No. 713,109. Patented Nov. 11, 1902.

A. B. KAY.

PISTON ROD PACKING.

(Application filed July 11, 1899.)

(No Model.)

Fig. 1.

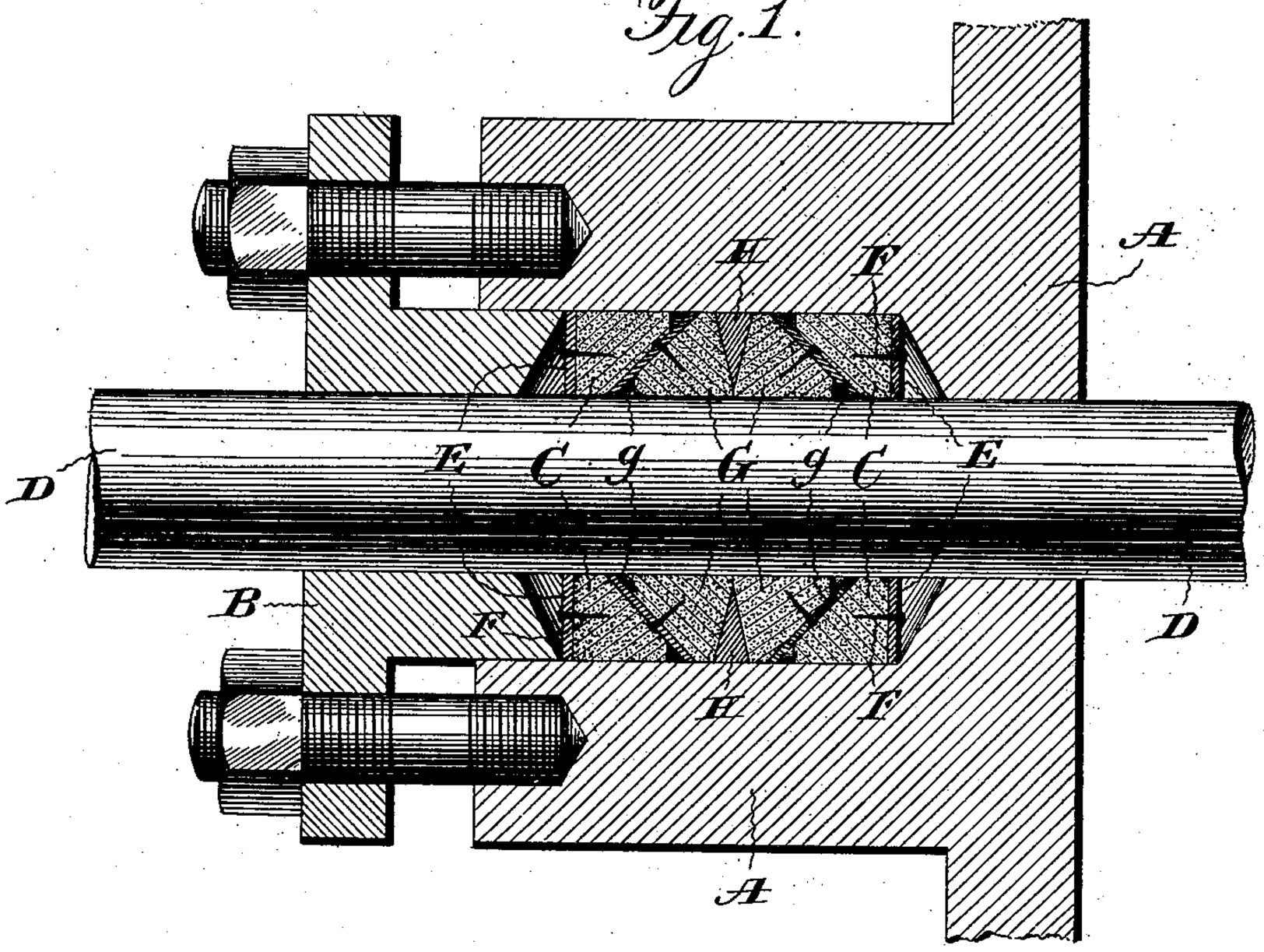


Fig. 2.

