

(Model.)

P. H. HOLMES.  
BEARING.

No. 482,309.

Patented Sept. 6, 1892.

FIG. 1.

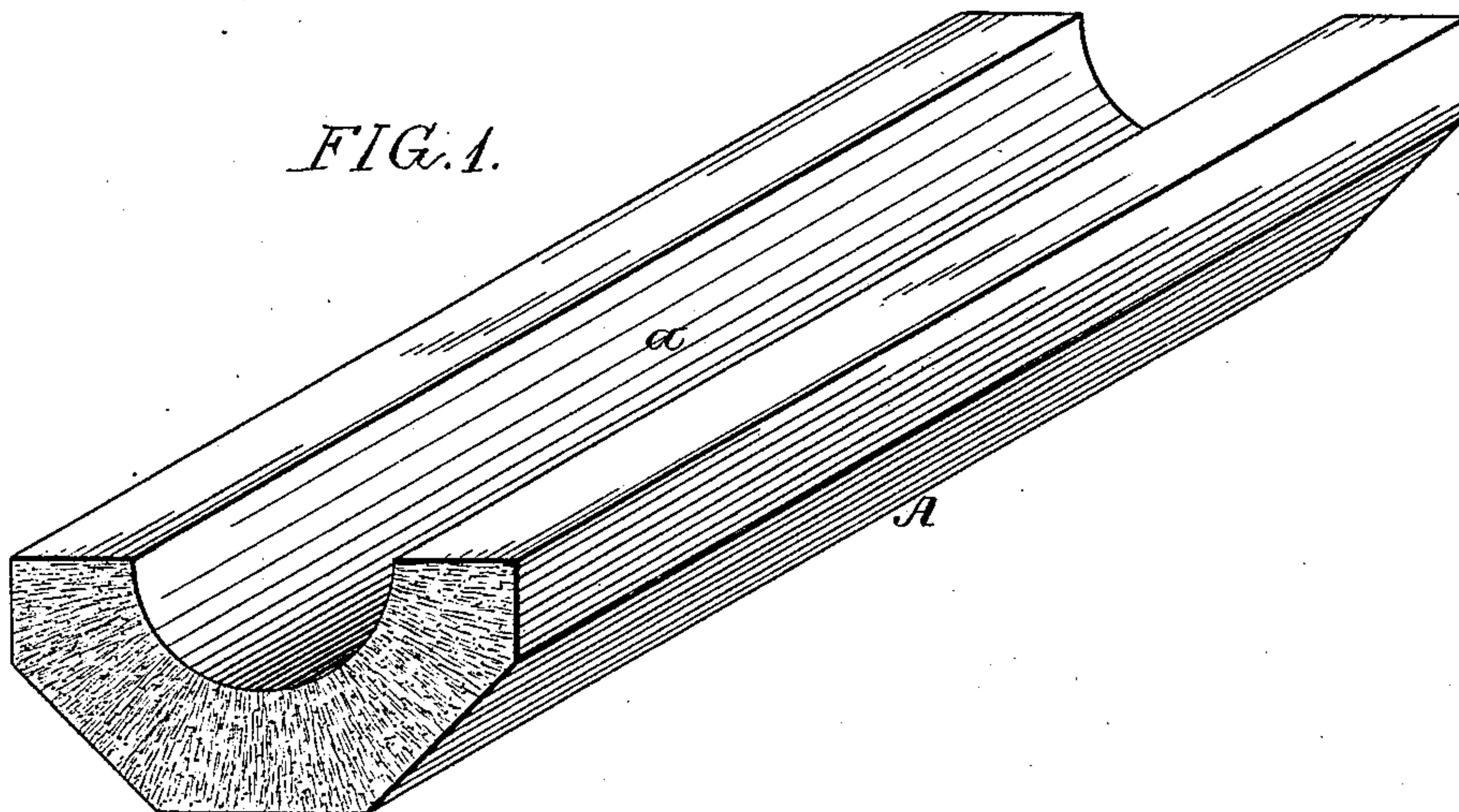


FIG. 3.

