

No. 833,791.

PATENTED OCT. 23, 1906.

D. E. MORAN.
CONSTRUCTION AND SINKING OF CAISSONS, &c.
APPLICATION FILED JUNE 22, 1906.

FIG. 1.

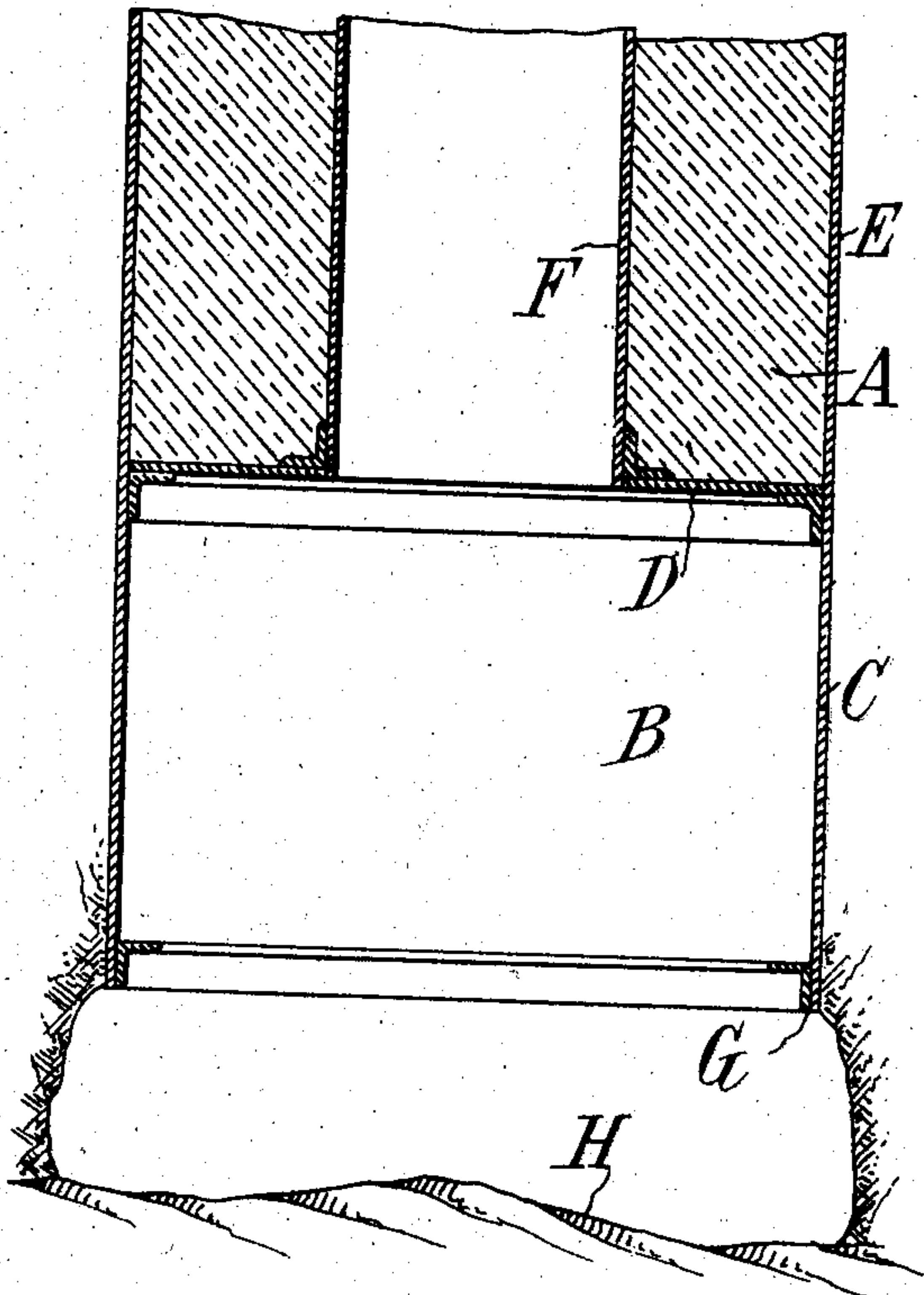


FIG. 2.

