J. J. QUINN.

Machine for Tapping Mains.

No. 160,952. Patented March 16, 1875.

Fig. 1.

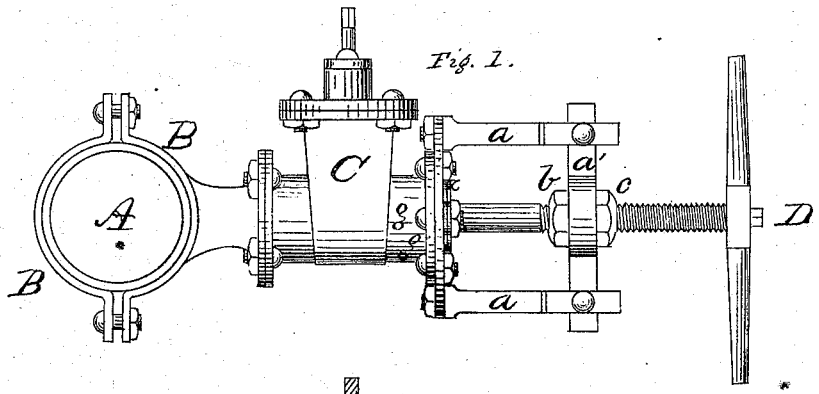


Fig. 2.

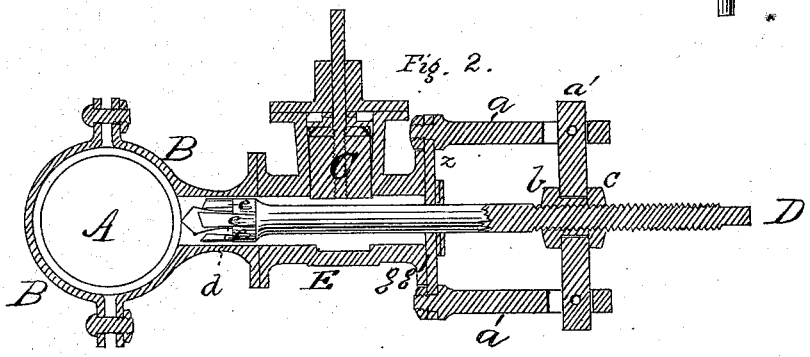
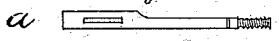


Fig. 3.



Witnesses,

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UNITED STATES PATENT OFFICE.

JOHN J. QUINN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO EDWARD T. JAMESON, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR TAPPING MAINS.

Specification forming part of Letters Patent No. **160,952**, dated March 16, 1875; application filed October 3, 1874.

To all whom it may concern:

Be it known that I, JOHN J. QUINN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Device for Making Connections with Water, Gas, or Steam Mains; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a vertical axial section. Fig. 3 is an elevation of shoulder bar and socket for journal-bearing.

The object of my invention is to provide a device by means of which large connections with water, gas, and steam mains may be made without stopping the flow of water, gas, or steam, or otherwise obstructing or interfering with their supply.

My invention consists, first, in the novel construction and combination of devices for effecting and regulating the pressure and feed of the drill; secondly, in the combination, with a clip-collar embracing the main, of a sub-main branch, containing a suitable valve, and constructed with a bowl and flange adapted, respectively, for the connection of the sub-main continuations and the attachment of the drilling-instrument.

Referring to the accompanying drawings, A is the main pipe, with which a large connection is to be made. B B represent a metallic clip-collar or broad annular band, in two separate parts, and of a sufficient width and thickness to effectually protect the main at the point to be cut. The side on which the connection is to be made is made in the shape of a T-branch, and forms a portion of the permanent branch.

If connection is to be made on both sides of the main, the clip-collar has both portions made as just described.

This clip-collar may be wrought or cast.

The two sections of the collar are provided with flanges at their adjacent edges. Through these are passed bolts or screws to draw them tightly, and hold the two portions firmly and permanently upon the main. The clip-collar is so formed that the flanges do not quite meet, in order to leave space for calking or leading the joint.

C represents an ordinary cut-off valve, and E a section of the sub-main, in which the valve is inserted, which are permanent parts of the connection. The outer end of the valve-pipe or sub-main is formed with both a bowl, *g*, and a flange, *g'*, the bowl to admit the regular supply-pipe after connection, and the flange for the adjustment of the drilling apparatus. This latter consists of two shoulder-bars, *a a*, at one end passing through the disk *z* at opposite points, and provided at the other end with slots and set-screws, to facilitate the adjustment or "truing" of the journal-bearing *a'*. This journal-bearing is a bar, having at the middle a cylindrical eye, the interior surface of which is turned smooth to allow free play to the journal *b*.

The journal is a nut-headed cylinder, threaded inside and smooth outside, that passes through the eye of the bar *a'*, and into which the drill-bar is secured, and which permits the drill-bar and nut to revolve freely, while an accurate bearing is maintained.

c is a check-nut, which is applied to the threaded part of the drill-shaft, above the journal-bearing *a'*, and which, with the journal *b*, revolves freely to allow the drill to turn without progressing lengthwise. The drill is permitted to feed while cutting, when the play or rotation of the nuts *c b* is arrested. D designates the drill-bar, provided with a crank or other suitable means of rotation. At one end the drill-bar is provided with a bit, *d*. An ordinary triangular bit, projecting beyond the cutters *e*, forms and maintains a journal for the drill-rod during the operation. The bit is provided on its periphery with a number of cutters, *e*, wedge-shaped in cross-section.

The method of operating is as follows: Having permanently attached one section of the clip-collar (or each of the two, if connection be required on both sides,) to a permanent valve-section, both portions are placed around the main, bolted or otherwise rigidly joined, and all cracks and joints calked and leaded, or cemented firmly, so as to make a permanent

attachment. The connection being thus formed, it only remains to open communication with the interior of the main. The drilling apparatus is now temporarily bolted to the outer flange of the valve-section, and the drill operated till the required orifice is cut. The pressure of the water, gas, or steam keeps the piece which has been cut out jammed against the cutter-head, so that no pieces or shavings can get into or clog the main. The drill is then withdrawn till its bit comes just beyond and outside the plunger or valve, at which time the latter is shut down, after which the drilling apparatus is taken off, the circular piece cut out is removed, the outer end of the valve-section cleaned, and the laying of the regular pipe proceeded with at once.

In case of a double connection, the operation of drilling is transferred immediately to the other side of the main, without delaying the work on the side already connected.

Having fully described my invention, what I claim is—

1. The combination of the clip-collar B embracing the main A, the sub-main branch E, having the bowl *g* and flange *g'*, and the valve C with the disk *z*, arms *a*, journal-bearing *a'*, screw D, and check-nuts *b c*, substantially as shown and described, and for the purpose set forth.

2. The threaded journal *b* and check-nut *c*, in combination with the bearing *a'* and threaded drill-shaft D, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of September, 1874.

JOHN J. QUINN.

Witnesses:
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THOS. J. MCTIGHE.