

No. 745,453.

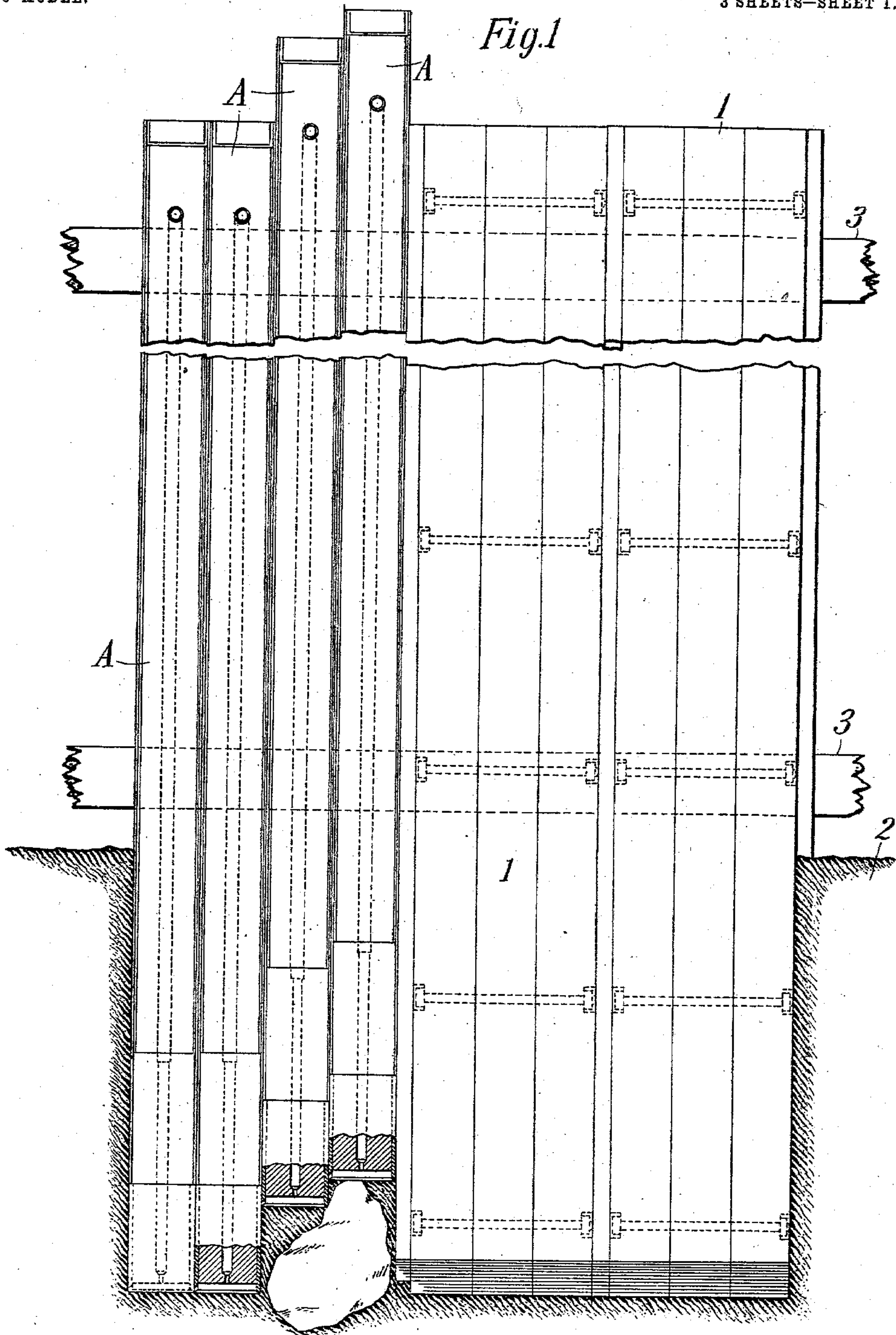
PATENTED DEC. 1, 1903.

