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2,842,837

METHOD OF WORKING WIRE AND A LUBRICANT THEREFOR

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No Drawing. Application April 17, 1956

Serial No. 578,561

5 Claims. (Cl. 29—193)

This invention relates to a method of working wire and a lubricant therefor and particularly to the processing of steel wire which is to be hot worked after being drawn. Prior to the development of our invention it was necessary to remove the wire drawing lubricant from the wire and apply hot forming lubricants to the wire for subsequent operation such as upsetting and extruding. This was necessary because the conventional wire drawing lubricants became gummy or viscous upon being heated to the hot working temperature and would thus clog the dies of the hot working machine. Also, some wire drawing lubricants char at these temperatures and lose their lubricating characteristics.

It is therefore an object of our invention to provide a method of working wire in which the coating used for wire drawing can also be used for subsequent hot working operations.

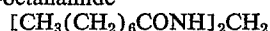
Another object is to provide a wire drawing lubricant which is suitable for both hot and cold working operations.

Still another object is to provide a drawn wire having a coating thereon for use in further hot working operations.

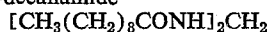
These and other objects will be more apparent after referring to the following specification.

The wire drawing lubricant of our invention includes a mixture of an organic compound and an inorganic compound. The organic compounds are of the group having the formula $(C_xH_{2x+1}CONH)_2CH_2$ where x is any number from 7 to 17. Examples of such compounds are as follows:

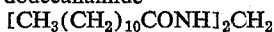
Methylene bis-octanamide



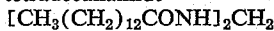
Methylene bis-decanamide



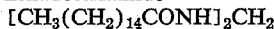
Methylene bis-dodecanamide



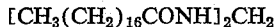
Methylene bis-tetradecanamide



Methylene bis-hexadecanamide



Methylene bis-octadecanamide



The compound methylene bis-octadecanamide is preferred. These compounds volatilize at a temperature of about 500° F. and are not water soluble. The inorganic compound includes non-volatile lubricants of the class consisting of graphite, molybdenum disulfide, cadmium sulfide, cadmium iodide and boron nitride. The preferred mixture contains between 20 and 50% by weight of the inorganic lubricant with the remainder being the organic lubricant. However, the inorganic lubricant may be as little as 5% by weight of the entire mixture with the remainder being the organic lubricant. A mixture of 70% methylene bis-octadecanamide and 30% molybdenum disulfide is satisfactory.

In drawing the wire it may be first coated by dipping in a water solution containing a well known wire draw-

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ing aid such as borax, copperas, lime, phosphates and silicates. It is then passed through a die box containing a dry mixture of our lubricating mixture and the wire drawn through a series of wire drawing dies. The drawn wire with the coating thereon is then heated to a temperature of between 500° and 1000° F. and upset or extruded while hot. During the hot forming operation the organic compound is volatilized, thus leaving the wire coated with the inorganic lubricant alone so that clogging of the work dies is eliminated. It often occurs that the drawn wire is sold to others who perform the hot working operation thereon. Since the organic compound is not water soluble it protects the wire against corrosion during shipping and storage.

While several embodiments of our invention have been shown and described it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

We claim:

1. A lubricant suitable for cold and hot working consisting essentially of a mixture containing between 95 and 50% by weight of methylene bis-octadecanamide and between 5 and 50% by weight of an inorganic non-volatile lubricant of the class consisting of graphite, molybdenum disulfide, cadmium sulfide, cadmium iodide and boron nitride.

2. A lubricant suitable for cold and hot working consisting essentially of a mixture containing between 95 and 50% by weight of a compound of the group having the formula $(C_xH_{2x+1}CONH)_2CH_2$ where x is any number from 7 to 17, and between 5 and 50% by weight of an inorganic lubricant of the class consisting of graphite, molybdenum disulfide, cadmium sulfide, cadmium iodide and boron nitride.

3. The method of wire drawing comprising coating the wire with a mixture consisting essentially of between 95 and 50% by weight of methylene bis-octadecanamide and between 5 and 50% by weight of an inorganic non-volatile lubricant, drawing the coated wire, and then hot working the drawn wire at a temperature of between 500° and 1000° F.

4. The method of working wire comprising coating the wire with a light coating consisting essentially of a compound of the group consisting of lime, borax, copperas, phosphates and silicates, then applying over said coated wire a coating of a mixture consisting essentially of between 95 and 50% by weight of a compound of the group having the formula $(C_xH_{2x+1}CONH)_2CH_2$ where x is any number from 7 to 17 and between 5 and 50% by weight of an inorganic lubricant of the class consisting of graphite, molybdenum disulfide, cadmium sulfide, cadmium iodide and boron nitride, then drawing the wire, and then hot working the drawn wire at a temperature of between 500° and 1000° F.

5. An article comprising a drawn wire having a coating thereon consisting essentially of a compound of the group having the formula $(C_xH_{2x+1}CONH)_2CH_2$ where x is any number from 7 to 17, and an inorganic non-volatile lubricant of the class consisting of graphite, molybdenum disulfide, cadmium sulfide, cadmium iodide and boron nitride.

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