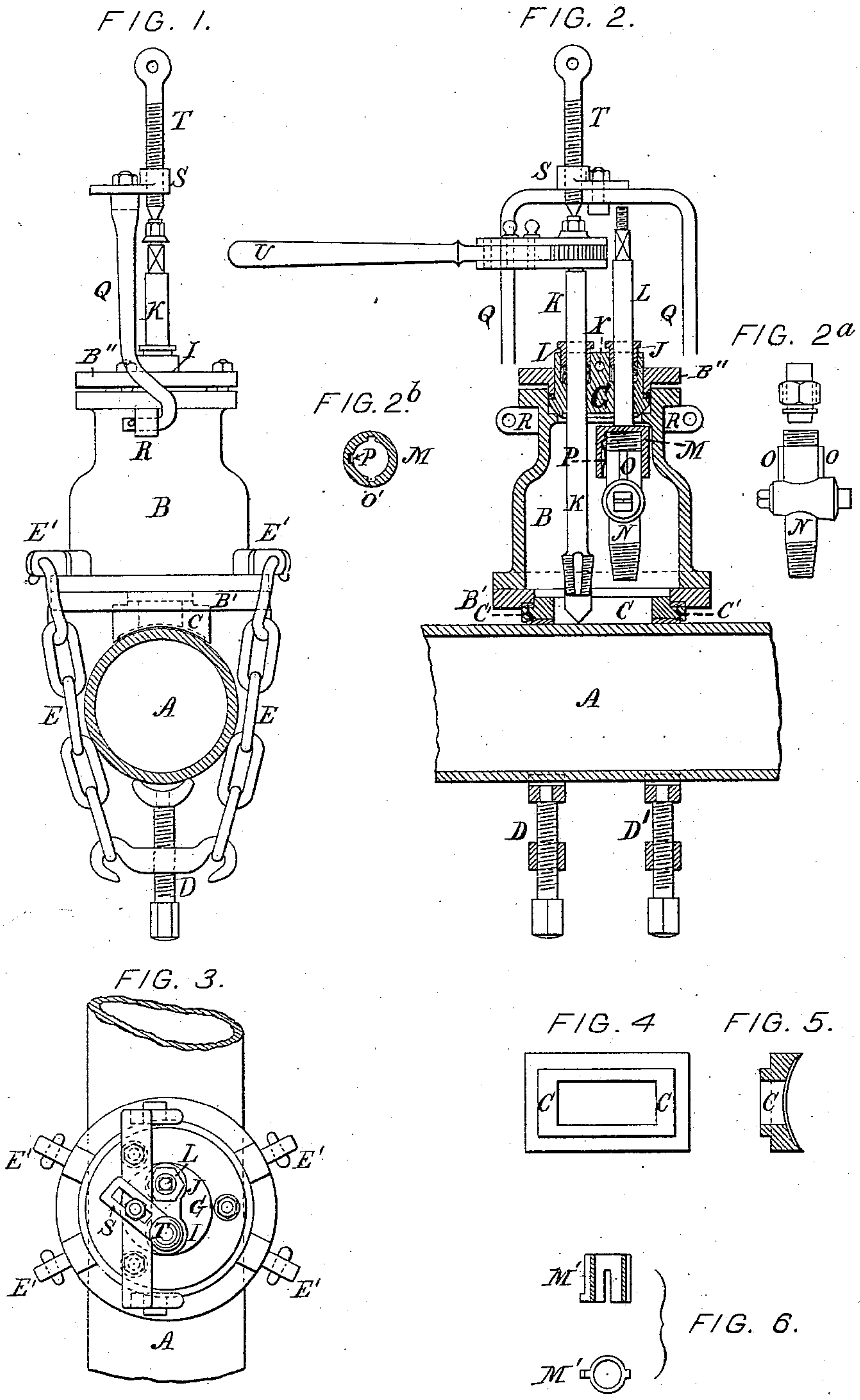
J. PENNEY.
Machine for Tapping Mains.

No. 210,706. **Patented Dec. 10, 1878.**



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UNITED STATES PATENT OFFICE.

JAMES PENNEY, OF STOCKPORT, GREAT BRITAIN.

IMPROVEMENT IN MACHINES FOR TAPPING MAINS.

Specification forming part of Letters Patent No. **210,706,** dated December 10, 1878; application filed October 8, 1878; patented in England, January 8, 1878.

To all whom it may concern:

Be it known that I, JAMES PENNEY, of Stockport, in the county of Lancaster, in England, have invented a new and useful Improvement in Apparatus for Tapping Mains, of which the following is a specification:

My improved apparatus is, primarily, designed for connecting branch pipes or service-pipes to street-mains during times when there is a pressure of gas or water within such mains, but is also applicable with advantage in some cases where steam-connections have to be effected under pressure.

The present invention consists, first, in the combination of a working-chamber having a rotary cover, a sliding rotary tool-holder or shaft passing upward through a gland in said cover, a removable yoke supported by perforated lugs on the curb of said chamber, an adjustable nut-bracket attached to said yoke, and an axial feed-screw working in said bracket and engaging with the extended upper end of said shaft above a driving-square; secondly, in an improved rotary and sliding cock-holder or shaft having at its inclosed lower end a large axial socket with internal longitudinal grooves to receive lateral flanges on the ferrule tap or cock, and an internal spring to press against the side of the latter.

Said elements of the first part of the invention co-operate to apply the drill and screw-tap in a simple and efficient manner, and at the end of the boring operation, by removing the yoke, convenient access is had to the rotary cover for bringing the cock-holder into position.

The improved cock-holder supports the ferrule tap or cock by friction.

Any required force can be applied thereto for tightening the cock without the possibility of locking the holder, and when the cock is in place the holder is readily withdrawn by simply lifting it, as hereinafter more fully set forth.

