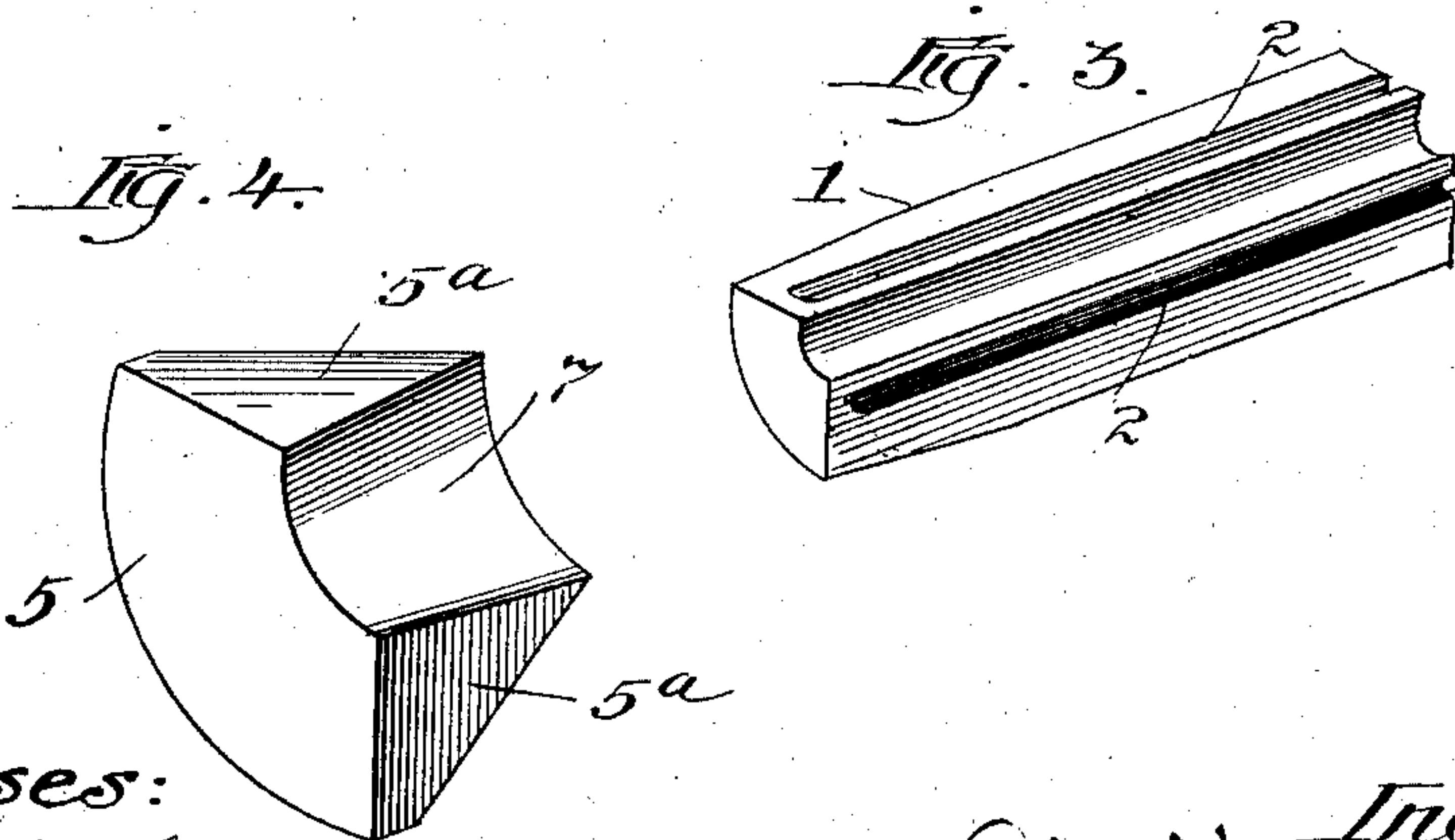
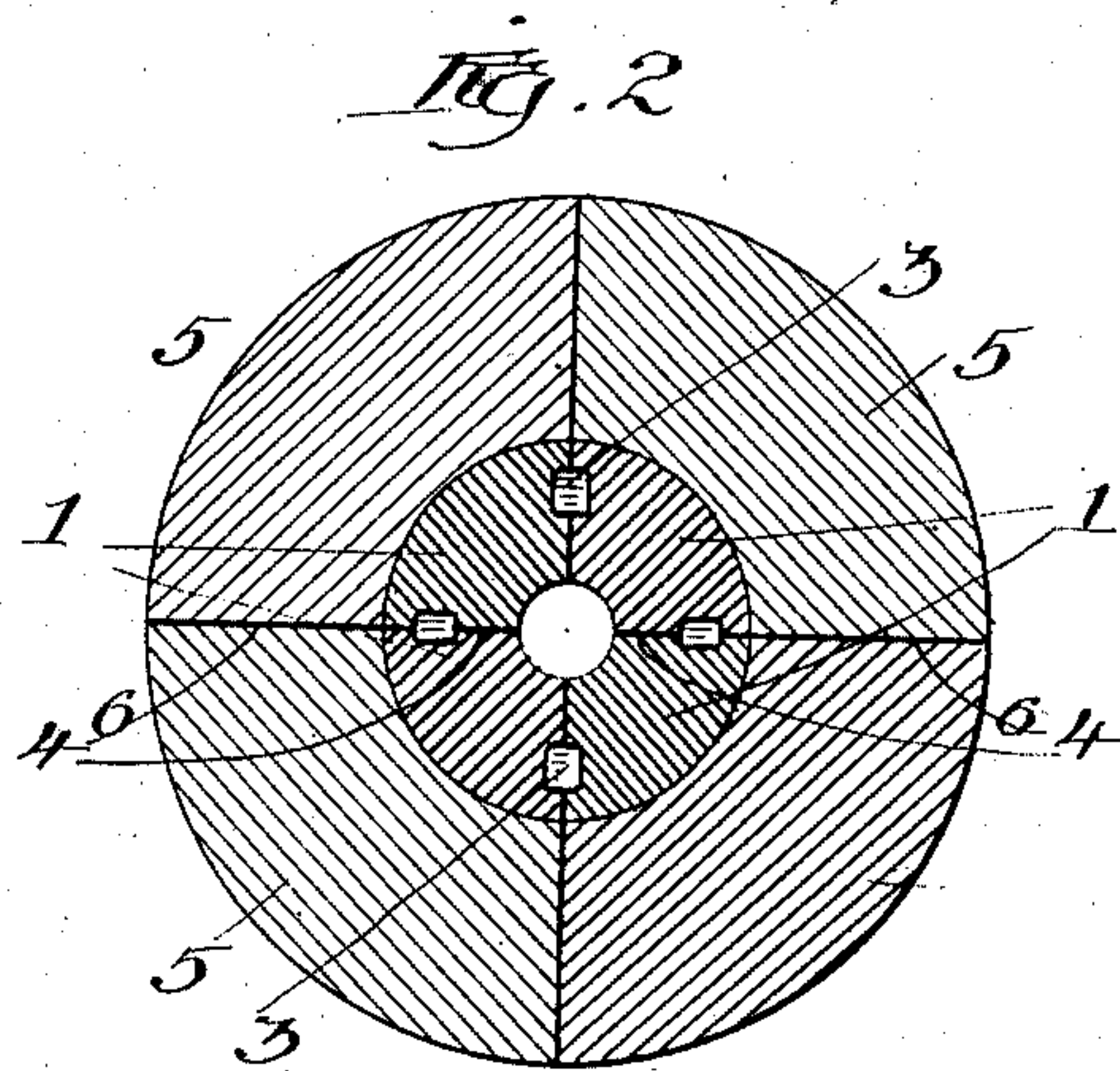