D. D. McBEAN.  
PILOT SHEETING.

APPLICATION FILED MAY 9, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:  
*Raphael Hether*  
*Price Powers*

*Duncan D. McBean* Inventor

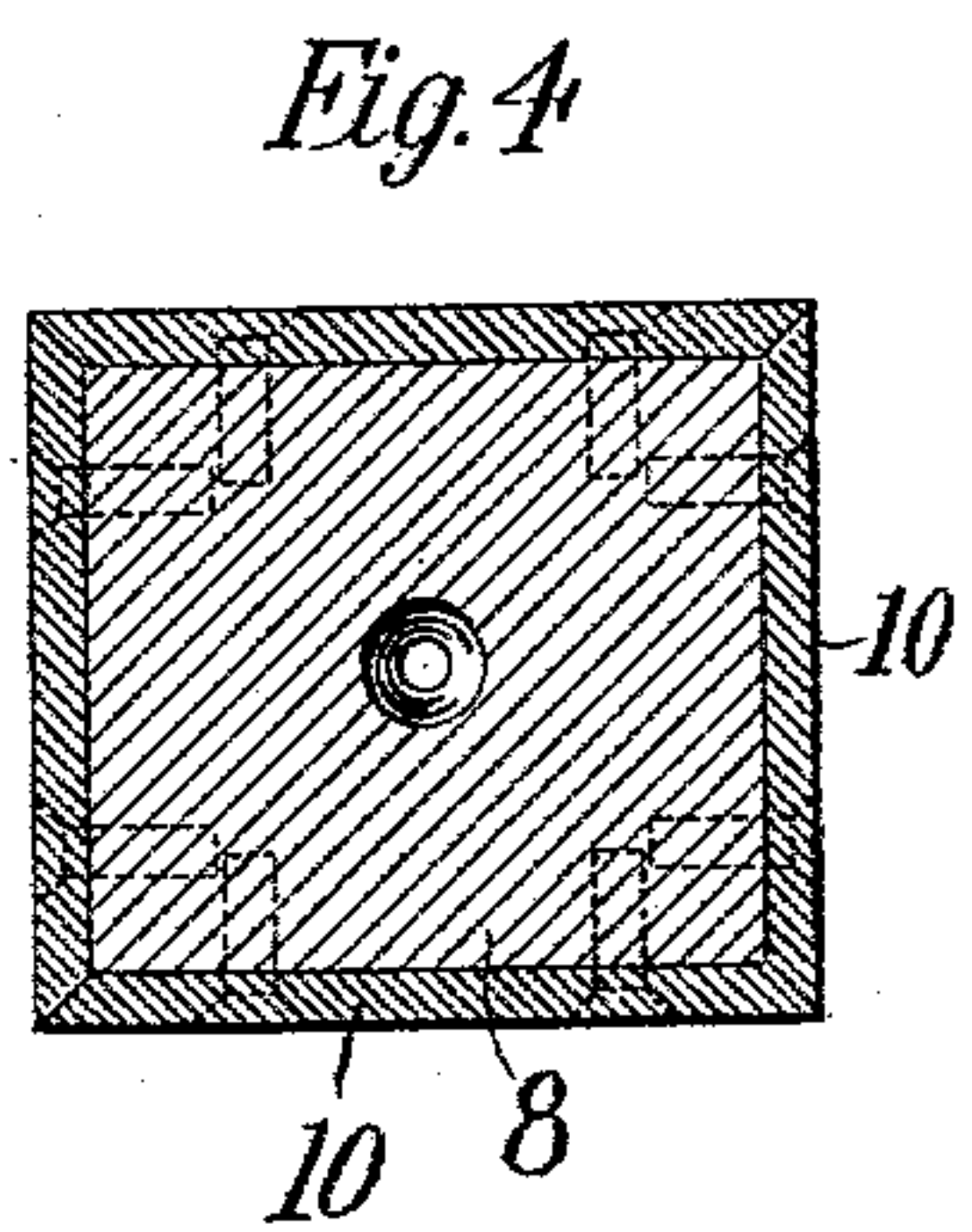
