I. J. BLAIR.

COMBINED FORCE FEED AND OPERATING DEVICE.

APPLICATION FILED JUNE 1, 1920.

1,384,116. Patented July 12, 1921.

Fig. 1.

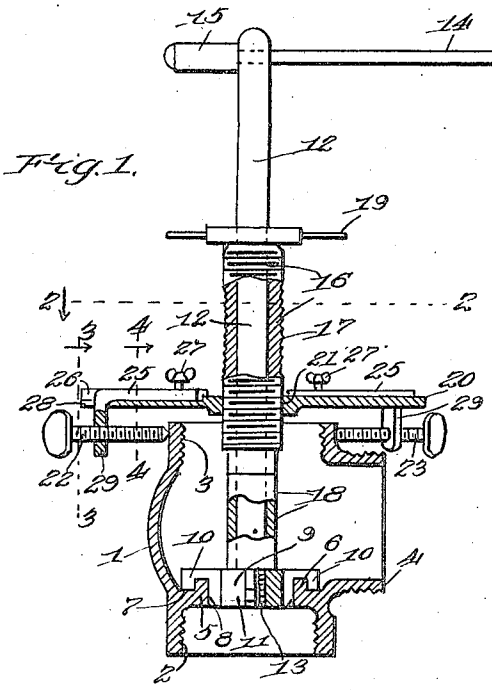
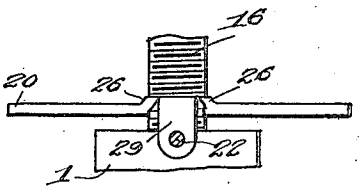


Fig. 3



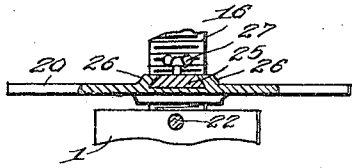
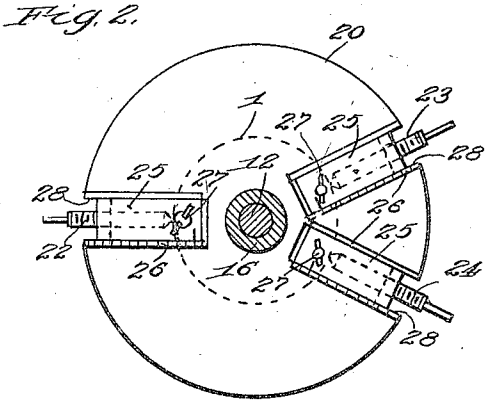


Fig. 4

Fig. 2.



Inventor
Isaac J. Blair
By Earl M. Crawford
Attorney

UNITED STATES PATENT OFFICE.

ISAAC J. BLAIR, OF SPOKANE, WASHINGTON.

COMBINED FORCE-FEED AND OPERATING DEVICE.

1,384,116. Specification of Letters Patent. Patented July 12, 1921.

Application filed June 1, 1920. Serial No. 385,856.

To all whom it may concern:

Be it known that I, ISAAC J. BLAIR, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented new and useful Improvements in Combined Force-Feed and Operating Devices, of which the following is a specification.

This invention relates to an improved device for holding and centering a valve seat dressing tool during the operation of dressing or re-seating a valve seat.

In my pending application filed September 19, 1919, Serial Number 325,012, is disclosed a form of dressing tool to which the invention of this present case is addressed. In re-seating a valve seat, due to the inequalities and irregularities of surface over which the tool must rotate in the initial stages of the dressing operation, difficulty is experienced in holding the tool to its work and preventing it from swerving from a centered position. It also has a marked tendency to jump, especially where the tool is not yet centered and held by engagement with the bore of the valve seat. In the larger or globe valves, the length of stem above the tool is so great that care must be taken to center and hold the upper end portion of the stem in alinement with the bore of the valve seat in order to insure a right angle plane of the latter with respect to its bore. Further, in the relatively large globe valves, with their wide range of sizes, it is essential in order to avoid a multiplicity of holders, to provide one holder which is capable of adjustment to a wide range of sizes of valves.

