G. FETTER & J. S. McCLINTOCK.

COUPLING PIPES.

No. 15,560. Patented Aug. 19, 1856.

Fig. 1.

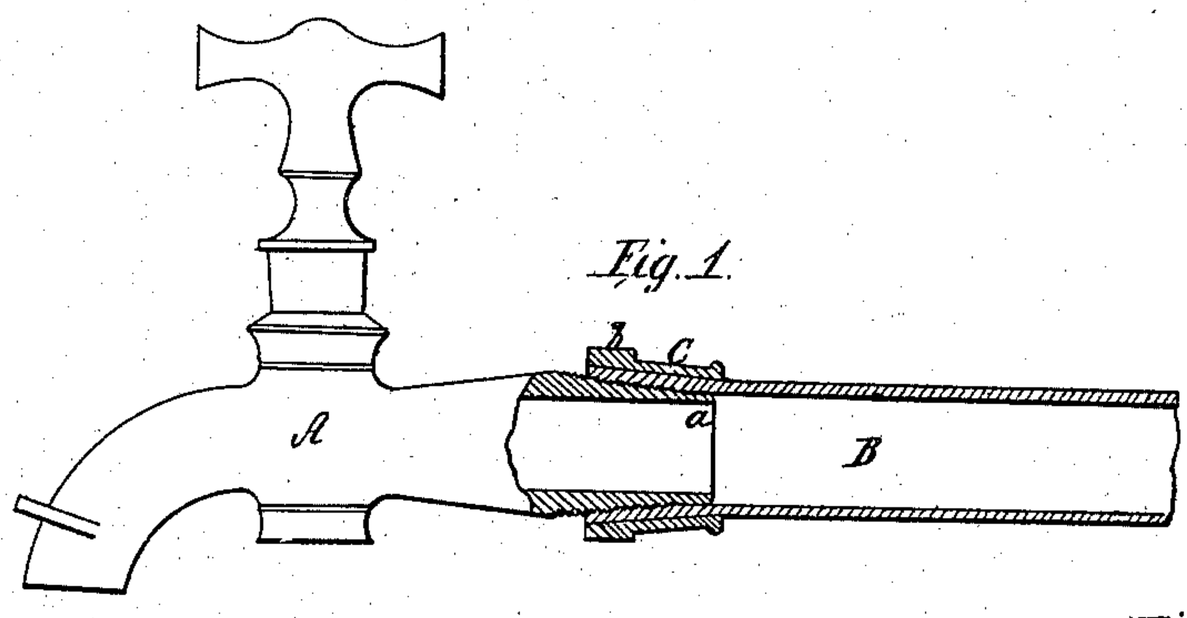


Fig. 7.

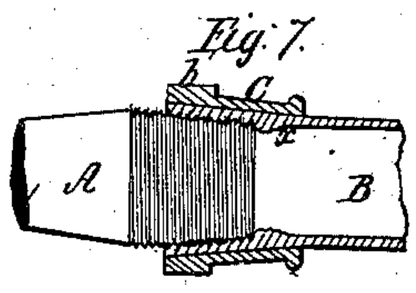


Fig. 2.

Fig. 3.

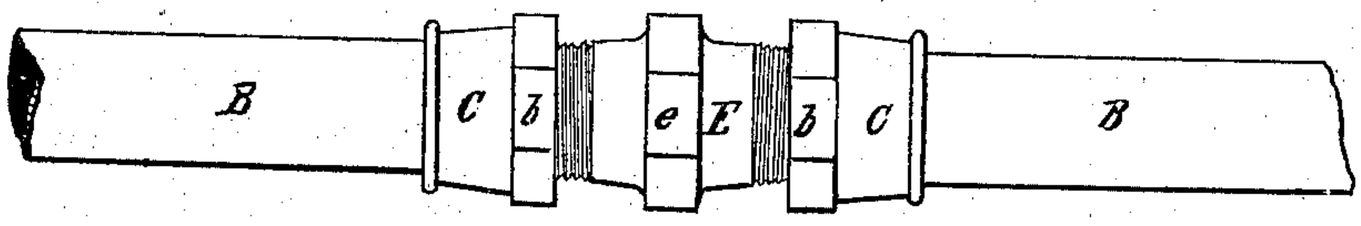


Fig. 4.

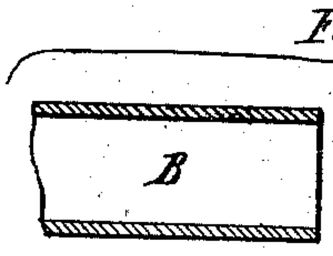


Fig. 5.

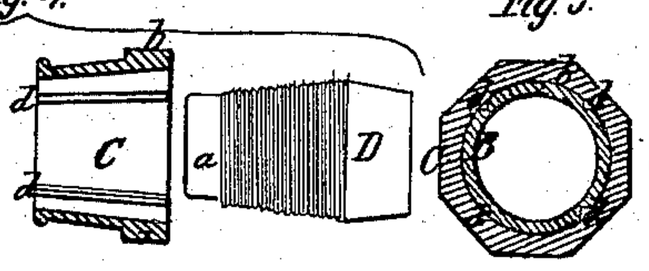
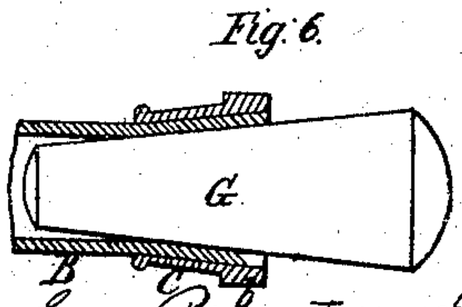


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE FETTER, OF PHILADELPHIA, PENNSYLVANIA, AND JOHN S. McCLINTOCK, OF LIBERTYVILLE, ILLINOIS.

