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UNITED STATES PATENT OFFICE.

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CASTING SLIP.

No Drawing. Application filed October 8, 1923. Serial No. 667,102.

This invention relates to casting slips, and more particularly to slips for producing refractory articles produced by casting.

In some cases it is desirable to employ an article, which in addition to being refractory to a marked degree, possesses a high dielectric strength when raised to high temperatures. An instance of this sort is a tube serving to support resistance material for forming a heating element in an electric soldering iron. In such a case the tube must not only successfully withstand the high and rapidly changing temperatures which are encountered in the use of the soldering iron, as well as be a good conductor of heat, but it must also provide a satisfactory insulation between adjacent helices of resistance material wound thereon, as well as between such material and other parts of the structure. Silicon carbide has been found to possess all of the above mentioned desirable qualities and is therefore particularly adapted for use in electrically heated apparatus such as a soldering iron.

Due to the restricted space in which a heating element may be placed in a soldering iron, it is often necessary to employ a tube having a very thin wall, which may be more readily produced by casting than by other methods.

An object of this invention is to produce a casting slip containing silicon carbide.

A casting slip in accordance with one embodiment of the invention may comprise clay, or other binding agents, and silicon carbide in very finely divided state, held in suspension by means of suitable deflocculating agents.

These and other features not specifically mentioned may be clearly comprehended from the following description.

In order to successfully cast articles including silicon carbide. it is necessary to employ it in a very finely divided condition, preferably of the character known as "220 mesh." As is sometimes the practice in connection with casting refractories, it is often desirable to employ as a binder a combination of different clays possessing somewhat different characteristics. For instance, a plastic clay is often combined with a less plastic clay so as to properly regulate the shrinkage due to the firing of the cast article and the strength of the completed article. In order to maintain the various ingredients of the casting slip in suspension, suitable deflocculating agents are also usually employed, such agents also serving to reduce the quantity of water required in the slip.

A casting slip which has been found to be very satisfactory in the casting of silicon carbide is composed of the following ingredients in the proportions noted:

50 parts silicon carbide (220 mesh), 12 parts Florida clay, 12½ parts English china clay, ⅛ part solid sodium carbonate, ⅜ part liquid sodium silicate, 40 parts water.

The various ingredients are wet ground together in a pebble mill of the type usually employed in mixing ceramic compositions. After they are thoroughly mixed, the slip should have a specific gravity of approximately 2.25.

The slip prepared, as described above, may be used advantageously in practicing the method and in connection with the apparatus disclosed and claimed in Patent No. 1,564,274, issued December 8, 1925, to C. C. Rand, although its use is not in any way restricted to such a method and apparatus.

What is claimed is:

1. A casting slip consisting of finely divided silicon carbide, refractory clay, a deflocculating agent, and sufficient water to give the mixture a specific gravity of 2.25.

2. A casting slip consisting of 50 parts silicon carbide, 24½ parts of clay, ⅛ part solid sodium carbonate, ⅜ part liquid sodium silicate, and 40 parts of water.

3. A casting slip consisting of 50 parts of silicon carbide, 24½ parts of clay, ⅛ part solid sodium carbonate, ⅜ part liquid sodium silicate, and sufficient water to give the mixture a specific gravity of 2.25.

4. A casting slip consisting of 50 parts of 220 mesh silicon carbide, 12 parts of Florida clay, 12½ parts of English china clay, ⅛ part of solid sodium carbonate, ⅜ part of liquid sodium silicate, and 40 parts of water.

In witness whereof, I hereunto subscribe my name this 21 day of September, A. D. 1923.

HARRY TRISTRAM BELLAMY.