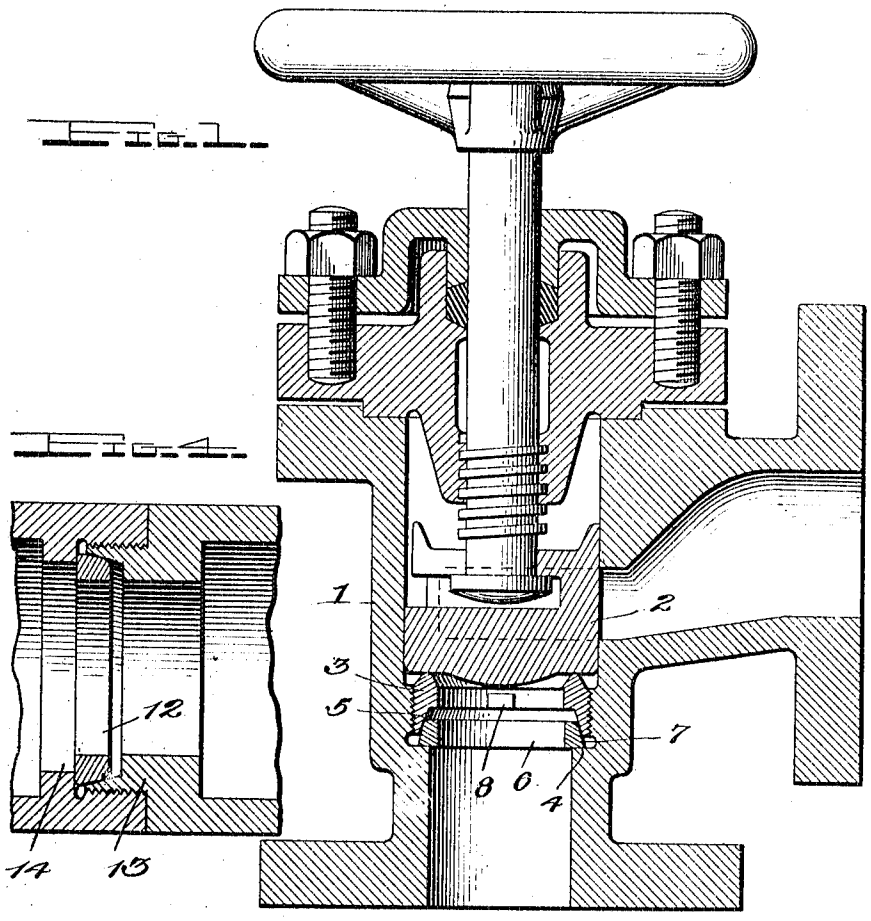
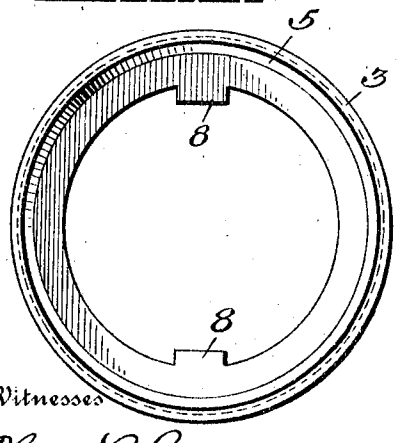
H. FERRELL & C. WITWER.

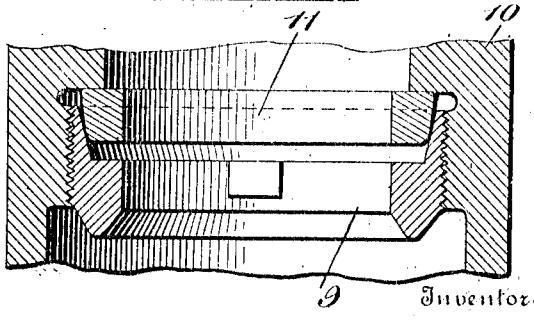
JOINT EXPANDING RING.

APPLICATION FILED JAN. 30, 1913.

1,080,430. Patented Dec. 2, 1913.







Witnesses

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UNITED STATES PATENT OFFICE.

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JOINT-EXPANDING RING.

1,080,430. Specification of Letters Patent. Patented Dec. 2, 1913.

Application filed January 30, 1913. Serial No. 745,263.

To all whom it may concern:

Be it known that we, HARRY FERRELL and CORNELIUS WITWER, citizens of the United States, residing at Barberton, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Joint-Expanding Rings; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in joint expanding rings.

One object of the invention is to provide means whereby one member of a threaded joint will be automatically expanded when screwed into engagement with the adjoining member thereby forming an absolutely fluid tight connection between said members.

Another object is to provide an expanding device of this character which will be simple and inexpensive in construction, efficient and reliable in operation and which when applied to valve seats, pipe couplings or other joints will form a positively fluid tight connection between the same without requiring excessive force to be applied to either member of the joint when making the connection or without necessitating an accurate fit between the threaded parts of the members.

