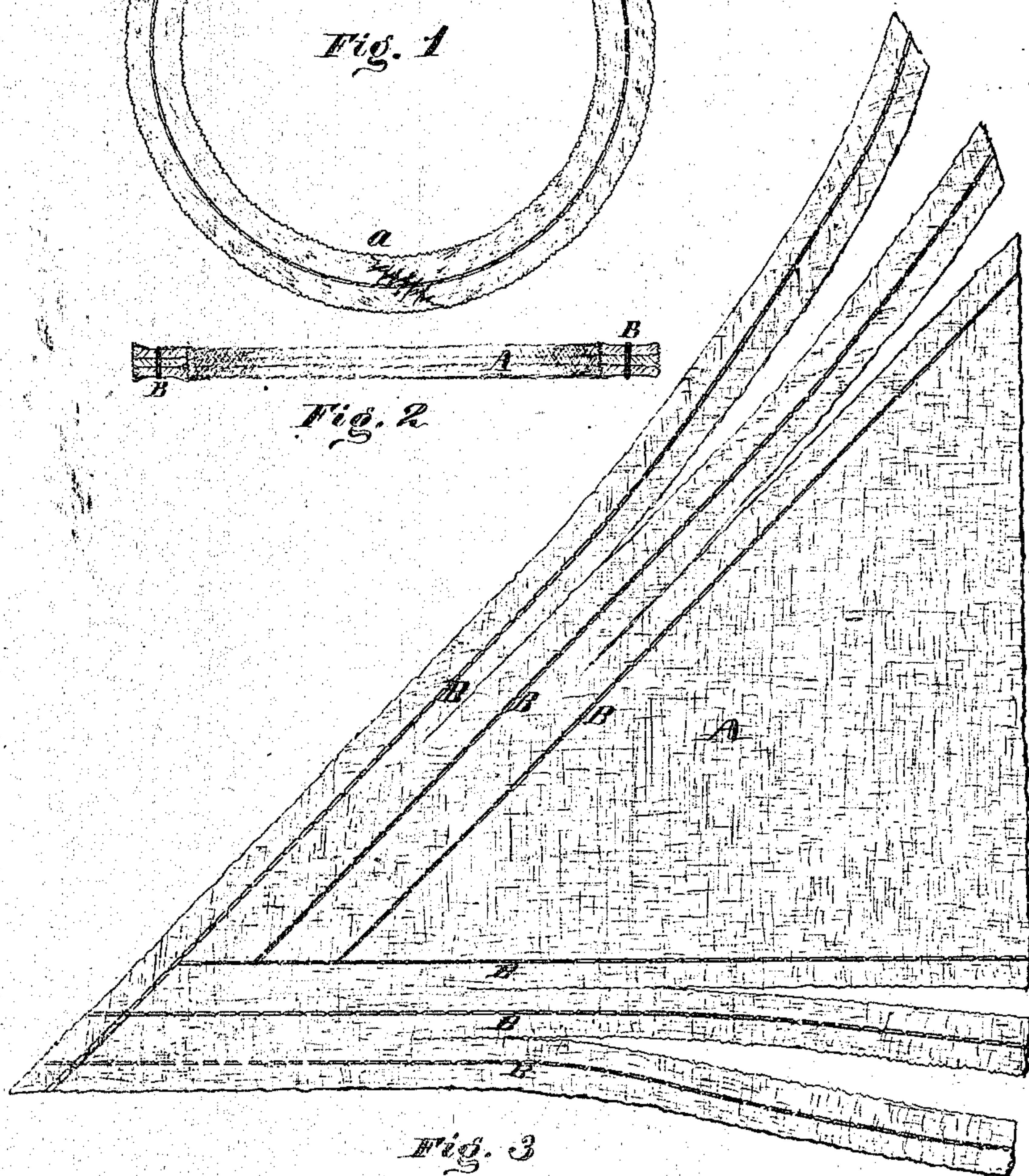
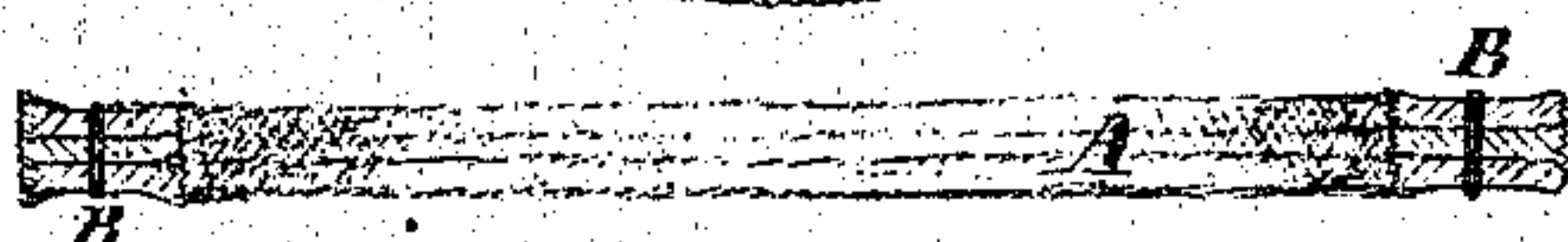
