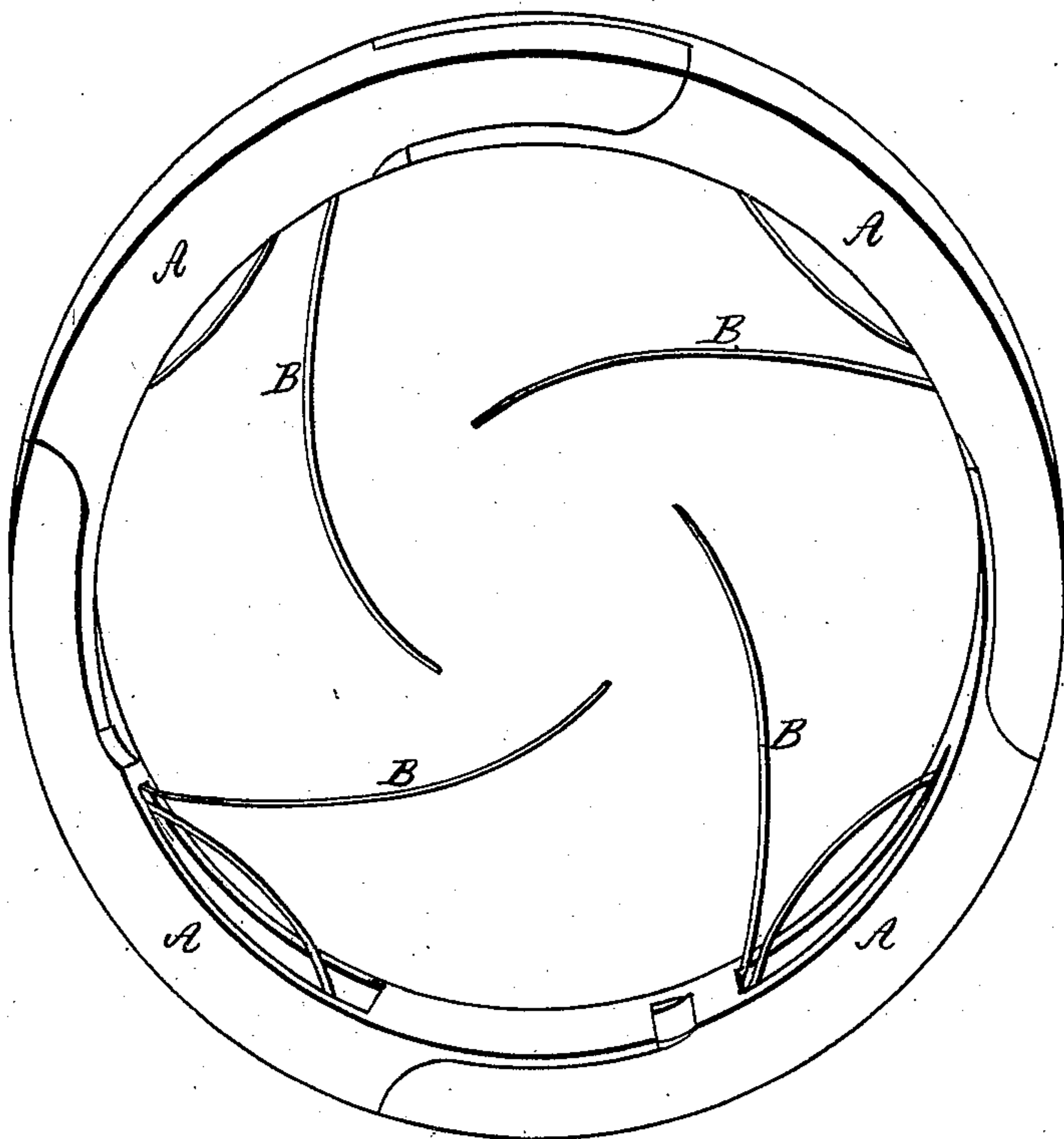
