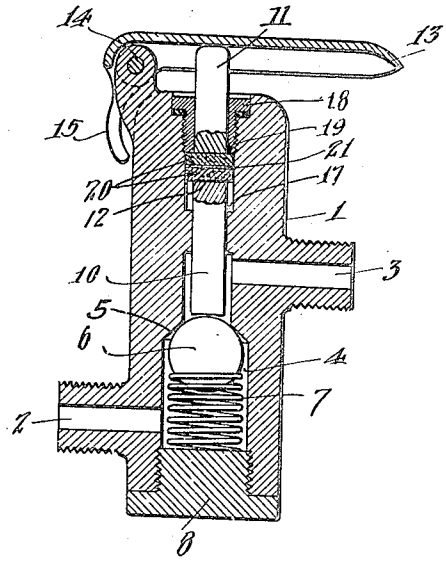
Feb. 6, 1923.

1,444,189

J. F. KEY.
VALVE STEM.
FILED NOV. 24, 1920.



INVENTOR.
James F. Key
BY Frederick B. Ryan
ATTORNEY

Patented Feb. 6, 1923. 1,444,189

UNITED STATES PATENT OFFICE.

JAMES F. KEY, OF SIERRA MADRE, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO FIRST TRUST AND SAVINGS BANK OF PASADENA, AS TRUSTEE.

VALVE STEM.

Application filed November 24, 1920. Serial No. 426,117.

To all whom it may concern:

Be it known that I, JAMES F. KEY, a citizen of the United States, residing at Sierra Madre, in the county of Los Angeles and State of California, have invented a new and useful Valve Stem, of which the following is a specification.

This invention relates to valve stems and is particularly directed to a sectional self-packing valve stem.

The object of the invention is to provide a self-packing valve stem in which the stem packing constitutes a part of the stem and transmits all the power applied to the stem.

Another object is to provide a valve stem which is particularly adapted for construction in very small sizes and which obviates the necessity of stuffing boxes, packing glands, or other screw threaded elements.

Various other objects and advantages will be more fully apparent from the following description of the accompanying drawings, which form a part of this disclosure, and which illustrate a preferred form of embodiment of the invention.

The drawing is a vertical section illustrating a self-closing ball valve operated by the valve stem of the present invention.

Referring to the drawing, 1 designates the body of the valve, having an inlet port 2, an outlet port 3 and an intermediate valve chamber 4 formed to provide a valve seat 5. A ball valve 6 is positioned within the valve chamber and is yieldingly maintained in closed position by a valve spring 7 engaging the valve and a closure plug 8 screw threaded into the lower end of the valve chamber. The upper portion of the body is bored to accommodate the valve actuating stem and said bore is enlarged between the valve seat and outlet passage to establish communication therebetween. The valve stem is of three part construction comprising an inner valve actuating rod member 10, an outer rod member 11, and an intermediate motion transmitting packing unit 12 formed of relatively pliable packing material, such as leather.

An operating handle 13 is pivoted at 14 on an ear projecting from the body, and extends over the top of the valve stem, a stop lug 15 engaging the body to limit the upward movement of the handle.

The packing unit 12 is an imperforate cylindrical plug, preferably comprising one or more discs of leather and in the translation of the valve stem all the power applied to the stem in either direction is transmitted entirely by said packing unit which is compressed between the two rod members 10 and 11 and by being so compressed will engage the wall of the bore with sufficient force to form a perfect air or liquid tight seal against escape of said air or liquid past the stem.

Preferably the bore in the upper portion of the body is enlarged to provide a seat 17 and a plug 18 is screw-threaded into the body to provide an opposed seat 19. The packing portion of the valve stem is slidable between these opposed seats and in this instance consists of two imperforate leather discs 20 and an intermediate metal disc 21. In the operation of this type of valve stem, the outer portion of the lower surface of the lower disc 20 engages the seat 17 when the valve is fully opened, thereby forming an additional seal against leakage, and likewise when the stem is in its uppermost position the outer portion of the upper surface of the upper disc 20 engages the seat 19. The disc 21 serves to stiffen the peripheral portions of both discs 20.

The above described valve stem will be especially advantageous in devices of small size and can be produced at a minimum cost. Further a valve stem of this character will be practically indestructible and operate with a maximum efficiency.

I claim:

A device of the class described combining a body formed to provide a valve seat and bored to accommodate a valve stem, said bore having an enlarged portion providing a packing chamber defining a packing seat, a bushing engaging into the packing chamber and providing an opposite packing seat, a valve cooperating with the valve seat, a spring yieldingly maintaining the valve

closed, a valve stem slidable in the bore and comprising an inner rod member, an outer rod member and an intermediate compressible packing slidable in the packing chamber and adapted to alternately engage the opposed packing seats, and means for translating the valve stem to unseat the valve.

Signed at Los Angeles, California, this 16th day of November, 1920.

JAMES F. KEY.

Witnesses:
CLARENCE B. FOSTER,
L. BELLE WEAVER.