No. 765,479. PATENTED JULY 19, 1904.

J. P. GUNDLACH.

PACKING FOR PISTON RODS OR THE LIKE.

APPLICATION FILED NOV. 27, 1903.

NO MODEL.

Fig. 1.

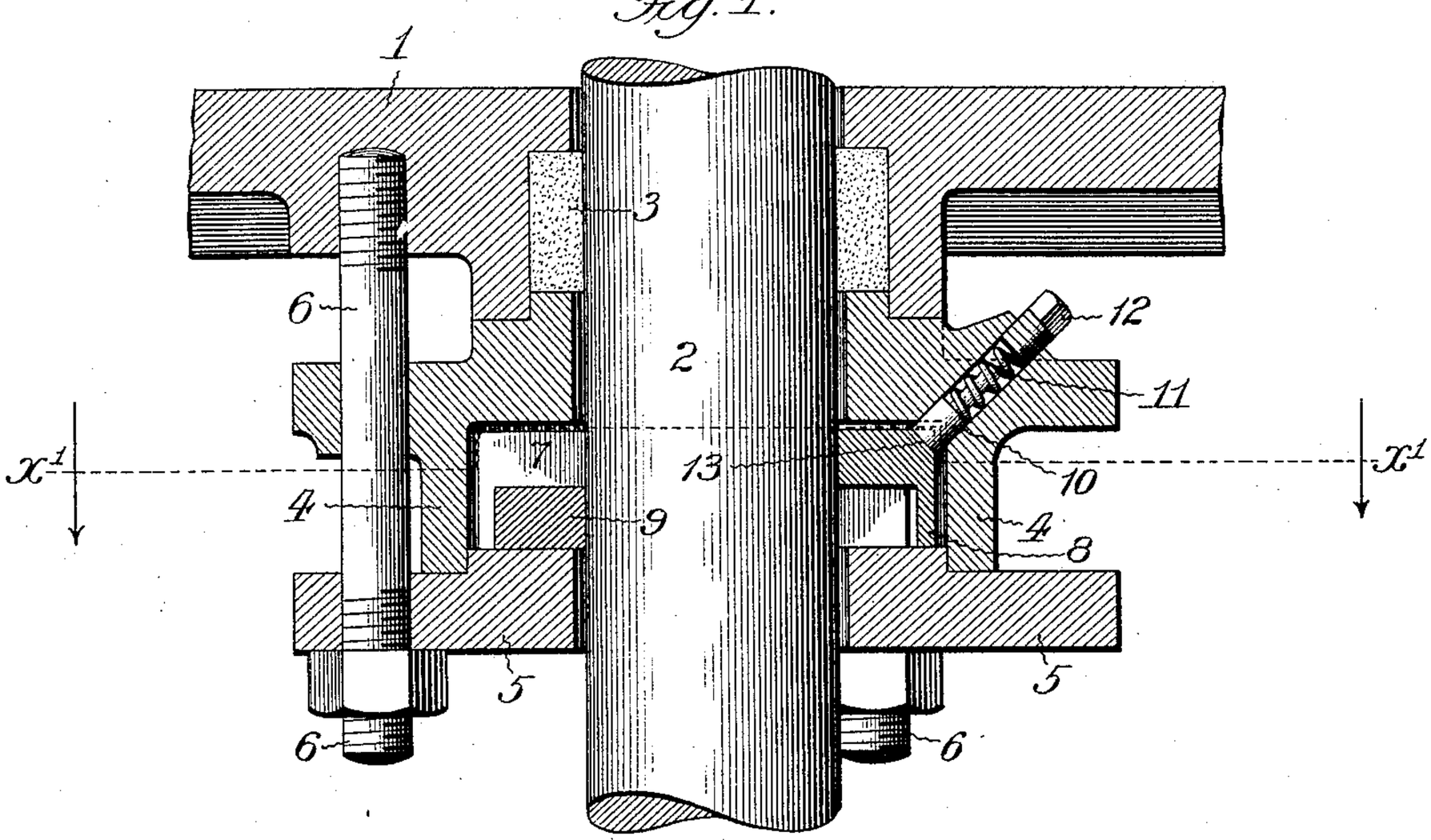
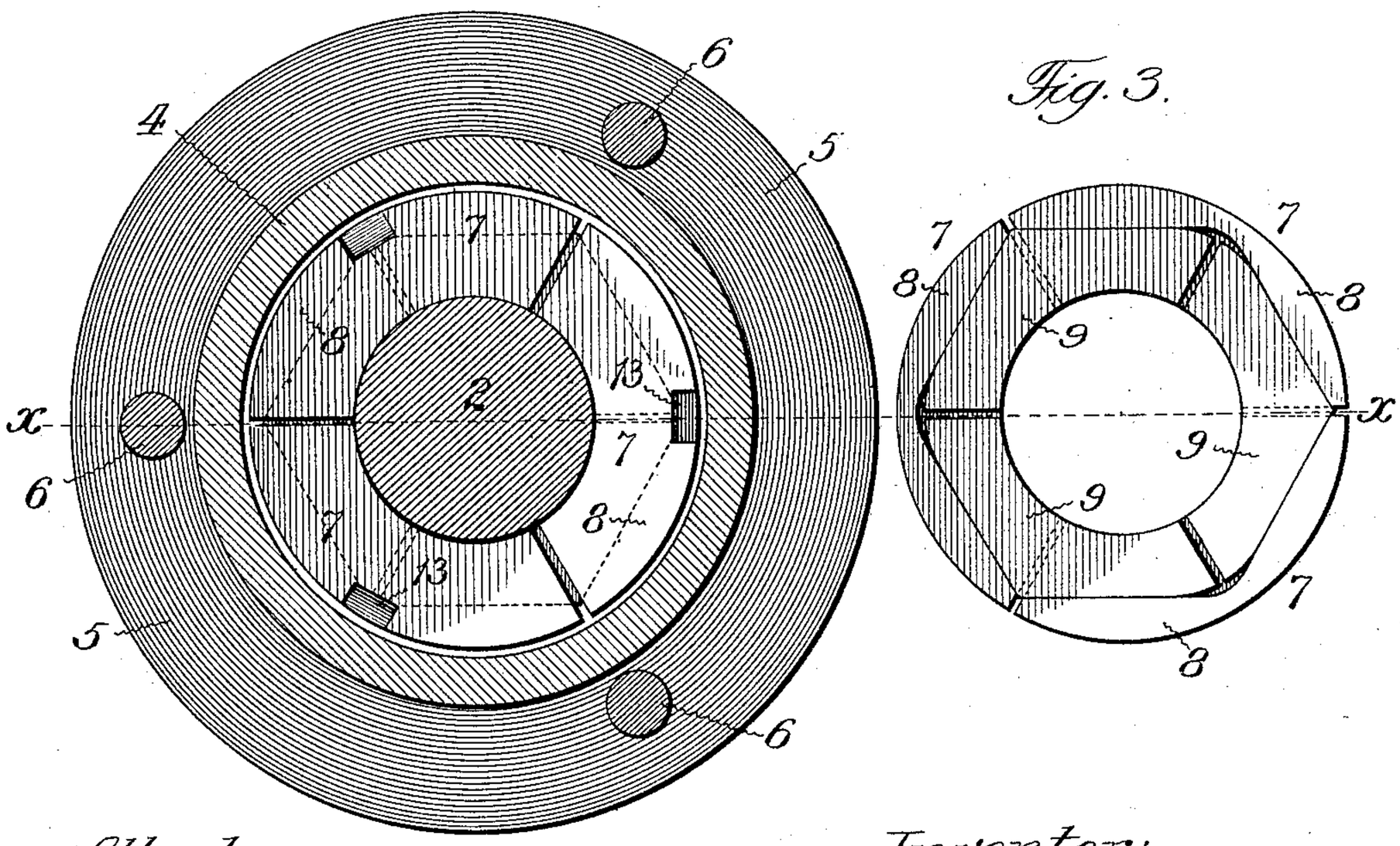