I have solved this inventive problem by devising a combined holding and centering device, which in combination with my improved forced feed, will hold and center the latter in a most accurate manner, a novel feature being the provision of a plurality of holding and centering members, preferably three, which are disposed in such unequal spaced relation that the plate may as readily be applied to a T-valve as to a union valve. With this number of holding members, the latter can be adjusted to very accurately center, as well as hold the plate in a centered position.

My improved mechanism includes a forced feed device having threaded engagement with the centering and holding plate so that as the tool is rotated to dress the seat, the tool may be advanced to its work against the seat.

My invention has other features and objects which will be more fully described in connection with the accompanying drawing, and which will be more particularly described and pointed out in the appended claims.

In the drawing:—

Figure 1, is a vertical sectional view of a globe valve showing the device of my invention applied thereto.

Fig. 2, is a sectional view on line 2—2 of Fig. 1.

Fig. 3, is a sectional view on line 3—3 of Fig. 1.

Fig. 4, is a sectional view on line 4—4 of Fig. 1.

Like characters of reference designate similar views throughout the different figures of the drawing.

As shown, 1 designates an angle valve of the generally T-passage form, internally threaded branches being indicated at 2 and 3, and an externally threaded branch being indicated at 4. The seat 5, of the valve has an annular raised portion 6, onto which the closure (not shown) is adapted to seat, and it is this raised portion 6, that wears down and requires dressing off of the seat in order to afford a tight seating engagement of the closure on the seat. Outside of the annular portion 6, is a depressed portion 7, which is dressed down to a predetermined level below the top of portion 6. The bore of the valve seat is shown at 8. The dressing tool, which is not specifically claimed in this application, is indicated at 9, and has winged portions 10, provided with cutting edges for dressing off the seat to retain the cross section shown. The central portion 11, of the tool 9, extends downwardly so as to engage the bore 8, for the purpose of centering the tool with respect to the seat.

A tool operating spindle 12, has its lower end 13, threaded into the tool 9, in a manner to provide for rigid attachment of the tool thereto. Said spindle 12, is cylindrical and is of the same diameter throughout its length above the lower threaded portion thereof. At its upper end, the spindle is provided with a transverse bore through which is slidable an operating rod 14, having enlarged ends 15, one of which may be remov-

able for purposes of assembly. By this means, the operator has ample leverage to rotate the spindle 12.

A force feed sleeve 16, exteriorly telescopes said spindle 12 and is readily rotatable about the same as well as being longitudinally movable with respect thereto. The exterior of said sleeve 16 is provided with threads 17, for a purpose which will presently appear. One of the functions of said sleeve 16 is to advance the tool 9, to its work, and in cases where the valve is of considerable length, and to avoid employing an extra long sleeve 16, an auxiliary sleeve 18 may be employed for actual engagement with the tool 9, as shown. Where the valve is of ordinary length, this extension sleeve 18 is not employed, its attachment or detachment being readily effected by removing one of the threaded ends 15, and sliding the sleeves off from or onto the spindle 12. The upper end of the force feed sleeve 16 is provided with finger grips 19, whereby the sleeve 16 may be slowly turned.

A holding and centering device forms a part of my improved force feed, which I will now describe in detail.

Said device includes a plate 20, which may be in the form of a disk, and which is provided with a central threaded bore 21 through which the sleeve 16 projects and has threaded engagement. Means is provided for holding and centering said plate 20, on the valve to be re-seated, and as shown, said means includes three holding or centering members in the form of screws 22 and 23 and 24, these screws being identical in form and operation but being differently numbered to facilitate a description of their operation. Each screw is designed for endwise impinging engagement against the exterior of the valve, the screws having tapered ends for this purpose. By providing three of these screws, they may be severally adjusted to very accurately center the plate 20, their arrangement being broadly triangular. In actual practice, the operator can "feel" the proper adjustment of the plate 20, by the manner in which the tool turns, and further, the threads of the screws 22, 23 and 24, can be counted, with respect to the parts suspending the same so that the equal projection of all the screws can be very accurately ascertained. By disposing the screws as shown, room is left for a laterally projecting branch 4, which would otherwise interfere with application of the device in the case of a very short upper branch 3, as in the valve shown.