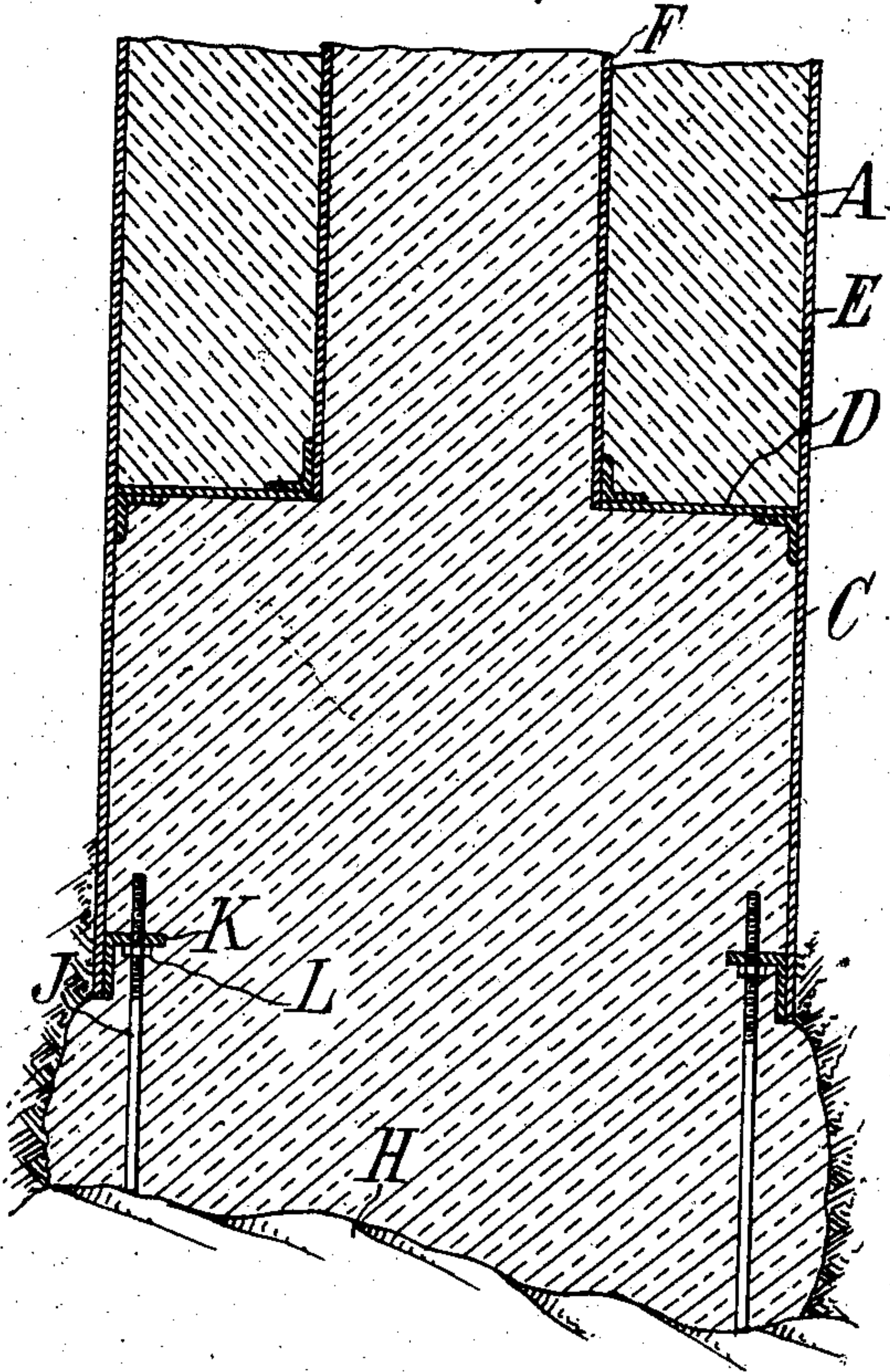


FIG. 4.