Fig. 2.

Fig. 3.



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No. 765,479. Patented July 19, 1904.

UNITED STATES PATENT OFFICE.

JOHN P. GUNDLACH, OF BELLEVILLE, ILLINOIS.

PACKING FOR PISTON-RODS OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 765,479, dated July 19, 1904.

Application filed November 27, 1903. Serial No. 182,811. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. GUNDLACH, a citizen of the United States of America, and a resident of Belleville, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Packing for Piston-Rods or the Like, of which the following is a specification.

The present invention relates to metallic packing for the piston and other rods of a steam-engine, and has for its object to provide a simple, durable, and efficient structural formation and arrangement of parts adapted to take up the usual wear of the packing and prevent leakage of steam through the parts during long-continued use, all as will hereinafter more fully appear and be more particularly pointed out in the claims.

In the accompanying drawings, illustrative of the present invention, Figure 1 is a longitudinal sectional elevation at line x x, Figs. 2 and 3, of a piston-rod packing embodying the present invention. Fig. 2 is a transverse sectional elevation of the same at line x' x', Fig. 1. Fig. 3 is a front elevation of the sectional packing-ring of the present improvement.

Similar numerals of reference indicate like parts in the different views.

Referring to the drawings, 1 represents a portion of the cylinder-head of an engine having the usual axial bore for the passage of the piston-rod 2 and made of a larger diameter than said rod to permit of the normal lateral vibration of such rod in actual use.

4 is a gland for containing the hereinafter-described sectional packing-ring of the present improvement. The inner end of such gland in the construction shown in the drawings fits the outer end of a counterbore of the axial bore aforesaid and is adapted to confine in place an ordinary elastic packing 3, as usual in the present type of engine stuffing-boxes.

5 is a head forming a closure for the outer end of the gland 4, and 6 represents bolts by which said head 5 and the gland 4 are secured in proper position on the cylinder-head 1 of the engine.

In the present invention the annular packing-ring heretofore referred to as occupying the gland 4 and surrounding the piston-rod 2 comprises a main and a secondary sectional ring member nested together to afford a square or rectangular cross-section to the packing-ring and will have in detail a structural formation as follows:

7 represents a series, usually three in number, of substantially counterpart segmental or stave-like sections assembled together to constitute the main ring member aforesaid and having radial separating-spaces between their adjacent ends in order to permit of a contraction of such main ring member to fit the periphery of the piston-rod in actual use. Each section 7 has a curved inner surface to fit the piston-rod and is provided at its outer and forward end with an overhanging flange 8 to form a receiving-recess for the hereinafter-described sections of the secondary ring member, and the inner face of such flange is angular or V-shaped, as shown, to constitute inclined bearing-surfaces for such sections of the secondary ring member, as hereinafter more fully set forth.

9 represents a series, usually three in number, of substantially segmental or stave-like sections assembled together to constitute the secondary ring member aforesaid and having radial separating-spaces between their adjacent ends to permit of the construction of such secondary ring member to fit the periphery of the piston-rod in actual use. Each section 9 has a curved inner surface to fit the piston-rod and an angular or V-shaped outer surface adapted to bear against the angular or V-shaped bearing-surfaces of the flanges 8 aforesaid and in the manner hereinafter set forth. The segments or sections 9 are adapted to occupy the receiving-recess formed by the overhanging flanges 8 aforesaid and with their outer faces flush with the end faces of such flanges and with their inner faces in surface contact with the adjacent faces of the segments or sections 7, which comprise the main ring member.

In the present improved construction the one series of segments or sections are so arranged with relation to the other series of segments or sections that the radial separating-spaces of the one series will be located

midway of the radial separating-spaces of the other series and so that the apex of the V-shaped outer surface of each segment or section 9 will be located at the separating-space between the next adjacent segments or sections 7, as illustrated more particularly in Fig. 3 of the drawings. With the described arrangement the continuity of the various seams or spaces between the different segments or sections comprising the packing-ring is broken and a leakage of steam through such packing-ring prevented in a very effective manner. In addition the described V-shaped formation and arrangement, as described, of the segments or sections 7 and 9 is adapted to effect a simultaneous radial movement of the various sections in a positive, accurate, and uniform manner to accommodate the same to the periphery of the piston-rod.

In the present construction steam from the cylinder leaking past the ordinary elastic packing 3 fills the chamber of the gland 4 and exerts a pressure against the rear end and upon the periphery of the annular packing-ring to hold the same in a steam-tight manner against the inner face of the closure-head 5 of the gland 4 and at the same time force the segments or sections comprising the packing-ring inward against the piston-rod to attain a steam-tight fit of the parts.

