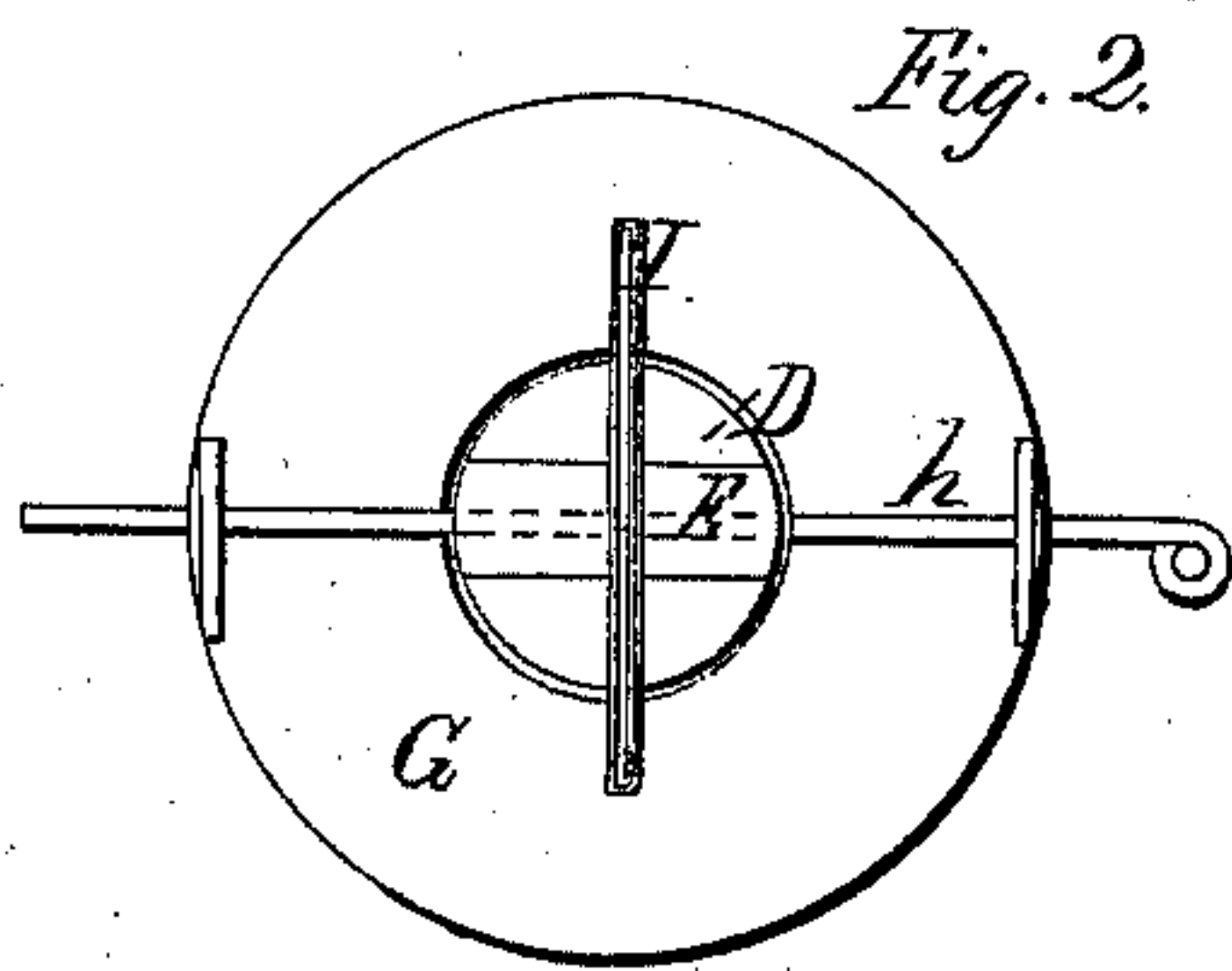
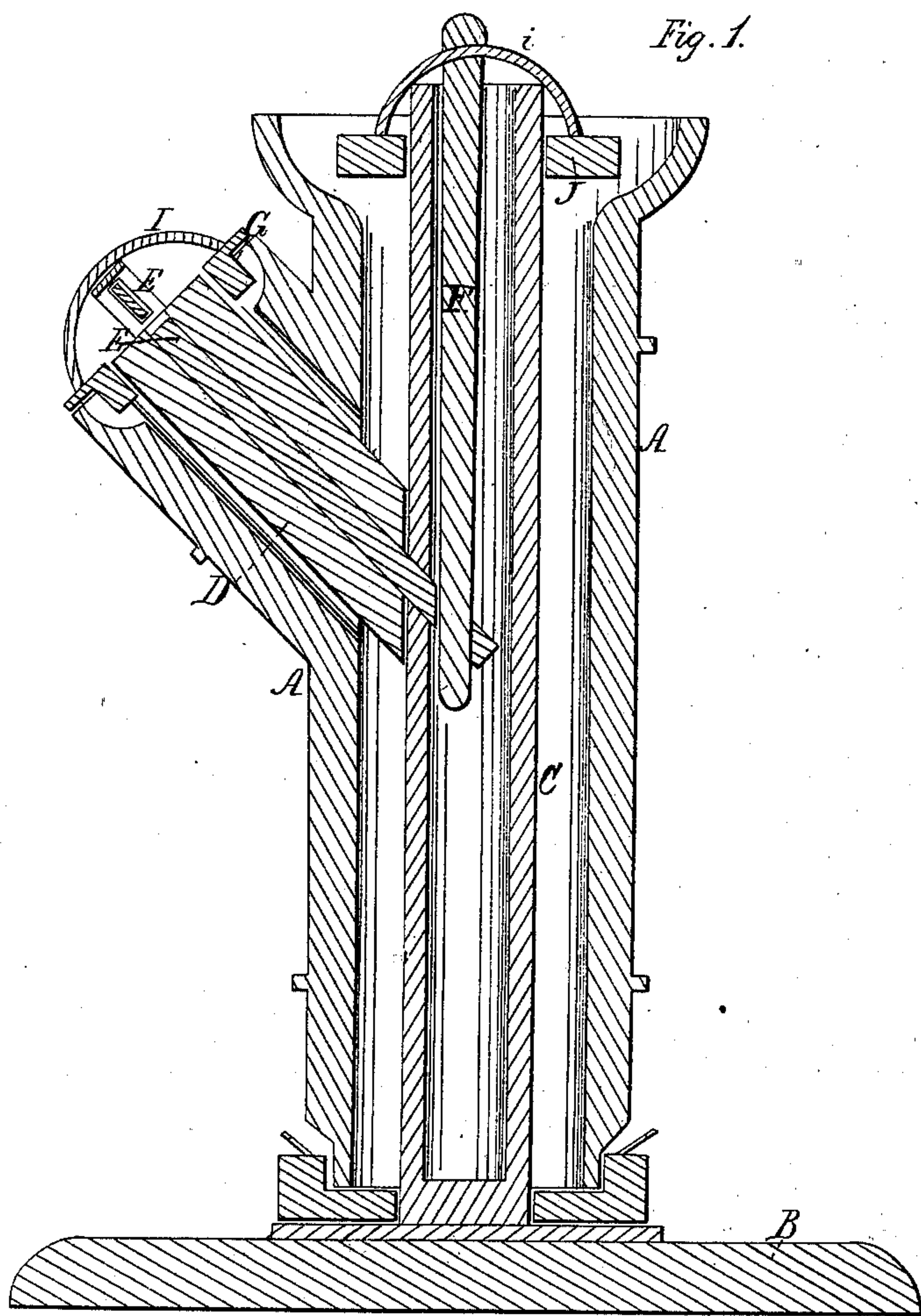


