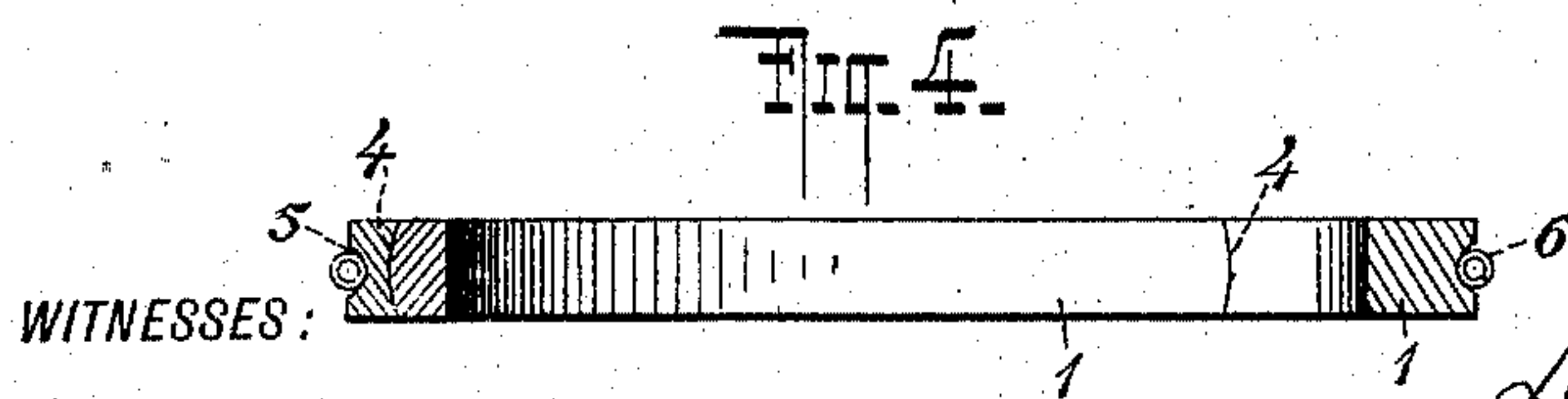
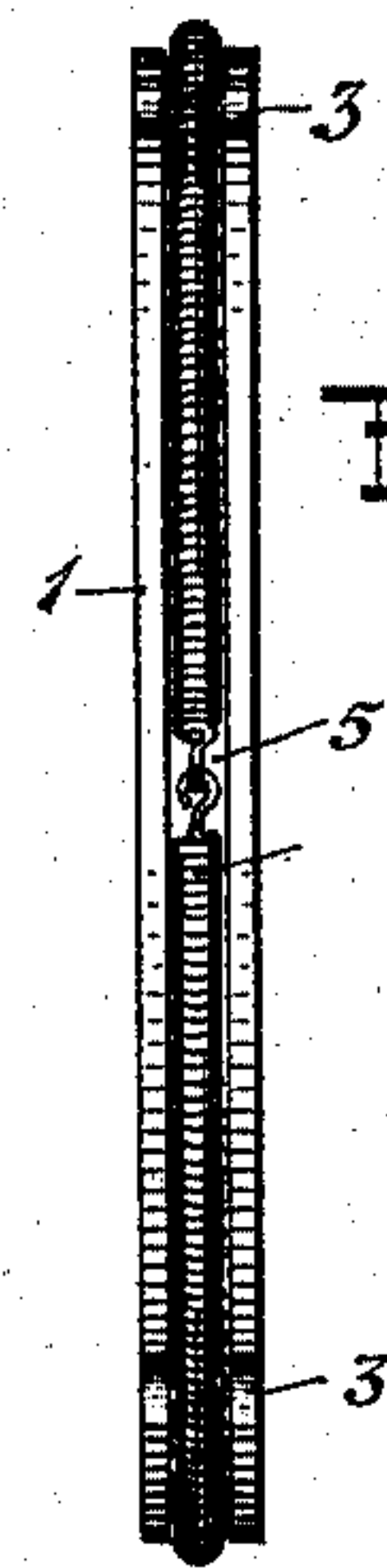
