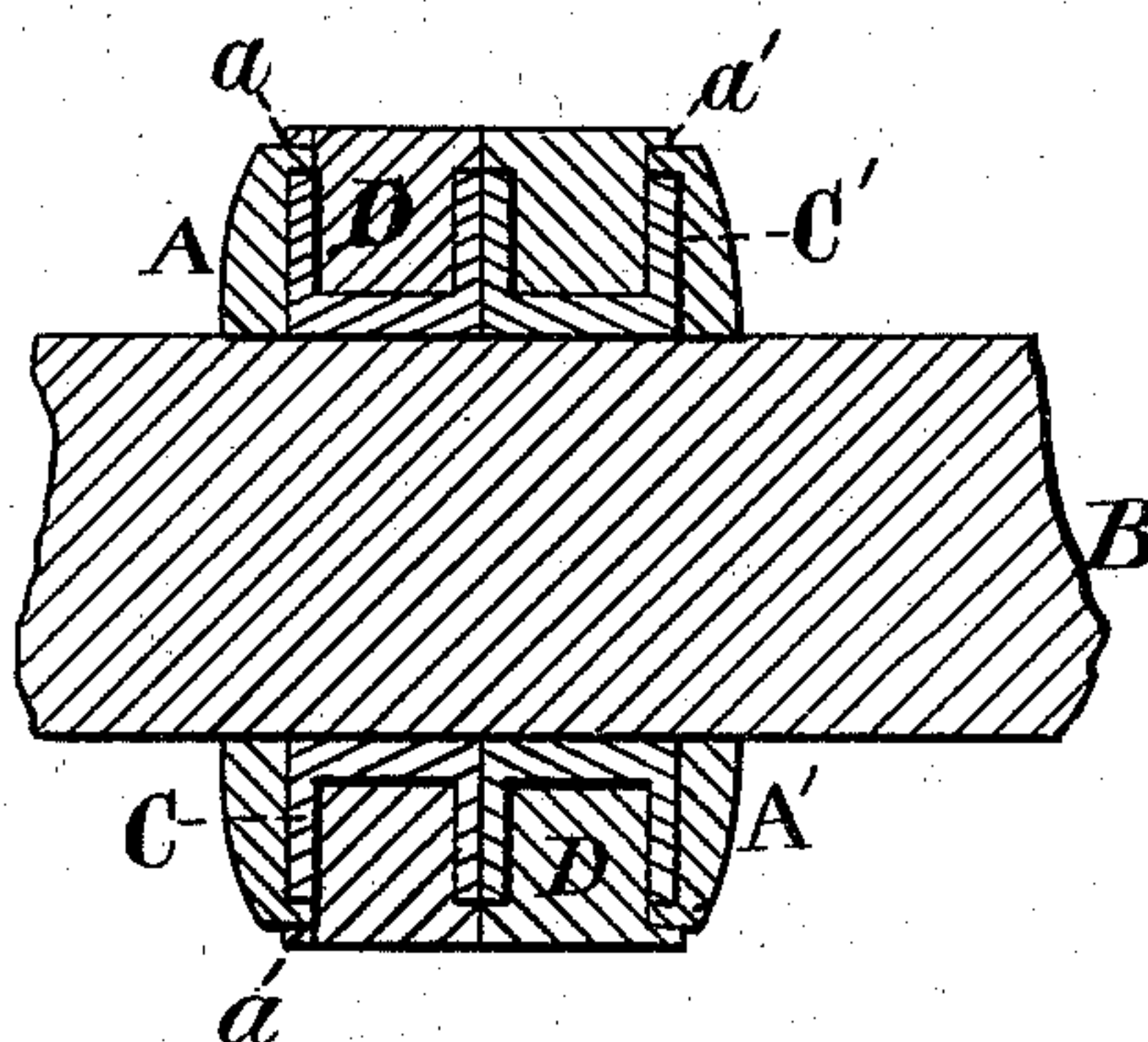


**P. W. RICHARDS.**  
**Packings for Pistons.