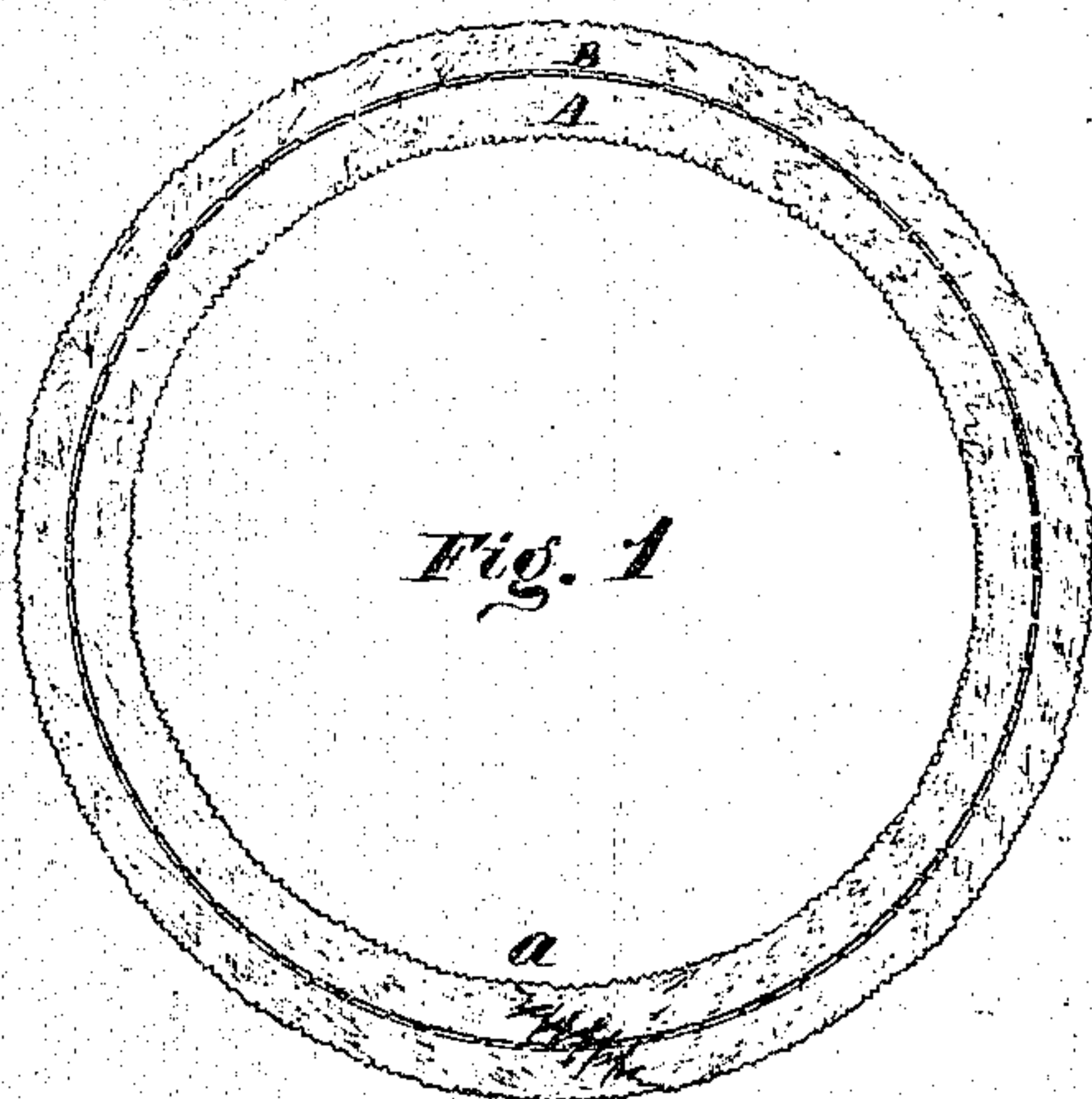


