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Patented Dec. 9, 1902.

F. E. SMALL.

METALLIC PACKING FOR PISTON RODS.

Application filed May 22, 1902.)

(No Model.)

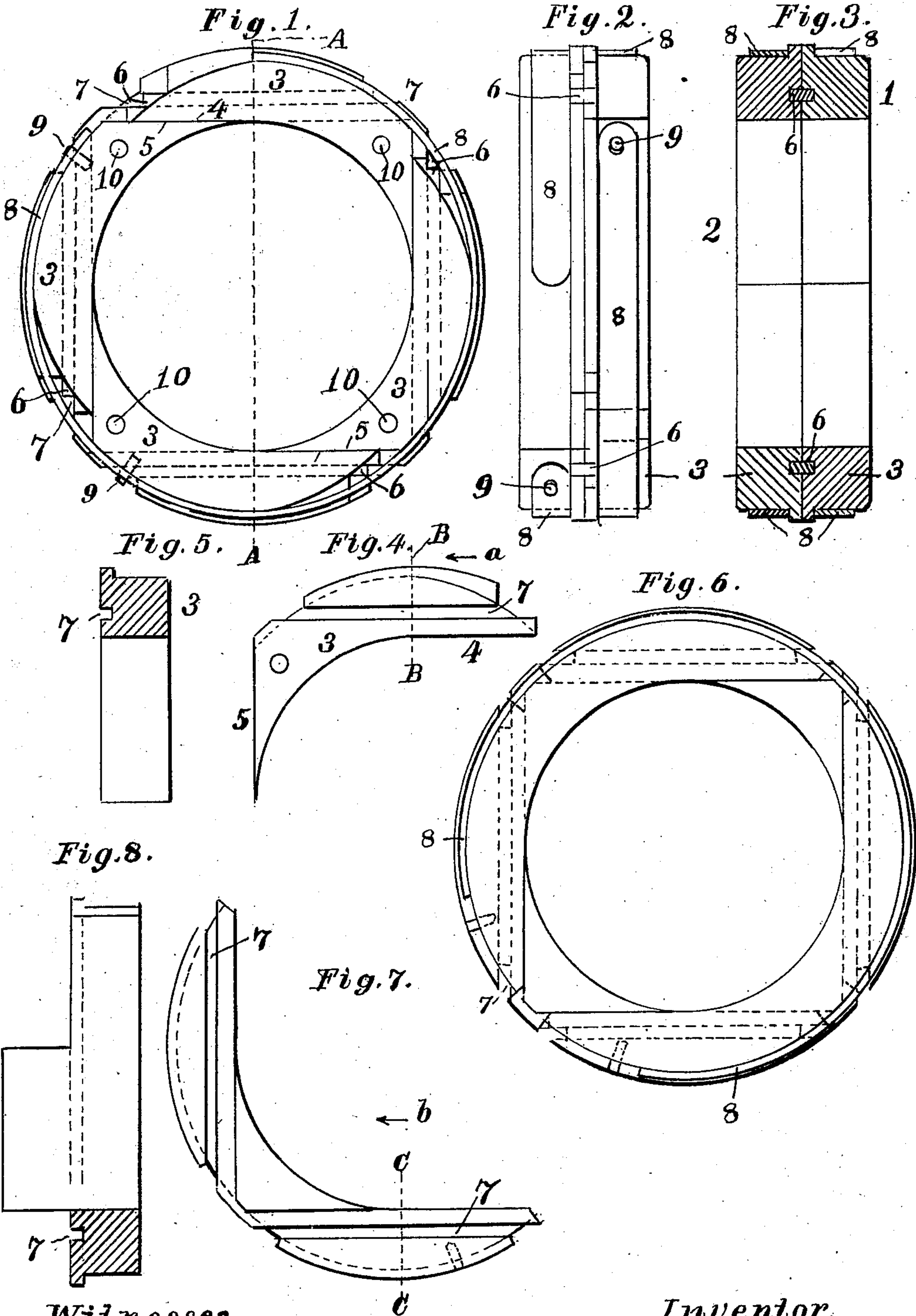


Fig. 8.

Fig. 7.

Fig. 6.

Fig. 4.

Fig. 5.

Fig. 2.

Fig. 3.

Fig. 1.

Witnesses.

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METALLIC PACKING FOR PISTON-RODS.

SPECIFICATION forming part of Letters Patent No. 715,616, dated December 9, 1902.

Application filed May 22, 1902. Serial No. 108,501. (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 other Like Purposes, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to metallic packings for piston-rods and other like purposes, is an improvement upon the inventions shown and described in the Patents Nos. 642,855 and 265,470, issued February 6, 1900, and October 3, 1882, respectively, is especially applicable to that class of metallic packings which are composed of two contiguous packing-rings each made up of a plurality of segments, has for its object the prevention of a possible opening of the joints between said segments which extend from the inner perimeter of each ring to its outer diameter and thereby causing a leakage, 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.

