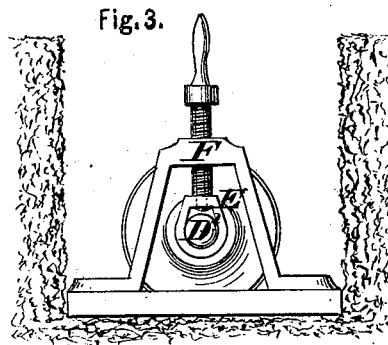
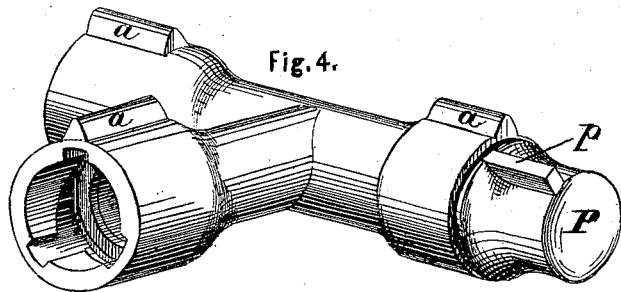
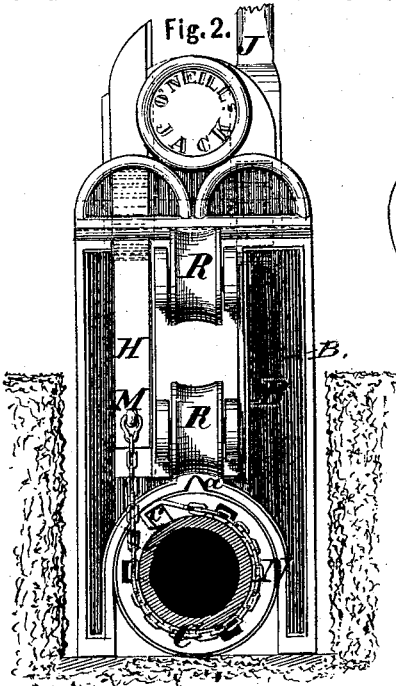
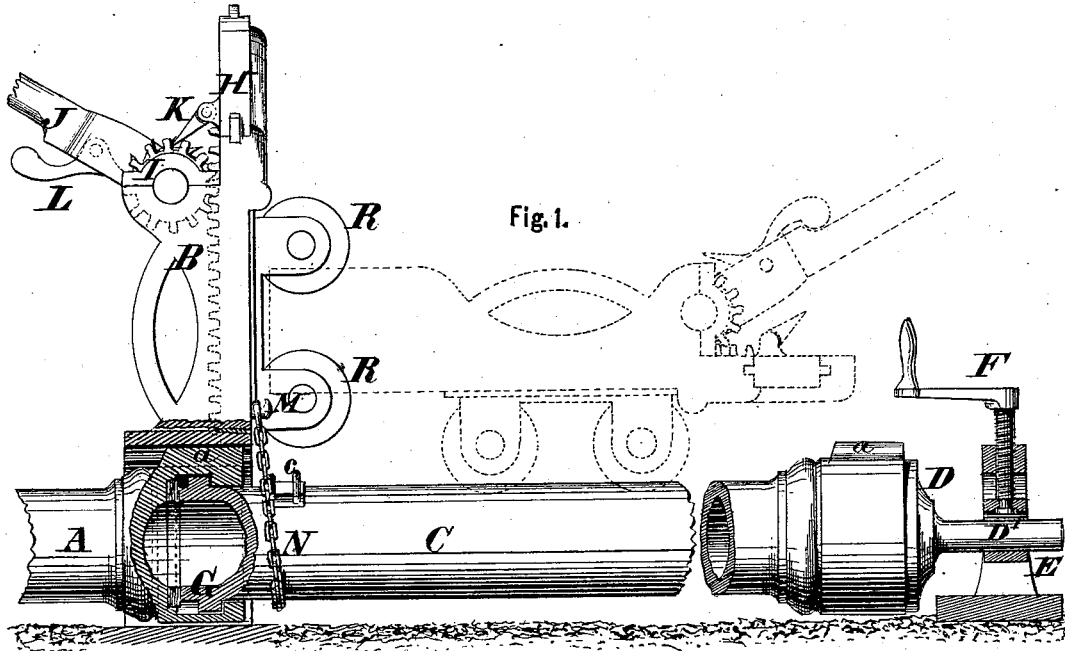


A. O'NEILL.

Art of Laying Street-Mains.