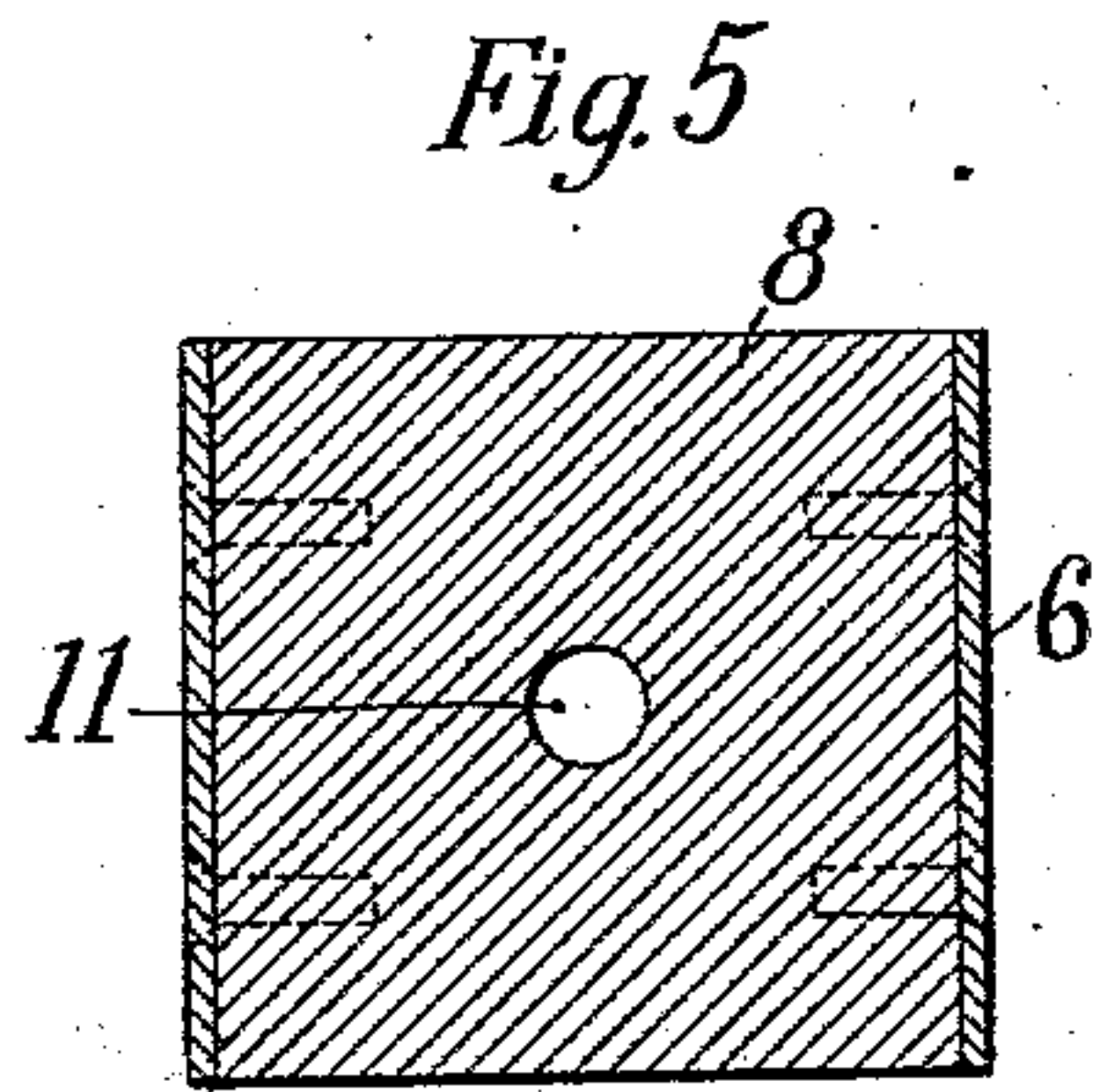
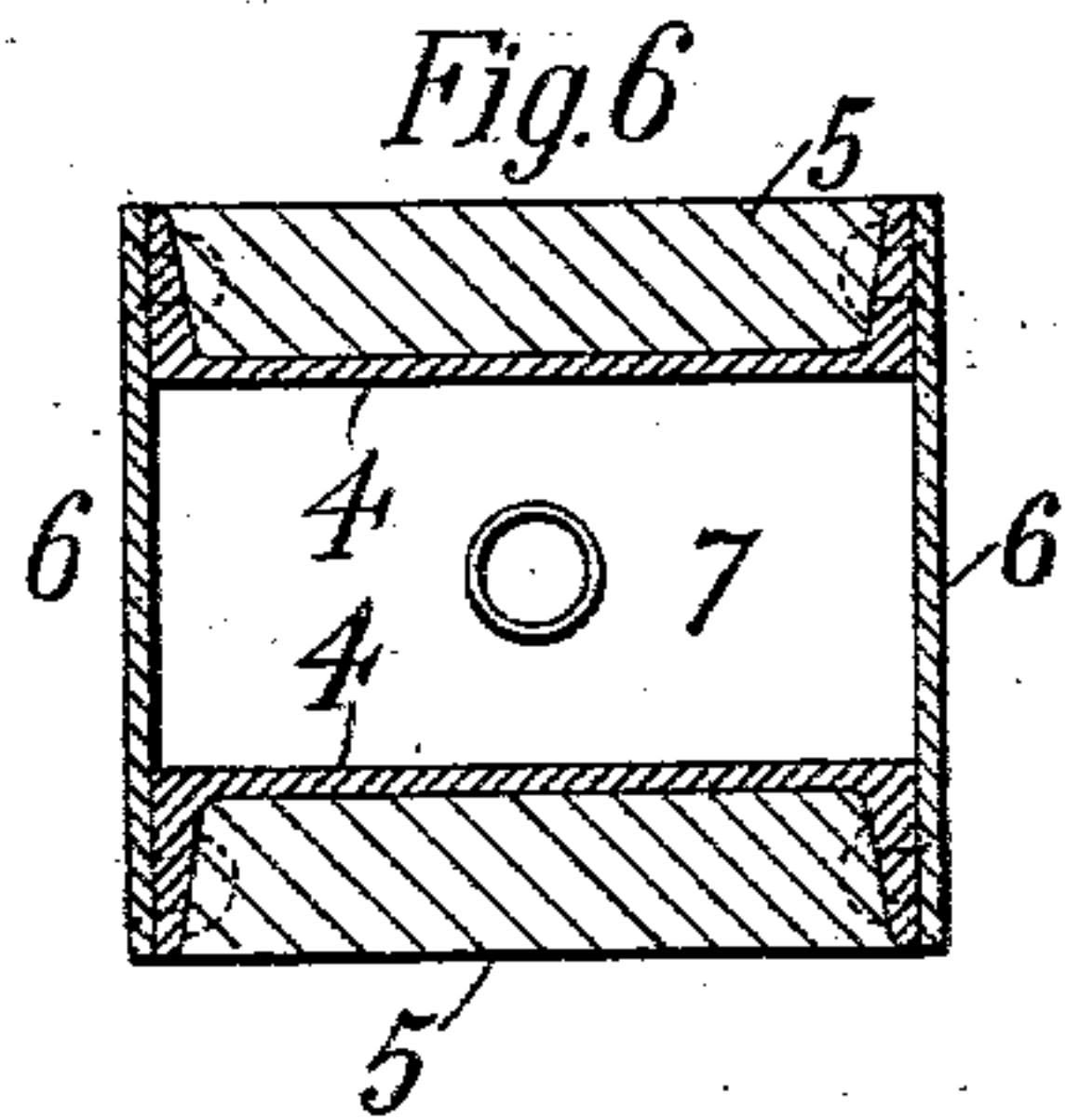
