UNITED STATES PATENT OFFICE.

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LUBRICATING-PACKING AND METHOD FOR MAKING THE SAME.

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No Drawing. Application filed June 8, 1914. Serial No. 843,863.

To all whom it may concern:

Be it known that I, ALBERTO BARBERIS, subject of the King of Italy, residing at Mexico city, Federal District, Mexico, have invented certain new and useful Improvements in Lubricating-Packing and Methods for Making Same, of which the following is a specification.

This invention relates to a lubricating packing made from waste residues of cotton, wool, cellulose, or of any textile fiber.

The object is to secure incombustibility of the packing, a notable economy in the required consumption of lubricants, a diminution of the percentage of friction, and the absolute chemical stability of the oils or greases employed as lubricants.

The wastes of cotton, wool, cellulose or of any other textile fiber which are to be employed as packing, are subjected to two baths.

Bath No. 1: Water 1,000 grams, alum 100 grams. The alum may be replaced by any of the following salts, merely observing the same proportions indicated above: ammonium phosphate, ammonium sulfate, zinc sulfate, borax, magnesium sulfate, sodium phosphate, potassium phosphate, sodium tungstate, ammonium tungstate, acetate of aluminium, ammonium chlorate, or any other similar or equivalent salt for producing the same results. When this bath No. 1 is prepared and ready, the waste or material to be prepared is submerged in it and left until all of its fibers are well saturated with the liquid, by absorption. This having been accomplished, the material is removed from the bath and is reduced by compression in any suitable manner to a state of semi-dryness, after which it is subjected to bath No. 2, composed of water 1,000 grams, boric acid 20 grams, gelatin 30 grams, glycerin 40 grams, solution of formaldehyde (36%) 4 grams, and graphite Number 00 100 grams. The material to be prepared is introduced into this second bath and left until completely saturated, after which it is withdrawn and subjected to a light compression by any suitable means with the object of expelling the excess of liquid, whereupon the material is ready for immediate industrial use as a vehicle for lubrication. These two baths may be reduced to one single bath at pleasure, by combining or joining all of the substances of the two baths specified and in the same proportions set forth.

When the waste is withdrawn from the baths mentioned or from the combined bath, it is, at once ready for immediate use, and the result of its employment will be: incombustibility, whether from spontaneous combustion or from the heating up of the frictional parts of the boxes or journals in which it may be employed; a notable economy in the consumption of lubricants; a diminution of the percentage of friction; and the absolute chemical stability of the oils or greases employed as lubricants. It may be stated in this connection that the boric acid contributes to the result specified inasmuch as it acts both to render the packing incombustible and to prevent fermentation of the solution or bath containing the gelatin, the latter being rendered insoluble to a certain limit of temperature by the combined action of the alum and the formaldehyde. The glycerin is used in order to maintain the saturated fibers flexible and in a moist condition.

The advantage of lubrication depends upon the preservation of a light or thin coating of lubricating material between the surfaces subjected to friction; and all of the inconveniences arise from the interruption of that coating no matter how thin or tenuous it may be. These inconveniences may be summed up in: heating up of axles and journals and, as an immediate consequence, the rapid combustion of the packing.

With the use of material prepared under the process of my invention, as a vehicle for lubrication, the foregoing dangers and inconveniences will be avoided, because the packing having been made incombustible, if an exceptional heating up of the frictional parts should take place, owing to their bad condition or to any other cause, this heating up will only cause the exhaustion of the lubricant without any danger whatever of fire.

As, besides the incombustibility of the material prepared according to the process

of my invention, the reduction of the capillarity of said material is secured as a principal result, and consequently the limitation of its absorbent power, it results that for the normal saturation of the tow or other inert materials prepared according to my process it will require at most only a quarter of the quantity of lubricant ordinarily needed, thus securing a double economy, both initially at the moment of the initial saturation of the packing with the lubricant, and subsequently during its employment, as the fibers prepared by my process do not absorb the lubricant but preserve it upon their exterior, and thus all of the oily material is effectively useful, no part of it remaining inert, as at present happens with ordinary packing, owing to the great absorption of fibers not prepared under my process.