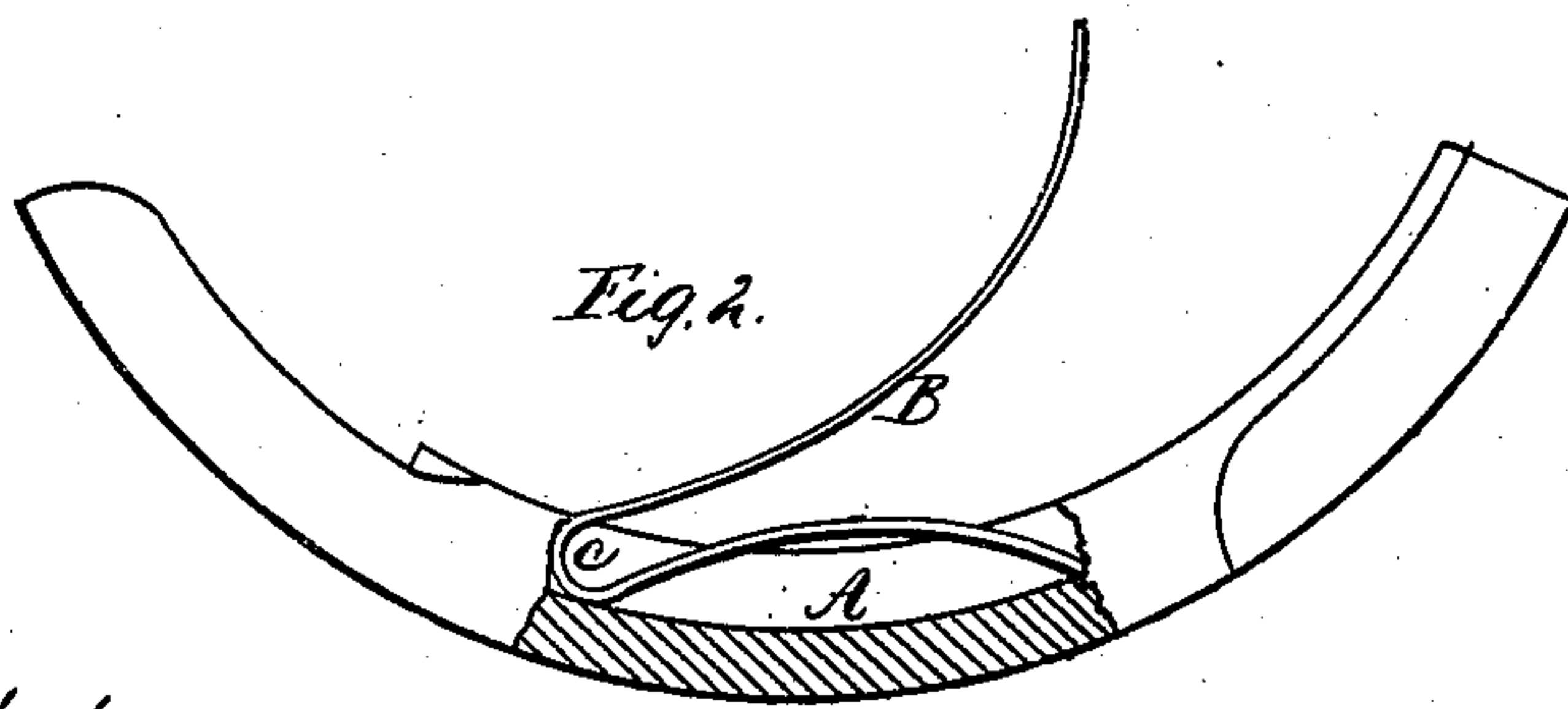