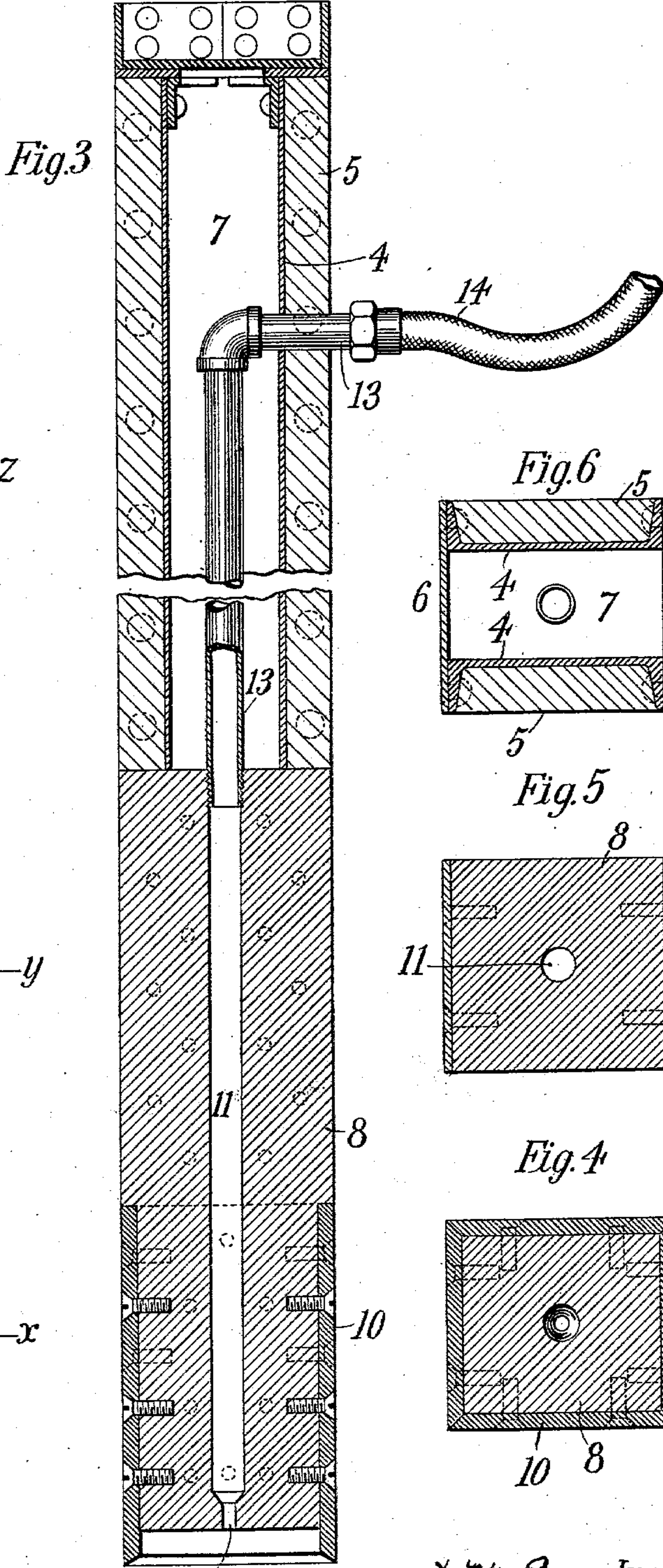
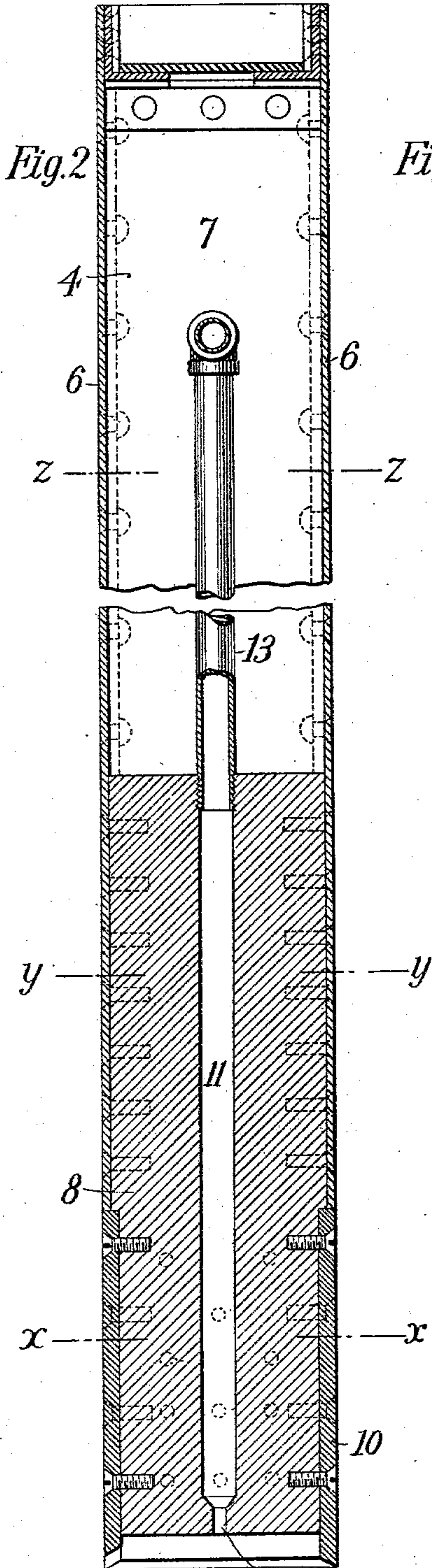
by *J. D. Merriam* Atty



