

No. 608,184.

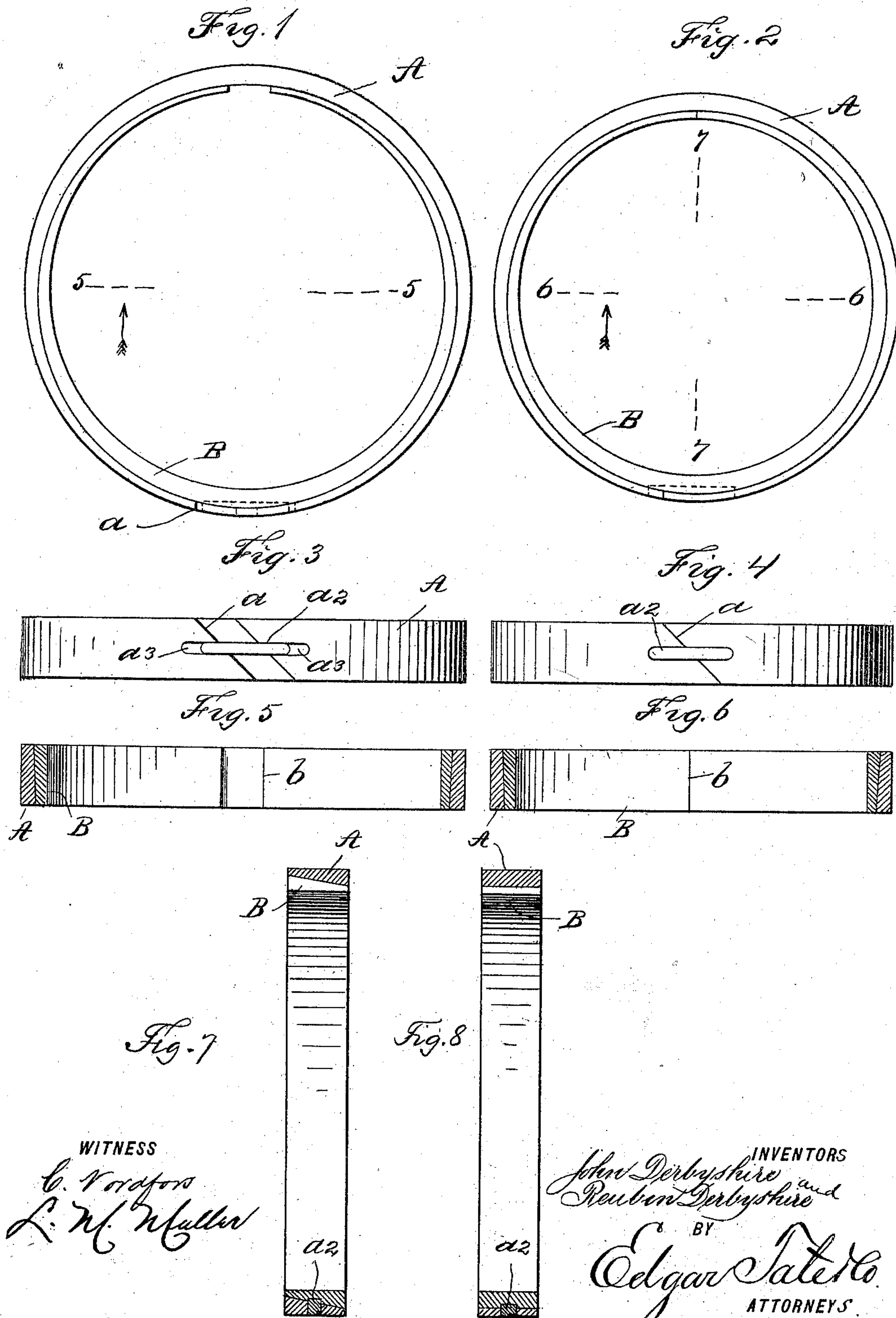
J. & R. DERBYSHIRE.

Patented Aug. 2, 1898.

PISTON PACKING.

(Application filed Nov. 19, 1897.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

1908

JOHN DERBYSHIRE AND REUBEN DERBYSHIRE, OF LOUGHTON, ENGLAND.

## PISTON-PACKING.

SPECIFICATION forming part of Letters Patent No. 608,184, dated August 2, 1898.

Application filed November 19, 1897. Serial No. 659,103. (No model.) Patented in England July 21, 1897, No. 17,214.

*To all whom it may concern:*

Be it known that we, JOHN DERBYSHIRE and REUBEN DERBYSHIRE, subjects of the Queen of Great Britain, residing at Hall Cottage, Loughton, in the county of Stafford, England, have invented certain new and useful Improvements in Piston-Packing, (for which we have secured Letters Patent in Great Britain, No. 17,214, dated July 21, 1897,) of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to packings for the pistons of steam and other engines and for pumps and similar machinery; and the object thereof is to provide improved devices of this class which are simple in construction and operation and comparatively inexpensive, while being well adapted to accomplish the result for which they are intended.

The invention consists of two rings constructed and connected as hereinafter described, and is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a plan view showing the rings which constitute our improved packing in the expanded position; Fig. 2, a similar view showing the rings compressed; Fig. 3, a side view showing the angle at which the outer ring is cut at one side and the connecting-tongue and showing the rings expanded; Fig. 4, a similar view showing the rings compressed; Fig. 5, a section on the line 5 5 of Fig. 1; Fig. 6, a section on the line 6 6 of Fig. 2; Fig. 7, a section on the line 7 7 of Fig. 2, and Fig. 8 a similar view showing a modified form of construction.