*J. Wheelock,*  
*Steam-Piston Packing,*  
*N<sup>o</sup> 99,990- Patented Feb. 15, 1870.*

*Fig. 1.*



*Fig. 2.*



*Witnesses,*  
*L. B. March*

*Geo. Southwick*

*Inventor,*  
*Jerome Wheelock*



# United States Patent Office.

JEROME WHEELOCK, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 99,990, dated February 15, 1870.

## STEAM PISTON PACKING.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, JEROME WHEELOCK, of Worcester, in the county of Worcester, and State of Massachusetts, have invented new and useful Improvements in Springs for Steam Piston Packing; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings which make a part of this specification, in which—

Figure 1 is an elevation of a segmental steam packing ring to which my improved springs have been applied.

Figure 2 represents a segment of said ring, with a part of the side removed, the better to show a part of the spring.

Same letters of reference refer to like parts in both figures.

This invention relates to certain improvements in that class of pistons in which sectional adjustable or other expansive packing rings are used, and which require to be partially held in place by the action of springs, to insure more perfect action of the steam in holding them to the inner surface of the cylinder.

The invention consists in combining with an adjustable expansive packing ring a series of springs, which are made in a double elliptic form, and of such a shape and arrangement with each other, and with the packing rings, as will cause the said packing rings to be kept slightly pressed out against the cylinder, and at the same time give the rings a revolving motion; the whole of which, with their action, will be hereinafter more fully explained.

A represents a sectional metallic expansive steam packing ring, composed of four, more or less, segments, the ends of which are so arranged and fitted as to break joints with each other.

This ring may be used in connection with a piston provided with one or more annular grooves turned on its periphery, into which grooves the rings should be loosely fitted. They should be turned the same diameter as the bore of the cylinder, and by the arrangement of the joints they are allowed to expand to compensate for any wear.

Inside of each segment are cast or made cavities or pockets, (see fig. 2,) which extend outward.

In each of these pockets are fitted the double elliptic springs B.

The segments A are mainly pressed out by the action of the steam in the cylinder; but in order to prevent the rings from collapsing when no steam is used, when the segments are partially worn away, it has been found necessary to use a spring to keep them at all times slightly pressed against the inner surface of the cylinder.

Many devices have heretofore been tried, and much damage and waste of steam have been caused by the use of adjustable steam packing, which might have been averted by the use of a proper spring.

In many cases a stiff spring has been used, pressing the packing firmly against the inner surface of the cylinder, thereby causing the same to be scratched and roughed when the piston was moved without steam.

In other cases a spring has been used which soon wears or becomes "set," thereby being of no value for the purpose intended.

To overcome these and other objections, and perfect the operation of steam adjustable piston packing, I have invented the within described spring. I have applied it to a large number of engines of various styles within the last year, and it has been found most successful in its operations.

By reference to fig. 2, it will be seen that the pockets in the segments are made longer at their bottom. It will also be seen that the short wing of springs B are curved inward, or in opposite direction to the longer or outside wing.

The springs should be made of a proper width to correspond with the width of the pockets in the segments. They should be properly rounded at c, fig. 2, to admit of an easy action, and to allow the wings of the springs to act independent of each other.

The length of the short wing should be such as to allow the ends to come nearly against each end of the pocket. This wing should be slightly curved inward.

The outer or longer wing of the spring should be of such a length as that when it is compressed it will come directly under the joint of the packing, and it should be curved to give the necessary amount of spring action, which may be varied according to circumstances.

Their operation is as follows:

The packing rings having been fitted to the grooves of a properly constructed piston, and the springs properly fitted into the pockets of the segments, care being taken to have the outer ends of the springs all point in one and the same direction. Now, by compressing the ends of the springs closely under each joint, and placing the packing in its proper place in the cylinder, it will be seen that by liberating the springs the extreme end will take a bearing on the bottom of the groove in the piston.

It will also be seen that this end comes in contact with the bottom of the groove at a point not directly opposite to its center line, and all the ends bearing in the same direction, and acting in connection with the motion of the piston, will give a rotary motion to the packing rings, thereby changing their position in the grooves, and causing the cylinder and packing surfaces to wear extremely smooth.

By making a spring in this or a similar shape, great



elasticity and ease of action are obtained within a small space, as both wings of the springs are affected simultaneously, and the elasticity of the short wing is transmitted to the longer wing by its being confined in the pocket at c, and any compression of the longer wing tends to straighten the curved part of the short wing, thereby confining it more firmly in the pocket.

The spring also acts in a manner to keep the joints pressed together, and should any wear result from long use, it will be at the extreme end, causing no injury to the spring.

Having thus described my invention,  
What I claim, and desire to secure by Letters Patent, is—

In combination with the packing ring A, the springs B, the latter fitted to the former, and operating substantially as shown and described.

JEROME WHEELLOCK.

Witnesses:

L. B. MARCH,

GEO. H. SOUTHWICK.