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Lucius J. Knowles'
Improved Piston Packing

PATENTED JUL 19 1870



Witnesses,

Thos. H. Dodge
Geo. H. Miller

Inventor

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United States Patent Office.

LUCIUS J. KNOWLES, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 105,466, dated July 19, 1870.

IMPROVEMENT IN 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, LUCIUS J. KNOWLES, of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in Piston-Packing; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, in which—

Figure 1 represents a ring of my improved packing, as prepared for use;

Figure 2 represents a transverse section of the same; and

Figure 3 illustrates the method of construction.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

The nature of my invention consists in an improved packing for the pistons of steam-pumps, constructed substantially as hereinafter described.

My improved packing is composed of heavy canvas or duck, and is made as follows:

Several layers or courses of canvas are placed together, and joined to each other by stitching or sewing them through with strong thread, the seams being formed parallel to each other and at regular intervals, as shown in fig. 3, in which A indicates the canvas and B the seams. The seams B may be parallel with the web of the cloth, as indicated at the lower part of fig. 3, or diagonal to the web, as indicated at the upper part of said figure.

After the layers of canvas have been stitched together, the sheet thus composed is formed into strips by cutting it parallel to and midway between the seams B, (see fig. 3,) so that the seam will hold together the different layers of each strip. These strips

are cut to the required length, and formed into rings, by sewing together their ends, as shown at *a*, fig. 1, when the packing is ready to be applied to the piston, upon which the rings are arranged, with the raw edges of the canvas outward, a sufficient number being used to completely fill the groove around the piston. In piston-packing, as heretofore constructed, the different layers of canvas have been joined together by means of elastic gum or India rubber, and when packing thus formed is applied to a practical test, it is found that the rubber becomes incorporated with the fibers of the canvas, and mats them down into a solid mass, thereby greatly increasing the friction of the parts, and, in a very short time, rendering the packing unfit for use.

To overcome these difficulties is the object of my present invention, wherein the layers of canvas, being joined by the seams only, the fibers are left free and clean, so that their elasticity is not destroyed; consequently, as has been practically tested, the packing fits the cylinder closer and works with much less friction than the ordinary packing, while its durability is unsurpassed.

Having thus described my improved piston-packing, What I claim therein as new and of my invention, and desire to secure by Letters Patent as an improved article of manufacture, is—

A packing for the pistons of steam-pumps, composed of several layers of canvas or duck, joined together by sewing or stitching, substantially in the manner shown and described, and for the purposes stated.

LUCIUS J. KNOWLES.

Witnesses:

THOS. H. DODGE,
GEO. H. MILLER.