

UNITED STATES PATENT OFFICE.

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SOLID LUBRICATING COMPOUND FOR COMPRESSED-AIR APPARATUS.

1,020,893.

Specification of Letters Patent.

Patented Mar. 19, 1912.

No Drawing.

Application filed June 23, 1909. Serial No. 503,929.

To all whom it may concern:

Be it known that I, EDWIN A. EMERY, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented new and useful Improvements in a Solid Lubricating Compound for Compressed-Air Apparatus, of which the following is a specification.

This invention relates to lubricating compounds for pneumatic machinery and more particularly to a lubricant which is adapted to be suspended or located in, or adjacent to, the path of the current of compressed air so as to be gradually dissolved and eroded by the moisture in said air current and thereby carried to the parts of the mechanism to be lubricated, in accordance with the method as covered by my prior Patent No. 827,519 of July 31, 1906. A lubricant to be used in this manner should have the following characteristics: It should be sufficiently hard to allow for use in stick form and yet be sufficiently soluble to permit of being dissolved by the moisture and eroded upon the exterior of the stick by the current of compressed air; it should have affinity for moisture, and be non-refrigerant, non-corrosive and non-drying; and it should also be a non-conductor of moisture to confine the solvent action to the exterior of the stick and prevent softening of the interior by the absorption of moisture.

The object of my invention is to provide an improved lubricating compound having the above characteristics.

My improved lubricant is preferably composed of an ingredient having affinity for moisture, such as glycerin, which is also non-refrigerant, non-corrosive and non-drying, a saponaceous substance soluble in moisture, and mineral lubricating oil to increase the lubricating qualities and render the mass a non-conductor or non-absorber of moisture. A powdered or amorphous form of graphite may also be included as an ingredient if desired.

The preferred formula for my improved lubricant is as follows: 3 parts glycerin, 2 parts dry and powdered castile soap, 1 part amorphous graphite, these together making 70 per cent. of the whole, and the remaining 30 per cent. of mineral lubricating oil. This may be prepared in the following

manner: Heat the glycerin to about 212° F., mix the graphite and powdered soap dry and then add same to the heated glycerin, stirring in slowly; then heat the lubricating oil to substantially the same temperature and stir well into the mass, and finally pour into molds to cool and harden. The sticks should then be wrapped with a suitable covering such as tin foil and sealed with wax before any moisture collects upon the lubricant.

In this composition the lubricating oil used may be prepared from a mixture of mineral with other oils to give the desired consistency, and to prevent the softening of the mass by the absorption of moisture through the interior of the stick and to confine the solvent action to the exterior surface.

The glycerin makes the lubricant anti-freezing, and non-drying and has a great affinity for the moisture in the compressed air current.

Graphite may be included to enhance the lubricating qualities, and also to provide a polish and increase the wear of the moving parts to which it is conveyed by the air current.

In lieu of the castile soap any suitable saponaceous substance may be employed, such as animal fats or vegetable oils, or both, combined with an agent for producing saponification such as caustic soda or potash, the former being preferred in order that the resulting saponified substance may be sufficiently hard for the purpose for which the lubricant is to be used.

It will also be apparent that, in the place of the mineral lubricating oil, any equivalent substance which will give to the lubricant the properties of a non-conductor and non-absorber of moisture may be employed as an ingredient.

In the application of my improved lubricant, the same is placed in, or adjacent to, the path of a current of compressed air used in the operation of pneumatic machinery, such as air brake apparatus, and the air current acts upon the lubricant in such a manner that the moisture is strongly attracted and slowly dissolves the lubricant from the exterior, which is then gradually disintegrated or eroded and taken up by the air current, the particles of lubricant being

dissolved and carried in suspension in the air to the moving parts of the apparatus upon the surface of which they are deposited and serve to thoroughly lubricate.

5 By the use of my improved lubricant there is no hardening or gumming of the lubricant upon the working parts of the apparatus as the glycerin or non-refrigerant prevents any freezing of the lubricant resulting from low temperatures or the rapid expansion or variation of air pressures.

10 Another important advantage derived from the use of my improved lubricant is the cleansing effect upon valves and other moving parts of the machinery operated by the air under pressure, since the saponaceous ingredients which are deposited upon these parts prevent the accumulation and adherence of all dirt or other foreign matter to said parts and the air currents carry away all such matter thereby keeping the parts thoroughly clean. It also produces a polish upon the wearing parts thereby preventing cutting and reducing friction.

25 Another advantage is the economy in the use of the lubricant since when the apparatus is out of service or not being operated by air under pressure, as in air brake apparatus, the lubricant remains in place but is not effected or consumed under normal atmospheric pressure and all waste is therefore prevented. Furthermore when the mechanism stands unused for a long period of time, as in an air brake apparatus on a car which is set out upon a siding, there is no corroding of the parts since the compound is non-acid and substantially neutral. The mechanism will therefore remain in

good condition for operation at any time desired.

40 It will therefore be seen that with the use of my improved method and lubricant the operation of pneumatic machinery such as air brake apparatus is rendered more uniform and reliable, while the cost for lubrication and maintenance of the apparatus is greatly reduced.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:—

50 1. A solid lubricant having a moisture soluble surface and adapted to be transported to pneumatic machinery by air currents containing moisture, comprising moisture soluble solid soap, glycerin in quantity to render the product non-refrigerant and non-drying, lubricating oil to render said product resisting to penetration of moisture and a powdered mineral lubricant for the purpose specified.

60 2. A solid lubricant having a moisture soluble surface and adapted to be transported to pneumatic machinery by air currents containing moisture, comprising moisture soluble solid soap, glycerin in quantity to render the product non-refrigerant and non-drying, mineral lubricating oil to render said product resisting to penetration of moisture and graphite for the purpose specified.

70 In testimony whereof I have hereunto set my hand.

EDWIN A. EMERY.

Witnesses:

WM. M. CADY,
A. M. CLEMENTS.