

W. L. GUMPRECHT.
MANUFACTURE OF WATER METER DISKS.
APPLICATION FILED APR. 3, 1909.

990,255.

Patented Apr. 25, 1911.

Fig. 1.

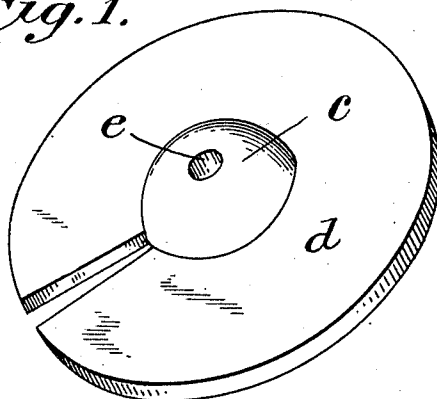


Fig. 2.

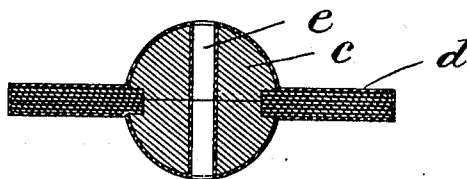


Fig. 3.

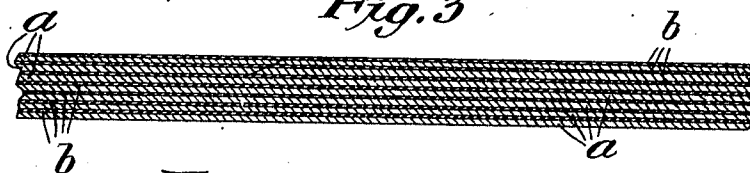
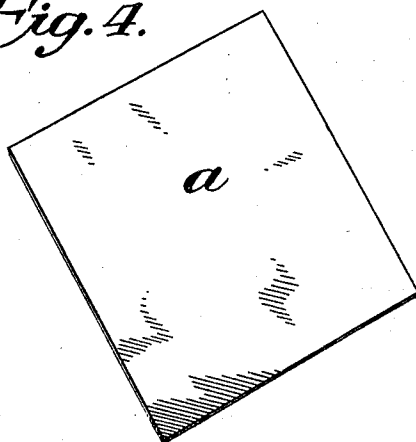


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM L. GUMPRECHT, OF NEW YORK, N. Y., ASSIGNOR TO NEPTUNE METER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

MANUFACTURE OF WATER-METER DISKS.

990,255.

Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed April 3, 1909. Serial No. 487,727.

To all whom it may concern:

Be it known that I, WILLIAM L. GUMPRECHT, a citizen of the United States, residing in the borough of Manhattan of the city of New York, in the State of New York, have invented certain new and useful Improvements in the Manufacture of Water-Meter Disks, &c., of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

The object of this invention is to produce a new and improved material for disks of disk water meters and other like purposes which shall meet in a higher degree than various materials heretofore used for such purpose, the peculiar requirements of their use. These requirements are best illustrated in a water meter of the oscillating or nutating disk type, in which the registering mechanism is actuated by a disk so mounted in a disk chamber as to be nutated or oscillated by the flow of water through the chamber. Such a disk must be light in weight in order that the energy of the flowing liquid exerted in actuating it may be as little as possible; it should also be capable of resisting the corrosive action of the liquid; it should also be practically liquid repellent so that its weight shall not be increased nor its dimensions changed by absorption of liquid; it must also be practically rigid under ordinary pressures so that accuracy of measurement shall not be affected by change in shape; and it must be strong enough and tough enough to withstand extraordinary pressures and stresses without breaking. Disks of hard rubber are generally used for the purpose but it is found that they are liable to be broken under unusual pressures when of the required thinness.

The purpose of this invention is to produce a material which shall possess all the desirable qualities of hard rubber and shall also possess in a higher degree the qualities of rigidity under normal pressures, strength and toughness, while being even lighter than hard rubber.

The invention will be more fully explained hereinafter with reference to the accompanying drawing in which—

Figure 1 is a perspective view of a meter disk constructed in accordance with the invention. Fig. 2 is a view in diagrammatic section thereof. Fig. 3 is a detail view, on

an enlarged scale, illustrating more clearly the method of manufacture. Fig. 4 is a perspective view of one of the sheets of fibrous material employed in the manufacture.

In the practice of the improved method of manufacturing water meter disks, etc., and in the production of the improved material for such purposes, there are first prepared thin sheets of a suitable fibrous material, one of which is represented at *a* in Fig. 4. These sheets are then coated or saturated with a suitable rubber solution, as at *b*, and are assembled, one upon another, as represented in Fig. 3, preferably with the grain crossed and in such number as to give the requisite thickness to the completed material. The mass of rubber coated or saturated sheets is then subjected to pressure, and is vulcanized under pressure, the resulting material being ready for use for various purposes.

It has been found that for the particular purpose in view, namely, the production of an improved material for meter disks, the most satisfactory results are secured by employing as the fibrous material sheets of cedar wood, each about .01 of an inch in thickness, giving these sheets two coatings of any ordinary rubber solution, allowing them to dry, then pressing the sheets together and vulcanizing them under pressure. For the production of meter disks the vulcanized mass of sheets is cut to proper form and there is applied to it, in two parts, the usual spherical bearing or disk ball of hard rubber or any other suitable material. Thereafter the disk and spherical bearing or disk ball are preferably coated with a prepared rubber mixture, to a thickness of from $\frac{1}{16}$ of an inch to $\frac{1}{8}$ of an inch, the coating entering the bore *c* of the spherical bearing, and the entire mass is vulcanized. Obviously the coating of the mass of fibrous sheets with an outer layer of prepared rubber mixture may be done before vulcanizing of the mass of fibrous sheets and the whole body vulcanized at one time, or, as already explained, the mass of fibrous sheets may be first vulcanized and then receive the outer coating of prepared rubber mixture and then vulcanized again. It is found in practice that the outer coating of vulcanized rubber gives a better wearing surface and better protects the fibrous mass from the action of liquids in which it may be sub-

merged. Nevertheless, for many uses, the vulcanized and laminated body of fibrous sheets is capable of use for many purposes without the vulcanized rubber covering.

5 It will be understood, of course, that many different fibrous materials may be employed to make up the laminated body and that any suitable rubber solution may be used for the purpose of coating or saturating the fibrous
10 sheets, and that the invention is not limited to the embodiment of any particular mode of procedure in preparing or treating such materials.

15 In the claim which follows the word "disk" is used in its restricted sense to refer

to a relatively thin, flat, and circular portion of the structure represented in Figs. 1 and 2, distinct from the spherical bearing or disk ball *c*.

I claim as my invention:

20 A meter disk comprising a laminated body of fibrous material and rubber and an outer protective coating of rubber, the whole being vulcanized.

This specification signed and witnessed 25
this 1st day of April, A. D. 1909.

WILLIAM L. GUMPRECHT.

Signed in the presence of—

HENRY KAHN,

CHARLES B. MOREHOUSE.

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