In the drawings forming part of this specification the separate parts of our improvement are designated by the same letters of reference in each of the views, and in the practice of our invention we provide two metallic rings A and B, and these rings are preferably composed of cast-iron and are eccentric in form, each of said rings being open at one side and the open side being much thinner than the other, as clearly shown in the drawings, and when thus constructed and placed together one within the other the pack-

ing thus formed will be circular in form, as will be readily understood.

Our improved packing is designed to be placed upon a piston and secured thereon or connected therewith in the usual or any preferred manner, and by reason of said rings being formed in the manner described they may be expanded or contracted, so as to adapt themselves to pistons of various sizes.

The rings A and B may also be of any desired width, and the outer ring A is preferably divided at its thinner side by being cut diagonally, as shown at  $a$ , and the separate ends thereof are connected by a tongue  $a^2$ , which is placed in longitudinal slots  $a^3$ , formed therein in the usual manner. These rings may be rectangular in form in cross-section, as shown in Fig. 8, or they may be conical in form in cross-section, as shown in Figs. 5 to 7, inclusive, and the outside of the inner ring is the same in size and shape in cross-section as the inner side of the outer ring, and when the rings are placed together the thinner part of one is placed opposite the thinner part of the other, as clearly shown in Figs. 1 and 2, in order that when connected the packing thus formed will be of equal thickness and diameter throughout.

The rings A and B, as hereinbefore described, are cut at the thinner portion thereof and a sufficient amount taken out of each to admit of the adjustment thereof to cylinders of different sizes, and the inner ring may also be cut at an angle or straight, as shown at  $b$  in Figs. 5 and 6.

Our improved packing may be used in connection with steam-engines, air-pumps, or water-pumps; and these rings will not crinkle, but will form a true circular packing under compressure, and they may be locked in the piston or compressed by a band to be put in the cylinders, or they may be connected with the piston in any desired manner, and when so made will retain their elastic force for a long time.

It will be understood that the inner ring carries the interiorly-projecting tongue or key upon its thicker part, which tongue or key is centrally or intermediately arranged between the top and bottom edges of the ring and extends in a longitudinal plane, as shown



in the drawings, and that at the diagonal joint in the thinnest part of the outer ring are provided the transverse slots at each side of said joint and intermediately between its top and bottom termini, which slots receive the projecting tongue or key upon the inner ring. The advantages of this construction are that the joint connection formed by the intermediate tongue or key upon the thickest part of the inner ring and the corresponding intermediate slots upon the thinnest part of the outer ring is firmly embraced against lateral strain or twisting movement, the tongue or key being housed on both sides and having a bearing upon the outer ring at both of said sides, and the provision of the tongue or key upon the thicker part of the inner ring instead of upon the thinnest part of the outer ring provides a stronger construction and one in which the detachability or separation of the rings is facilitated.

Having fully described our invention, we claim as new and desire to secure by Letters Patent—

1. An improved packing of the class described for pistons, comprising the two tapering rings placed one within the other, the relative construction and arrangement being such that the outer and inner peripheries of the compound ring are concentric and the intervening joint between the rings is eccentric, the inner ring being cut or open at its thinnest part and provided upon its opposite thicker part with an exteriorly-projecting tongue or key centrally or intermediately arranged between the top and bottom edges of the ring and extending in a longitudinal plane with respect to the periphery of the ring, and the outer ring being cut or open at its thinnest part at an angle forming a diagonal joint at each side of which and intermediately between the top and bottom edges of the ring is provided a transverse slot receiving the end portions of the projecting tongue or key upon the inner ring, substantially as and for the purpose set forth.

2. An improved packing of the class described for pistons, comprising the two tapering rings placed one within the other, the relative construction and arrangement being such

that the outer and inner peripheries of the compound ring are concentric and the intermediate joint between the rings is eccentric, the adjoining inner eccentric faces of said rings being correspondingly beveled to form a transverse angle-joint, the inner ring being cut or open at its thinnest part and provided upon its opposite thicker part with an exteriorly-projecting tongue or key centrally or intermediately arranged between the top and bottom edges of the ring and extending in a longitudinal plane with respect to the periphery of the ring, and the outer ring being cut or open at its thinnest part at an angle forming a diagonal joint at each side of which and centrally or intermediately between the top and bottom edges of the ring is provided a transverse slot receiving the end portions of the projecting tongue or key upon the inner ring, substantially as and for the purpose set forth.

3. An improved packing of the class described for pistons, comprising the two tapering rings placed one within the other, the relative construction and arrangement being such that the outer and inner peripheries of the compound ring are concentric and the intervening joint between the rings is eccentric, said rings being cut or open at their thinnest parts, and devices centrally or intermediately arranged between the top and bottom edges of the inner ring and projecting from the inner ring and through or into engagement with the outer ring for retaining said rings in their relative position, whereby said connecting projecting devices are firmly braced and have a bearing at both their sides with respect to the outer ring, the outer ring having a slidable or movable connection with said connecting devices upon the inner ring, substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of the subscribing witnesses, this 9th day of November, 1897.

JOHN DERBYSHIRE.

REUBEN DERBYSHIRE.

Witnesses:

FREDERICK BARRATT,

JOHN HENRY COPESTAKE.