Figure 1 of the drawings is an elevation of a metallic packing having two sectional rings each composed of four segments, as shown and described in the Patent No. 642,855, above referred to, with my present improvement applied thereto. Fig. 2 is an elevation of the same looking at right angles to the axis of the rod upon which it is to be used. Fig. 3 is a section on line A A on Fig. 1. Fig. 4 is an elevation of one of the segments which make up one of the packing-rings looking at the surface thereof which is at a right angle to the axis of the rod and which contacts with the like surface of the segments of the contiguous ring. Fig. 5 is a section on line B B on Fig. 4 looking in the direction indicated by the arrow *a*. Fig. 6 is an elevation of the packing shown and described in the Patent No. 265,470 with my present improvements applied thereto. Fig. 7 is an elevation of one of the ring-segments of said packing looking at the surface thereof which is at a right angle to the axis of the rod and contacts

with the segments of the contiguous ring; and Fig. 8 is a sectional elevation of the same, the cutting plane being on line C C on Fig. 7 looking in the direction indicated by the arrow *b*.

In the drawings, 1 and 2 represent two sets of independent segments 3 of uniform shape, substantially as shown and described in said Patent No. 642,855, above referred to, except as they are modified by the application thereto of my present invention, this particular form of packing being illustrated in Figs. 1, 2, 3, 4, and 5 and is composed of two sets of four segments 3, each segment having an inner tangential surface 4 and an outer tangential surface 5, the outer tangential surface 5 contacting with the inner tangential surface 4 and each segment in one set contacting with and overlapping parts of each of two segments of the other set, as in said prior patent.

In applying my improvement I connect the segments of one ring with the segments of the other ring by tongues 6 and grooves 7, arranged at right angles to each other, said tongues being in fixed positions in the segments of one ring and fitted closely in the grooves in the segments of the other ring, but so that the segments of one ring may slide upon the segments of the other ring as the inner curved surfaces of said segments wear, so that the tension of the springs 8 bearing upon the outer circumferential surfaces of said segments will force said segments into close contact with the piston-rod.

In the packing illustrated in Figs. 6, 7, and 8 each ring of the packing is formed of two segments, and each segment in one ring overlaps and contacts with one-half of each of the two segments of the other ring, and said segments in the contiguous rings are connected together by tongues and grooves arranged at right angles to each other, as described in connection with Figs. 1, 2, 3, 4, and 5. As a matter of convenience in construction I prefer to form grooves in each segment and form the tongue in a separate piece; but it is evident that the tongues may be formed integral with the segment and project therefrom into the grooves formed in the opposing segments, into which grooves said tongues fit sufficiently close to prevent all possibility

of the joints between the segments of the same ring being opened, so as to cause leakage, while at the same time the grooved segments are free to be moved in the direction 5 of the length of the tongues and grooves by the action of the springs 8 thereon to take up the wear of their inner surfaces which contact with the piston-rod.

In the packing illustrated in Figs. 1, 2, 3, 10 4, and 5 one segment in each ring or set of segments has set therein a radially-projecting pin 9, which fits in a hole formed in one end of the spring 8 to prevent said spring being accidentally moved circumferentially about 15 said ring, and each segment in one ring is pivoted to a segment in the other ring by a pin 10 near their outer tangentially-surfaced ends, as in said Patent No. 642,855. In the packing illustrated in Figs. 6, 7, and 8, 20 the springs are mounted as in the Patent No. 265,470.

By the application of tongues and grooves 6 and 7, respectively, to either form of metallic packing herein described any possible 25 opening of the tangential joints between the segments is prevented.

My improvement is applicable to any metallic packing composed of two sectional rings each made up of any even number of 30 segments.

I claim—

1. In a metallic rod-packing, the combination of two sectional rings arranged side by side, around said rod in contact with each 35 other, and each composed of an even number of segments, each segment in one ring overlapping and contacting with portions of two other segments in the other ring; an even number of straight tongues and grooves

formed in the contacting faces of said rings 40 that are at right angles to the axis of the rod upon which they are to be used and arranged with the tongues and grooves on opposite sides of the rod parallel to each other, and interlocking the segments of one ring with 45 the segments of the other ring; and means for forcing said segments into contact with said rod.

2. In a metallic rod-packing composed of two sectional rings arranged side by side 50 around said rod, in contact with each other, and each having an even number of independent packing-segments each having two plane flat parallel sides and outer and inner tangential surfaces at opposite ends thereof, 55 the segments in one ring being pivoted to the segments in the other ring in pairs, and each segment in one ring overlapping portions of two other segments in the other ring, in combination with a corresponding even number of 60 pairs of tongues and grooves formed in the contacting surfaces of the opposing rings, said tongues and grooves being arranged tangentially to a circle of greater diameter than the inner perimeter of said packing-rings, and so 65 arranged that the tongues and grooves on opposite sides of the rod shall be parallel to each other; and means for forcing said segments into contact with the rod to which it is fitted.

In testimony whereof I have signed my 70 name to this specification, in the presence of two subscribing witnesses, on this 15th day of May, A. D. 1902.

FREDERICK E. SMALL.

Witnesses:

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EDWIN A. BABB.