# C. G. FORCE, Jr.

## Canal Lock.

No. 166,695. Patented Aug. 17, 1875.

Fig 1

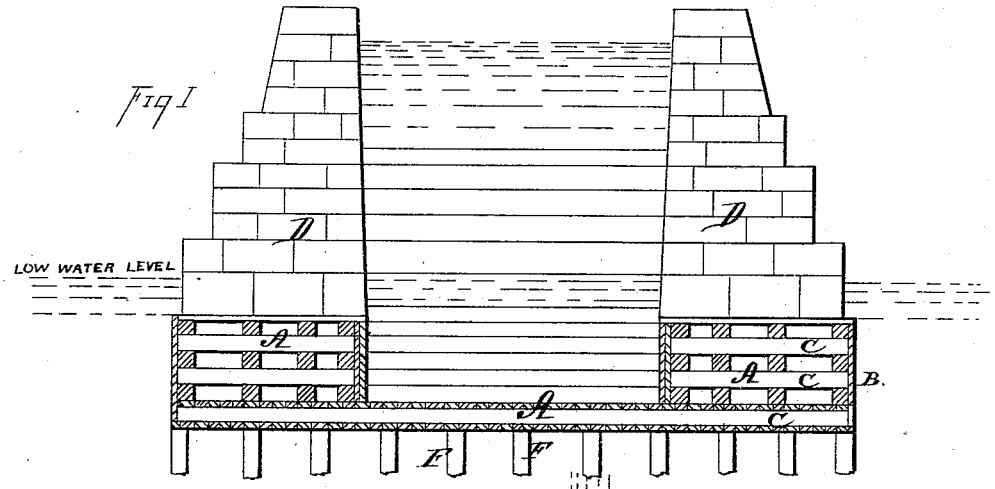
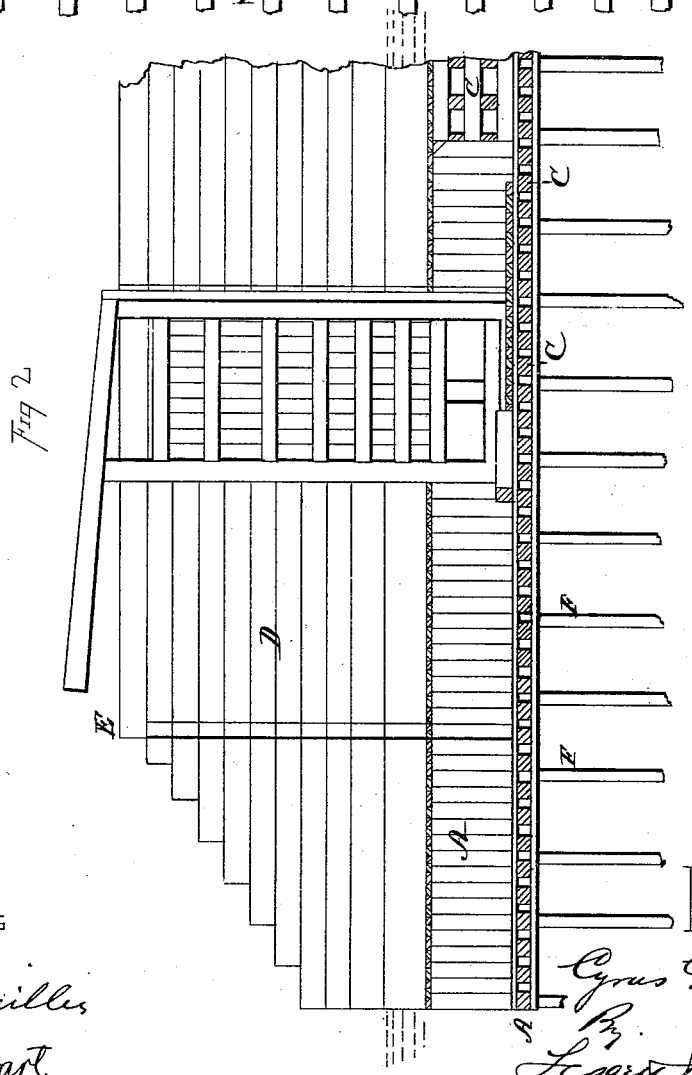



Fig 2




WITNESSES

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## IMPROVEMENT IN CANAL-LOCKS.