**

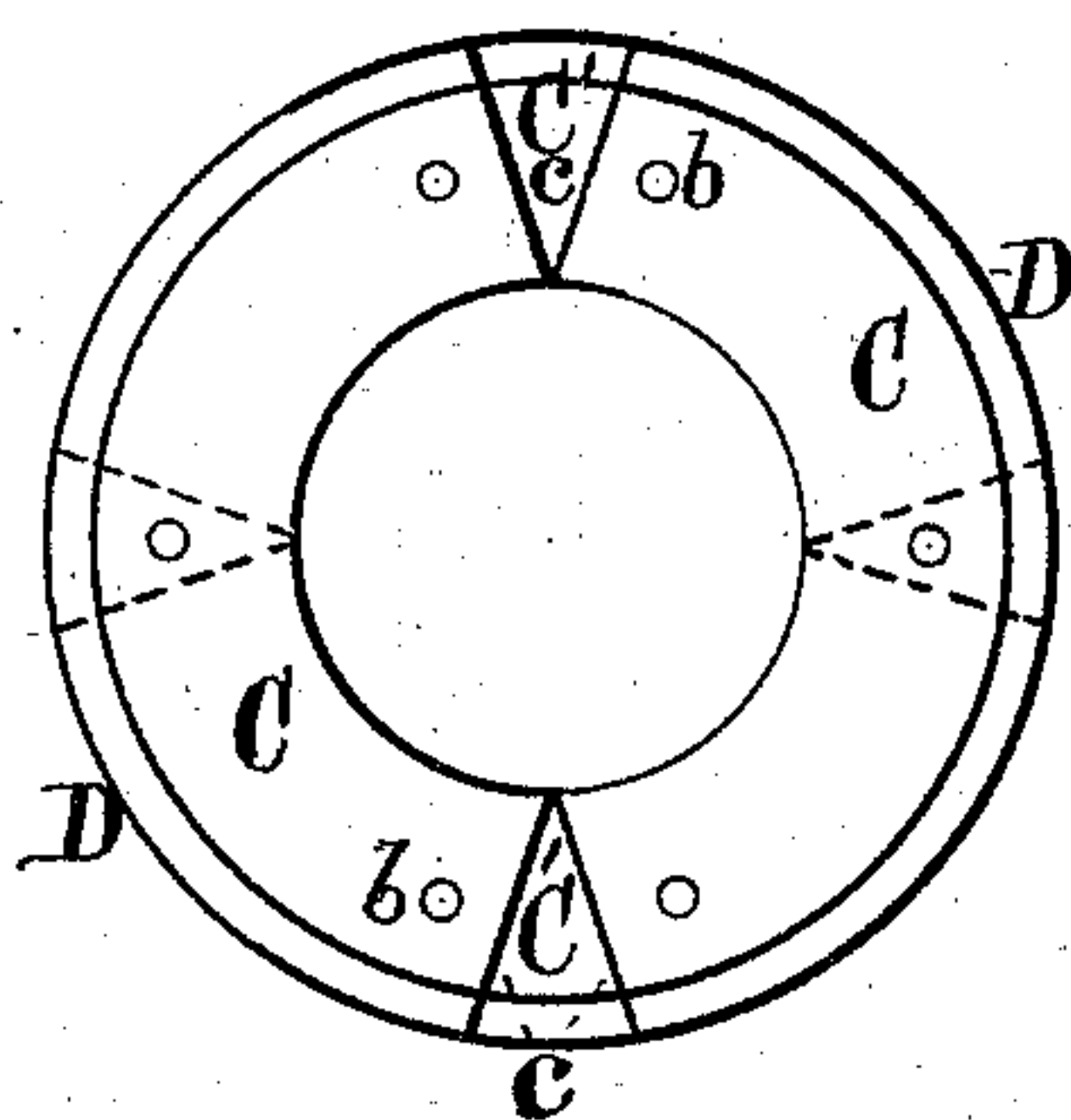
No. 156,859.

Patented Nov. 17, 1874.

