This invention relates to an improved method of drying coal and like fuels.

It frequently happens that fuels, particularly brown-coal containing a large quantity of water, fall to pieces. In order to prevent the fuel from falling to pieces during the drying operation it has been proposed to heat the fuel to the drying temperature, e.g., to about 100 degrees centigrade, in the presence of steam or by means of steam, in order to destroy its colloidal character, and subsequently reduce gradually the pressure of the steam in order to effect a slow drying without that the fuel falls to pieces.

In the assay-office good results have been obtained with this known method. However this known method did not prove a success as soon as tests had been carried out on a large scale, because by heating the fuel to 100 degrees centigrade the colloidal character of some parts of the fuel to be dried had not been positively destroyed and the subsequent drying by reducing the pressure of the steam takes up much time, as it has to be carried out slowly.

Now tests carried out on a large scale have shown, that the drying operation can be carried out more quickly in accordance with an increased temperature to which the coal is heated before the actual drying by subjecting it to the treatment by steam. The process is carried out at a quick pace in case the temperature is considerably above 100 degrees Celsius, for instance between 120° C. and 180° C. Already a considerable part of the water is removed from the coal during the cutting off of the steam. The subsequent drying by reducing the steam-pressure calls for a much shorter time than without the previous heating to a higher temperature, and the reduction of the partial steam-pressure may be accomplished by the application of cold air, in order to obtain a considerable reduction of the water contained in the coal.

In case of employing these high temperatures the walls of the arrangements employed therefor have to be of considerable strength, but in spite of this the process according to the present invention possesses great advantages over the known processes.

A great economical working will result particularly when employing a number of boilers, which are arranged behind one another and connected with each other in such a manner, that the steam discharged from one boiler and its condensing products pre-heat the coal in the other boilers.

The process can be made use of also for drying plastic masses for instance for preserving the smooth surface of compressed pieces. Of course thereby the heating has to be carried out in a compartment filled with the vapours of the corresponding solvent or gelatinizing medium.

I claim:

1. Method of drying coal and like fuels of a colloidal character so as to prevent the same from falling to pieces, consisting in first heating the fuel in saturated steam under pressure, to a temperature which is considerably higher than the drying temperature, and subsequently drying by reducing the partial pressure of the steam in order to prevent the fuel from falling to pieces and provide for a quick drying.

2. Method of drying coal and like fuels of a colloidal character so as to prevent the same from falling to pieces, consisting in first heating the fuel in saturated steam under pressure, to a temperature which is considerably higher than the drying temperature, and subsequently rapidly cooling the steam to reduce the partial pressure thereof in order to prevent the fuel from falling to pieces and provide for a quick drying.

3. A method of drying coal and like fuels of a colloidal character as claimed in claim 2 in which the rapid cooling of the steam is effected by blasts of cold air.

4. Method of drying materials of a colloidal character so as to prevent the same from falling to pieces, consisting in first heating the material in a saturated vapor of the liquid to be removed under pressure, to a temperature which is considerably higher than the vaporizing of the liquid to be removed and subsequently rapidly cooling the saturated vapor to reduce the partial pressure thereof in order to prevent the fuel from falling to pieces and provide for a quick drying.

In testimony whereof I affix my signature.

HANS FLEISSNER.