

UNITED STATES PATENT OFFICE.

HUGH RODMAN, OF PITTSBURG, PENNSYLVANIA.

ART OF CEMENTING LOW-CARBON IRON.

949,445.

Specification of Letters Patent. Patented Feb. 15, 1910.

No Drawing.

Application filed May 15, 1909. Serial No. 496,270.

To all whom it may concern:

Be it known that I, HUGH RODMAN, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have made a new and useful Invention in the Art of Cementing Low-Carbon Iron, of which the following is a specification.

This invention relates to the art of cementing low carbon iron and more particularly to cementing material for use in said art.

The necessity of using a non-shrinkable cementing material is well understood by those skilled in this art. Metal parts to be cemented or case-hardened require firm support in their heated state to prevent warping and accidental contact and for that reason non-shrinkable cementing material, such as bone, is ordinarily used.

I have found that cementing materials which are subject to harmful shrinkage in use, may, prior to use, be heated so as to bring about maximum or nearly maximum shrinkage without materially reducing their cementing power. Coke granules or dust mixed with, say 50% of powdered soda ash will shrink about 35% in volume, due principally to the absorption by the coke of the fused soda-ash or the resultant oxid and partially to the reducing action of the coke upon the soda-ash. Commercial charcoal mixed with 25% of powdered soda-ash shrinks about 35%, due partly to the shrinkage of the charcoal and partly to the reduction and absorption of the soda-ash. Lignite and peat shrink from 40% to 80%, depending upon the moisture content and chemical constituents. If heated with energizing substances easily fused or reduced, such as soda-ash, the shrinkage is even greater. I have found that by pre-heating these materials, preferably in closed recep-

tacles or pots, the maximum shrinkage can be brought about without materially reducing their cementing powers, thereby increasing their usefulness and, in fact, rendering useful some which without such treatment are practically commercially useless.

The time and temperature of pre-heating necessary to bring about substantially maximum shrinkage of the material, of course, varies with the character of the material treated. With some lignites, I have obtained excellent results by pre-heating for one or two hours at about 800° Fahrenheit, while with a mixture of coke and soda-ash it is necessary to reach the fusing or reducing temperature of the soda-ash, roughly about 1500° Fahrenheit and on account of these variations, I do not wish to limit this invention to any particular time or temperature, but consider that the time or temperature, or combination of the two, which will bring about the desired shrinkage without materially reducing the cementing power of the mixture will fall within the scope of this invention.

Having thus described my invention, what I claim is:

1. The method of preparing coal of the soft, non-coking variety for use as cementing material which consists in shrinking the same by the application of heat.

2. The method of preparing peat for use as cementing material which consists in shrinking the same by the application of heat.

In testimony whereof, I have hereunto subscribed my name this 12th day of May, 1909.

HUGH RODMAN.

Witnesses:

C. W. MCGHEE,
GEO. C. WALKER.