

No. 636,512.

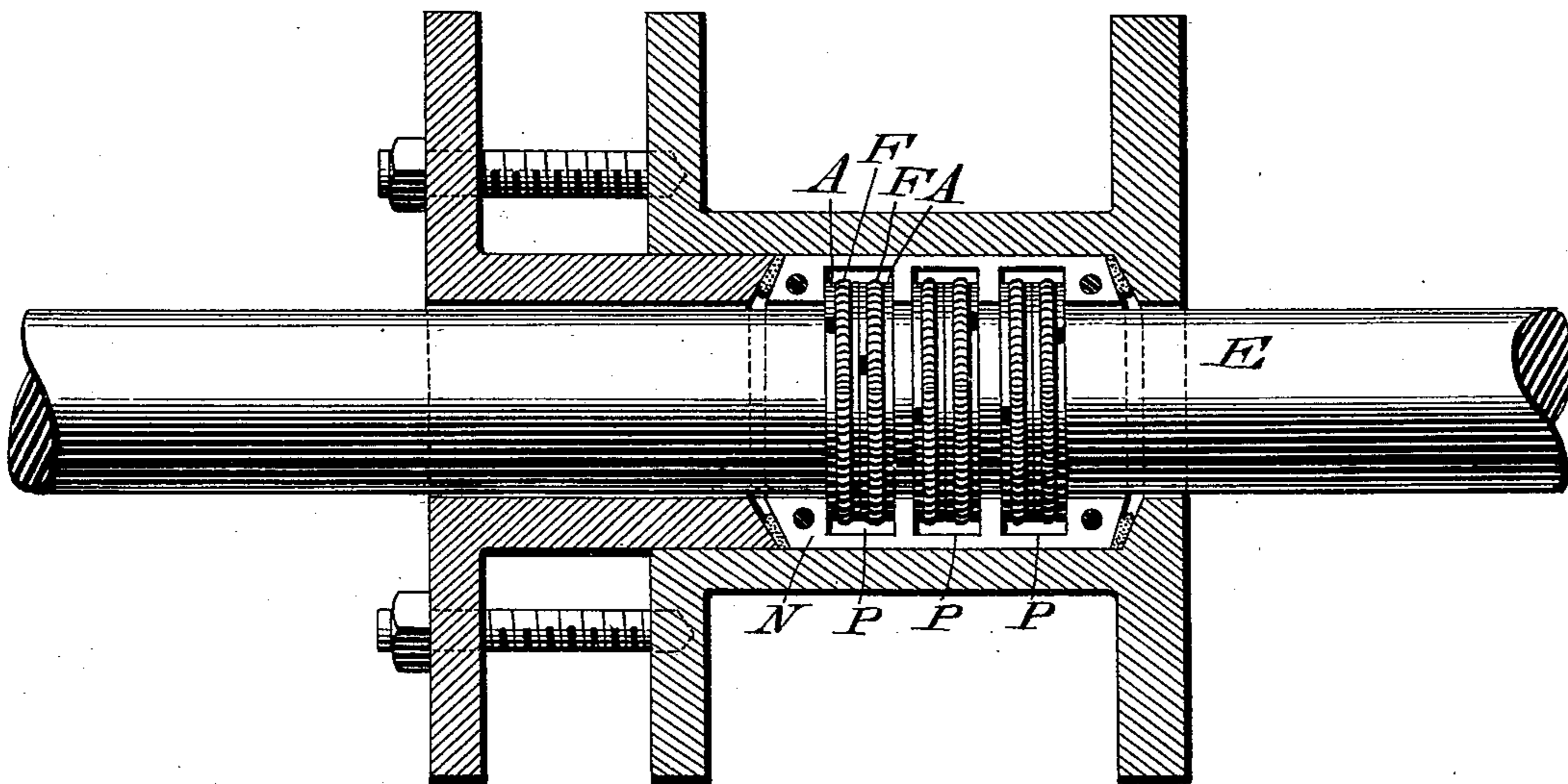
Patented Nov. 7, 1899.

