

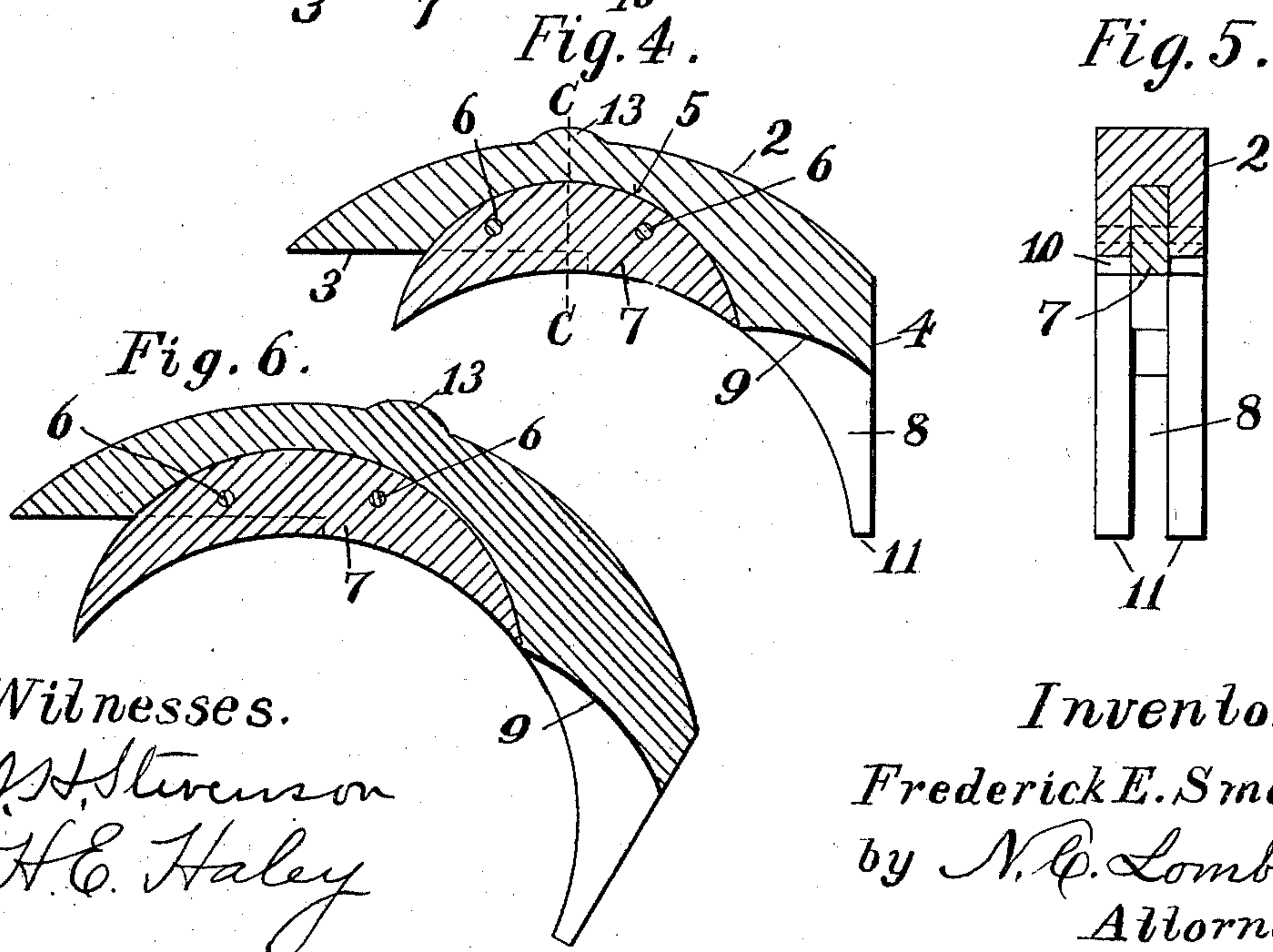
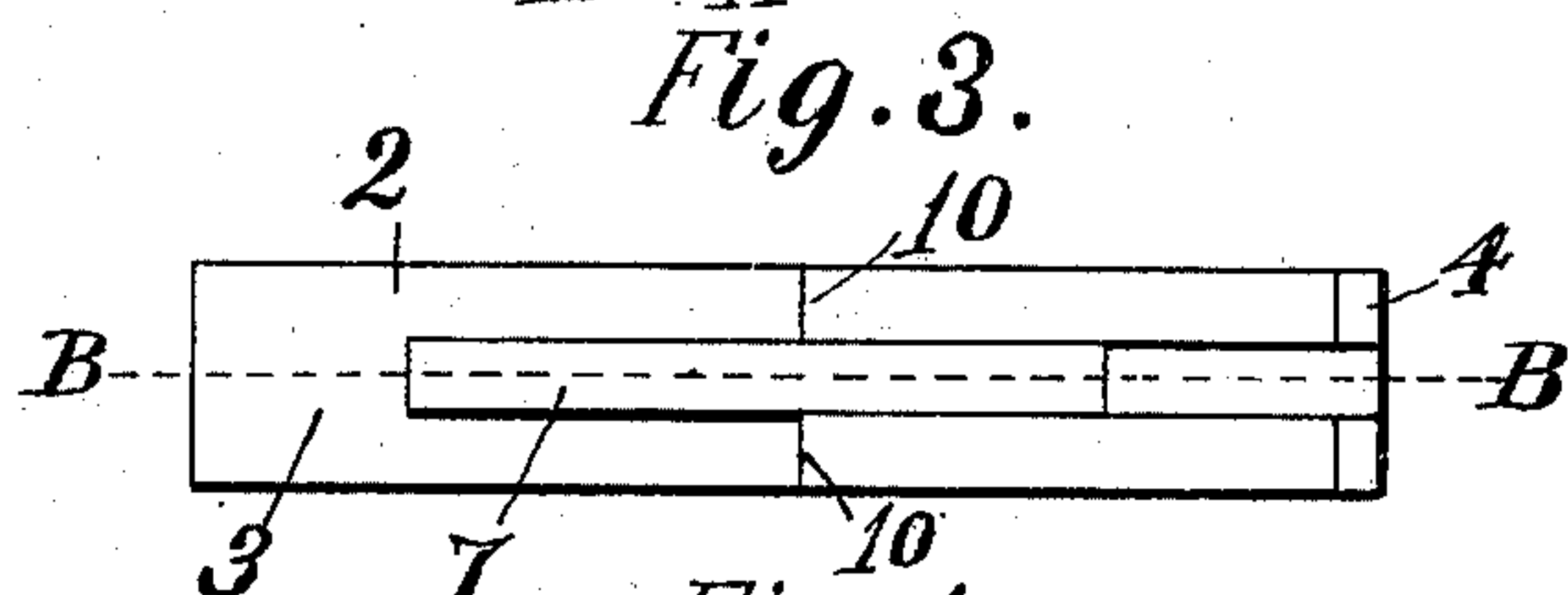