D. D. McBEAN.  
PILOT SHEETING.  
APPLICATION FILED MAY 9, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses:  
*Raphael Ketter*  
*Pierce J. Powers*

*Duncan & McBean* Inventor  
by *J. D. Merwin* Atty



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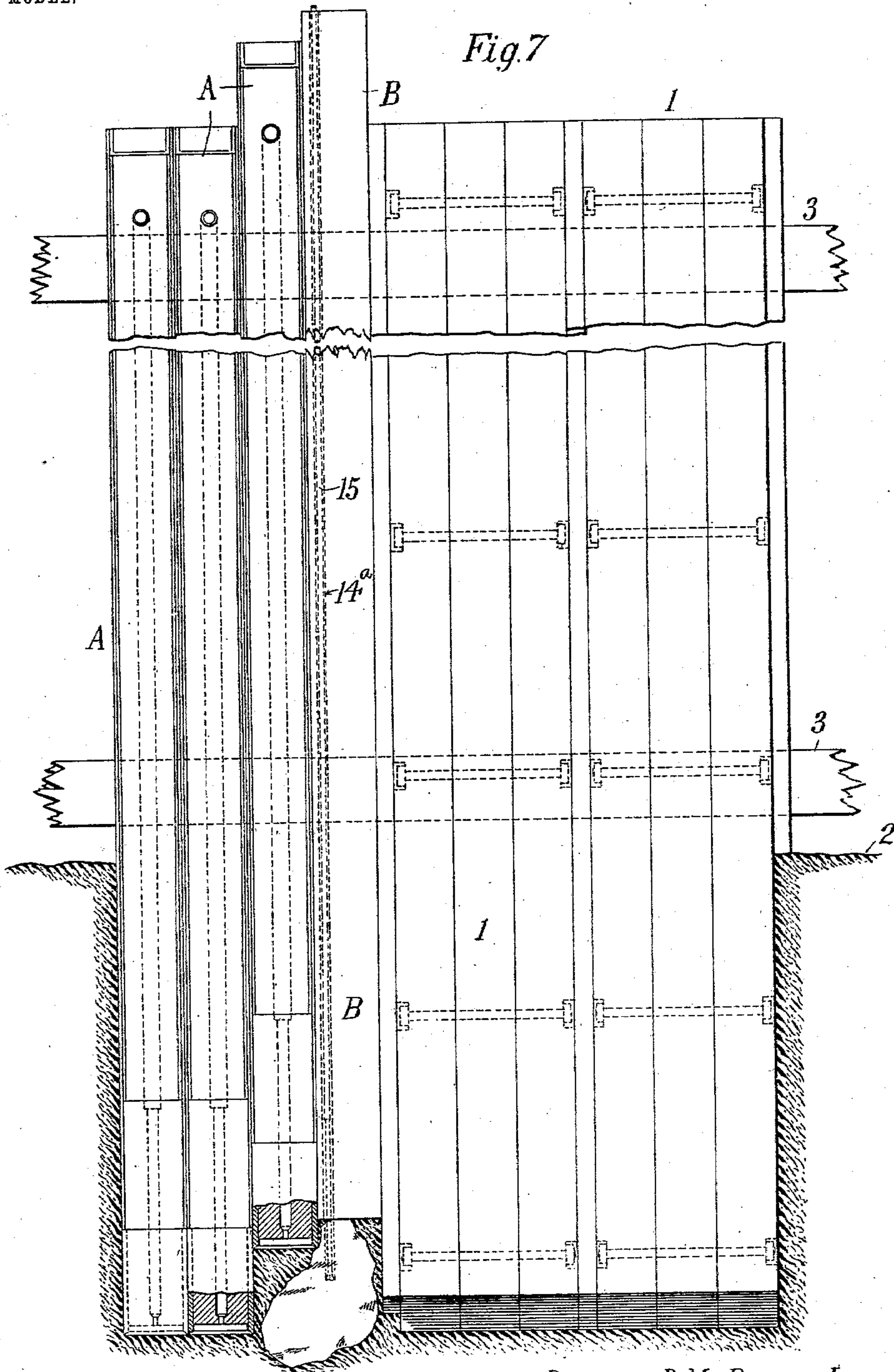
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APPLICATION FILED MAY 9, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:

*Raphael Ketter*  
*Henry J. Sanders*

*Duncan D. McBean, Inventor*

*by J. D. Merwin*

*Att'y*



# UNITED STATES PATENT OFFICE.

DUNCAN D. McBEAN, OF NEW YORK, N. Y.

## PILOT-SHEETING.

SPECIFICATION forming part of Letters Patent No. 745,453, dated December 1, 1903.

Application filed May 9, 1903. Serial No. 156,407. (No model.)

*To all whom it may concern:*

Be it known that I, DUNCAN D. McBEAN, of the city, county, and State of New York, have invented a new and useful Improvement in Pilot-Sheeting, of which the following is a specification.

My invention relates to devices employed in building coffer-dams and in excavating for sewer and tunnel construction, its object being to provide means for the removal of obstructions in the earth to permit the driving of sheeting to serve as a dam or sustaining-wall; and it consists in the features of construction hereinafter described and claimed.

The invention forming the subject-matter of this application is specially adapted for use in connection with my improved composite or built-up sheeting for deep excavation work, which forms the subject-matter of an application for patent of even date herewith. In the driving of sheeting of this character compact earth, gravel, and boulders are frequently encountered at considerable depths, the removal or penetrating of which is absolutely necessary to enable the sheeting to be driven in place. My invention serves this desired purpose of removing such obstructions and providing a free path for the sheeting. Where the character of the soil as to hardness or presence of boulders makes it advisable, I prefer to use my improvement in advance of the driving of the sheeting. In other cases it is brought into use whenever a sheeting in the course of being driven encounters an obstacle. In such case the sheeting is withdrawn and my improved pilot-sheetings are driven down in its stead to determine the general location and dimensions of the obstruction, after which one or more of the pilots can be removed and a drill-guide inserted for the purpose of boring into the obstruction, which is then exploded by means of a charge of dynamite or powder.

In the accompanying drawings, forming part of this specification, Figure 1 is an elevation of part of the side wall of an excavation, showing two of my composite sheetings in place and a series of four of my improved pilot-sheetings adjacent the same, illustrating how their position locates and determines the general dimensions of the boulder. Figs. 2 and 3 are central longitudinal sections of

the lower end of a pilot-sheeting, the plane of section in one being at an angle of ninety degrees with that of the other. Fig. 4 is a cross-section of the same on line *xx* of Fig. 2. Fig. 5 is a like cross-section on line *yy* of Fig. 2. Fig. 6 is a cross-section on line *zz* of Fig. 2; and Fig. 7 is a view similar to that of Fig. 1, showing one of the pilot-sheetings withdrawn and a timber of the same size, constituting a drill-guide, substituted therefor and indicating also in dotted lines the drill penetrating the obstruction.

1 represents the composite or wooden sheeting, 2 the earth wall of the excavation on each side of the sheetings, and 3 the walings, which serve as guides and supports for the sheeting 1 while being driven.

A represents my improved pilot-sheeting, preferably square and of the dimensions of one of the three members of the composite sheeting. I preferably employ four of these pilot-sheetings, as shown in Figs. 1 and 7, so that three of them will prepare the path for the wooden sheeting, while the fourth remains in place as a guide and support for the wooden sheeting when being driven. The top or body portion of the pilot-sheeting is formed, preferably, of U-shaped structural steel 4, the depressed portion of which is filled with pieces 5, while plates 6 are bolted to the edges of the pieces 4 to make the structure square, with a hollow interior 7. The lower end of the sheeting is made up of the rectangular casting 8, having plates 6 screwed on the faces adjacent to the other sheeting. At the lower end of the sheeting the core or block 8 is reduced and faced on all four sides with steel cutting-plates 10, which project below the body and are provided with cutting edges to assist in the forcing of the same through the soil. The plate on the left-hand side of Fig. 2 is slightly shorter than the others, furnishing, therefore, a vent for the escape of material as forced out by water, as hereinafter described. Extending axially through the block 8 is a passage 11, having its lower portion 12 preferably reduced or throttled. To the upper end of the passage is connected the pipe 13, which communicates, by means of a pipe or hose 14, with a source of water under pressure. As the pilot-sheeting is driven downward water is forced through the