A. W. FRANCE.  
PISTON AND VALVE ROD PACKING.

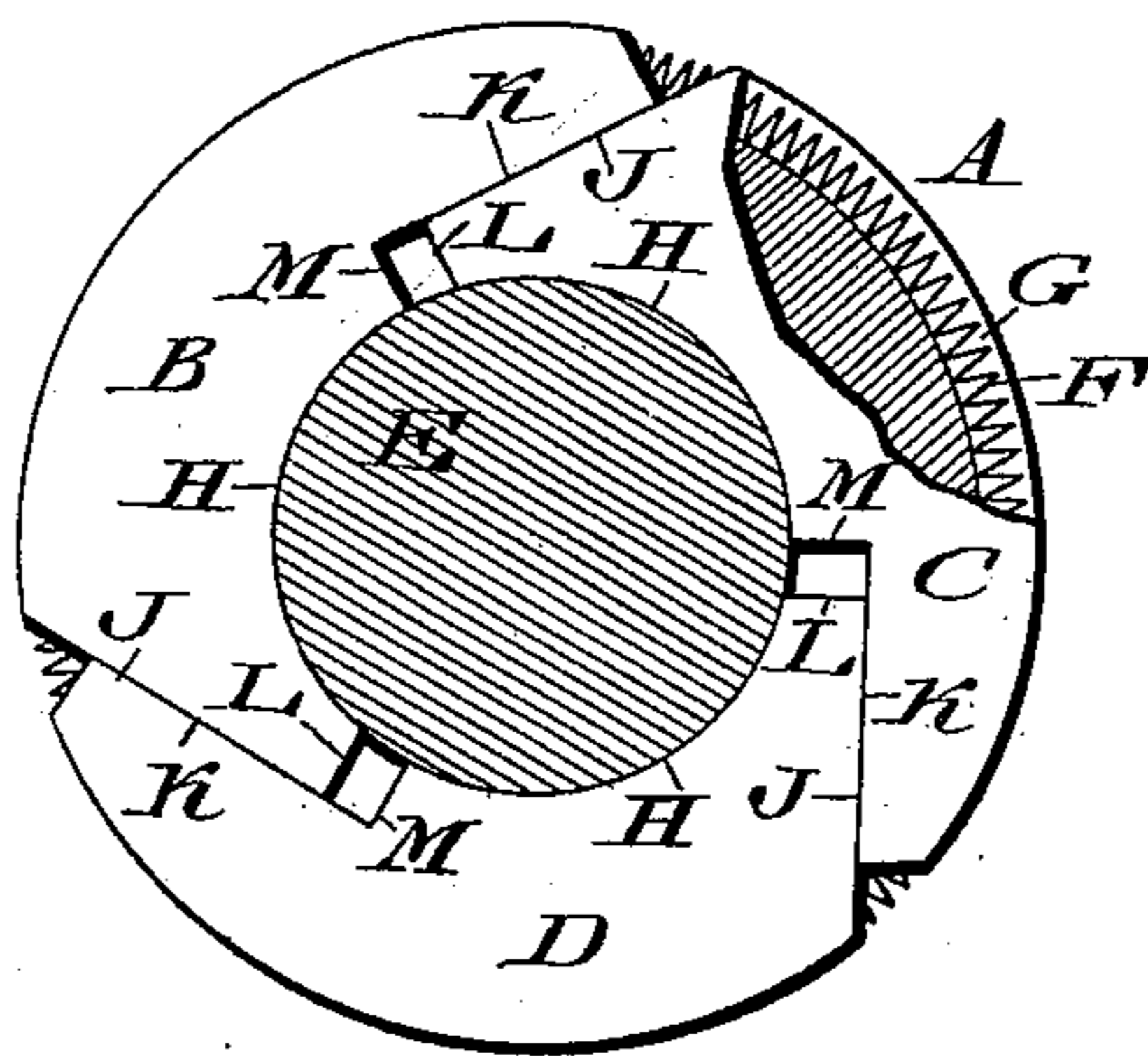
(Application filed June 13, 1899.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

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## PISTON OR VALVE ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 636,512, dated November 7, 1899.

Application filed June 13, 1899. Serial No. 720,358. (No model.)

*To all whom it may concern:*

Be it known that I, ADAM WARREN FRANCE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Piston or Valve Rod Packing, which improvement is fully set forth in the following specification and accompanying drawings.