IMPROVEMENT IN COUPLING-PIPES.

Specification forming part of Letters Patent No. **15,560**, dated August 19, 1856.

To all whom it may concern:

Be it known that we, GEORGE FETTER, of the city of Philadelphia and State of Pennsylvania, and JOHN S. MCCLINTOCK, of Libertyville, Illinois, have invented a new and Improved Mode of Attaching Connections to Lead Pipes; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the figures and letters of reference marked thereon.

Our invention relates to a mode of rapidly attaching to lead pipes, stop-cocks, and other metal connections without the assistance of solder; and it consists in surrounding the end of the lead pipe to which it is required to attach a connection with a tapering ferrule of brass or other metal harder than lead. On the outside of this ferrule is a raised portion with six, eight, or any other convenient number of sides for the purpose of receiving a screw-key or other similar holdfast. On the inside of the ferrule are any convenient number of projections, which are caused to penetrate the outside of the lead pipe by the preparatory process of driving a tapering plug into the end of the same, thus causing the end of the lead pipe to fit tightly to the inside of the tapering ferrule, the projections in which prevent one from turning without the other. The plug being withdrawn, the end of the pipe is now ready for receiving the connection. The portion of the latter which enters the pipe is cut with a tapering screw, the threads of the screw terminating a short distance from the end of the connection, which is turned perfectly smooth and rounded off. The ferrule on the end of the lead pipe being now held by a screw-key on the raised portion, the connection is screwed into the tapering end formed by the plug, the threads on the connection cutting corresponding threads on the inside of the softer metal of the pipe and the smooth end of the connection acting as a guide and preventing the burring up of the lead during the operation. The whole is designed and arranged for the purpose of making a perfectly air and water tight attachment with great rapidity and without solder and easily accomplished by the most unskillful workman.

In order to enable others skilled in the art to make and use our invention, we will now proceed to describe its construction and operation.

On reference to the drawings which form a part of this specification, Figure 1 is a view, partly in section, of an ordinary stop-cock as attached by our improved mode to the end of a lead pipe. Fig. 2 is a view of a cut-off connection, the pipes being attached to both ends of the same. Fig. 3 is an uninterrupted connection showing our improved mode of fastening. Fig. 4 are detached views in section of part of a lead pipe, the ferrule and part of the connection being separated from each other. Fig. 5 is an end view of the ferrule inclosing the lead pipe and showing the projections for preventing the pipe from turning without the ferrule. Fig. 6 is a sectional view showing the process of adapting the end of the pipe to the inside of the ferrule by means of a tapering plug. Fig. 7 is a sectional view showing the bad effects of screwing a tapering connection without a smooth end into the end of the pipe.

The same letters of reference allude to similar parts throughout the several views.

A is a stop-cock; B, the pipe to which it is connected. The end of the cock which enters the pipe is tapering and cut with a screw, a small portion *a* at the extreme end being smooth and rounded, as best observed in Fig. 4, and hereinafter alluded to.

C is the tapering ferrule, having a raised portion *b* with six or eight sides, and on the inside any convenient number of projections *d d*. (See Fig. 5.) This ferrule is in the first instance placed on the end of the pipe and a hard wood or metal tapering plug G driven into the end of the same, (see Fig. 6,) which forces the lead tight against the inside of the ferrule and causes the projections *d* to penetrate the lead in such a manner that the pipe cannot possibly turn without the ferrule, and also gives the inside of the pipe a taper adapted to the shape of the connections, so that on removing the plug the pipe is ready for receiving any connection required.

In all cases the part of the connection which enters the pipe has a smooth end, as we have found by repeated experiments that without this there is great difficulty in preventing the lead from burring up and causing an ineffi-

cient joint, as illustrated at *x*, Fig. 7, in which instance the screw is cut to the extreme end of the taper on the connection. The smooth end *a* effectually prevents this and serves as a guide in screwing the connection into the pipe. In performing the latter operation the ferrule is held on the raised portion *b* by a screw-key while the operator turns the connection, the projection *d* in the ferrule performing the important duty of preventing the pipe from turning within the ferrule. In attaching a connection between the ends of two pipes, as in Figs. 2 and 3, it is necessary to have recourse to a left and right handed screw, so that on turning the connection to make a joint the two ends of the pipes are drawn toward each other.

Although in the drawings we have shown but three different kinds of connections, it will easily be seen that any of the fixtures used by plumbers and usually secured by solder may be connected without departing from the above-described operation.

We do not claim, exclusively, the inclosing of the ends of lead pipes in a tapering ferrule of metal harder than lead for the purpose of attaching connections thereto and the use of right and left handed screws on such connections; but

We claim—

As a new and improved mode of attaching connections to lead pipes, the tapering screw terminating in a smooth and rounded end on the connections for the purpose of guiding the said screw and preventing the lead from burring up inside the pipe, in combination with a tapering ferrule on the end of the lead pipe, said ferrule having any convenient number of projections for preventing the pipe from turning within the ferrule while the end of the said connection is being screwed into the pipe.

GEORGE FETTER.

Witnesses to the signature of George Fetter:

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