Figure 1 of the accompanying drawing is an exterior side view, Fig. 2 a front sectional view, and Fig. 3 a plan or top view, of my improved apparatus, showing the same as applied to a gas or water main in accordance with my invention.

In all the said views, A represents the main or pipe to be drilled and tapped, and to which a connection is then to be made. B is a chamber formed by a hollow casting or curb, with a flat bottom, B′, and a flat annular top, B″, which are securely bolted to parallel flanges at the respective extremities of said curb, so as to form gas and water tight joints.

An opening is formed through the flat bottom B′ to receive a saddle-piece, C, which rests upon the main A, as illustrated, being fitted thereto, and provided on its curved face, and also on its flat back, with rubber or other washers or packings, C′, to form gas and water tight joints.

A series of such saddles having face-curves of different diameters will be provided for each apparatus, so as to adapt one and the same apparatus for use upon mains of various sizes, the back of each saddle to be fitted to the flat bottom B′ and its opening.

The apparatus is secured in position upon the main A, either vertically, as shown in the drawing, or at any required angle, and the joints between the main A and saddle C and between the latter and the flat bottom B′ are tightened by means of a pair of clamping-screws, D D′, and chains E E, the latter being constructed with central nut-links, in which said screws work, while the extremities of each chain are hooked to lugs E′ on the curb, and the requisite pressure is readily applied by turning said screws.

The flat annular top B″ of the chamber B is constructed on the principle of a stuffing-box, and serves, with its gasket, to support and pack a concentric circular cover or guide-block, G, which is beveled at its bottom and seated on a flange within the neck of said chamber, as clearly shown in Fig. 2, so as to form a tight joint, and at the same time permit said cover to rotate freely. Said cover G is furnished with vertical glands or stuffing-boxes I J at equal distances from its center of rotation, to form gas and water tight guides for a pair of handles or shafts, K L, which rotate and slide therein.

The lower end of the shaft K, which is hereinafter called the "tool-holder," is provided with a drill and a tapered thread-cutter or tap combined in one tool, and the lower end of the shaft L, which is hereinafter called

the "cock-holder," is provided with a socket, M, to hold a ferrule-tap or stop-cock, N, of peculiar construction. The latter (shown detached in Fig. 2^a) has a pair of projections or wings, O, on its upper neck, and the socket M (shown in plan in Fig. 2^b) has corresponding internal grooves O′ and an internal spring, P, at right angles thereto, to press against the side of the cock, so as to keep it from falling out.

The same socket is adapted to hold smaller cocks by means of a series of lining-sockets, M′, one of which is shown in section and end view in Fig. 6.

Ordinary cocks, &c., and holders fitted thereto may be employed in connection with the other parts of my improved apparatus, which is designed for providing mains under pressure with any preferred style of cock, valve, or other connection.

The upper part of the rotary cover G projects beyond the flat top B″, and is provided with a transverse hole, X, to receive a rod by which to rotate it, so as to bring the tool-holder and cock-holder successively into position. The upper ends of the said tool-holder and cock-holder are adapted by squares and threaded ends to receive in succession one and the same ratchet-brace, U, (shown in Fig. 2,) and also to receive in succession the direct impact of an axial feed-screw, T. The latter works in an adjustable nut-bracket, S, which is supported by a yoke, Q, to which it is bolted, the ends of this yoke being hooked into lugs R on the curb of the chamber B.

In the condition represented in Figs. 1, 2, and 3, the ratchet-brace U is applied to the tool-holder K. The requisite hole is thus drilled and tapped, ready to receive the cock N, which is meanwhile suspended by the cock-holder L, as shown in Fig. 2. At the end of said drilling and tapping operation the yoke Q is detached, the tool-holder is drawn up to its highest position within the chamber B, and the cover G is then given a half-turn, so as to bring the cock N over the tapped hole. The cock-holder is now lowered, and, with or without the aid of said parts Q R S T U, (an ordinary screw-wrench being usually sufficient,) the cock is screwed home into said hole, and the connection is thus completed without any gas or water having escaped out of the chamber B. The holder L M slips freely off the inserted cock without liability to loosen the latter.

Instead of being combined in one tool, the drill and tap may be separate, each having a holder or shaft passing through a gland or stuffing-box in the rotary cover G, and thus as many tools as may be required may be arranged in such cover around and equidistant from its center of rotation.

I am aware that apparatus for tapping mains has before been provided with a rotary plate or disk carrying glands or stuffing-boxes for the tools employed.

I am also aware that an oblong curb has been provided with a reciprocating slide at its top for the same general purpose, and I hereby disclaim this.

I also disclaim the broad idea of adapting the cock-holder to support and drive a ferrule-tap or its equivalent. Heretofore they have been so adapted by means of screw-sockets or socket-pieces.

The following is what I claim as new and of my own invention, and desire to secure by Letters Patent of the United States, namely:

1. The combination, in an apparatus for tapping mains under pressure, of a working-chamber having a rotary cover, a sliding rotary tool-holder or shaft passing upward through a gland in said cover, a removable yoke supported by perforated lugs on the curb of said chamber, an adjustable nut-bracket attached to said yoke, and an axial feed-screw working in said bracket and engaging with the extended upper end of said shaft above a driving-square, as herein shown and described, for the purpose set forth.

2. In an apparatus for tapping mains under pressure, the improved rotary and sliding cock-holder or shaft herein specified, having at its inclosed lower end a large axial socket with internal longitudinal grooves to receive lateral flanges on the ferrule tap or cock, and an internal spring to press against the side of the latter for supporting and releasing said tap or cock in the manner set forth.

JAMES PENNEY.

Witnesses:
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