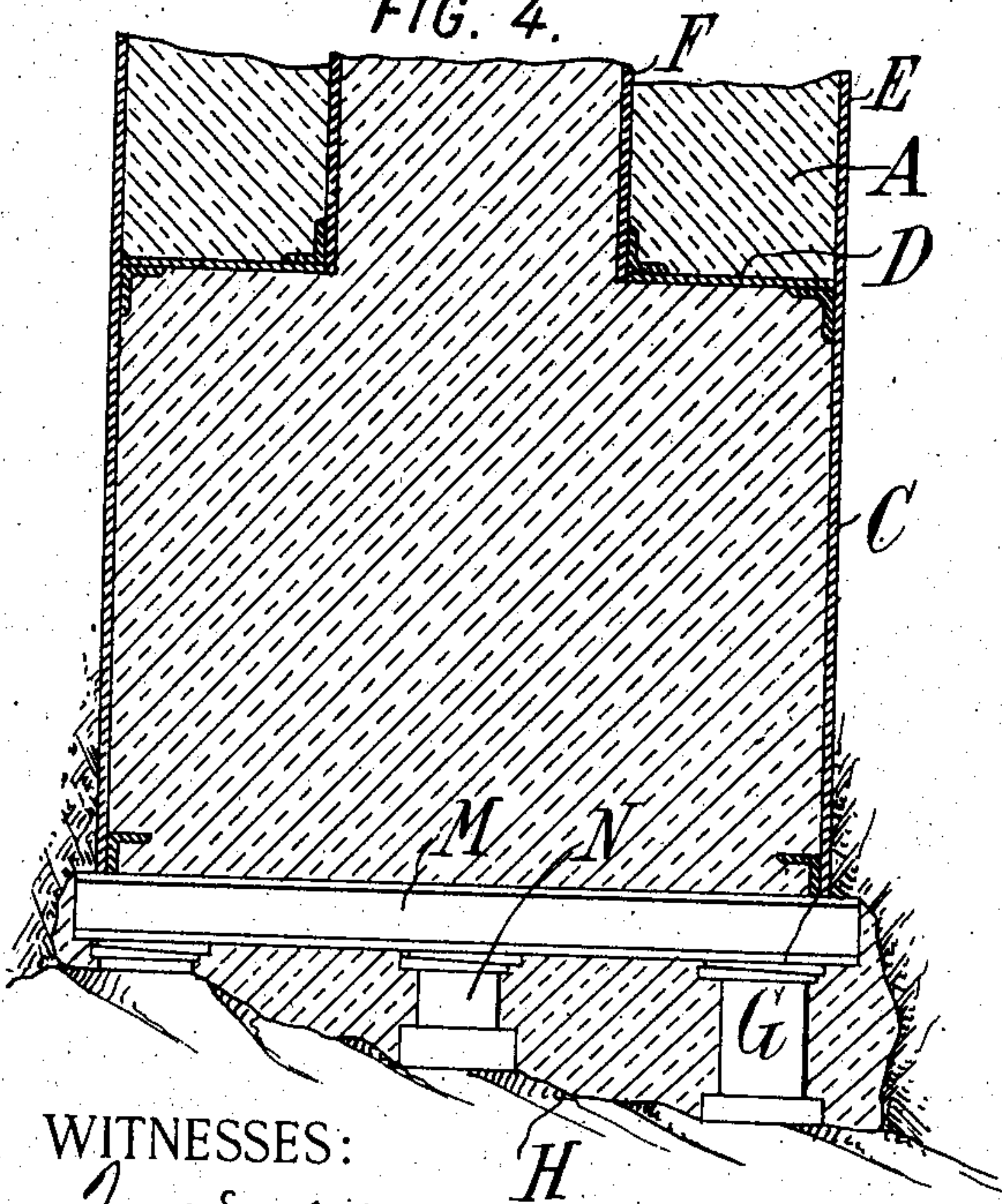
