J. CURRAN.

Device for Tapping Water-Mains.

No. 165,310. Patented July 6, 1875.

FIG. III

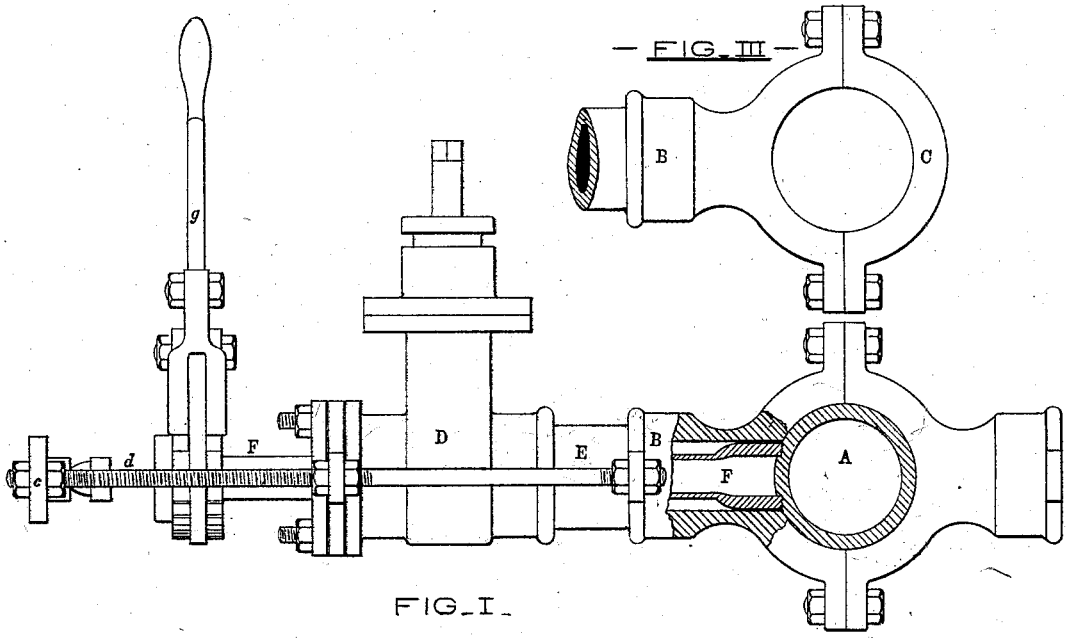

FIG. I.

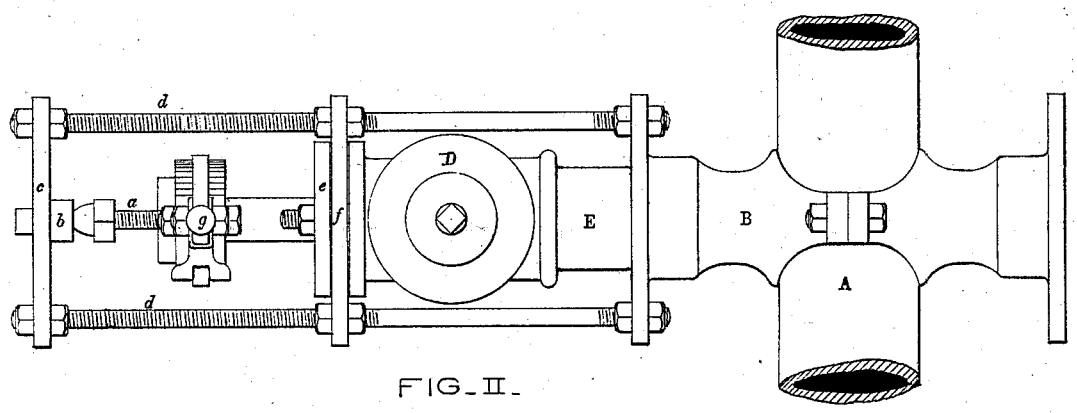

FIG. II.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES CURRAN, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN DEVICES FOR TAPPING WATER-MAINS.