Specification forming part of Letters Patent No. **166,695**, dated August 17, 1875; application filed June 9, 1875.

*To all whom it may concern:*

Be it known that I, CYRUS G. FORCE, JR., of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Locks; 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.

My invention relates to an improvement in locks, designed more especially for locking from a canal into a lake, sea, or other body of water which never falls below a sea-level.

My invention consists in improvements in the construction of the said lock, and more particularly to a water-tight chamber, which said chamber forms the foundation of a superstructure of masonry, the chamber being of such a size relatively to the depth of water that, when the structure is completed, the said chamber of timber will always be below the water-level, as hereinafter more fully set forth and claimed.

In the drawings, Figure 1 represents a view, in cross-section, of a lock embodying my invention; Fig. 2, a central longitudinal vertical section of same.

A is an air and water tight chamber, formed of timber suitably sheeted with sheeting B. The timbers C are so disposed as to form a very solid, strong foundation, capable of supporting the superstructure. The water-tight chamber A is made to extend across the bottom of the channel, and up upon each of the sides nearly to the level of low water. D are the side or retaining walls of masonry founded upon the sides of the chamber A. The construction of the side walls of masonry forms no part, particularly, of my invention. They may be of any ordinary construction. E is a recess for the insertion of a temporary gate for use during the construction of masonry, and also for use when it is desired to clean and repair the chamber A. F are piles or any suitable foundation. If the foundation is not sufficiently stiff or permanent in its natural state, it may be rendered so by suitable piles F, or in any suitable manner, the said foundation forming no essential part of my invention.

When it is desired to build a lock such as described, it has been necessary heretofore to build coffer-dams, or other similar constructions, in order to exclude the water from the locality where the work is to be erected. Moreover, it is often necessary, in order to procure a suitable foundation for such masonry-work, to excavate for some distance below the adjacent bed of the lake or stream. It is, moreover, absolutely necessary that the work be commenced and carried forward, at least until above the water-level, at such opportune seasons as will admit of making and employing the temporary structures named.

All these difficulties are obviated by my invention. According to my invention, when it is desired to make a lock of this nature, a chamber, A, is constructed on land, air and water tight, and suitably calked, if necessary, for this purpose. If the locality where the structure is to be erected is not provided already with a sufficiently firm foundation, a foundation of piles is provided, and the said piles sawed off to a common level in the ordinary manner. The chamber A, with suitable gates at its ends to prevent the inflow of water in its channel, is then launched and moored into position over the locality where it is to be settled. The first course of masonry is then laid upon the top of the sides of the said chamber, and if the buoyancy of the chamber is not sufficient to maintain the structure above the water-level until the said course is completed, it may be stayed in any suitable manner. When the said first course of masonry is completed the chamber will have settled itself upon the piles F, or other foundation beneath, and masonry D can be carried on to completion.

This construction enables the cement employed to set before it is immersed in the water, and there is, therefore, no liability to wash out before setting, and permits of forming a perfectly water-tight work. So, also, all temporary structures, such as coffer-dams, are obviated; the necessity of excavations is likewise obviated, and, owing to the almost perfect preservation of wood when immersed in water, the structure will be sufficiently permanent for all purposes.

It is not an essential element of my invention that the level of low water shall be just be-

low the top of the lower course of masonry. That level may be taken at any point, provided it is above the top of the chamber A—that is, so that the chamber A shall always be below low-water level.

It is evident that a lock may be constructed in accordance with my invention at an expense very considerably less than the expense of constructing locks in the manner heretofore employed.

It is not absolutely essential that the chamber A should remain filled with air after it has been sunk into position and the structure located thereon. It may, after it has been sunk into position by the masonry, be opened, so as to permit water to enter; or, if desired, it may be filled with concrete.

What I claim as new, and desire to secure by Letters Patent, is—

In the construction of a canal-lock, the water-chamber A of timber, in connection with walls D founded thereon, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CYRUS G. FORCE, JR.

Witnesses:

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