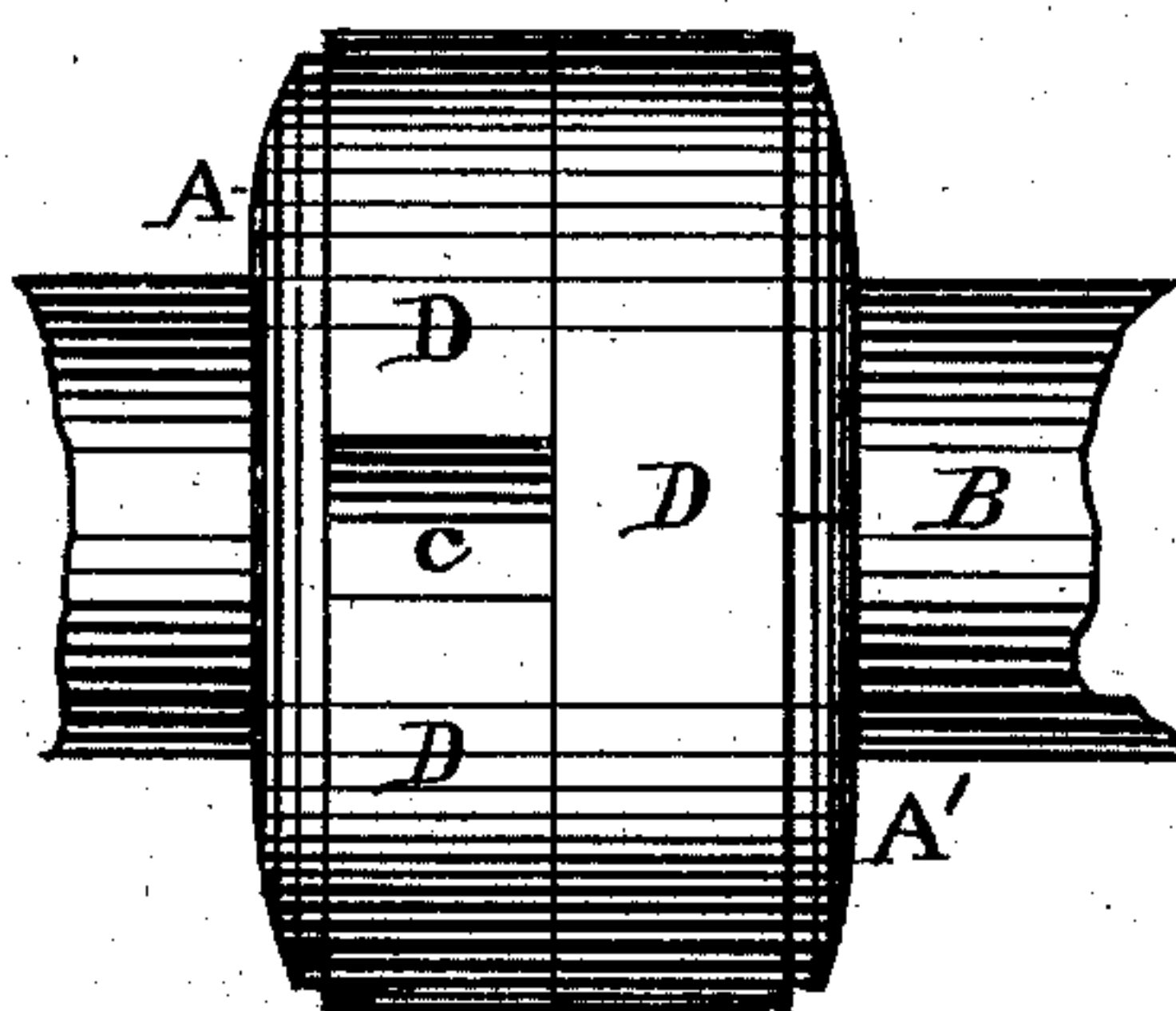
*Fig. 1*



*Fig. 2*



*Fig. 3*



*Witnesses*  
*Chas. Felton Ridgway,*  
*Oren H. Weaver.*

*Inventor*  
*Phillip W. Richards,*  
*by his Atty.,*  
*Saml. M. Barton.*



# UNITED STATES PATENT OFFICE.

PHILLIP W. RICHARDS, OF BOSTON, MASS., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL TUBE-WORKS COMPANY, OF SAME PLACE.

## IMPROVEMENT IN PACKINGS FOR PISTONS.

Specification forming part of Letters Patent No. 156,859, dated November 17, 1874; application filed September 30, 1874.