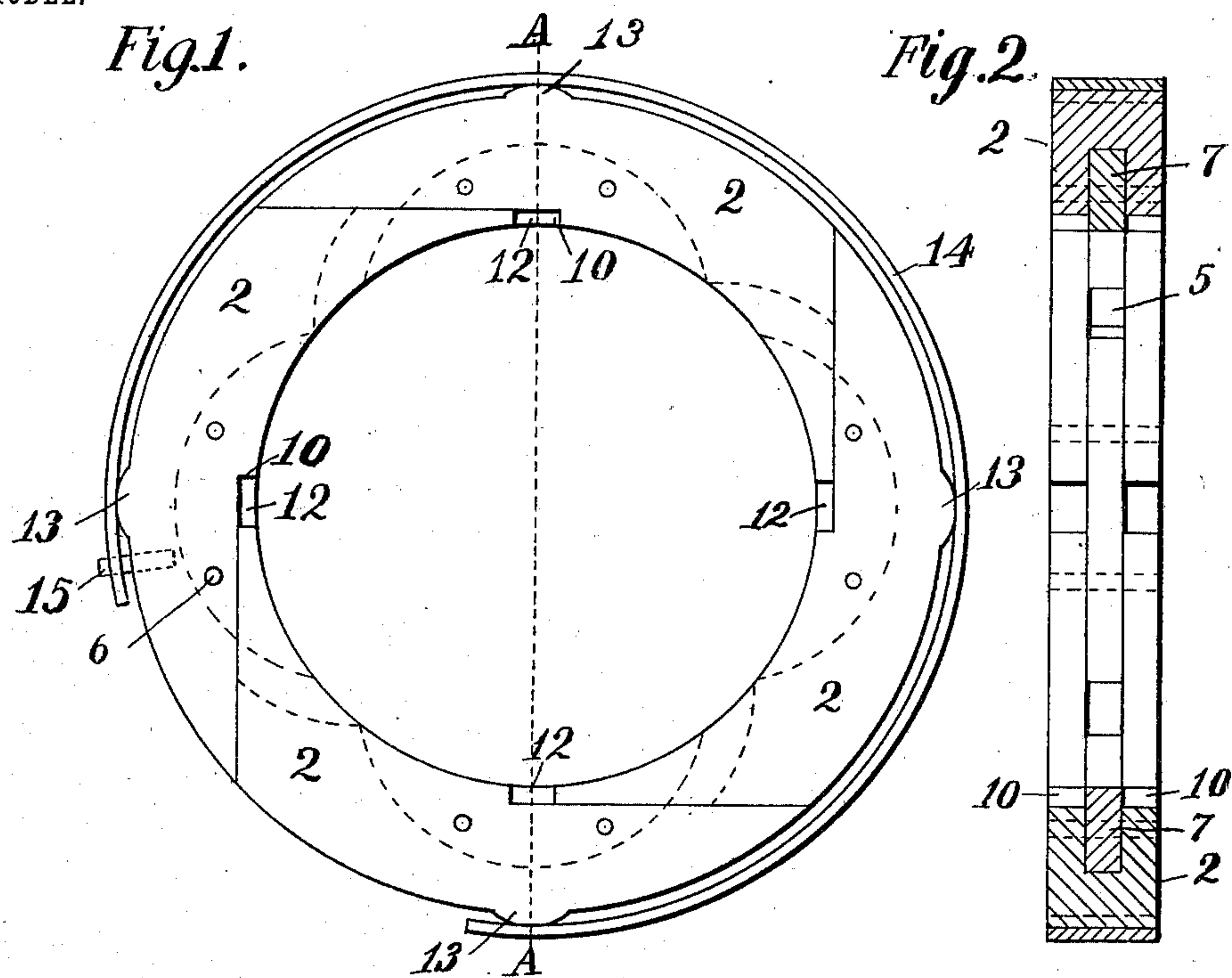
No. 757,062.