10 is a pressure-block slidingly arranged in a guide-orifice in the rear end of the gland 4 and having a radial and rearwardly-inclined position with relation to the longitudinal axis of such gland, as illustrated in Fig. 1. A series of such blocks corresponding in number to the segments or sections 7 and individual thereto will be employed, and the respective inner ends of said blocks are adapted to have bearing against the rear corner of the respective segments or sections 7, preferably by means of a centrally-arranged angular depression 10, in such rear corner of the respective segments or sections 7, as illustrated in Figs. 1 and 2.

11 is a spring individual to a block 10 and tending to force said pressure-block upward to maintain the present packing-ring in proper position around the piston-rod and against the gland-head 5 in a yielding manner.

12 is a screw-plug fitting the outer end of each guide-groove aforesaid and adapted to form an adjustable abutment for the spring 11.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a packing for piston-rods and the like, the combination of a rod, a gland surrounding said rod and an annular packing-ring arranged within said gland and comprising a main ring member formed by a series of stave-like sections having radial separating-spaces and flanges which overhang to form a receiving-recess, and a secondary ring member formed by a series of stave-like sections having radial separating-spaces and adapted to occupy the receiving-recess aforesaid, the radial separating-spaces of the one series being arranged midway between the separating-spaces of the other series, substantially as set forth.

2. In a packing for piston-rods and the like, the combination of a rod, a gland surrounding said rod, and an annular packing-ring arranged within said gland, and comprising a main ring member formed by a series of stave-like sections provided with flanges which overhang to form a receiving-recess and have angular inner surfaces, and a secondary member formed by a series of stave-like sections fitting the receiving-recess aforesaid and having angular outer faces, substantially as set forth.

3. In a packing for piston-rods and the like, the combination of a rod, a gland surrounding said rod, and an annular packing-ring arranged within said gland, and comprising a main ring member formed by a series of stave-like sections having radial separating-spaces and provided with flanges which overhang to form a receiving-recess and have angular inner surfaces, and a secondary member formed by a series of stave-like sections having radial separating-spaces and provided with angular outer faces, the radial separating-spaces of the one series being arranged midway between the separating-spaces of the other series, substantially as set forth.

4. In a packing for piston-rods and the like, the combination of a rod, a gland surrounding said rod and an annular packing-ring arranged within said gland and comprising a main ring member formed by a series of stave-like sections having radial separating-spaces and flanges which overhang to form a receiving-recess, and a secondary ring member formed by a series of stave-like sections having radial separating-spaces and adapted to occupy the receiving-recess aforesaid, the radial separating-spaces of the one series being arranged midway between the separating-spaces of the other series, and means for yieldingly holding the said ring members in place around the piston-rod, substantially as set forth.

5. In a packing for piston-rods and the like, the combination of a rod, a gland surrounding said rod, and an annular packing-ring arranged within said gland, and comprising a main ring member formed by a series of stave-like sections having flanges which overhang to form a receiving-recess, and a secondary ring member formed by a series of stave-like sections adapted to occupy the receiving-recess aforesaid, and means for yieldingly holding said ring members in place the same comprising a series of pressure-blocks, springs tending to force said blocks inwardly and adjustable abutment-plugs for said springs, substantially as set forth.

6. In a packing for piston-rods and the like the combination of a rod, a gland surrounding

said rod and an annular packing-ring arranged within said gland and comprising a main ring member formed by a series of stave-like sections having radial separating-spaces and flanges which overhang to form a receiving-recess, and a secondary ring member formed by a series of stave-like sections having radial separating-spaces and adapted to occupy the receiving-recess aforesaid, the radial separating-spaces of the one series being arranged midway between the separating-spaces of the other series, and means for yieldingly holding said ring members in place, the same comprising a series of pressure-blocks, springs tending to force said blocks inwardly and adjustable abutment-plugs, substantially as set forth.

Signed at Belleville, Illinois, this 21st day of November, 1903.

JOHN P. GUNDLACH.

Witnesses:
JACOB GUNDLACH, Jr.,
EDW. R. GUNDLACH.