*Lockhart, Roberts & Knight,*  
*Tile Machine,*  
*No 80,357, Patented July 28, 1868.*



*Witnesses.*  
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*per Wm. L. &*  
*Attorneys.*

# United States Patent Office.

ENOCH LOCKHART AND FRANK ROBERTS, OF LOUISVILLE, KENTUCKY, AND  
HENRY KNIGHT, OF BROOKLYN, NEW YORK.

*Letters Patent No. 80,357, dated July 28, 1868.*

## IMPROVED BRANCH CEMENT-PIPE.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, ENOCH LOCKHART and FRANK ROBERTS, of Louisville, in the county of Jefferson, and State of Kentucky, and HENRY KNIGHT, of Brooklyn, in the county of Kings, and State of New York, have invented a new and useful Improvement in Cement Branch-Pipe; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to an improvement in the manufacture of branch-pipe for water-conductors, drains, or sewers, and for other purposes.

And it consists in the peculiar formation of the mould and the cores, and the manner in which the cores are united and secured in place, and the method of using the same, as will be hereinafter more fully described.

Figure 1 is a vertical longitudinal section of the mould and cores of both the main pipe and the branch.

Figure 2 is a view of the end of the branch-pipe.

Similar letters of reference indicate corresponding parts.

A is the mould, which parts in the middle, forming two half moulds, after the manner of the flasks for making metallic castings.

The parts of the mould are secured together by clamps or bolts, or in any suitable manner.

B is the bed or platform, upon which the mould rests.

C is the core of the main pipe, which is attached to the bed B, and is stationary. This core is tubular, as seen in the drawing, and provision is made for holding and securing the branch-core by a key, but this main core may be made solid, and the branch-core may be secured otherwise, if desired.

D is the branch-core, through which passes the core-pin E. This core-pin has a mortise near its lower end, through which passes the key F from the upper end of the main core, as seen in the drawing.

The core-pin E of the branch is secured to a flanged collar, G, which sets over the end of the branch-mould. The pin E has a mortised metallic loop attached to its top end, as seen more distinctly in fig. 2.

H is a key, which passes through the mortises or key-holes in the loop, and over the end of the core D, and rests on top of the flanged collar G.

I is a bail, which is attached to the top of collar G.

The collar G is for forming a recess in the end of the pipe, for making the proper connecting-joint in extending the branch-pipe.

J is a collar or ring, which surrounds the main core, and is held in the proper position by the bail i, on top of the core. This collar is for the same purpose as the collar G, or for forming the proper recess for the next joint in laying the pipe.

We do not confine ourselves to this particular arrangement.

The branch-core pin may be dispensed with, and other variations may be made, without materially affecting our method of forming branch-pipe, nor do we confine ourselves to any particular angle in attaching the branch.

T-pipe or other form of branch-pipe may be made by our method with equal facility. In making T-pipe, we prefer to dispense with the key F.

When the mould is filled with the cement or mortar, the keys and collar G are removed, when the branch-core is removed from the main core, and the mould (with the pipe) is lifted off the main core, and the pipe thus formed remains in the mould, for drying or setting, as long as may be desired.

In this method of forming branch-pipe, and moulding it with the main pipe, we do not limit ourselves to any particular form or method of making our cores, nor of supporting them in the mould.

We claim as new, and desire to secure by Letters Patent—



1. The cores D and C, the collars G and J, the core-pin E, with the key F, arranged substantially as described, for the purposes set forth.

2. The key F, in combination with the cores C D, as herein described, for the purpose specified.

ENOCH LOCKHART,  
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Witnesses for KNIGHT:

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