

J. E. MEEK.  
AIR BRAKE PISTON.  
APPLICATION FILED JAN. 4, 1909.

924,087.

Patented June 8, 1909.

Fig. 1.

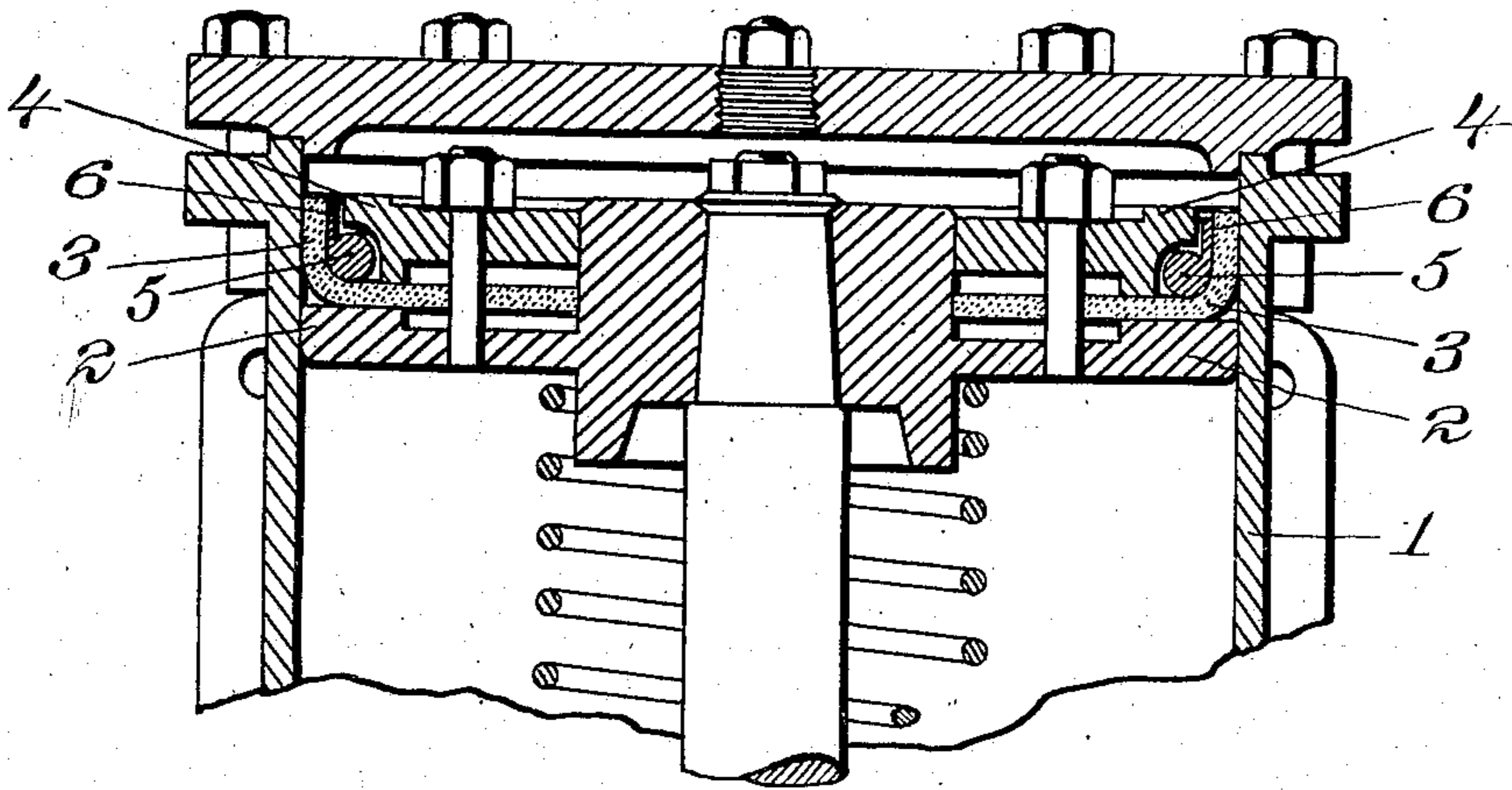
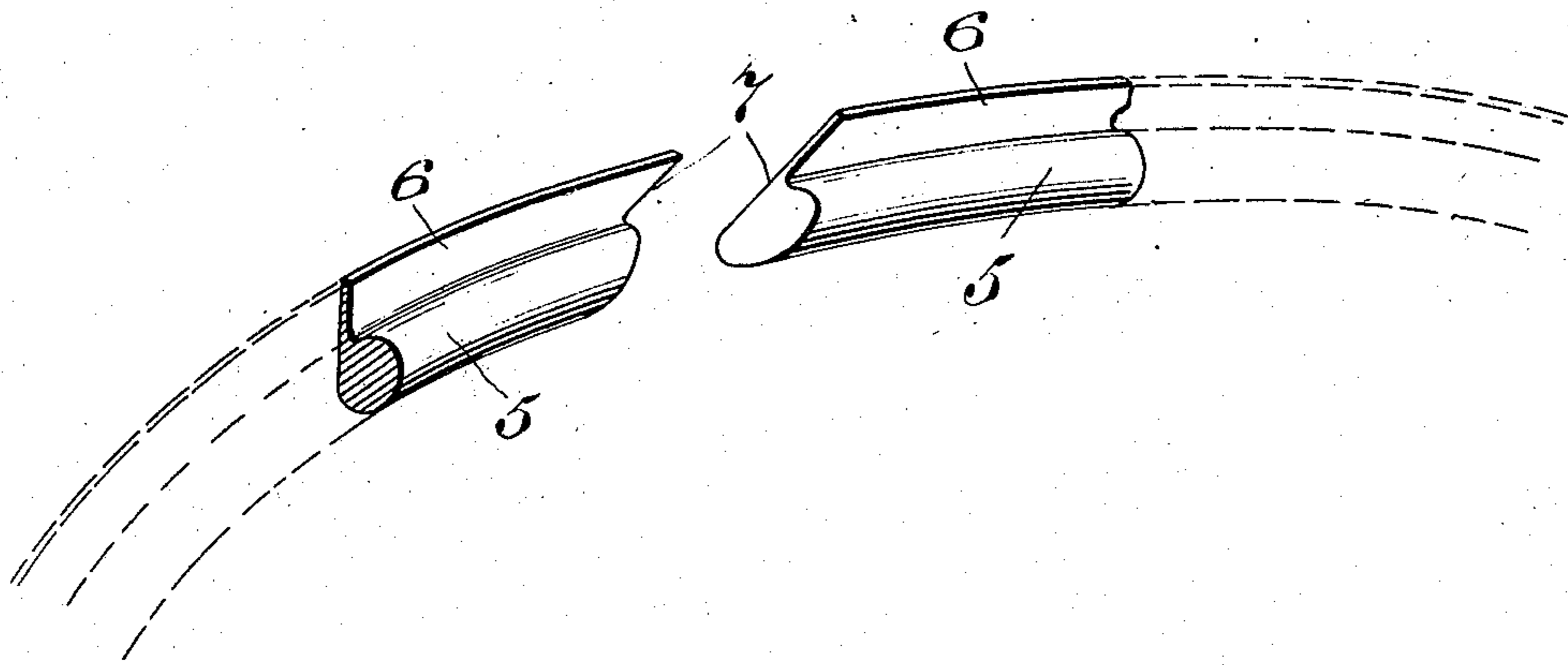


