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BRIQUETTES FOR ALLOYING

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4 Claims. (Cl. 75—133)

The present invention relates to a new and useful process for the production of self-reducing briquettes for use in alloying.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the processes, steps and combinations pointed out in the appended claims.

The invention consists in the novel steps, processes, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates one form of apparatus for carrying out the process of the invention and, together with the description, serves to explain the principles of the invention.

The single figure of the drawing is a schematic view showing diagrammatically one form of apparatus useful in connection with the process of the present invention.

The present invention is in certain respects an improvement upon my prior Patent No. 2,134,616 but in other respects is of more general application. The invention has for its object the provision of a novel and improved process for the manufacture of self-reducing briquettes of metallic oxides for use in the production of alloys. A further object is the provision of an improved metallic oxide briquette which is dense, relatively non-friable and can be quickly and completely reduced to the metallic form by addition to molten or melting ferrous metal.

In accordance with the process of the present invention which is applicable to the production of self-reducing briquettes of molybdenum oxide, tungsten oxide, vanadium oxide and the like, the metallic oxide of the alloying metal in a relatively fine state of division, together with other constituents if desired, is blown into a chamber into which is simultaneously blown a relatively fine spray, regulated in quantity, of heated bitumen or asphalt binder or other liquifiable carbonaceous binding material, the sprayed material being caused to mix in such chamber, so that the individual particles of the metallic oxide become coated with or intimately mixed with the bitumen after which the mixture settles and may be removed from the chamber, and pressed into briquettes.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

More specifically, the metallic oxide may comprise molybdenum trioxide, roasted molybdenite

concentrates, molybdenum dioxide, reduced roasted molybdenite concentrates, tungstic trioxide or lower oxides of tungsten, vanadium oxide and the like, together, if desired, with relatively small additions of other material such as powdered aluminium, calcium, silicon or magnesium.

The bituminous material may comprise still pitch, asphalt or other liquifiable carbonaceous material and is preferably used at about one-tenth the rate at which the metallic oxide is supplied.

As shown in the drawing, the metallic oxide is added to the hopper 1, and is in a relatively fine state of division, preferably at least as fine as 200 mesh. This material is fed by means of a distributor 2 at a relatively constant rate and drops to the screw conveyor 4 by which it is fed along to the nozzle 5 through which it drops to be pulverized and sprayed into the mixing and settling chamber 7 in the form of a fine dust by means of the air issuing from the end of the compressed air pipe 8.

The bituminous material is liquified by heat in the supply tank 3 and is pumped by pump 10 into the vessel 12 from which it may overflow through pipe 14 into the tank 3. Extending upwardly from the vessel 12 is a pipe 16 the end of which is in aspirating relation to the end of compressed air pipe 18 so that the liquified bituminous material is sprayed into the chamber 7 under sufficient pressure to form a cloud-like spray which is intimately mixed with the metallic oxide dust, to coat the dust particles with bitumen.

The feed of screw 4 and the amount of bitumen sprayed are preferably so regulated that the resultant mixture contains about 10% of bitumen. The coated metallic dust collects in chamber 7 and is removed therefrom by screw conveyor 20.

The mixed metallic oxide and bitumen is then passed to a briquetting press where it is formed into briquettes of the desired size and shape. It is found, that due to the intimate mixture of the bitumen and metallic oxide, the briquettes can be formed with less pressure than has heretofore been required, the briquettes are even more dense and less friable, and react much more quickly when used in accordance with the process of my said patent.

The invention in its broader aspects is not limited to the specific processes and steps shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.