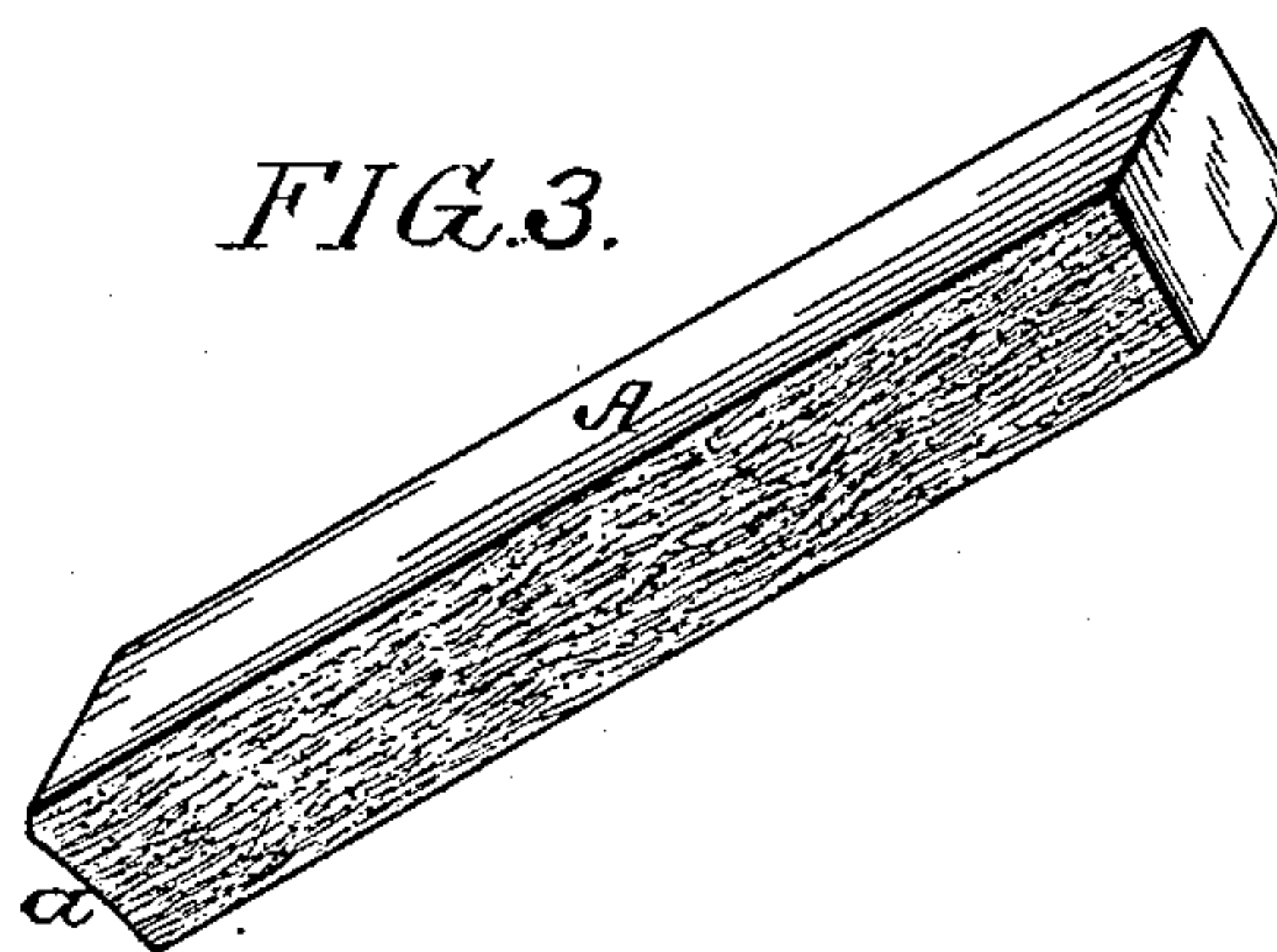


FIG. 4.

