

No. 674,568.

Patented May 21, 1901.

J. WHEELLOCK.

METALLIC PACKING FOR STEAM PISTONS.

(Application filed Nov. 1, 1900.)

(No Model.)

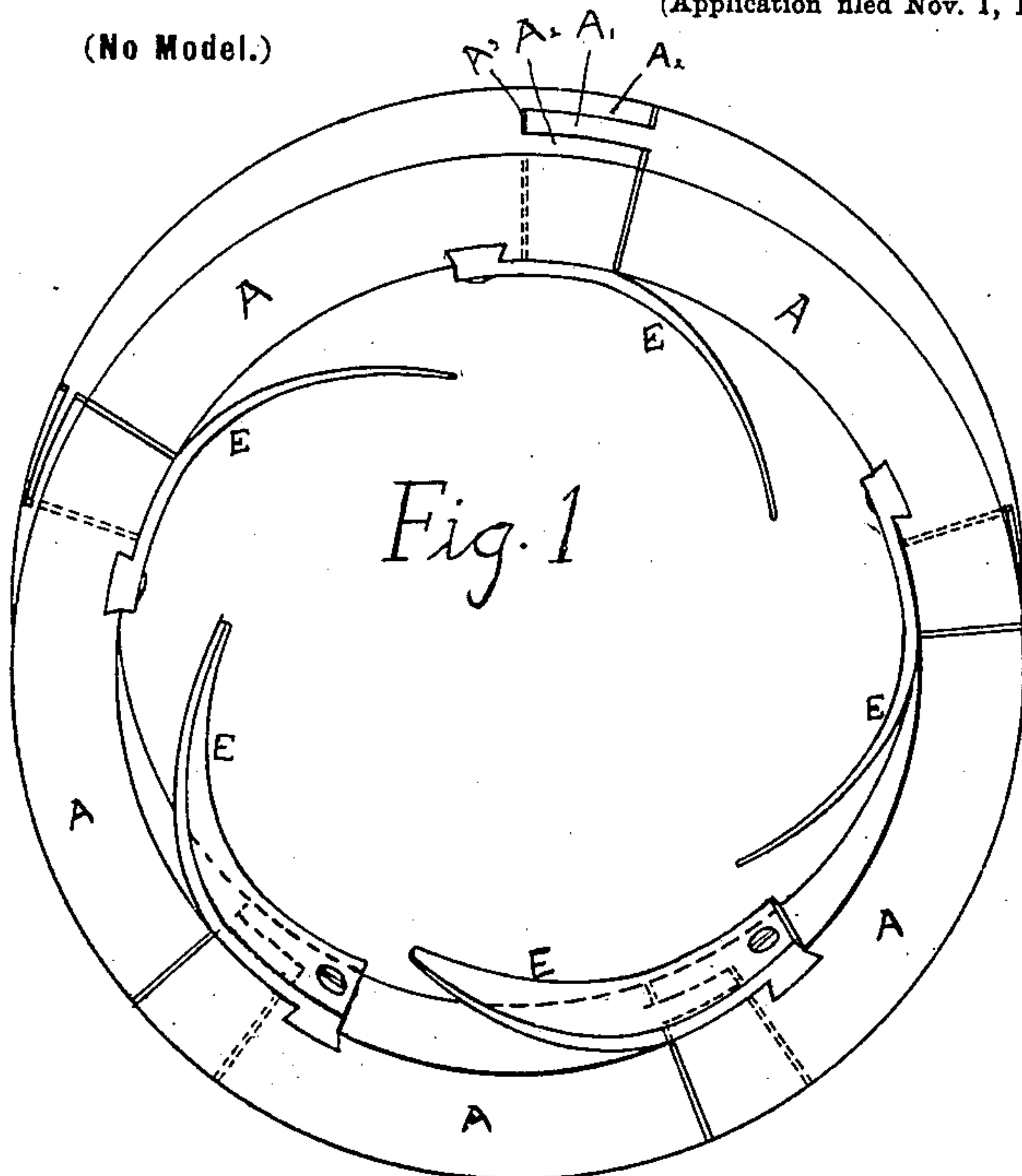


Fig. 1

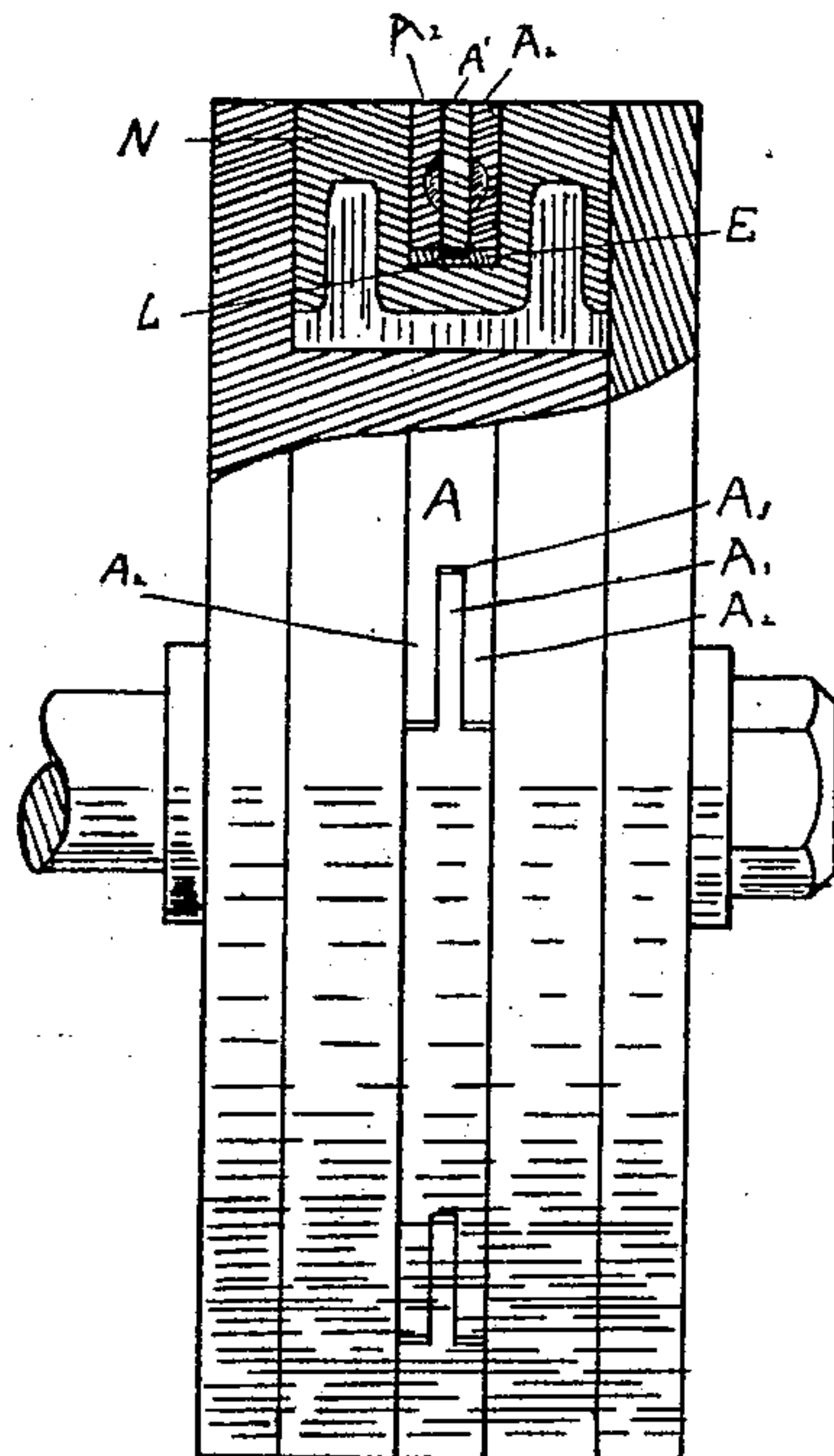


Fig. 2.