With these and other objects in view, the invention consists of certain novel features of construction and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings: Figure 1 is a vertical section through a valve casing showing our improved expanding ring applied to the removable valve seat of the casing for forming an absolutely fluid tight joint between the engaging parts of the seat and the casing. Fig. 2 is an enlarged sectional view through a valve casing showing the application of our improved ring for expanding the valve seat therein, said seat being in a reverse position from that occupied by the seat shown in Fig. 1; Fig. 3 is an end view of a valve seat constructed to receive our improved expanding ring; Fig. 4 is a longitudinal section through the connected ends of two sections of pipe showing our improved expanding ring applied to the joint thereof.

Referring more particularly to Fig. 1 of the drawings, 1 denotes the casing of a reciprocating valve and 2 denotes the valve which is slidably mounted in the casing. These parts may be of the usual or any suitable construction. The valve casing 1 is provided with a removable valve seat 3 and at the point where said valve seat is engaged therewith, said casing is threaded in the usual manner. At the end of the threaded portion of the valve casing the passage therethrough is reduced to form an annular interior shoulder 4.

The valve seat 3 is in the form of a ring having its outer surface threaded for engagement with the threaded portion of the valve casing to which the seat is applied and the outer portion of the valve seat is chamfered or flared outwardly toward its outer end as shown at 5 to provide an annular inclined surface adapted to be brought into engagement with our improved expanding ring 6 which is engaged with the shoulder 4 in the valve casing. The upper surface of the expanding ring 6 is tapered as at 7 to coincide with the chamfered surface 5 of the valve seat when the latter is screwed down in position in the valve casing.

In applying the seat the expanding ring is first placed in position on the shoulder 4 after which the seat is screwed downwardly by hand, until the chamfered portion thereof comes into engagement with the tapered outer surface of the expanding ring after which a wrench may be applied to the wrench receiving lugs 8 of the valve seat and the latter screwed inwardly to a greater extent which will cause the tapered surface of the expanding ring to force or expand the engaging portions of the valve seat outwardly into absolutely fluid tight engagement with the threaded portion of the valve casing.

In Fig. 2 of the drawings is shown a valve seat 9 constructed in the same manner as the valve seat 3 shown in Fig. 1, said valve seat 9 being arranged in the casing 10 in a reverse position from that occupied by the valve seat 3 shown in Fig. 1. The valve seat 9 shown in Fig. 2 is provided with an expanding ring 11 constructed and arranged in the same manner as the expanding ring 6 hereinbefore described and said valve ring operates in the same manner to expand the threaded portion of the valve seat into engagement with the threads of the valve casing for forming an absolutely fluid-tight

joint between these parts in the same manner as described in connection with the corresponding parts shown in Fig. 1.

In Fig. 4 of the drawings is shown the engaging ends of two sections of pipe which are connected by a threaded joint, said joint being expanded by one of our improved expanding rings 12 which is applied to the joint in any suitable manner. In the present instance the end of one of the pipe sections is reduced and threaded as at 13 and said threaded end is screwed into the interiorly threaded end of the adjoining section as shown. In the interiorly threaded section is formed an angular inwardly extending flange 14 which provides a stop shoulder for our improved ring 12 which is engaged therewith as shown. The reduced exteriorly threaded end of the opposing pipe section is chamfered on its inner side to form an inclined or tapered ring engaging surface, which when the end of this pipe section is screwed into the threaded end of the opposing section will engage the tapered surface of the expanding ring which will expand or force the chamfered end of the pipe outwardly thereby bringing the threaded portion thereof into absolutely fluid-tight engagement with the threaded portion of the adjoining pipe section. When the valve seats hereinbefore described or the ends of the pipes are disconnected the resiliency of the chamfered ends of these parts will cause the same to contract as soon as relieved from the pressure of the tapered expanding surface of the expanding ring, after which further unscrewing and separation of the parts may be readily accomplished by hand.

By providing an expanding ring constructed in accordance with our invention the machining of the threads to provide an accurate and tight fit between the engaging portions of a joint is obviated as the expansion of one of the engaging parts by our improved expanding ring will overcome any slight inaccuracies or loose fitting of the parts and will bring the threaded surfaces into an absolutely fluid tight engagement.

The use of our improved expanding ring also permits the parts of the joint to be brought together into fluid-tight engagement with much less force than is required in the usual connection of the parts herein described.

In constructing our improved ring the corners at the smaller end thereof are preferably slightly rounded as shown to prevent shearing of the tapered surfaces with which they are engaged.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described our invention, what we claim is:

In an expanding device for valve seats, the combination with a valve casing having therein a stop shoulder and a threaded valve receiving portion, of an exteriorly threaded valve seat adapted to be screwed into engagement with the threaded portion of the valve casing and having its threaded end chamfered on its inner surface, an expanding ring adapted to be engaged with the stop shoulder in said valve casing and having its outer surface tapered to fit in the outer end of the chamfered portion of the valve seat whereby when the latter is screwed into the casing, the tapered surface of the expanding ring will expand the threaded end of the valve seat into absolutely fluid-tight engagement with the threaded surface of the valve casing.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

HARRY FERRELL.
CORNELIUS WITWER.

Witnesses.
RAY E. MORTON,
W. A. MORTON.