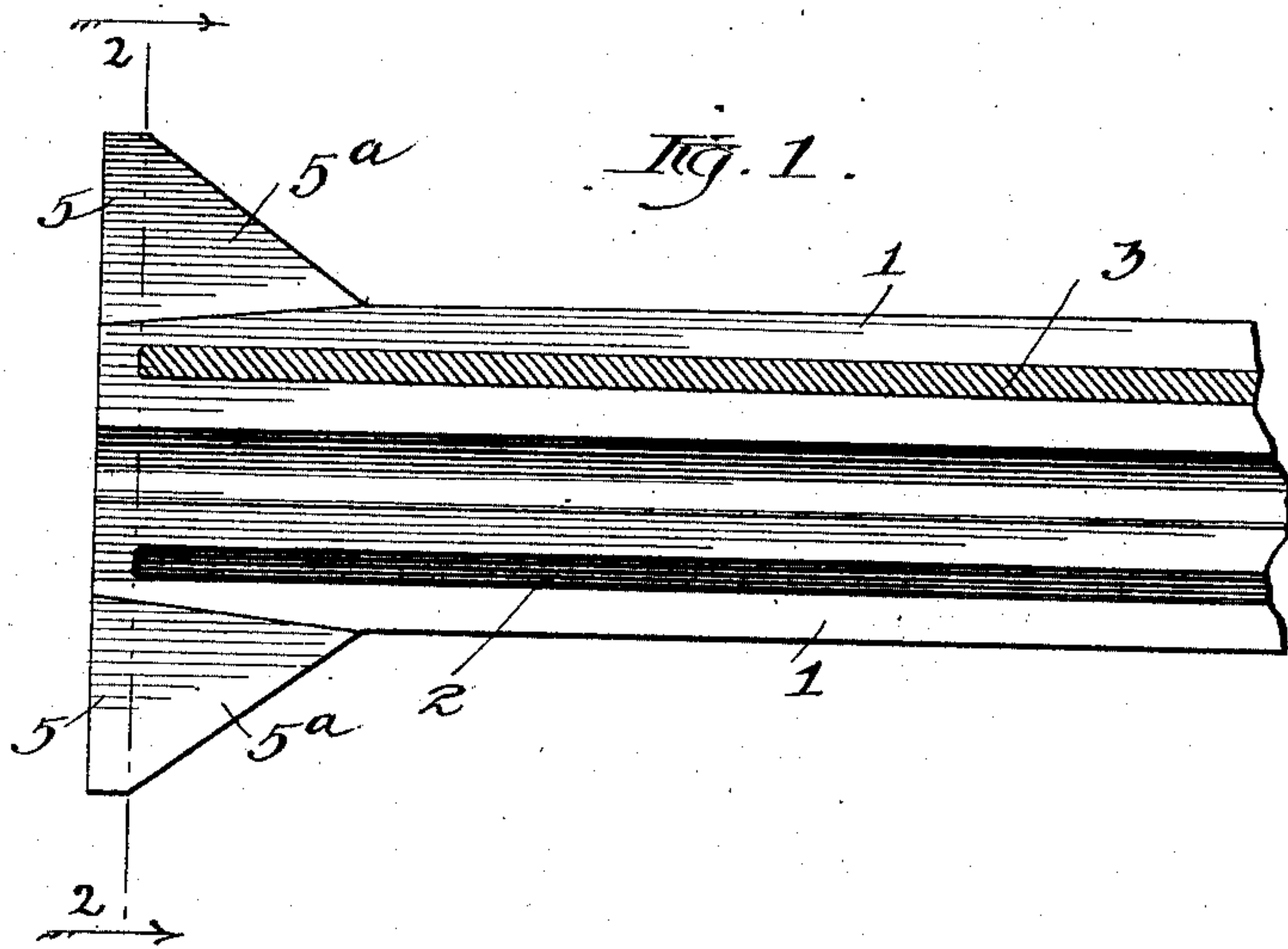