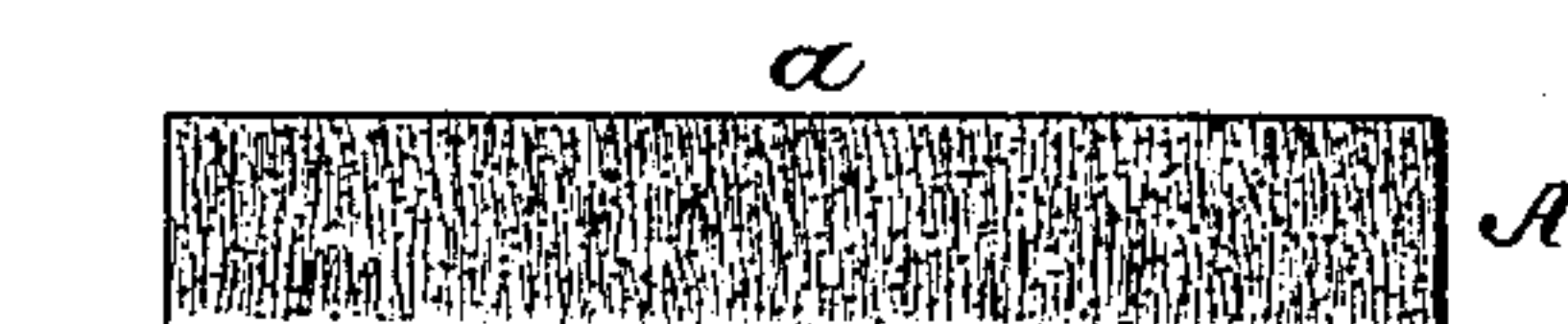
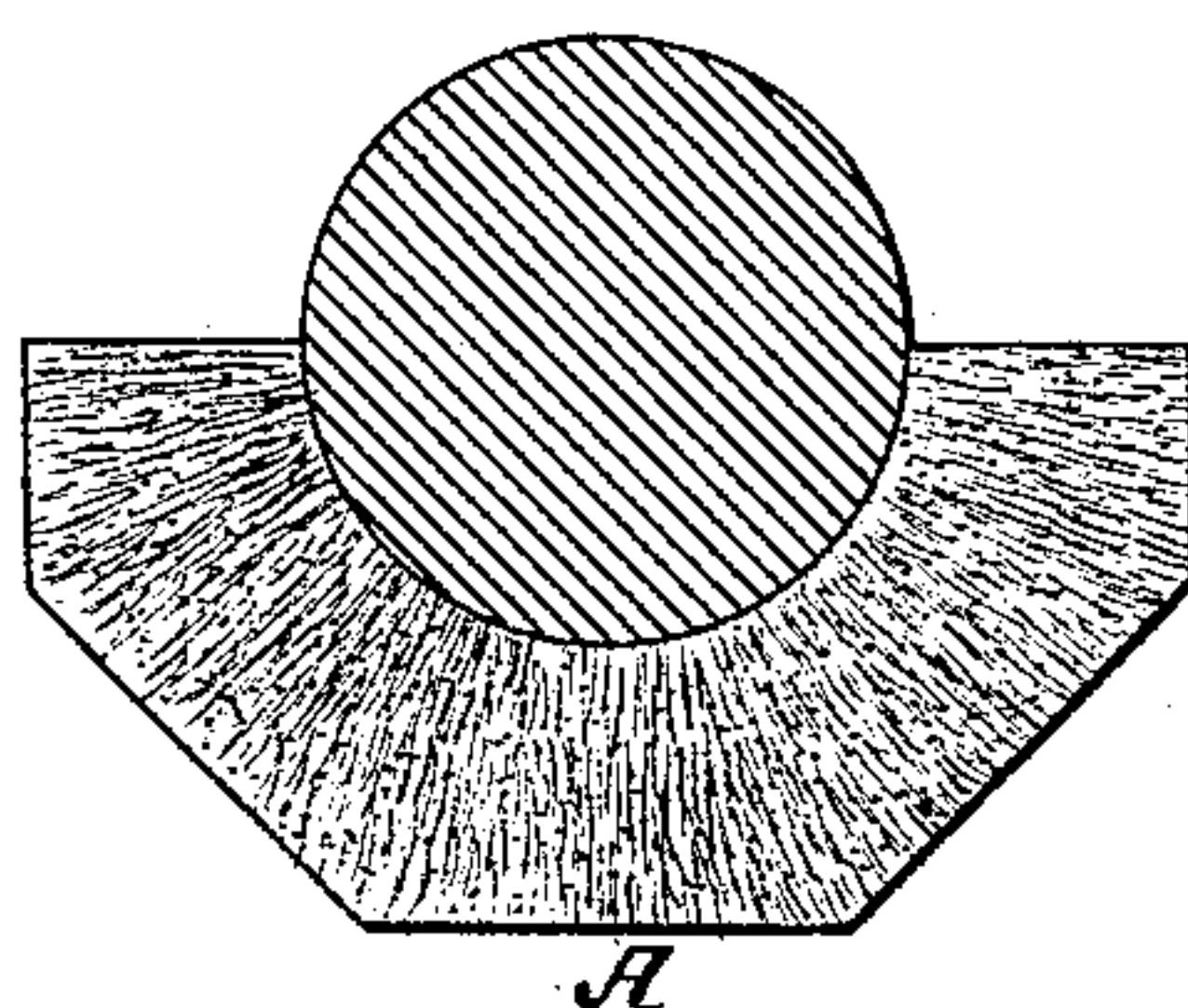


FIG. 2.