Specification forming part of Letters Patent No. **165,310**, dated July 6, 1875; application filed April 26, 1875.

To all whom it may concern:

Be it known that I, JAMES CURRAN, of the city of Baltimore and State of Maryland, have invented certain Improvements in Devices for Tapping Mains, of which the following is a specification, reference being had to the accompanying drawing forming a part hereof.

The invention relates to means employed in tapping the main while under pressure, without interfering with the current therein, or causing leakage thereof, during or after the operation, as hereinafter described.

In the accompanying drawing, Figure 1 shows a side view, partly in section, of my apparatus applied to a main. Fig. 2 shows a plan of the same. Fig. 3 illustrates a modification of a portion of the apparatus employed.

Similar letters of reference indicate similar parts in all the figures.

A represents the water-main, and B the branch nozzle, provided with a curved flange to fit around the main. The extremities of the flange are connected by bolts to a correspondingly-curved strap, C, on the opposite side of the main, and a water-tight joint between the flange and main formed by means hereinafter described. D is a stop-valve attached directly to the nozzle B, or indirectly by means of a pipe, E, as shown in the drawing. In Figs. 1 and 2 the strap C is dispensed with, and two nozzles used, the flanges of which are bolted together, forming a complete circle around the main A. F is a hollow boring-bar, one end of which is enlarged to the size of the proposed aperture in the wall of the main, and serrated or toothed to form a cutting-edge. The other end of the boring-bar is fitted with a feed-screw, *a*, pointed to rest within a center, *b*, in the cross-bar *c*. The cross-bar *c* is held by means of the rods *d*, which extend to lugs projecting from the nozzle B. The boring-bar, where it enters the stop-valve, is packed in order to prevent leakage around it, the packing being secured from accidental removal by means of the gland *e* and flange *f*.

The boring-bar F is preferably operated through the medium of a ratchet-lever, *g*; but any other suitable device may be employed, if desired.

The operation of attaching a nozzle to a water-main, and of boring the communicating aperture between them, in a manner to prevent leakage, is as follows: The nozzle, with the stop-valve, being placed in the desired position, and the strap C bolted thereto, the joint is formed by pouring molten lead between the surfaces of the nozzle-flange and the main. The rods *d* and the packing devices are then adjusted, and, the valve proper being raised, the boring-bar is inserted in the stop-valve, the cutting end being brought into contact with the outside of the main, and the feed-screw *a* resting within the center *b* in the cross-bar *c*. After sufficient strain has been placed upon the boring-bar by means of the feed-screw, the ratchet-lever is vibrated, and an annular groove cut in the outside of the main. Upon the penetration of the boring-bar entirely through the side of the main, the said bar is withdrawn sufficiently to allow of the closing of the valve, after which the bar may be entirely removed.

It will be understood that the circular piece of metal cut from the side of the main is withdrawn with the boring-bar, as it is retained within the bar by the pressure of the water in the main.

It will be seen that the tool employed, not having a center point, immediately begins its cut, and does not weaken the piece removed, and cause leakage from the main before the metal is entirely penetrated by the drill proper. The connection of the branch with the valve and rear bar *c*, by means of the screw-rods *d*, gives great rigidity to the whole, and enables the tool to be fed up to the main in a convenient manner.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The boring-bar F, having a cylindrical cup end to receive the piece cut from the main, and provided upon its annular edge with cutters or serrations, as described, com-

bined with the ratchet and feed mechanism herein described, as and for the purposes specified.

2. The branch B, pipe and valve E D, flange *f*, cross-bar *c*, and screw-bolts *d*, with their nuts, combined substantially as and for the purposes set forth.

3. The combination of the branch B, pipe and valve E D, gland *e*, flange *f*, screw-rods *d*, cross-bar *c*, boring-bar F, and the ratchet and feed mechanism, all substantially as and for the purposes herein set forth.

In testimony whereof, I have hereunto subscribed my name this 13th day of April, in the year of our Lord 1875.

JAMES CURRAN.

Witnesses:
WM. L. SHARETTS,
WM. F. SINCLAIR.