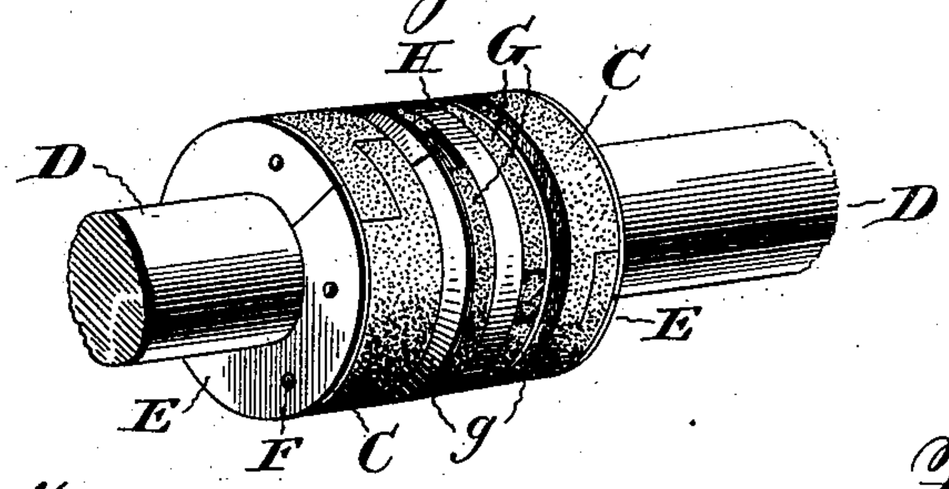


Fig. 3.

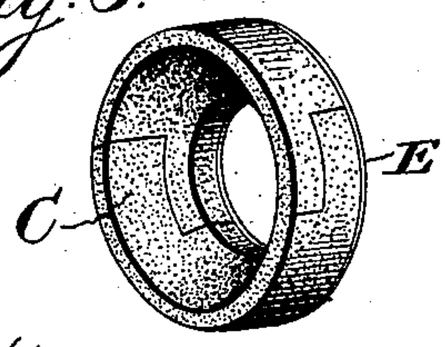
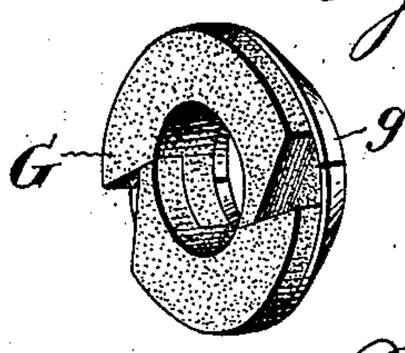


Fig. 4.



Witnesses:
Jas. E. Fitchinson.
Henry C. Hazard.

Inventor
Allan B. Kay, by
Prindle & Russell, his Attys

UNITED STATES PATENT OFFICE.

ALLAN B. KAY, OF NEW YORK, N. Y.

PISTON-ROD PACKING.

SPECIFICATION forming part of Letters Patent No. 713,109, dated November 11, 1902.

Application filed July 11, 1899. Serial No. 723,480. (No model.)

To all whom it may concern:

Be it known that I, ALLAN B. KAY, of the borough of Manhattan, city of New York, in the county of New York, and in the State of New York, have invented certain new and useful Improvements in Piston-Rod Packing; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a rod-packing embodying my invention; Fig. 2, a perspective view of the packing-rings alone shown on a portion of the rod, and Figs. 3 and 4 are respectively views in perspective of the two forms of packing-rings I employ.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an efficient and durable piston-rod packing which will adapt itself to the conditions due to imperfections in the adjustment or relation of the rod and the stuffing-box; and to this end said invention consists in the piston-rod packing having the features of construction substantially as hereinafter specified.

In the carrying of my invention into practice the stuffing-box A and the gland B may be of usual construction, as shown in the drawings, each being of a familiar type, the stuffing-box having a cylindrical packing-chamber with a conical inner end and the gland having its end in the chamber likewise conical.