10 This invention relates to an improvement in a packing for a piston or valve rod; and it consists of the structural features hereinafter fully described and claimed.

15 Figure 1 represents a longitudinal section of a piston-rod embodying my invention. Fig. 2 represents a side elevation of one of the rings of the packing constructed in accordance with my invention.

20 Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates a packing-ring consisting of three or more sections and in the present case of three sections B C D. E designates a piston-rod, around 25 which said sections are situated and in contact with which they are held, for instance, by a spring F, situated within the circumferential groove G in the outer periphery of said sections of the packing-ring. The inner peripheries H of said sections are of the same radii, and their combined length is less than the circumference of a circle of such radius, so that said sections can be compressed to conform to the rod which they pack when a 35 portion or portions of said rod of less diameter than normal passes through the packing-ring, it being understood, of course, that said sections can likewise expand to conform to a portion of the rod whose diameter is greater 40 than normal. These sections B C D have abutting faces, upon which the adjacent sections slide relatively and which form steam-joints, each section having an outer abutting face J and an inner abutting face K. These 45 abutting faces are tangential to the inner peripheries of the sections, but do not necessarily intersect the same, and in the instance illustrated shoulders L and M are situated between the inner ends of said abutting faces 50 J and K and said inner peripheries. The abutting faces of each section are at an angle

to each other, and the angles of the different sections correspond, so that the steam-joints between these abutting faces are maintained when the sections move relatively to conform 55 to the inequalities in the rod passing there-through. For instance, if the unevenness of the rod E causes the section B to move outwardly its outer face J, sliding upon the inner face K of section D, would tend to separate the inner face K of said section B from the outer face J of section C. This is resisted, however, by the movement of section C upon its inner face K and the outer face J of section D, whereby the outer face J of section C follows the inner face K of section B 65 to maintain the steam-joint. It is understood that the corresponding angles of the abutting faces of different sections maintain the parallelism of such abutting faces that have a tendency to separate, as in the case of the faces J and K of sections B and C, above described. The compression of the sections in regaining their normal position or in being compressed from normal to accommodate a 75 reduction in the diameter of the rod, being the reverse of the expanding movement above described, is plainly obvious.

It is seen that I have produced a sectional packing-ring in which the steam-joints between the abutting faces of adjacent sections are maintained under all conditions and that the combined lengths of the inner peripheries of the sections being less than the circumference of a circle of the same radius as the 85 inner peripheries the packing-ring can be compressed as well as expanded from its normal position.

I am aware that it has been proposed to construct a sectional packing-ring of two 90 sections having tangential parallel abutting faces. In this device, however, there is no correlative movement between the different sections of the ring, so that it is possible for one section to move away from the other section to break the steam-joints formed by the abutting faces, the same being due to the absence of correlative movement between the sections and the fact that the two sections can only move in the same path when their 100 abutting faces are in contact, so that when one section moves away from the other the

latter cannot follow. In my device the sections move in relative angular paths, so that when section B is moving in the path of its face J section C moves on the path of its face K, and thus the movement of one of my sections causes a corresponding change of relation or correlative movement of all the sections, which results in the maintenance of the steam-joints formed by the abutting faces.

10 In Fig. 1 of the drawings I have shown a piston-rod packing by which the rings can be readily applied to stuffing-boxes of ordinary construction and which consists of a sectional case N, having a plurality of interior grooves P, in which the packing-rings are situated in the usual manner, adjacent packing-rings being doweled to break joints.

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

1. A packing-ring consisting of three or more relatively-movable compressible sections each section having inner and outer

abutting faces forming steam-joints, said faces extending at an angle to each other. 25

2. A packing-ring consisting of three or more relatively-movable compressible sections each section having inner and outer abutting faces forming steam-joints, said faces extending at an angle to each other, and means for holding said sections in contact under tension. 30

3. A packing-ring consisting of three or more relatively-movable compressible sections each section having inner and outer abutting faces forming steam-joints, said faces extending at an angle to each other, the inner periphery of said sections being of the same radii and the combined length of said inner peripheries being less than the circumference of a circle of said radius. 40

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Witnesses:

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