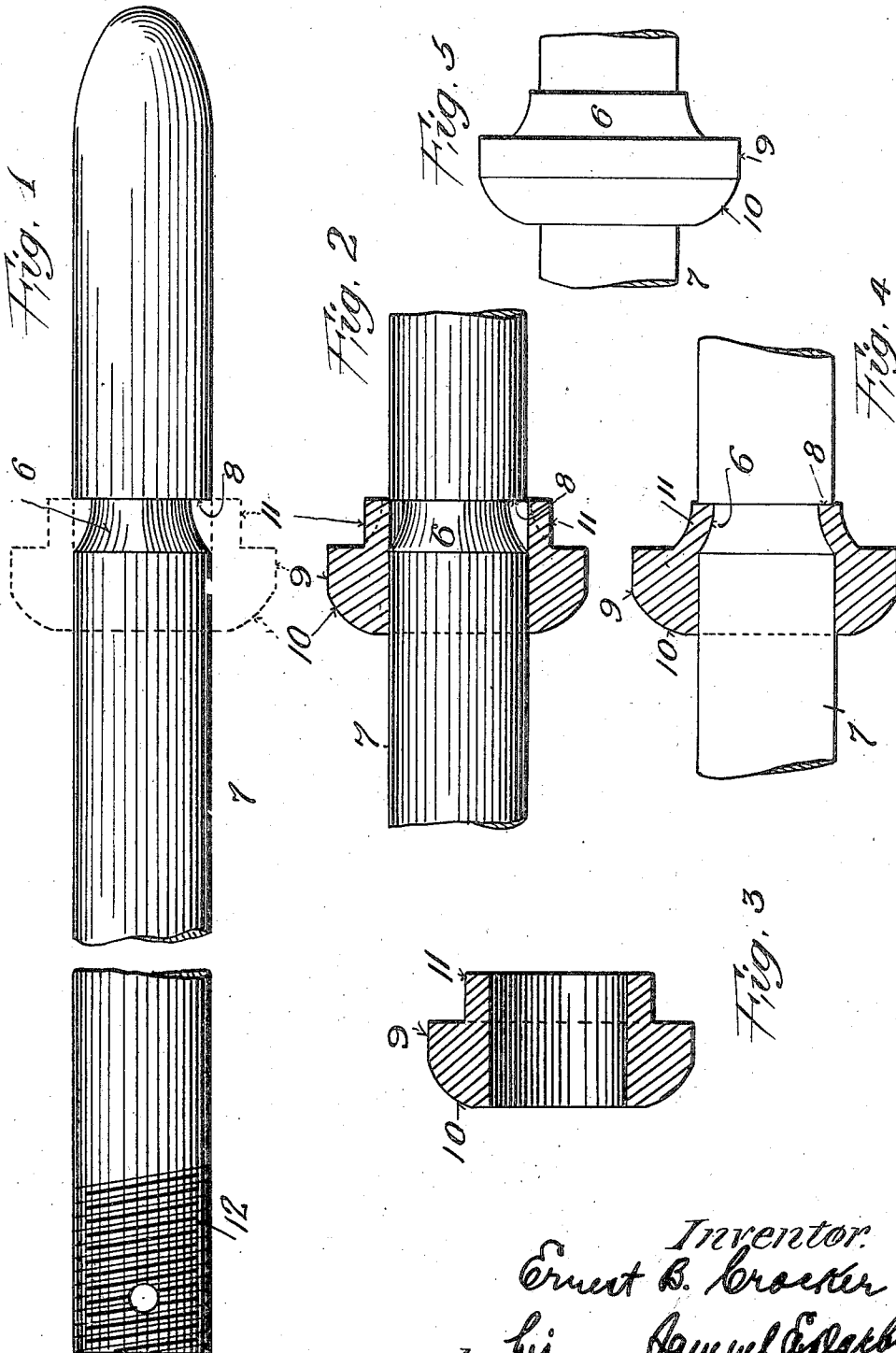


E. B. CROCKER.
 MEANS FOR SECURING COLLARS TO SPINDLES.
 APPLICATION FILED MAY 8, 1919.

1,363,496.

Patented Dec. 28, 1920.



Inventor.
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 by his atty Samuel A. Slatby

UNITED STATES PATENT OFFICE.

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MEANS FOR SECURING COLLARS TO SPINDLES.

1,363,496.

Specification of Letters Patent.

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Application filed May 8, 1919. Serial No. 295,533.

To all whom it may concern:

Be it known that I, ERNEST B. CROCKER, a citizen of the United States, residing at Stratford, county of Fairfield, State of Connecticut, have made a certain new and useful invention in Means for Securing Collars to Spindles, of which the following is a specification.