Broadly considering the screws 22, 23 and 24, as being mounted on the plate 20, it will now be clear that the sleeve 16 is rigidly held to center, and may be slowly turned to force feed the tool 9, against the seat, as the spindle 14 is turned, the lower end of sleeve 16, or the extension sleeve 18, bearing directly against the tool.

In order to provide the plate 20 with an adjusting range capable of being applied to valves of a great range of size, I have provided improved adjusting means which I will now describe in detail.

As shown, a carrier is provided for each holding screw, and as all are alike in form and function, only one need be described in detail. Carrier 25 has dove-tailed engagement with ribs 26, on the upper face of plate 20, and an anchoring screw 27 serves to hold the carrier in adjusted positions. I may graduate the carrier and one of the ribs, as shown in Fig. 2, so that all the carriers may be advanced radially inwardly or outwardly to exactly the same extent. The peripheral portion of plate 20, is suitably cut away at 28 to permit a pendant portion 29 of carrier 25, to be adjusted to an extreme inward position. The holding screw 22, is threaded through the pendant lug 29.

Now it will be seen that the holding screws 22, 23 and 24, provide a fairly wide range of adjustability to adapt the device to valves of different sizes, but in addition, the carriers afford a still further range of adjustment so that it will be possible to use one plate for a very wide range of size of valves.

A particular feature of this invention is the exterior engagement of the holding and centering device on the valve as it is because of this exterior grip that I am enabled to provide for operation on such a wide range of size of valves, without making the device complicated and bulky.

It is believed that my invention will be fully understood from the foregoing description, and while I have herein shown one embodiment thereof, I do not wish to be limited thereto except for such limitations as the claims may import.

I claim:—

1. In a combined forced feed and operating device for valve seat dressing tools, an operating spindle having a dressing tool for engagement with the seat of the valve, a forced feed sleeve rotatably telescoping said spindle and engaging said tool, and means radially adjustable against the exterior of valves of different sizes and having threaded engagement with the exterior of said sleeve to steady and center the latter and said spindle whereby said sleeve may be rotated to force said tool gradually against said seat as said spindle is rotated to dress said seat.

2. In a combined forced feed and operating device for valve seat dressing tools, a rotatable operating spindle having a dressing tool on its one end for dressing engagement with the seat of the valve, a forced feed sleeve rotatably telescoping the exterior of said spindle and having an end portion engaging said tool and provided with ex-

terior threads, and centering means having threaded engagement with said sleeve and provided with radially adjustable devices for engaging the exterior of valves of different sizes and centering and holding said sleeve to position as the sleeve is rotated to force the rotating tool against said seat.

3. In a combined forced feed and operating device for valve seat dressing tools, a rotatable operating spindle having a dressing tool on its lower operating end for dressing engagement with the seat of the valve, a forced feed sleeve rotatably telescoping the exterior of said spindle and adapted for engagement with said tool to advance the latter against said seat, and a centering and holding plate having threaded engagement with said sleeve, said plate having holding screws in substantially triangular relation for impingement against the exterior of said valve body to center and hold said sleeve.

4. In a combined forced feed and operating device for valve seat dressing tools, a rotatable operating spindle having a dressing tool on its lower end for dressing engagement with the seat of said valve, a forced feed sleeve rotatably telescoping the exterior of said spindle and adapted for feeding engagement with said tool to advance the latter to its work against said seat, and a centering and holding plate having threaded engagement with said sleeve, said plate having a plurality of radially adjustable screw carriers, means for holding said carriers in radially adjustable positions for valves of different sizes, and each carrier having a holding screw adapted to be endwise impinged against the exterior of said valve to center and hold said plate.

5. In a combined forced feed and operating device for valve seat dressing tools, a rotatable operating spindle having a dressing tool on its lower end for dressing engagement with the seat of said valve, a forced feed sleeve rotatably telescoping the exterior of said spindle and adapted for feeding engagement with said tool to advance the latter to its work against said seat, a centering and holding plate having threaded engagement with said sleeve, said plate having a series of adjustable carriers and each carrier having an adjustable valve engaging and plate centering member whereby the plate will have a range of adaptability to valves of a range of sizes equal to the total or combined range of adjustment of said carriers and said valve engaging members.

In testimony that I claim the foregoing as my own, I hereby affix my signature.

ISAAC J. BLAIR.