PATENTED APR. 12, 1904.

F. E. SMALL.  
METALLIC PACKING FOR PISTON RODS.

APPLICATION FILED SEPT. 5, 1903.

NO MODEL.



*Witnesses.*

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# UNITED STATES PATENT OFFICE.

FREDERICK E. SMALL, OF BOSTON, MASSACHUSETTS.

## METALLIC PACKING FOR PISTON-RODS.

SPECIFICATION forming part of Letters Patent No. 757,062, dated April 12, 1904.

Application filed September 5, 1903. Serial No. 172,159. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK E. SMALL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Metallic Packing for Piston-Rods and Like Purposes, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to metallic packing for piston-rods; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings and to the claims hereto appended and in which my invention is clearly pointed out.

The object of my present invention is the production of an effective metallic packing comprising a single ring composed of a plurality of segments of uniform shape, and to this end I construct the packing as illustrated in the accompanying drawings, in which—

Figure 1 is a plan of my improved packing, the several sections being in the positions they occupy relative to each other when new and applied to a new rod. Fig. 2 is a section on line A A on Fig. 1. Fig. 3 is an inside elevation of one of the segments. Fig. 4 is a section on line B B on Fig. 3. Fig. 5 is a section on line C C on Fig. 4; and Fig. 6 is a sectional plan of a single segment of a packing-ring which is divided into three segments instead of four.