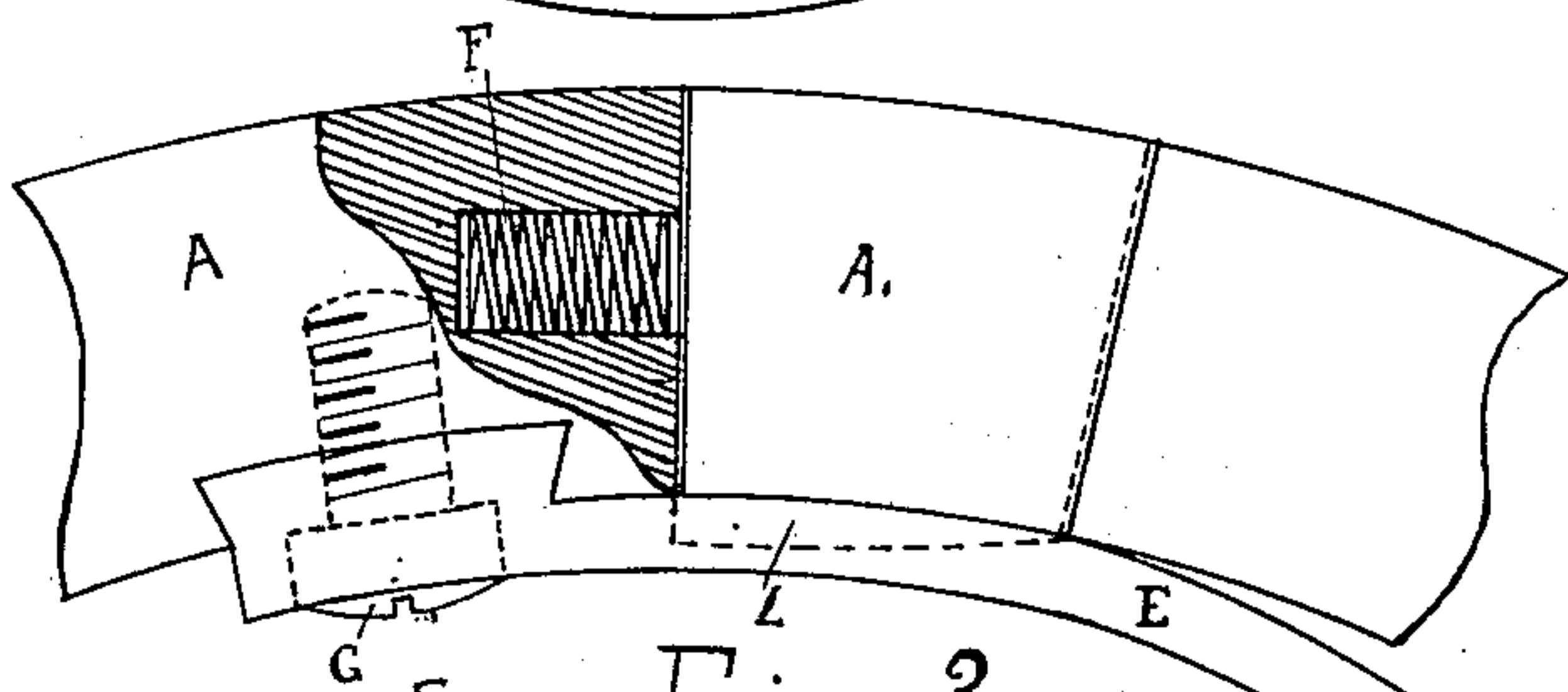


Fig. 3.