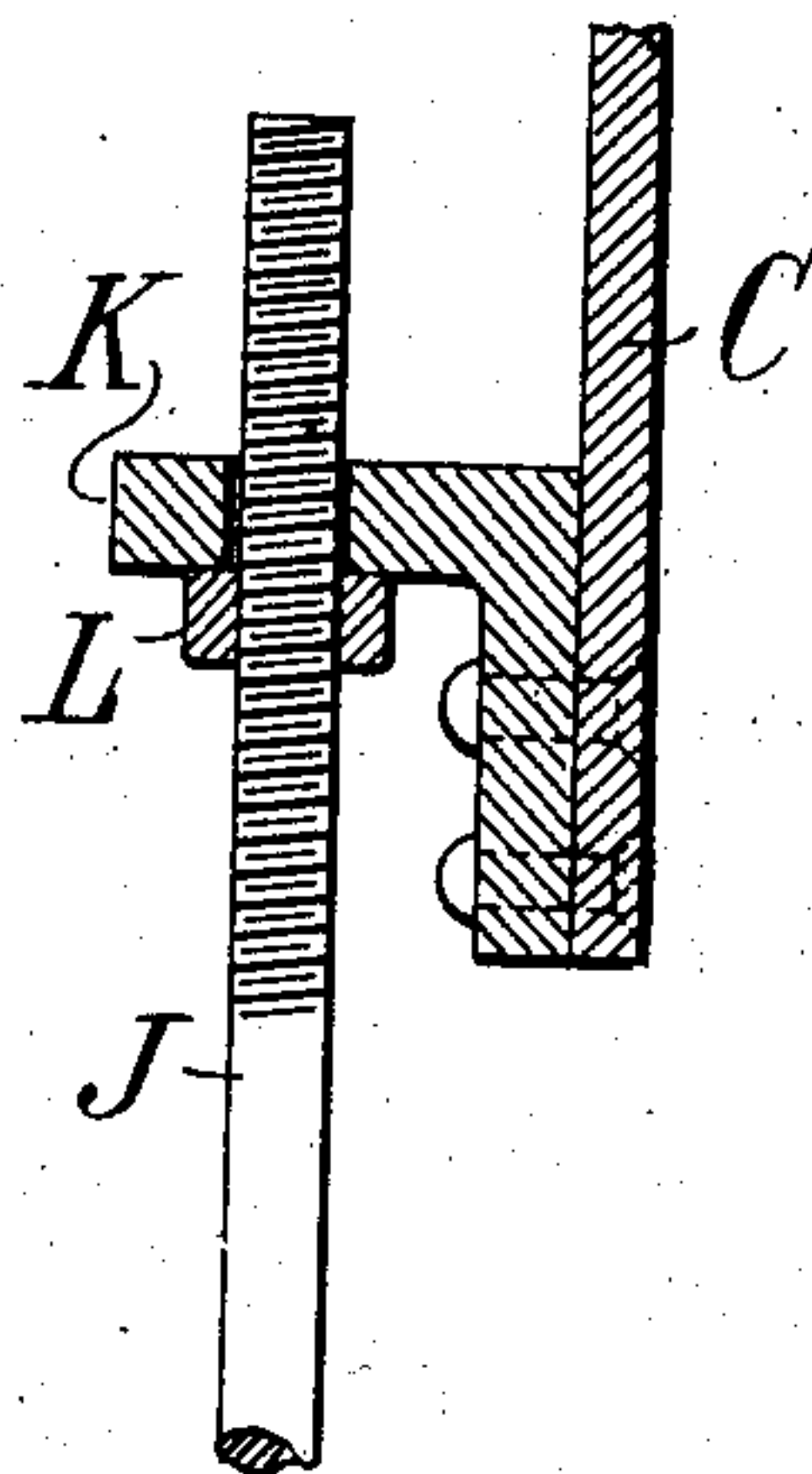


