

(No Model.)

J. DOUGLAS, Jr.
SELF LUBRICATING JOURNAL BOX.

No. 379,531.

Patented Mar. 13, 1888.

Fig. 1.

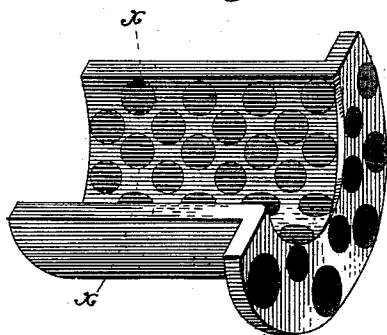


Fig. 2.

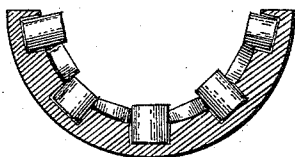


Fig. 3.

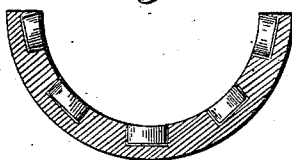


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES DOUGLAS, JR., OF NEW YORK, N. Y., ASSIGNOR TO THE NORTH AMERICAN METALLINE COMPANY, OF SAME PLACE.

SELF-LUBRICATING JOURNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 379,531, dated March 13, 1888.

Application filed March 12, 1887. Serial No. 230,664. (No model.)

To all whom it may concern:

Be it known that I, JAMES DOUGLAS, Jr., a British subject, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Compounds to be Used in the Manufacture of Journal-Boxes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to compounds and the method of making them to be used in the manufacture of journal-boxes, by which the employment of oil or any other fluid lubricant is dispensed with.

Figure 1 is a perspective view of one half flanged bush for journal-bearing metallined with my improved compound; Fig. 2, a transverse sectional view on the line X X of Fig. 1, showing plugs of the compound inserted in openings in the bush; Fig. 3, a view similar to Fig. 2, but showing the plugs dressed down flush with the bearing-surface of the bush; and Fig. 4, detail views of different grades of plugs of the compound.

In the compounds heretofore used as self-lubricants certain metals mixed with paraffine, graphite, and other unctuous ingredients have been employed. Sulphur has sometimes been added; but the amount of sulphur has been always small and added without any definite purpose and in variable proportions.

I have found by investigation that the best self-lubricating compounds are made from certain metallic sulphides of definite composition used singly or combined, which are to be mixed with a substance like paraffine, which reduces the brittleness of the metallic sulphides. I have found, for example, that the compound made by mixing and grinding in a suitable mill at a temperature of 210° Fahrenheit 79.8 parts of lead, 6.59 parts of antimony, and 13.61 parts of sulphur makes a sulphide containing ninety per cent. of artificial galena and ten per cent. of artificial stibnite.

To more fully comprehend the operation of

producing the sulphides, it has been found not to be necessary to raise the ingredients above named to the fusing-point to cause them to enter into combination. Pressure alone will suffice to effect the desired result. While being ground in the mill at the temperature named combination takes place with the evolution of so much heat that a red glow will rapidly diffuse itself through the mixture; but fusion does not take place, or the reduction of the mass to fine powder in the mill could not be effected.

This metal, in a finely-divided state, as it comes from the mill, can be pressed in suitable molds into plugs having a bright metallic luster and great hardness and high lubricating properties. These plugs are secured in a suitable journal-box by being pressed into openings bored therein. After the plugs are placed in position they present the appearance shown in Fig. 2, and when dressed down appear as shown in Figs. 1 and 3. The brittleness of the compound is reduced by the addition to the sulphide in the mill of, say, three and one-fourth per cent. of paraffine or glycerine, or other unctuous substances, and seven per cent. of graphite, and its hardness may be increased by the addition of finely-divided metal, either lead or antimony.

Other metallic sulphides, and notably disulphide of tin (made by heating and grinding 86.2 parts of tin with 13.8 parts of sulphur) and disulphide of copper, made by heating and grinding seventy-five parts of copper with twenty-five parts of sulphur, (Cu_2S), possess valuable lubricating properties, and can be prepared separately and mixed before making into plugs, as the work for which the bearing is to be used may require.

I do not claim the use of metals in finely-divided state, nor yet the use of sulphur or graphite separately or indiscriminately mixed for the manufacture of anti-friction metal; but

What I do claim, and desire to secure by Letters Patent, is—

1. The herein-described method of making a self-lubricating composition, which consists in, first, grinding in a mill a metal and sulphur in definite proportions, as specified, at a temperature less than the fusing-point of either, and, second, pressing the composition as it

comes from the mill in a finely-divided state into desired shape for use, substantially as described.

2. The hereinbefore-described method of making an anti-friction composition, which consists in, first, grinding in a mill a metal and sulphur at a heat less than the fusing-point of either; second, adding an unctuous substance, as paraffine and graphite, to the pulverized sulphide to reduce its brittleness, substantially as set forth.

3. The herein described method of making an anti-friction composition, which consists in, first, grinding in a mill a metal and sulphur at a less temperature than the fusing-point of either, then adding an unctuous substance, as

paraffine and graphite, to the pulverized sulphide; second, supplying metal in a finely-divided state to the composition, and, third, pressing the composition into desired shape, substantially as described.

4. The herein-described anti-friction composition, composed of sulphides of lead and antimony, an unctuous substance, as paraffine, graphite, and finely-divided lead or antimony, in about the proportions specified.

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

JAMES DOUGLAS, JR.

Witnesses:

GROSVENOR S. HUBBARD,
JOHN H. COLE.