*To all whom it may concern:*

Be it known that I, PHILLIP W. RICHARDS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Metallic Packing, of which the following is a specification:

Figure 1 of the accompanying drawings is a central longitudinal vertical section. Fig. 2 is an end view with the outer ring or head removed; and Fig. 3 is an exterior elevation of my improved metallic packing.

The object of the present invention is to provide an economical, durable, and efficacious packing for piston-rods, valve-stems, &c., that is readily arranged within a stuffing-box; and to this end my invention consists of a metallic ring or rings formed by annular segments, contained between outer rings or heads and surrounding a piston-rod or valve-stem within a stuffing-box, one ring covering the joints of the other ring, each ring being formed with an outer groove or recess to receive a cushion of yielding material that bears against the inner periphery of a stuffing-box and the ring so as to keep the packing snugly to the rod or stem at all times and yet prevent the wear of the packing next the rod by the vibration of the latter, the construction of the ring or rings being such as to compensate for the wear of the cushion, which is pushed out as worn, to impinge at all times snugly against the inside of the stuffing-box, by the lateral pressure exerted on the sides of the ring or rings by the screwing up of the gland of the stuffing-box.

All of which I will now proceed more particularly to describe, and to explicitly define in my claims.

In the drawings, A A' represent outer metal rings or heads, each made in two semi-annular sections, countersunk on the inner faces to leave, or otherwise formed with, an inner lip, *a a'*. These heads or rings are located within a stuffing-box (not shown in the drawings) at either end, and receive through their central aperture the piston-rod or valve-stem B, around which rod or stem, between the heads A A', are located, in the present example, two

(although the number may be varied as desired) metallic rings, each formed by two or more annular segments, C C', each having its exterior recessed or grooved in a rectangular, curved, or angular shape, as preferred, to contain between its sides a cushion, D, of mixed textile or fibrous, or cloth and rubber, or other elastic material or composition, or of other suitable material or composition of a yielding nature. The ends of the segments C C' are beveled so that when in position they impinge at the inner periphery around the rod or stem, and are separated at the outer periphery, leaving a triangular space, *c*, between to allow the wearing up of the segments, which are located on the rod or stem, so that when the rings are together the segments of one ring shall cover the joints of the other ring. The lips *a a'* of the heads or rings A A' cover the rims or outer peripheries of the outer sides of the rings C C', which abut against the inner faces of the heads A A', and the cushions D project beyond the outer peripheries of the rings to press against the interior periphery of the stuffing-box, and extend laterally over the rims of the rings to impinge snugly against each other to prevent leakage. The cushions may be held in the grooves or recesses by pins *b* extending laterally through them and the sides of the rings, or otherwise held, as preferred.

The metal of the packing may be of any suitable composition; but it is more desirable to have it of such nature that, while strong and durable, it will admit of lateral compressibility, so that the pressing together of the rings will narrow the grooves or recesses between their sides and press or bulge out the cushion to compensate for wear.

By means of the elastic cushion D and sectional rings, arranged as herein described, any vibration of the rod or stem causes the packing on one side to yield to its pressure. At the same time the packing on the other side is, by the pressure of the cushion, induced to follow up and hug snugly to the rod, thus preventing the longitudinal wear on the packing that would ensue by the vibration of a rod against a rigid fixed packing. Moreover, the yielding cushion and segments relieve the strain from

the packing and permit the rod to run free and easy. The metallic sides of the packing-rings protect the cushion from the injurious action of the steam, and serve, when the rings are pressed together by screwing up the gland of the stuffing-box, to bulge or press out the cushions, to take up any wear and insure their effective operation on the packing-rings, whose inner periphery protects the cushions from the wear of the rod or stem.

Having thus described my improvements, what I claim, and desire to have secured to me by Letters Patent, is—

1. In a metallic packing, a ring or rings of

segments, C C', recessed or grooved on their exteriors, intermediate triangular spaces *c c*, and cushions D, substantially as and for the purpose set forth.

2. The combination of heads or rings A A', segments C, cushions D, and piston-rod or valve-stem, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PHILLIP W. RICHARDS.

Witnesses:

SAML. M. BARTON,

CHAS. FELTON PIDGIN.