Fig. 4

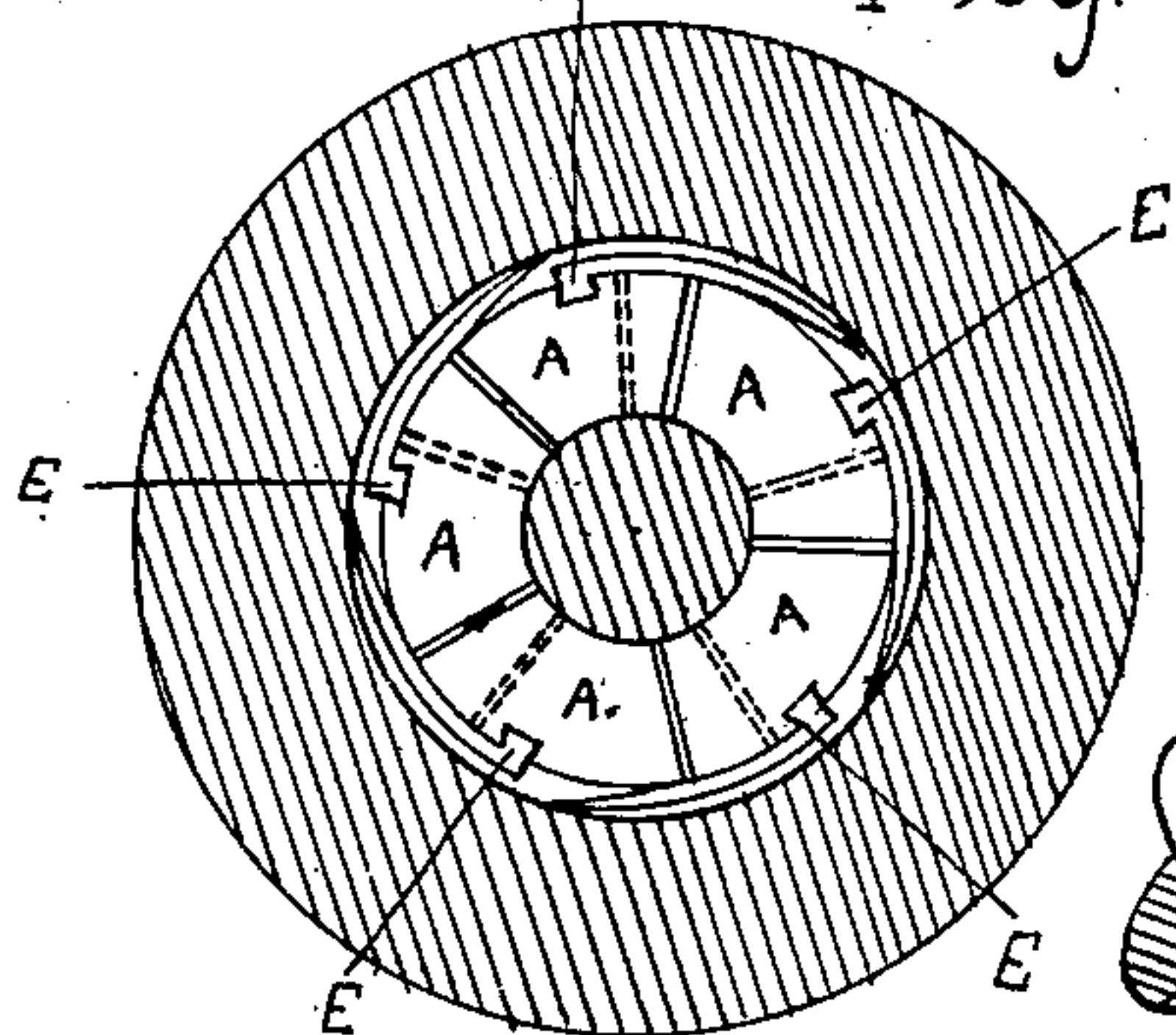


Fig. 6.