Fig. 2.



Witnesses: *Harry O. Feltzinger*  
*Le Roy Newcomb*

*John Emory Meek*  
Inventor

By his Attorney *A. B. Schmidt*

# UNITED STATES PATENT OFFICE.

JOHN EMORY MEEK, OF NEW YORK, N. Y., ASSIGNOR TO H. W. JOHNS-MANVILLE COMPANY,  
A CORPORATION OF NEW YORK.

## AIR-BRAKE PISTON.

No. 924,087.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed January 4, 1909. Serial No. 470,615.

*To all whom it may concern:*

Be it known that I, JOHN EMORY MEEK, a citizen of the United States of America, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Air-Brake Pistons, of which the following is a specification.

My invention relates to pistons used in the power cylinders of air brake systems, though applicable to other forms of piston, and comprises an improved form of cup leather or packing expander which can be used to insure an air-tight contact between the said packing or cup leather and the walls of the cylinder.

As constructed in over one million sets of air brake apparatus in use at the present time, the piston consists of a piston head, a cup leather, a disk shaped follower between which and the piston head the cup leather is bolted to make an air tight joint with the piston head, and an expander ring of heavy iron wire or rod of cylindrical cross section bent into a ring and which tends to spring outwardly and hold a part of the cup leather against the walls of the cylinder to form an air tight joint therewith. The trouble with this construction has been that the edges of the cup leather are not supported and bend inwardly, thus allowing the compressed air to get between them and the cylinder walls, destroying the air-tight character of the joint. They also produce pressure only along a narrow line and wear the leather through quickly at that point. It has been proposed to remedy this by making a packing expander of large enough surface to support the entire width of the upturned edge of the cup leather, but the ring so proposed is too heavy and stiff, and has the radical, practical defect that it is too thick to be inserted between the cup leather and the standard follower. Thus the proposed ring cannot be applied to any of the million and more of sets of air brake apparatus now in use, and could not be applied to new apparatus unless the air brake companies are prevailed upon to change the pattern of the follower.

I have invented an expander ring which has all the advantages of the old ring, and none of its defects, and which can be used on the standard air brake piston.

The preferred form of apparatus embodying my invention is illustrated in the accompanying sheet of drawings in which:

Figure 1 is a cross section of a cylinder and piston with my invention applied thereto, and Fig. 2 is a detail perspective view and cross section of portions of the expander ring.

Throughout the drawings like reference figures indicate like parts.

1 is the cylinder, 2 the piston head, 3 the cup leather, and 4 the standard form of follower.

My improved expander has the cylindrical portion 5 exactly the same as the old expander ring for coöperation with which the other parts of the air brake apparatus were designed, but it also has in addition the thin web portion 6 formed of a ribbon of metal, tangent to the outer surface of the old ring 5. Preferably the web and ring are both cut on a plane 7 oblique to the plane of the ring. This permits the necessary expansion of the ring in action and also tends to prevent the formation of a groove in the unsupported portion of the packing between the slightly separated ends of the expander (as might occur if the cuts were at right angles to the plane of the ring) through which groove air may leak by the piston.

In operation the ring 5 holds the curved portion of the cup leather firmly out against the wall of the cylinder, as in the old construction, and the web 6 also holds the upturned edge of the cup leather firmly against the cylinder wall. Thus no air gets under any part of the cup leather, but all of it is held behind the leather, forcing it down on the cylinder wall and insuring a joint which grows more perfect as the air pressure increases.

Among other advantages of my invention may be mentioned the fact that the expander may be used on any standard air brake apparatus now in this country; that not only is a tighter piston joint secured, but that the wear is more evenly distributed over the entire surface of the upturned portion of the cup leather, thereby increasing the life of this most troublesome element in air brake installations; and that all the flexibility and other features of benefit of the old ring expander are preserved, while its defects are eliminated.

Having, therefore, described my invention, I claim:—

1. A packing expander ring comprising in combination a ring of cylindrical metal with  
5 abutting ends, and a thin web formed of a ribbon of metal tangent to the outer surface of said ring.

2. A packing expander ring comprising in combination a ring of cylindrical metal with  
10 abutting ends, and a thin web formed of a ribbon of metal tangent to the outer surface of said ring, the abutting ends being cut in a plane oblique to the plane of the ring.

3. A piston for air brake cylinders having in combination a piston head, a cup leather, 15 a follower, and a packing expander ring formed of a cylindrical portion and a thin web portion tangent to the outer surface of the ring and extending out between the edge of the cup leather and the follower. 20

Signed at New York, N. Y., this 31st day of December, 1908.

JOHN EMORY MEEK.

Witnesses:

HARRY O. FETTINGER,  
LE ROY NEWSOME.