Witnesses:  
Alex. Barkoff  
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# UNITED STATES PATENT OFFICE.

PHILIP H. HOLMES, OF GARDINER, MAINE, ASSIGNOR TO THE HOLMES FIBRE-GRAPHITE MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

## BEARING.

SPECIFICATION forming part of Letters Patent No. 482,309, dated September 6, 1892.

Application filed September 18, 1891. Serial No. 406,084. (Model.)

*To all whom it may concern:*

Be it known that I, PHILIP HENRY HOLMES, a citizen of the United States, and a resident of Gardiner, Kennebec county, Maine, have  
5 invented certain Improvements in Bearings, of which the following is a specification.

The object of my invention is to so construct a bearing made of a composition of lubricating material and fiber that the fibers  
10 will be disposed transversely and the ends of the fiber will be presented toward the bearing-surface.

In the accompanying drawings, Figure 1 is a perspective view of a journal-bearing, illustrating my invention. Fig. 2 is a sectional  
15 view of a journal-bearing, showing a shaft mounted therein. Fig. 3 is a perspective view of a commutator-brush made in accordance with my invention, and Fig. 4 is a view showing a flat bearing for use as a step or as a  
20 sliding bearing.

I will first describe my invention in connection with the manufacture of bearings in which plumbago and fiber are compressed  
25 and bound together. I mix with finely-divided plumbago the fiber, preferably wood fiber, which is intimately mixed with the plumbago and with a liquid in a suitable mixing-machine, the compound being then forced  
30 into suitable molds and molded into the desired form under great pressure. The molds are so arranged that the outlets for the liquid are either at the bearing-surface or directly in line with said bearing-surface, as illustrated and described in my application for  
35 patent filed January 7, 1891, Serial No. 377,028. In compressing the compound in the mold the plunger travels in a direction parallel with the bearing-surface, and consequently the flow of the liquid is transverse, and the fibers are turned so that they will  
40 lie transversely or at right angles to the bearing-surface, or, in other words, so that they will present their ends toward the bearing-surface. After the compound has been compressed, as described, it is dried and subjected to oil treatment, preferably to treatment with a drying-oil, and is then dried or hardened  
45 by heat. It will be understood, however, that my invention is not limited to a compound

such as described above, but it can be carried out in the manufacture of bearings generally in which the fiber is embodied with a lubricating material; but I have found by experiment that plumbago is the most available lubricating material and has the best lubricating prop-  
55 erties.

In Figs. 1 and 2 I have shown an ordinary journal-bearing adapted for line-shafting and axle-work. In Fig. 3 I have shown a commutator-brush or current-collector, which when  
60 made of plumbago and fiber in suitable proportions is a good conductor of electricity, the bearing-face  $\alpha$  in this case being at the end of the block, while the bearing-face  $\alpha$  in the form of bearing shown in Figs. 1 and 2 is at  
65 the longitudinal groove or recess. In Fig. 4 I have shown a flat bearing or step-bearing in which the bearing-face  $\alpha$  is at the top or bottom. In the block shown in Fig. 3 the fibers  
70 lie parallel with the sides of the block, while in Fig. 4 they are parallel with the ends, and in Figs. 1 and 2 the fibers radiate from the bearing-surface.

I claim as my invention—

1. A bearing made of a composition of lubricating material and fiber intimately mixed and compressed, the fibers at the bearing-surface being mainly in a direction transversely to the longitudinal line of the bearing-face.  
80

2. A bearing made of a composition of plumbago and fiber intimately mixed and compressed, the fibers at the bearing-surface lying mainly in a direction transversely to the longitudinal line of the bearing-face, and a  
85 binder, substantially as described.

3. A bearing made of a composition of plumbago or other lubricating material, the fiber intimately mixed and united, said bearing having a curved bearing-face, the fibers lying  
90 mainly in lines radiating from the center from which said curved face is produced, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of  
95 two subscribing witnesses.

PHILIP H. HOLMES.

Witnesses:

WILLIAM D. CONNER,  
HENRY HOWSON.