My packing is composed of several rings of compressible slightly-elastic material, preferably canvas, with a small quantity of rubber, and on the outer face of each end ring C, which is made perpendicular to the axis of the rod D, is placed a ring or facing-plate E of thin, elastic, or spring metal, pins F and F or other means being used to attach the facing-ring to its packing-ring. Interposed between the two packing-rings C and C are two other packing-rings G and G, whose sides that abut against the rings C and C are conical and the abutting sides of the latter being correspondingly shaped, the cavity being in the ring C, so that pressure applied to said ring in an axial direction will compress the ring G it engages upon the rod D and expand said ring C against the wall of the stuffing-box. To permit the easy passage or slipping of the engaging surfaces of the two rings over each other, one surface, preferably that of the ring G, has a sheet-metal facing *g*. Each of the rings C and G, with its metal facing, is formed in halves, and the meeting ends of the halves of each ring are interlocked or lapped to insure tight joints.

Preferably between the two rings G and G a metal ring H is placed, with conical or inclined sides to engage corresponding sides on the two rings G and G, and thus cause the latter to be compressed or crowded radially upon the piston-rod under pressure applied axially.

The action of my packing is as follows: As the rod moves the friction of the packing-rings thereon causes the material to move in the same direction in which the rod is moving, producing the flexing or bending of the elastic facing plates or rings E and E on the end packing-rings. On the reverse movement of the rod the spring-plates first resume their normal condition by reason of their elasticity and then are flexed or bent in the opposite direction as the rod continues its movement. Thus as the rod reciprocates the spring-plates are sprung first in one direction and then in the other under the combined action of their normal tendency when sprung and the friction of the rod and rings. As a result of the presence and action of the spring-plates the yielding packing material between them is kept from distortion, although capable of the inevitable movement in an axial direction, and its pressure in radial directions upon the surfaces to be packed is maintained. If there be inaccuracy in the relation of the piston-rod to the stuffing-box, such as a slight eccentricity or want of parallelism, my packing readily and rapidly adapts itself to the conditions thus presented, an abnormal pressure of the spring-plates causing the wearing and conformation of the packing-rings to the eccentric or non-parallel relation of rod and box.

It is to be understood that though I prefer the details of construction shown and described I nevertheless do not restrict the scope of my invention thereto as regards the spring facing plates or rings, for these latter

may be used with packing-rings differing in form and arrangement from those shown and described.

Having thus described my invention, what I claim is—

1. In a piston-rod packing, the combination with the stuffing-box and rod, of packing material having a spring-supporting plate for an outer end surface of the packing, substantially as and for the purpose described.

2. In a piston-rod packing, the combination with the stuffing-box and rod, of packing material interposed between spring-supporting plates which are flexible longitudinally of said rod, substantially as and for the purpose described.

3. In a piston-rod packing, the combination of the stuffing-box and rod, of rings of packing material having spring-plates at different ends, said plates being flexible longitudinally of such rod, substantially as and for the purpose described.

4. In a piston-rod packing, the combination of the stuffing-box and rod, rings of packing material having their outer ends in planes perpendicular to the rod-axis, and spring-plates at such ends substantially as and for the purpose described.

5. In a piston-rod packing, the combination with a stuffing-box and the rod, of packing material, and spring-plates which sustain the outer ends of such packing material, there being space between the said plates and the ends of the stuffing-box to permit the springing of the plates, substantially as and for the purpose described.

6. In a piston-rod packing, the combination with a stuffing-box having substantially conical end surfaces, and the rod, of packing material having its outer ends in planes substantially perpendicular to the rod-axis, and spring-plates at such ends, said spring-plates extending substantially across the space between the inner surface of the stuffing-box and the rod, substantially as and for the purpose described.

7. As an article of manufacture, a packing for piston-rods consisting of an annular mass of yielding packing material having a plane end surface, and a spring-plate attached to and substantially covering such end surface, substantially as and for the purpose described.

8. In a piston-rod packing, a sectional washer having an outwardly-flaring space between the opposite ends of the sections of such washer, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of July, A. D. 1899.

ALLAN B. KAY.

Witnesses:
M. GEOGHEGAN,
W. A. BLEMLY.