No. 864,304.

PATENTED AUG. 27, 1907.

E. HUBBARD.
SPOOL OR BOBBIN.
APPLICATION FILED APR. 22, 1907.



Witnesses:

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UNITED STATES PATENT OFFICE.

EBER HUBBARD, OF CHICAGO, ILLINOIS.

SPOOL OR BOBBIN.

No. 864,304.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed April 22, 1907. Serial No. 369,434.

To all whom it may concern:

Be it known that I, EBER HUBBARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and
5 useful Improvements in Spools or Bobbins, of which the following is a specification, reference being had to the drawings, forming a part thereof.

The purpose of this invention is to provide an improved spool or bobbin for winding thread and the like,
10 particularly adapted for manufacturers' use for winding a large quantity, as one pound, of thread on a single spool, and it is designed particularly as an improvement on this type of spools when made of fiber pulp or wood pulp or other like non-metallic material
15 which is molded to form the spool.

The invention consists in the features of construction described and shown and indicated in the claims.

In the drawings:—Figure 1 is a longitudinal axial section of a spool or bobbin of the type to which this
20 invention pertains. Fig. 2 is a section at the line 2—2 on Fig. 1. Fig. 3 is a perspective view of one sectoral element of the shaft. Fig. 4 is a perspective view of one of the sectoral elements of the head.

I preferably make the shaft and the two heads of the
25 spools separately, uniting them by telescoping the shaft into the heads, the ends of the shaft being preferably slightly tapered, and the axial aperture of the head being similarly tapered so that a very secure junction is formed when the parts are telescoped with
30 suitable glue or other cement to secure the junction at their tapered surfaces.

In order to economically,—that is, with the minimum expenditure of labor and the cheapest machinery,—introduce both into shaft and heads the necessary longitudinal reinforcements to strengthen them
35 against the longitudinal tension to which they are subject in use, I preferably mold both the shaft and the heads in sectoral sections to be subsequently united to form the complete shaft and heads respectively.
40 Fig. 3 shows one of these sectoral sections of the shaft, and in the drawings I have represented both the shaft and the heads as made in four sectoral sections or quarters, but the number is immaterial except as the larger number affords the opportunity for introducing a larger
45 number of reinforcements, as will hereinafter appear.