FIG. 3.



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CONSTRUCTION AND SINKING OF CAISSONS, &c.

No. 833,791.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed June 22, 1906. Serial No. 322,816.

To all whom it may concern:

Be it known that I, DANIEL E. MORAN, a citizen of the United States, residing at Mendham, in the county of Morris and State of New Jersey, have invented certain new and useful Improvements in the Construction and Sinking of Caissons or the Like, of which the following is a specification.

In my application for Patent No. 321,845, filed June 15, 1906, I have described and claimed, broadly, the reinforcing of concrete caissons or piers by the introduction of steel, preferably in the form of continuous connections between the superimposed load and the foundation. The present invention is based upon a particular form of such reinforcement distinct from the specific form upon which said application is based and having certain valuable advantages hereinafter referred to in detail.

According to this invention an exterior shell of metal is provided extending entirely to the top, so as to receive a portion of the load, and adapted at its lower end to be extended in such a way as to carry the strain directly to and preferably distribute it upon the natural subfoundation of rock or any suitable artificial subfoundation. Such a reinforcement can be very easily provided, a metal shell extending from the cutting edge to the top being a common feature of many caissons now constructed and it being only necessary to provide for the extension of such shell to a subfoundation and preferably the distributing of the pressure over a suitable area.

The accompanying drawings illustrate embodiments of the invention.

Figure 1 is a vertical section through a caisson sunk to the desired depth. Fig. 2 is a similar view showing the steel reinforcement extended continuously to the rock foundation and the filling of concrete. Fig. 3 is a sectional view of a detail. Fig. 4 is a view similar to Fig. 2, showing another arrangement for extending the reinforcement to the subfoundation.

The drawings illustrate a caisson substantially like the common type, having a body A of concrete and a working chamber B with metal sides C extending upward above the roof D to form a coffer-dam E, having the usual horizontal joints at intervals. The shaft is provided with a lining consisting of a sheet-metal tube F. The parts C and E constitute a continuous metal member from

the cutting edge G to the top of the caisson, and the invention lies in extending this metal member continuously to the rock H, which is usually some distance below the cutting edge. Preferably, also, the extension is adapted to be pressed forcibly against the rock, so as to put the metal parts under initial strain to insure that they shall materially assist the concrete in carrying the load.

In order to adapt the sides C for the extension described, various constructions may be adopted. For example, threaded rods J may be arranged to extend through the horizontal flange of the stiffening angle-iron K at the cutting edge, and nuts L may be provided for exerting an upward pressure on the under side of the horizontal flange, so as to force the rods J down against the rock H and to give them an initial strain, if desired, or the load may be distributed more widely upon the rock subfoundation by any one of various arrangements—such, for example, as that shown in Fig. 4, where a number of cross-beams M are held up by any suitable supports N, so that the cross-beams stand in an approximately horizontal position and press upward under the cutting edge G at various points of its length, the struts resting directly upon the rock, so as to form an artificial subfoundation. After the described extensions have been made the concrete filling may be introduced, as shown in Figs. 2 and 4.

In connection with the reinforcing system described I may use various other systems—such, for example, as the internal reinforcing systems described in my application above referred to and others.

Though I have described with great particularity of detail certain specific embodiments of my invention, yet it is not to be understood therefrom that the invention is restricted to the specific embodiments disclosed.

Various modifications thereof in detail and in the arrangement and combination of the parts may be made by those skilled in the art without departing from the invention.

What I claim is—

1. The method of constructing and sinking a caisson or pier, which consists in forming the caisson with metal sides, sinking said caisson, and providing a metal extension from the cutting edge to the subfoundation so as to provide a continuous metal connec-

tion from the superimposed load to the sub-
foundation.

2. A caisson having a body of concrete
reinforced by metal on the outside, and
5 means for extending the metal reinforce to
the subfoundation.

3. A caisson having a body of concrete
reinforced by metal on the outside, and ad-
justable metal extensions adapted to con-
10 tinue the metal reinforce to the subfounda-
tion.

4. A caisson having a body of concrete

reinforced by metal on the outside, cross-
beams M, and supports N adapted to rest on
the subfoundation to bring said cross-beams 15
up against said metal.

In witness whereof I have hereunto signed
my name in the presence of two subscribing
witnesses.

DANIEL E. MORAN.

Witnesses:

DOMINGO A. USINA,
THEODORE T. SNELL.