My packing has another essential property, that on account of the impermeability of the fibers or, in other words, on account of the reduction of their absorbent power, a very light and almost imperceptible coating is formed upon the surface of each thread, sufficient to prevent any chemical combination between the oils or greases used as lubricants and the salts employed for obtaining the incombustibility of the fibers. Finally, owing to the graphite, which is one of the elements employed in my process, the percentage of friction is reduced to a minimum, this item being translated into an increase of economy in the consumption of lubricant oils or greases.

With the preparation of packing material, under this process are secured: a duration of the material thus prepared of thrice or at least of twice the length of time possible with material not thus prepared; the impossibility of becoming inflamed or being consumed by the heating up of the frictional parts of the journals, or from any other cause except the actual contact with a flame; a notable economy of lubricants, not only in the initial saturation of the waste, but during the operation of the parts, axles and journals, where material prepared according to my invention is employed; and a likewise notable diminution of the percentage of friction, with the consequent economy of oil or lubricant.

What I claim is:—

1. A process for reducing the capillarity and the absorbent power of wastes of cotton, wool, cellulose and other textile fiber employed as a vehicle for lubrication, and securing their incombustibility, consisting in soaking said fibers in a solution of salt having the property of making the fibers incombustible and of partially filling the same, expelling the excessive solution, then soaking the material in a solution of water, boric acid, gelatin, glycerin, formaldehyde and graphite, and finally expelling the solution.

2. A process for making an impermeable and incombustible lubricating packing, which consists in soaking fibrous material in a 10% solution of a salt like alum, having the property of making the fibers incombustible and of partially filling the same, expelling the excessive solution, then soaking the material in a solution of water 1,000 grams, boric acid 20 grams, gelatin 30 grams, glycerin 40 grams, 36% solution of formaldehyde 4 grams, and graphite 100 grams, thereafter expelling the excess of the last solution, and finally adding the lubricating oil to the treated fibrous material.

3. A process for making an impermeable and incombustible lubricating packing, which consists in soaking fibrous material in a solution of water 2 liters, salt having the property of making the fibers incombustible 100 grams, boric acid 20 grams, gelatin 30 grams, glycerin 40 grams, 36% solution of formaldehyde 4 grams, and graphite 100 grams, finally expelling the excess of the solution and adding the lubricating oil to said fibrous material.

4. The herein-described process of producing lubricating packing, which consists in impregnating fibrous material with a solution or solutions acting to fill the pores of the fibers, to render the latter incombustible, and to reduce their absorbent power; and subsequently coating the impregnated fibers with a lubricant.

5. The herein-described process of producing lubricating packing, which consists in impregnating fibrous material with a solution or solutions acting to fill the pores of the fibers and reduce their absorbent power; and subsequently coating the impregnated fibers with a lubricant.

6. The herein-described process of producing lubricating packing, which comprises the steps of impregnating textile waste with a solution or solutions acting to fill the pores of the fibers and reduce the absorbent power of the latter; and subsequently treating the fibers with a lubricant, to form a light coating of lubricant upon the exterior of each fiber.

7. The herein-described process of producing lubricating packing, which comprises the steps of impregnating fibrous material with a solution or solutions acting to reduce the absorbent power of the fibers; and thereafter treating the impregnated fibers with a lubricant, to form a light coating of lubricant upon the exterior of each fiber.

8. The herein-described process of producing lubricating packing which comprises the steps of impregnating fibrous material with a solution or solutions containing water

and a substance or substances acting to fill the pores of the material and maintain the latter in a permanently flexible and hygrometric state; and thereafter coating the exterior surfaces of the fibers with a lubricant, to form a light coating of lubricant upon the exterior of each fiber.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERTO BARBERIS.

Witnesses:

C. MAPUTAN,

G. HINEHETT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."