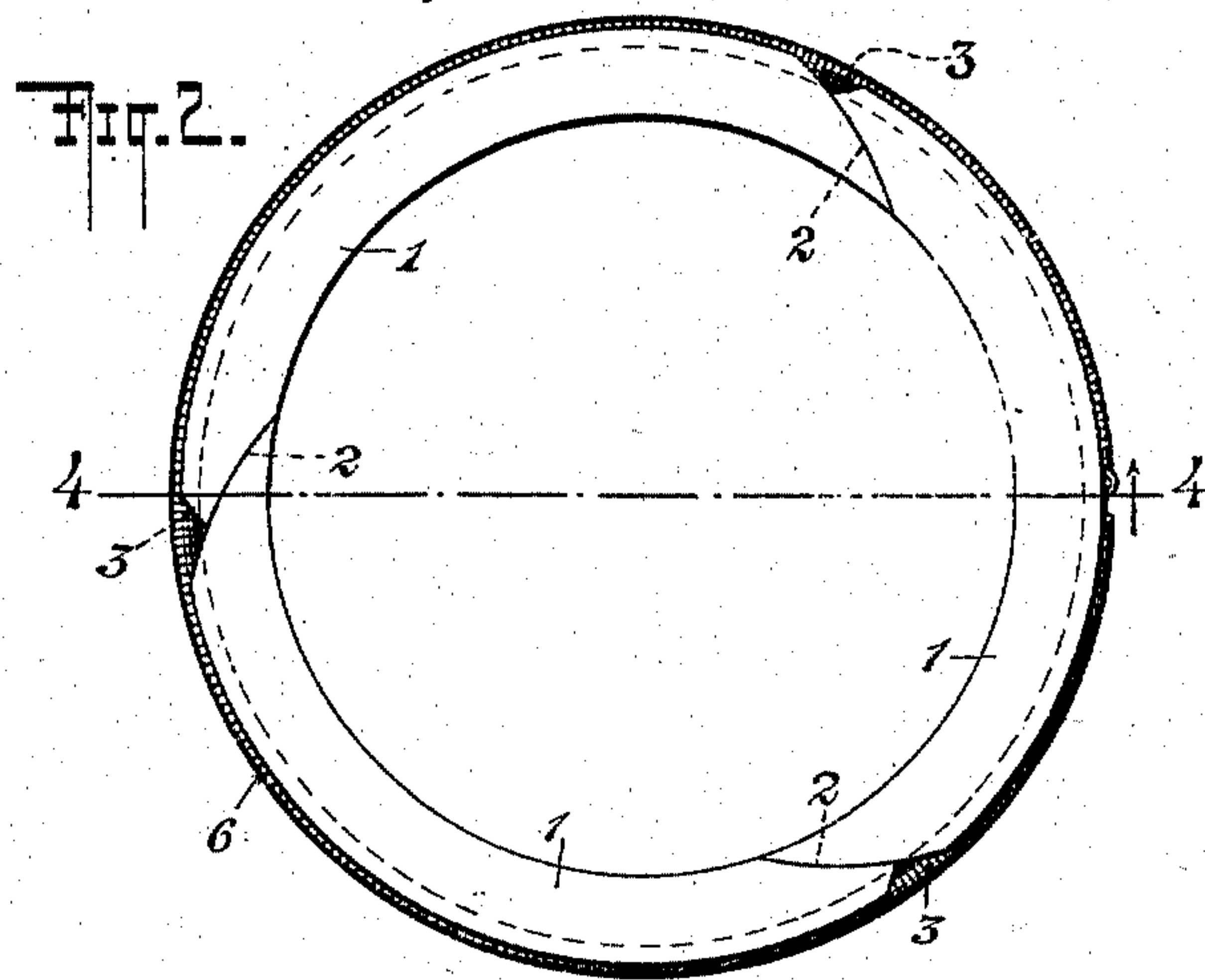
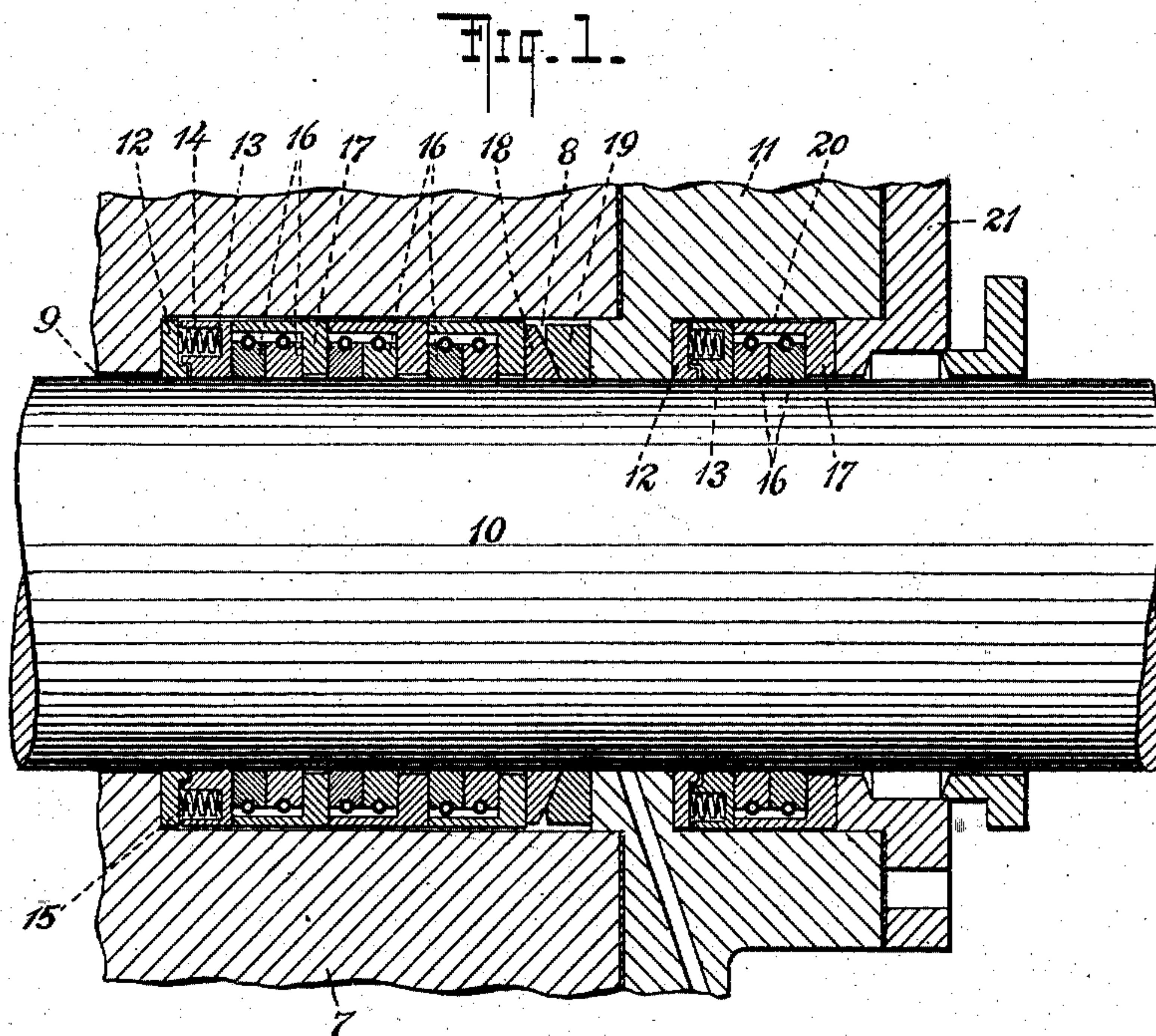