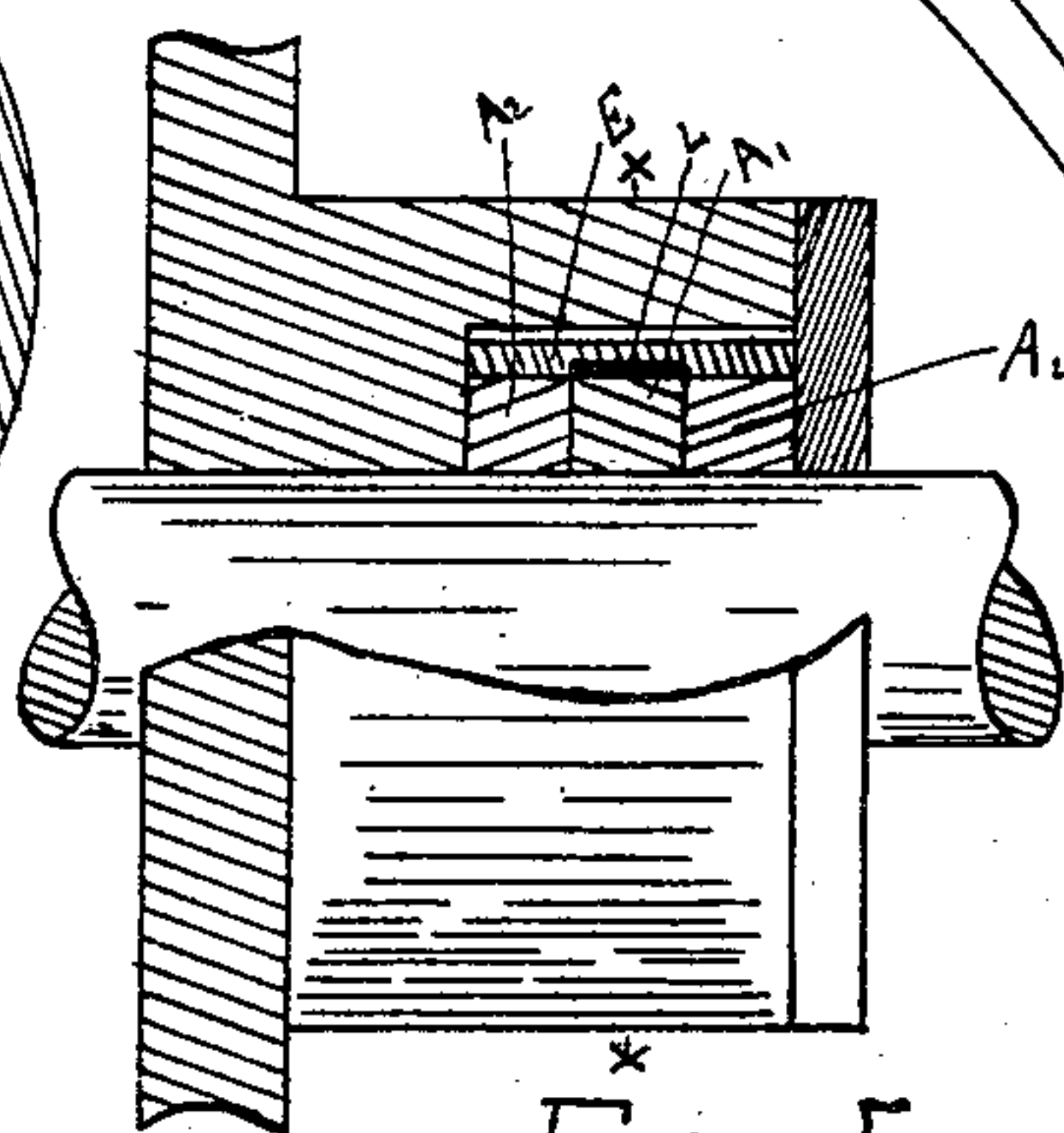


Fig 5.

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METALLIC PACKING FOR STEAM-PISTONS.

SPECIFICATION forming part of Letters Patent No. 674,568, dated May 21, 1901.

Application filed November 1, 1900. Serial No. 35,097. (No model.)

To all whom it may concern:

Be it known that I, JEROME WHEELOCK, a citizen of the United States, residing in Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Metallic Packing for Steam-Pistons, of which the following, in connection with the accompanying drawings, is a specification sufficiently clear and descriptive to enable those skilled in the art to which my invention belongs to make and use the same.

My invention relates to packing such as is generally known as "segmental ring-packing," and has for its objects, first, to minimize the friction of the piston in the cylinder by reducing the surfaces bearing upon it; second, to reduce the weight of the piston, and, third, to provide break-joints for the segments of the packing-ring, which shall be at once steam-tight and uniformly self-adjusting to the wear of the parts.