No. 163,942.

Patented June 1, 1875.



WITNESSES.  
Geo. L. Ewin  
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By *[Signature]*

# UNITED STATES PATENT OFFICE.

ANDREW O'NEILL, OF ANSONIA, CONNECTICUT.

## IMPROVEMENT IN THE ART OF LAYING STREET-MAINS.

Specification forming part of Letters Patent No. **163,942**, dated June 1, 1875; application filed October 15, 1874.

*To all whom it may concern:*

Be it known that I, ANDREW O'NEILL, of Ansonia, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in the Art of Laying Street-Mains, of which the following is a specification:

This invention relates to means for laying and coupling street-mains of any size; and it consists, primarily, in the employment of a screw or bayonet-joint coupling, in combination with a twisting-jack for making the same, the jack to be operated by hand-power for small mains and by hydraulic or other power for larger mains, as may be required.

The invention consists, secondly, in a peculiar construction of twisting-jack adapted to straddle and rest on the socket end of a laid section, so as to hold the same while it twists the small end of the succeeding section into it, occupying no more space in doing this than is actually required by the width of the size of pipe which is being laid. Mains can thus be laid in narrower trenches than heretofore. Considerable saving in excavation is thus effected.

The invention consists, thirdly, in the combination of a rack-bar, a chain, and a lug on the pipe as means for applying the power to the latter.

The invention consists, fourthly, in the application of one or more wheels to one face of the twisting-jack, to adapt it to travel on the laid pipe from point to point, the wheels or trucks to be changeable, if desired, to adapt the jack to different sizes of mains.

The invention consists, fifthly, in means for adjusting and supporting the outer end of a section while the coupling of its other end is being effected. By this means gas-mains can be laid with facility, so as to be perfectly level, as required, the work to be tested as it progresses by means of a spirit-level.

The invention consists, sixthly, in superior dead-ends for mains, adapted to be applied and removed with facility by means of the twisting-jack.

In the accompanying drawings, Figure 1 is a side view, partly in longitudinal section. Fig. 2 is an end elevation, the pipe in section. Fig. 3 is an end elevation, showing the adjusting and supporting jack. Fig. 4 is a perspec-

tive view of a T-branch, having a dead-end applied to one socket.

A represents a section of gas or water main already laid. Upon it is placed a twisting-jack, B, which is used in coupling the next section, C, to the section A, and so on from one section of gas or water main to another along the line of excavation. The section C is laid in the trench, there being fitted into its forward end a plug, D, having a stem, D', which hangs in the stirrup E of a jack, F. The latter has a screw-stem and crank, as shown in Figs. 1 and 3, in order to adjust the section E perfectly in line by raising and lowering the advanced end, as may be required.

The coupling is a screw or bayonet joint, the entering portion of which has lugs, which catch behind inclined ledges in the socket, as shown at G, Fig. 1, and, as the entering section is rotated on its axis, draw the parts firmly together, and compress a gasket or packing-ring of lead arranged within a recess in the end of the socket. This may be supplemented by a run-joint, if desired; or, if it becomes necessary to cut a section, the latter may be resorted to.

The section C being laid in the trench, and the end being introduced into the socket of A, is to be rotated to cause the lugs of the entering portion to draw firmly behind the inclined ledges of the socket, and compress the leaden gasket or packing-ring, which becomes jammed against a shoulder in the socket, and around the end of the entering section, both inside and outside. To make this rotation forcibly, speedily, and effectually, I employ the jack B.