L. KATZENSTEIN.
PACKING.
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966,922.

Patented Aug. 9, 1910.



WITNESSES:
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UNITED STATES PATENT OFFICE.

LEOPOLD KATZENSTEIN, OF NEW YORK, N. Y.

PACKING.

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Specification of Letters Patent.

Patented Aug. 9, 1910.

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To all whom it may concern:

Be it known that I, LEOPOLD KATZENSTEIN, a citizen of the United States, and resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Packings, of which the following is a specification.

My invention relates to packings for movable mechanical elements and more particularly to that class of packings commonly known as metallic packings and has for its object to provide a packing of this description with an expansible sectional ring in which the danger of leakage at the junction of the sections composing said ring is greatly reduced.

To this end my invention consists of certain features of construction which will be hereinafter described in detail and then specifically pointed out in the appended claims.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a sectional view illustrating my invention applied to a reciprocating rod; Fig. 2 is a face view of my improved ring; Fig. 3 is an edge view thereof and Fig. 4 is a cross section on the line 4—4 of Fig. 2.

My improved ring in the particular form illustrated is made in three sections 1 the ends of which fit together to form the complete ring. The abutting ends of said sections are curved as indicated at 2 instead of being straight as heretofore. One end of each section is also partly cut away as shown at 3 in Fig. 2 so that said sections are capable of a maximum degree of movement relatively to each other. The sections in addition to having their ends curved as indicated at 2 may also be curved transversely as at 4 in Fig. 4 so that the one end of each section is convexed in this direction while the other is concaved. Thus the convexed end of one section will fit into the concaved end of the next adjacent section, or in other words, the male part of one section will engage with the female part of the other section. While this is the preferred construction it is not absolutely necessary as both ends of one section might be concaved and both ends of another section might be convexed to fit together. Further, instead of being concaved and convexed, the ends of said sections might be otherwise formed so that the end of one

section would fit into the end of the next section.

