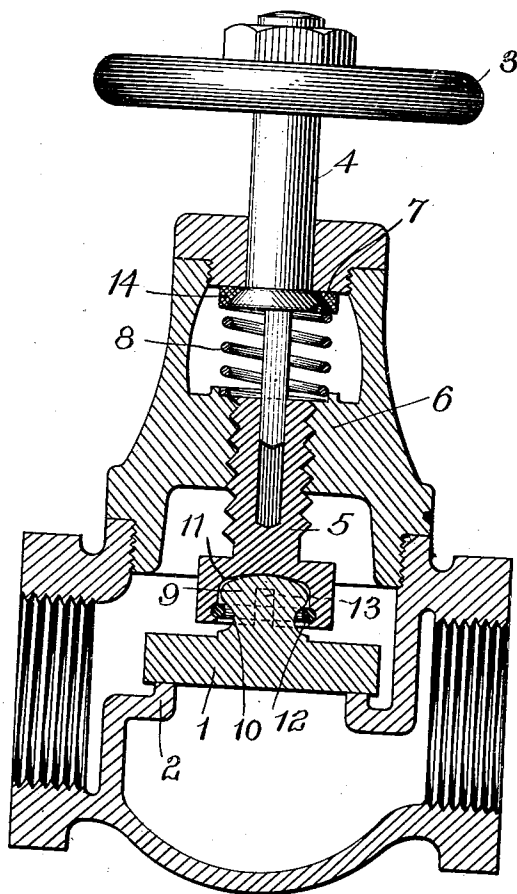


No. 854,698.

PATENTED MAY 21, 1907.

L. H. MARTELL.
VALVE STRUCTURE.
APPLICATION FILED NOV. 5, 1904.



WITNESSES:

Herbert Bradley
Charles Barnett

Louis H. Martell INVENTOR
by Christy and Christy Att'y's.

UNITED STATES PATENT OFFICE.

LOUIS HENRY MARTELL, OF ELLWOOD CITY, PENNSYLVANIA.

VALVE STRUCTURE.

No. 854,698.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed November 5, 1904. Serial No. 231,592.

To all whom it may concern:

Be it known that I, LOUIS HENRY MARTELL, residing at Ellwood City, in the county of Lawrence and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Valve Structures, of which improvements the following is a specification.

My invention concerns improved means for sealing a rotatable stem in its passage through a chamber wall; and the object of my improvement is to overcome or eliminate inaccuracy due to wear of the parts.

The accompanying drawing illustrates my invention applied to a valve of familiar type; and, for present purposes, this valve is representative of structures in which a rotatable stem passes through the wall of a chamber, where fluid pressures within and without are unequal.

The valve itself, 1, is arranged to move to and from its seat, 2, and thus control the passage of fluid through a conduit. This valve is operated by a hand-wheel, 3, mounted upon the valve stem, 4, 5, which extends through the wall of the valve chamber. The valve stem is provided with a suitably arranged screw-thread, which coacts with a thread formed in the body of the chamber, and by this means rotation of the stem effects the desired to and fro movement of the valve.

In order to secure a tight seal against the escape of fluid about the valve-stem, I adopt the known expedient of forming the stem in two parts, 4 and 5, longitudinally movable respecting one another, and so connected that rotation of the outer part effects a turning of the inner part, and, in consequence of the screw-thread construction already described, a longitudinal movement of the inner part 5. The outer part 4 of the stem may by this construction be more effectively packed.

My improvement is directed to the means of packing or sealing the passage of this outer portion of the valve stem through the chamber wall. It has heretofore been common to form upon the stem a collar and in the chamber wall a corresponding seat, and to hold the collar to its seat by spring-pressure. But, in structures of this character heretofore employed, the parts though tight when new become leaky in continued service, because the slightest bend or distortion or inequality in the wearing away of parts will disturb the nicety of fitting.

Upon the outer portion 4 of the valve stem

and adjacent to the chamber wall I form a collar, preferably an enlargement, 7, and surrounding the stem and interposed between the collar and the chamber wall I place a loose ring, 14, of inelastic material. This ring 14 bears upon the chamber wall and collar 7 bears upon it, and the bearing surfaces are in one case inclined or angularly arranged, respecting the axis of the stem.

As particularly shown in the drawing, ring 14 bears upon the chamber wall in a horizontal plane, but the coacting bearing surfaces of the ring and collar 7 are inclined to the axis of the stem; these surfaces are preferably, though not necessarily curved, and of spherical contour.

Spring 8 holds a collar, ring and chamber wall in sealing contact.

The advantages of this construction are obvious; in the first place, plate 14 may be formed of any preferred material, and of a material better suited to tight closure than the material of which the chamber wall itself is ordinarily formed; furthermore, plate 14 is capable of turning and also of sliding very slightly to compensate for slight inaccuracies and displacements produced by wear, while the sealing joint between collar and ring is still maintained. A relative movement of stem and collar may occur, without breaking the seal.

I am aware of the proposed use of an elastic gasket or packing between such a collar and the chamber wall; but, aside from the relatively short life of such a gasket, and its adhesion to the stationary surface, my invention is clearly distinguished by the nature of the contact and the self-adjustment of the parts in consequence of wear.

I claim as my invention:

1. Means for sealing a rotatable stem in its passage through a chamber wall which consists of a collar formed on the stem, and a loose ring of inelastic material surrounding said stem and interposed between said collar and the chamber wall, the bearing surfaces between said collar and ring being inclined to the axis of the stem, and the bearing surfaces between the chamber wall and ring being in a plane perpendicular to the axis of the stem, and the chamber wall being of such area or extent as to permit lateral movement of said ring thereon, substantially as described.

2. Means for sealing a rotatable stem in its passage through a chamber wall which con-

sists of a collar formed on said stem having a bearing surface of curved contour, and a loose ring of inelastic material surrounding said stem interposed between said collar and
5 the chamber wall having a curved bearing surface for said collar, and abutting against said chamber wall in a plane perpendicular to the axis of said stem, said chamber wall being of such extent as to permit lateral dis-

placement of said ring thereon, substantially as described.

In testimony whereof, I have hereunto set my hand.

LOUIS HENRY MARTELL.

Witnesses:

BAYARD H. CHRISTY,
CHARLES BARNETT.