This invention relates to means for securing a collar to its spindle.

The object of the invention is to provide means which are simple and efficient for securing collars to their spindles.

A further object of the invention is to provide means whereby the collars may be secured to their spindles quickly and economically and wherein the cost is substantially reduced.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown by the accompanying drawing, and finally pointed out in the appended claims.

Referring to the drawing:

Figure 1 is a view in side elevation of a valve spindle constructed in accordance with my invention with a collar indicated in dotted lines applied thereto ready to be secured thereon.

Fig. 2 is a broken view showing the valve spindle and collar assembled thereon, the latter being in section, and ready to be secured.

Fig. 3 is a view in section of the collar.

Fig. 4 is a view similar to Fig. 2 showing the collar after it is secured to the spindle.

Fig. 5 is a broken view in side elevation showing the collar and spindle assembled and secured together.

The same part is designated by the same reference numeral wherever it occurs throughout the several views.

Heretofore it has been a common practice, in assembling collars on their spindles, to turn down the long end of the spindle, to a diameter less than that of its short end, to thereby form a shoulder, against which abuts the end of the spindle sleeve or collar, the collar being formed tubular to slip over the valve stem and the end portion thereof being turned down to form a collar which

fits against the shoulder on the spindle. This practice necessitates the expense of turning down the long end of the spindle with the incident increase in the cost of manufacture of the assembly. Moreover, the shoulder against which the collar abuts is necessarily of limited area, and by reason of this, and of the further fact that the bearing of the collar against the shoulder is in a straight line parallel with the axis of the spindle, when pressure is applied to the collar in a direction to force it against the spindle shoulder an undue shearing strain is imposed. It is among the special purposes of my present invention to avoid the added expense of turning down the entire length of the long end of the spindle and at the same time increasing the abutment area of the shoulder and increasing the shearing strength of the collar when applied and secured to the spindle.

In carrying out my invention, instead of turning down the entire length of the long end of the spindle 7, I form at a suitable point in the length of the spindle an annular groove 6 to form a shoulder 8. The surface of the annular groove 6 in the form shown is gradually curved from the shoulder 8 lengthwise of the spindle and outwardly to the peripheral surface of the spindle. The collar 9 is formed with the rounded or ball bearing surface 10, which is the working face of the collar, and with an annular collar 11 of reduced exterior diameter. The bore of the collar is of such dimension as to slip easily over the spindle 7 in assembling the parts. In assembling the collar upon the spindle the collar is slipped along the spindle until the collar 11 reaches the annular groove 6. The sleeve 11 of the collar is then forced into the annular groove 6 by any suitable means, such for example, as a properly shaped die, and as clearly indicated in Fig. 4.

With the collar and spindle assembled as described and the collar secured to the spindle by forcing the sleeve 11 thereof into the groove 6, as shown in Fig. 4, it will be seen that pressure applied to the working face of surface 10 of the collar tends to force the sleeve 11 inwardly or into the annular groove 6 thereby increasing the shearing strength of the parts. I have found by actual test that the joint between the collar

and spindle as above described is equal to that of the solid spindle. In other words, that the spindle will bend under compression before the collar will shear on the shoulder in the spindle.

By the construction above described I am enabled to use for the valve spindles ordinary drawn stock which requires no machining or turning down other than that required for applying the thread 12 and the annular groove 6 thereto, thus substantially reducing the cost of construction while at the same time securing a strong and efficient joint between the collar and its spindle.

Having now set forth the objects and nature of my invention and a construction embodying the principles thereof, what I claim as new and useful and of my own invention and desire to secure by Letters Patent is,—

1. The combination with a valve spindle having an annular groove formed therein, of a collar fitting upon said spindle and having a sleeve portion formed integrally therewith, said sleeve portion encircling said spindle and adapted to be forced into said groove and hold said collar against endwise

movement in either direction upon said spindle.

2. The combination with a valve spindle having an annular groove formed therein, said groove being deeper at one end than at the other, of a collar fitting upon said spindle and having a sleeve portion formed integrally therewith, said sleeve portion encircling said spindle and adapted to be forced into said groove to hold said collar against endwise movement in either direction upon said spindle.

3. The combination with a spindle having an annular groove to form a shoulder, of a collar fitting upon said spindle and having a sleeve portion formed integrally therewith, said sleeve portion encircling said spindle and adapted to be forced into said groove, the end of said sleeve portion abutting against said shoulder, whereby said collar is held against endwise movement in either direction upon said spindle.

In testimony whereof I have hereunto set my hand on this second day of May, A. D. 1919.

ERNEST B. CROCKER.