It is to be understood that in the constructions described above the convexed or beveled end of one section fits into the concaved or recessed end of the next section and prevent lateral displacement of the ring sections, or in other words maintain said sections in perfect alinement with each other and still permit such relative movement thereof as may become necessary during use of the device. The ring sections are further each provided with a circumferential groove 5 extending along the outer periphery of the sections. These grooves 5 when the sections are secured together are in alinement with each other and thus form a substantially continuous outer peripheral groove adapted to accommodate a coil spring 6 which has its free ends fastened together in any convenient and well known manner. The said spring 6 serves to secure the ring sections together and to press them against the reciprocating rod or other movable element in connection with which the packing is used.

In Fig. 1 I have illustrated a structure of the kind in which my improved ring is adapted to be incorporated. In this structure 7 represents a stationary wall for instance the head of a cylinder, which is provided with a recess 8 and an aperture 9 in which the reciprocating rod 10 is movable. A movable element or cap 11 is arranged to close the open end of the recess 8 and may be secured in position in any suitable manner as for instance by means of bolts (not shown). In the recess 8 is located an end ring 12 having its one face in engagement with the end wall of the recess 8 and its opposite face adjacent to a second ring 13 provided with spaced sockets 14. Coil springs 15 are located in each socket 14, each with its one end abutting against the ring 12, and tend to force said rings 12 and 13 apart. Next in order I place three sets of two sectional rings 16 each of the kind forming the subject matter of the present application, each set of two rings being preferably contained in cup shaped rings 17 placed end to end. The number of rings 16 and cup-shaped rings 17 may be increased or diminished to meet the requirements of each particular case. Adjacent to the last ring 17 is located a ring 18 having its outer face convexed to fit into the concaved face of an end

ring 19 arranged against the closing cap 11. The springs 15 press the various cup shaped rings 17 firmly against each other in a direction parallel with the axis of the rod 10 and the springs 6 serve to cause each sectional ring 15 to closely hug said rod 10. The closing cap may also be provided with a recess 20 in which are located rings similar to the rings 12, 13, 16 and 17 and maintained in position in said recess by means of a plate 21 suitably secured in position. This illustrates only one of many arrangements with which my improved ring may be used to secure a flexible, expansible and absolutely fluid tight packing.

By making the ends of the several ring sections curved at 2, these ends do not separate when fluid pressure is exerted thereon from the inside, as is the case when said ends are straight or are disposed tangentially to the inner surface of said rings; but these curved ends ride one on the other, the relative movement always following the direction of the curves, and are always maintained in close engagement with each other no matter how the rings contract or expand. It has been found that when the contacting surfaces of the ring sections are disposed tangentially to the inner surface of said rings, these ends, while they may engage with each other at one point, spread apart at other points, rocking on the point of contact as a fulcrum, thus permitting steam or other fluid to escape. If the ring sections engage each other along radial lines the said sections are spread apart as pressure is exerted from the interior of the packing. The transverse curves 4 aid in rendering these joints between the sections fluid tight by preventing lateral displacement of said sections as before stated. By cutting away the one end of each section as at 3 a rocking fulcrum is provided so that the sections are capable of a maximum amount of movement relatively to each other particularly in a direction toward the center of the ring.

My invention thus provides an expansible ring packing which in all relative positions

of the ring sections is fluid tight and secures a maximum effective result.

While I have shown my improved ring as comprising three sections it is to be noted that the number of sections may be increased or diminished to meet the particular requirements of each individual instance without affecting the operation and effectiveness of my invention.

It will be understood that I do not limit myself to the specific construction shown and described and that variations may be made without departing from the spirit of my invention as pointed out in the claims.

I claim as my invention:

1. A packing ring comprising a plurality of sections adapted to fit together, each end of each section being curved about an axis parallel with the axis of the ring and being further curved about an axis extending substantially at right angles to the axis of the ring.

2. A packing ring comprising a plurality of sections adapted to fit together, each end of each section being curved about an axis parallel with the axis of the ring and being further curved about an axis extending substantially at right angles to the axis of the ring and means for maintaining said sections yieldingly in position against the expansive effect of the fluid.

3. A packing ring comprising a plurality of sections adapted to fit together, each end of each section being curved about an axis parallel with the axis of the ring and being further curved about an axis extending substantially at right angles to the axis of the ring and a portion of one end of each section being cut away at the outer periphery thereof.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LEOPOLD KATZENSTEIN.

Witnesses:

JOHN A. KEHLENBECK,
FRITZ ZEIGLER, Jr.