The advantage derived from melting the sulphur with the heated crude oil before it is added to the heated coal is that the melting point of sulphur alone is 120 degrees C. and it becomes liquid or plastic at 125 degrees C., at 130 degrees will become pasty and will crystallize at 200 degrees C. If the heat varies a few degrees the flow of the mixture would not be uniform. By adding the crude oil to the sulphur in this manner causes the melting point of the sulphur to be lowered to about 85 degrees C. which is equal to about 180 degrees F. thereby requiring less heat to produce the result. The addition of the crude oil to the sulphur also insures an even distribution of the sulphur throughout the coal when it is mixed therewith and when the crude oil comes in contact with the coal it fills all the pores of the coal which in turn greatly reduces

the amount of binding material used that would otherwise fill such pores thereby reducing the cost per ton of the briquettes made therefrom considerably.

Another object of melting the sulphur with the crude oil, before introducing same to the heated coal, is the fact that the oil unites with the sulphur, forming a film over the surface which prevents ignition of the sulphur while mixing it with the heated coal.

I have found that briquettes made by means of a binding material and coal alone disintegrate rapidly when the melting point of the binder is reached and gives off their gases too rapidly for economical fuel combustion. On the other hand I have found that briquettes containing a percentage of sulphur, crude oil, binder and coal do not disintegrate too rapidly for thorough and economical combustion. This condition is due to the fact that a chemical reaction takes place between the sulphur, crude oil, binder and coal while burning. During the stage of combustion the viscosity and plasticity of the mass diminished as the gases are consumed until the briquette finally reaches the consistency of coke. The briquette, however, retains its original shape during the entire period of combustion with a diminishing in size.

The most important result of mixing, with the coal and binding material sulphur and crude oil in the manner described resides in the retention of the gases over a period of time suitable for economical combustion of the fuel whereby effective heat value of the treated fuel is considerably increased.

What I claim is:—

1. A fuel briquette formed of coal, crude oil, sulphur and a suitable binder.

2. The method of forming a fuel briquette which consists in mixing mixed heated sulphur and crude oil with a ground heated coal and binding material and then forming briquettes therefrom.

3. The method of forming a fuel briquette which consists in mixing 4 percent mixed heated sulphur and crude oil with 90 percent ground heated coal and 6 percent heated binding material and then forming briquettes therefrom.

In witness whereof, I hereunto subscribe my name this 19th day of August, A. D. 1927.

GEORGE F. SHEEHAN.