Each of the sectoral sections, 1, of the shaft is molded in a manner which will be understood and which is familiar in the art of molding fiber pulp; and need not be here explained further than to say that the subdivision of the barrel into sectoral fractions for molding,
50 by affording two additional surfaces,—namely, the radial planes of subdivision,—for drainage in the process of molding, makes it possible to make each of these sections much more uniformly dense, and therefore

much more tenacious for all purposes than it is possible to mold a complete cylinder or cone required for the shaft and head respectively of such an article.

The several sectoral sections making up the complete shaft of the spool have their radial faces suitably dressed, and at least one of said faces is provided,
60 either in molding or by subsequent process, with a longitudinal groove, 2, which preferably stops short of the ends, as seen in the drawings; and in this groove there is lodged a strip, 3, preferably of wood, the dressed and grooved face having first applied to it and
65 in the groove a suitable glue or other cement of penetrative and adhesive character, and also adapted, when hardened, to be exceedingly tough. The common sorts of carpenters' and joiners' glue serve fairly well for this purpose, but there are other sorts of greater
70 tenacity, and I do not limit myself to any particular glue or other cement.

The several sectors constituting an entire shaft being first coated with cement are assembled in proper form to constitute a complete shaft and firmly held or secured together, as in any case of making glued joints,
75 until the cement is thoroughly hardened. When thus hardened the several septa formed by the cement at the junction planes of the sectors constitute very strong longitudinal reinforcements denoted by the heavy lines, 80
4, in Fig. 2.

The several sectors, 5, constituting the heads having their radial faces, 5^a, suitably dressed for a glued joint, and having cement of the character above described applied on them, are assembled in the same manner and
85 properly secured while the cement hardens, forming cement septa, 6, constituting in the heads the desired longitudinal reinforcements.

The complete shaft may now be dressed by any means to taper its ends, and the central apertures of the
90 heads will be suitably reamed out with proper taper, as shown, on the concave face, 7, of the sectors shown in Fig. 4, to seat upon the tapered ends of the shaft; and the heads being then secured upon the shaft with cement, in an obvious manner, the spool is complete except as to exterior finishing of the curved surfaces and the outer ends of the heads, which may be performed
95 by any suitable process and mechanism.

If the reinforcing strips, 3, extended to the ends of the sectoral elements in which they are lodged and which
100 they serve as a means of registering and reinforcing, the process of dressing off the ends of the spools, either on sand-paper wheel or by means of any other dressing apparatus suitable for that purpose would be very much retarded, because the ends of the wood strips would
105 yield to the dressing process much more slowly than the face of the molded fiber material, and furthermore said ends of the wood strips would wear away the sand-paper

disk, or other dressing device employed, in streaks, causing such dressing device to become unserviceable and to require either to be re-covered when sand paper is used or to be re-dressed when a carborundum or other grinding wheel or disk is used very much more frequently than such refitting would be required for the remainder of the surface outside of that affected by the contact with the ends of the wood strips. The cost of making the spools would thereby be very materially increased as compared with the cost when made in the manner shown,—so that the entire end surface of the spools exposed for dressing is of molded fiber without the protrusion therethrough of the more refractory wood.

It may be desirable for some purposes to form a longitudinal groove, 2, upon both of the radial faces of the sections, 1, of the shaft, so that the grooves of each two adjacent sectors facing each other will form a key seat, and the strips lodged therein will then be of suitable thickness to occupy both grooves and make a junction key or tenon connecting the two sectors and similarly increasing not only the capacity of the shaft to resist longitudinal tension, but also its capacity to resist radial compression or crushing, and which will have the usual value of such device for preventing slipping of the two surfaces upon each other while the cement is still soft; and this expedient may dispense with some devices which might otherwise be desirable for holding

the several sectors together during the period of hardening of the cement.

Other means of introducing cement into the structure of the spool so that it shall constitute, when hardened, longitudinal reinforcements of the spool, will readily occur to those familiar with the process of molding fiber pulp for making articles of such form. I do not limit myself to the particular means for so introducing such cement reinforcements, but nevertheless I consider that there are decided advantages in the method shown, consisting in forming the spool in several sectoral parts on whose radial faces the cement may be applied to form when they are united at those faces the desired longitudinal reinforcements.

I claim:—

1. A non-metallic molded spool or bobbin made of longitudinally parted sections cemented together, in combination with longitudinal reinforcing strips lodged in the junction surfaces of said sections and stopping short of the ends.

2. A non-metallic molded spool or bobbin made of longitudinally parted sections cemented together, in combination with longitudinal reinforcing strips of wood lodged and cemented in the junction surfaces of such sections and stopping short of the ends.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 19th day of April, A. D. 1907.

EBER HUBBARD.

Witnesses:

EDWARD T. WRAY,
CHAS. S. BURTON.