same into the space between the cutting edges, serving to loosen the material and to force the same through the vent afforded by the shorter cutting-plate, whence it flows upward alongside of the sheeting, leaving a path for the descent of the latter.

The method of use is as follows: The composite sheetings 1 may be driven serially in the ordinary course of the work to form the wall of the excavation, and whenever an obstruction is met the pilot-sheeting may be called into use to assist in removing the same. In case, however, the character of the soil or the presence of boulders in it offers serious or frequent obstruction to the wooden sheeting I prefer to drive the pilot-sheetings in advance of the wooden sheetings. In such case I prefer to use four pilot-sheetings, as shown in Fig. 1, which illustrates two of the pilots driven to the required depth, while two are stopped short by a boulder, the position of the two obstructed pilots indicating the position and dimensions of the boulder. One of the pilots is then removed and a square timber B of the same dimensions inserted in its stead, as shown in Fig. 7. This timber is provided with a hole 14<sup>a</sup> in proper position to serve as a guide for the drill to enter a selected point on the boulder, as shown. After an opening is thus formed in the boulder to a sufficient depth a charge of dynamite or other explosive is inserted and fired, thus shattering the boulder, after which the timber B may be withdrawn and the pilot substituted therefor and driven downward, completing the path for the wooden sheeting. Three of the pilots are then removed and the wooden sheeting inserted in their place.

I claim—

1. Means for forming a path for the driving of piles or sheeting, and for locating and removing obstructions therefrom, comprising a series of pilots adapted to be driven in advance of such piles or sheeting and to form a path therefor and by their arrested positions to indicate the location, form and dimensions of an obstruction, and a drill-guide adapted to be substituted for a selected pilot and to direct a drill into such obstruction.

2. Means for the removal of obstructions from the path in which sheeting is to be driven, comprising pilot-sheetings adapted to be driven severally into contact with such obstruction and to indicate by their arrested positions the location and contour of the obstruction, and a drill-guide adapted to be

substituted for one of said pilot-sheetings and to serve to direct a drill into the obstruction at a selected point.

3. Means for removing obstructions and providing a path for sheeting in excavation and similar work, comprising series of pilots adapted to form an opening to conform to the sheeting to be driven and by their arrested positions to indicate encountered obstructions, means for forcing water into the material in advance of such pilots, and a drill-guide adapted to be substituted for a pilot and to direct a drill to a selected point upon an encountered obstruction.

4. A rectangular sheeting having cutting edges at its point in line with its faces, one of said cutting edges being shorter than the others, and means for forcing water downward through said sheeting to wash the material away from its path.

5. A rectangular sheeting having a longitudinal passage therethrough and a hollow point formed by four projecting cutting edges in line with the several sides of the sheeting, means for connecting said passage with a source of water-supply under pressure, and means for lateral outlet of material from the space within said cutting edges.

6. A metallic pilot-sheeting, substantially rectangular in cross-section, having face-plates with cutting edges, a longitudinal passage through said sheeting, and means for forcing water therethrough to wash away the material in the path of the sheeting.

7. A metallic pilot-sheeting, substantially square in cross-section, having face-plates terminating in cutting edges, one of said plates being slightly shorter than the others, a longitudinal passage through said sheeting, and a connection with a source of water-supply under pressure, substantially as set forth.

8. A sheeting provided at its point with cutting edges in line with its several sides and beveled on their inner surface to adapt them for cutting an opening of the full size of the sheeting and having a lateral vent from the space within the cutting edges, and means for forcing water downward through the sheeting into the space below and within said cutting edges, as and for the purposes set forth.

Signed at New York city this 4th day of May, 1903.

DUNCAN D. McBEAN.

Witnesses:

ANNA W. McBEAN,  
J. T. CRANE.