In the drawings, 2 2 represent segments of a single packing-ring divided into four such segments, each segment having a portion of its inner surface curved to an arc of a circle to fit the peripheral surface of the rod upon which it is to be used and having an inner and an outer plain flat surface 3 and 4, respectively, both tangential to a circle of a diameter somewhat greater than the diameter of the rod upon which it is to be used. The inner curved edge of said segment has formed in the center thereof a groove or recess 5, the bottom of which is preferably made in the form of an arc of a circle, into which is fitted and secured in a fixed position by the pins

6 the crescent-shaped tongue 7, as shown in Figs. 4 and 5. The end of said segment which has the outer tangential surface 4 has a slot 8 cut through it of the same width as the groove 5, the outer end of which slot is preferably curved to the arc of a circle of a radius corresponding to the radius of the curve which forms the bottom of the groove or recess 5, as shown at 9 on Fig. 4. At the inner end of the flat surface 3 said segment 2 is provided with the shoulder 10, between which and the tip 11 of the slotted end of the contiguous segment is a space 12 when fitted to a rod, as shown in Fig. 1, which permits said segments to be automatically adjusted to the rod as the parts wear.

One end of the crescent-shaped piece 7 projects beyond the plain flat surface 3 of its segment and fits into the slot 8 of a contiguous segment when the several segments are assembled to form a complete packing-ring, said crescent-shaped piece bridging the space between the shoulders 10 of one segment and the adjacent tip 11 of another segment, as shown in Fig. 1. The outer edge of each segment is a segment of a circle and may or may not be provided with a slight projection 13, upon which the segmental spring 14 bears to press said segments into close contact with the periphery of the rod to which said packing-ring is fitted.

In the segments which are illustrated in Figs. 1, 2, 3, 4, and 5 the surfaces 3 and 4 are in planes at right angles to each other; but when the packing-ring is composed of a greater or less number of segments said flat surfaces are in planes at different angles to each other, as illustrated in Fig. 6, which shows a section of a packing-ring composed of three segments, in which case the surfaces 3 and 4 are in planes at an angle of sixty degrees to each other. In other respects, except dimensions, the segments illustrated in Figs. 4 and 6 are constructed alike.

It will be seen that all joints between the several segments are broken by the overlapping of portions of one segment of portions of two other contiguous segments and that



the tension of the spring acting thereon will constantly press said segments into contact with the rod to which they are fitted, thereby automatically taking up any wear that may occur and rendering said packing steam-tight.

Other forms of springs may be used instead of the spring shown in Fig. 1, which is secured against circumferential movement by the pin 15.

The operation of my invention will be readily understood from the foregoing without further explanation here.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A metallic rod-packing comprising a single ring composed of a plurality of segments of uniform shape, each provided with inner and outer tangential flat surfaces arranged in planes at an angle to each other, and having formed in the center of its inner surface a groove or recess having a length less than the length of the segment, and a slot cut through the center of the outer tangential surface and a tongue fitted to and secured in said recess, and projecting from the inner tangential surface and engaging the slot of a contiguous segment, and having its inner edge curved to fit the periphery of the rod upon which it is to be used.

2. In a metallic rod-packing, the combination of a plurality of segments of uniform shape, each provided with a curved inner surface, with inner and outer flat tangential surfaces arranged in planes at an angle to each other, with a slot cut through the outer tangential surface, and with a groove or recess in the center of its inner face and extending partly into said curved surface and partly into the inner tangential surface and having a curved bottom, in combination with a crescent-shaped tongue fitted to and secured in said recess, and projecting from said inner

tangential surface, and engaging the slotted end of a contiguous segment.

3. In a metallic rod-packing, the combination of a plurality of segments of uniform shape, each provided with a curved inner surface to bear upon the rod, inner and outer tangential surfaces arranged in planes at an angle to each other, a slot cut through the end thereof having the outer tangential surface, and having a curved bottomed recess formed in its inner face, partly within the curved surface thereof and partly within the inner tangential surface, a shoulder connecting the inner ends of said inner curved and tangential surfaces; a crescent-shaped tongue fitted to and secured in said recess, and projecting beyond said inner tangential surface and into the slot in the end of a contiguous segment; and means for automatically pressing all of said segments into close contact with the surface of the rod.

4. In a metallic rod-packing, the combination of a plurality of segments of uniform shape each provided with an inner tangential surface at one end, and an outer tangential surface at its other end and a slot cut through the outer tangentially-surfaced end; a tongue projecting from said inner tangential surface; a boss projecting from the outer curved edge of said segment intermediate of its ends; and a segmental spring nearly surrounding said segments and bearing upon said bosses to press said segments into close contact with the periphery of the rod upon which it is to be used.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 3d day of September, A. D. 1903.

FREDERICK E. SMALL.

Witnesses:

N. C. LOMBARD,

J. H. STEVENSON.