To these ends my invention consists in the improved construction of the segmental packing-ring and also in a new and improved method of constructing a steam-tight self-adjusting break-joint and springs actuating the packing-ring, as will be hereinafter fully described, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 represents a view in perspective of a complete piston-packing ring put together separate from the piston. Fig. 2 is a side elevation of a steam-piston with the packing-ring in position, partly broken away to show the sectional construction. Fig. 3 shows in detail the construction of the break-joint. Fig. 4 shows uncompressed the spring used to make uniform the adjustment made necessary by wear. Fig. 5 is a side elevation, partly broken away, of a "stuffing-box" of a cylinder, showing the application of my invention to piston-rods. Fig. 6 is a cross-section through the stuffing-box and piston-rod on line *xx*, Fig. 5.

Similar letters refer to similar parts.

In the accompanying drawings, A is a single segment of the packing-ring. In one end of each segment a slot A³ is cut, forming the lips A² A². The other end of each segment is cut away on each side to form a tongue A', which fits into the slot A³.

On the slotted or female end of each segment, at a convenient distance from the bottom of the slot A³, a slightly-tapering dovetail slot is cut transversely across the inside of the segment. Into this slot is fitted a flat steel spring E, being in width the same as the segment A. The spring E besides being held in place by being fitted tightly into the above-mentioned dovetail slot is made still more secure by means of the screw G. The curve of the spring E is so designed that when compressed its outer portion shall coincide with the circle of the inside of the segment A as far as the ends of the lips A² A². Thus it will be seen that the lips A² A², together with the spring E, form a pocket on the female end of each segment, into which the tongue A' or male end of each adjoining segment shall fit, allowing a considerable space in which the ends of the segment may separate and yet maintain a steam-tight break-joint. In the female end of each segment, at the bottom of the slot A³, a hole is drilled, partially cutting the lips A² A², into which is inserted a spiral spring F, (see Fig. 3,) which when the packing-ring is put together presses against the male end A' of the segments, with the result that the separation of the segments due to wear is uniformly divided among all the joints and not distributed unequally, as would otherwise be the case in engines of large diameter of cylinder. The springs E, pressing against the bottom of a groove in the center ring N, keep the packing-ring pressed closely against the cylinder. As the packing-ring expands and has to adjust itself to maintain a fit in the cylinder, the inner side of the packing-ring ceases to be concentric with the outside. Consequently the inner corner of the tongue A' tends to change its relative position. To meet this tendency, a slot or groove L is milled in the outside of the spring E, into which, as the parts wear, the male end A' slides, thus compensating for the unequal wear and also helping to form a more perfectly steam-tight joint. While the slot L is a necessary feature of my invention in its application to pistons of small and medium diameter, in its application to pistons of large diameter the spring E may be made without the groove or slot L and still retain all the important advantages of my invention.

The springs E from the fact that they all point in the same direction exert a rotative influence which causes the packing-ring when in use to be turned gradually in its groove in the center ring, thus tending to equalize the wear and making the bore of the cylinder wear perfectly round and true.

In the construction of packing-rings of large diameter it is desirable to place an additional flat spring similar to E at the middle of each segment. This additional spring is made the same as the spring E, except that the groove or slot L need not be made, and it is attached in a like manner.

It is well known to those skilled in the art to which my invention belongs that it is of great advantage to have that portion of the packing-ring which is in contact with the cylinder constructed of homogeneous material. It will be readily seen that by my method of construction this advantage is obtained.

To apply my invention to piston-rods, it is

necessary to reverse the springs and break-joints to cause the packing-ring to contract to keep in contact with the piston-rod, thus making a self-adjusting, tight, and serviceable joint. (See Figs. 5 and 6.)

What I claim as my invention, and desire to procure by Letters Patent, is—

In a metallic segmental packing consisting of a series of segments and flat curved springs fastened to the ends of the segments, each spring being indented into the segment and made flush with the segment at the point of break-joint thereby making a covering at the under side, the curves of the springs leading one way in the grooves adapted to cause a rotative movement of the packing in its grooves substantially as shown and described.

JEROME WHEELLOCK.

Witnesses:

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