The frame of the jack straddles and rests upon the socket end of section A, a lug, *a*, on the latter entering a notch or depression in the saddle of the jack, to keep the section A from turning when force is applied to turn section C. H is the rack-bar of the jack, acted upon by a pinion, I, and ratchet-lever J. K is a pawl, which engages the ratchet to hold the rack-bar to an attained elevation when the lever J is again raised to take a new hold. In this case the pawl L on the lever J slips on the ratchet. If additional power is required, a hydraulic jack may be applied in any preferred way, or other power may be

used. To a stud, M, on the rack-bar is attached the end of a chain, N, which has one turn around the section C, and then hooks over a lug, *c*, thereon. As the rack-bar H is raised the strain on the chain rotates the section C, and brings it firmly and compactly against the gasket or packing, which is compressed thereby, so as to form a tight joint. The ratchet is then released, the rack-bar depressed, and the chain unshipped. This being done, the jack is tipped over into the position shown in dotted lines in Fig. 1, its wheels R resting on the section of pipe just laid, and is thus drawn along, the pipe C forming a track therefor. This is much more convenient than lifting the jack from its seat and carrying it to the next station; and a still greater saving in time and power is effected by the convenient and powerful means for rotating one section by the jack which rests upon and anchors the other section.

To unscrew a section the twisting-chain is simply applied, so as to reverse its action.

To close a terminal end, whether of a straight section or branch, a peculiar dead-end, P, is provided. This is constructed on the same principle as the entering end of a section as regards one part of the screw or bayonet coupling, and with a lug, *p*, on its periphery to engage with the twisting-chain N. The plug D is also constructed with coupling-lugs to secure it against accidental withdrawal.

The employment of the screw or bayonet joint, made by means of a power-jack, obviates any necessity for fires and the handling of melted lead, except in special cases. The pipe can also be laid in water, if necessary, as in marshy ground and in trenches which have been partially filled by rains.

No enlargement of the trench is necessary, as for the accommodation of workmen in running and calking the ordinary lead joint. The general width of trench required is also the narrowest possible.

The joints are adapted to stand the greatest amount of pressure, and offer no obstruction within the pipe. A less amount of lead per joint is also required, and this is adapted to be prepared in quantity at the foundry.

Mains can thus be laid with superior cheap-

ness as regards the materials and excavation, and also with superior rapidity, and consequently with less expense and less obstruction to business.

The following is claimed as new in this invention, namely:

1. The mode of coupling or forming joints of gas or water mains, consisting in providing the sections of pipe with the respective members of a bayonet or screw joint, and with leaden gaskets or packing-rings, and with external lugs *a p*, or their equivalents, bringing the parts loosely together by hand, and forcibly rotating the entering section by means of a twisting-jack, substantially as herein specified, for the purposes set forth.

2. The twisting-jack B, constructed with a deep saddle, and with a notch or depression therein, in combination with a corresponding projection, *a*, on one section, A, which is thus held by this jack, while it supports the same during the application of the twisting strain to an adjoining section, C, as set forth.

3. The combination of the rack-bar H, chain N, and lug *c*, for the purpose described.

4. The wheel or wheels R, arranged on one of the vertical sides of the twisting-jack B, and constructed with concave peripheries, in combination with the laid pipe, forming a track therefor, as means for transporting the twisting-jack from point to point.

5. The combination of the adjusting and supporting jack F, having a swiveled stirrup, E, supported by a vertical screw, and the plug D, having a long cylindrical stem, D', with lugs or projections *a c* on the sections of pipe, and a twisting-jack, B, operating in connection therewith, as described, for laying street-mains by mechanical means, in the manner specified.

6. The improved dead-end P, having one member of a screw or bayonet coupling and an external lug, *p*, formed thereon, for use in combination with a twisting-jack, to temporarily stop or plug the outer end of a section or branch, substantially as herein described.

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Witnesses:

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