(No Model.) 3 Sheets—Sheet 1.

R. S. GILLESPIE.

CONSTRUCTION OF SUPPORTS FOR BUILDING WALLS.

No. 570,792. Patented Nov. 3, 1896.

Fig. 1.

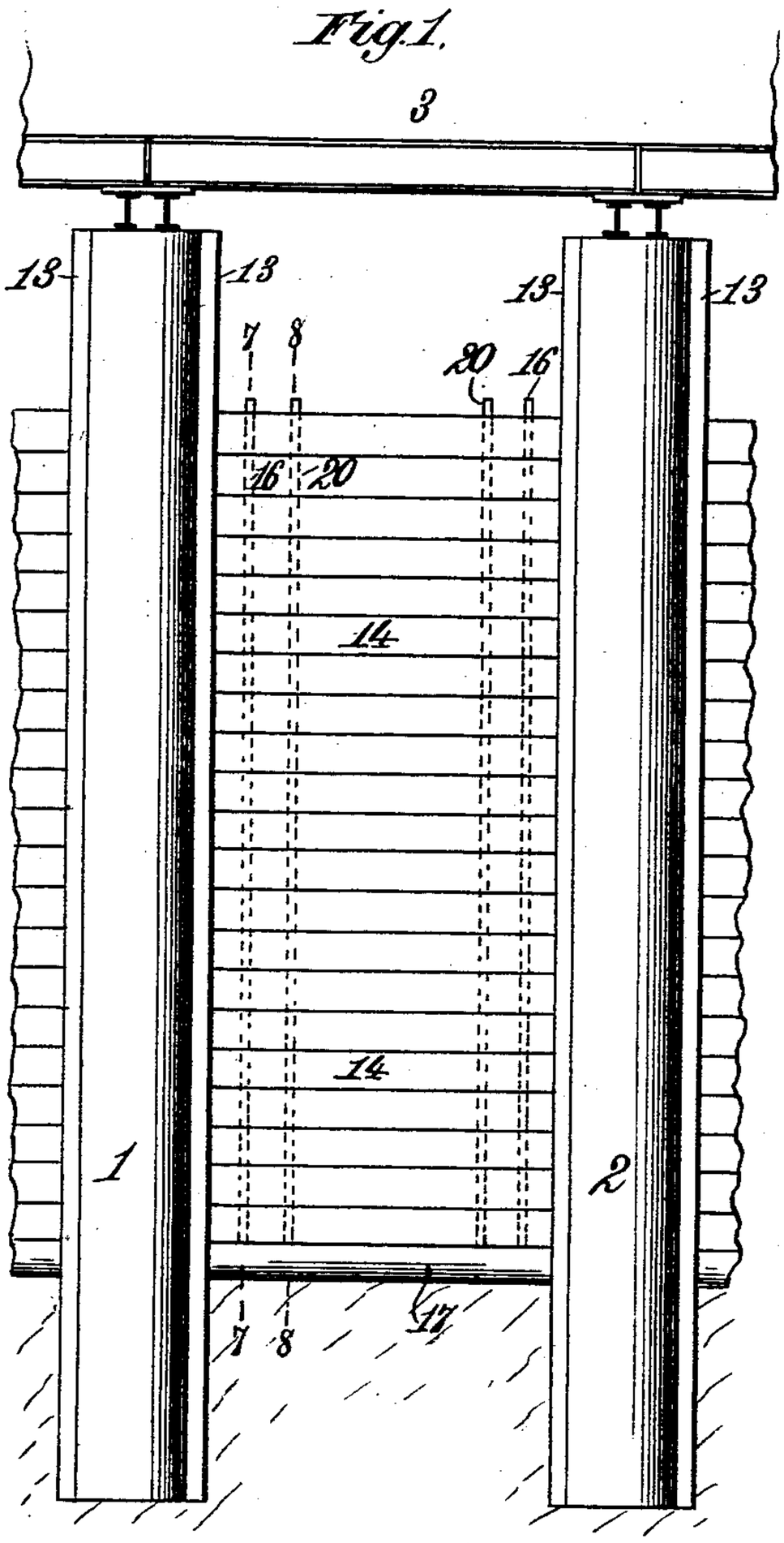


Fig. 2.

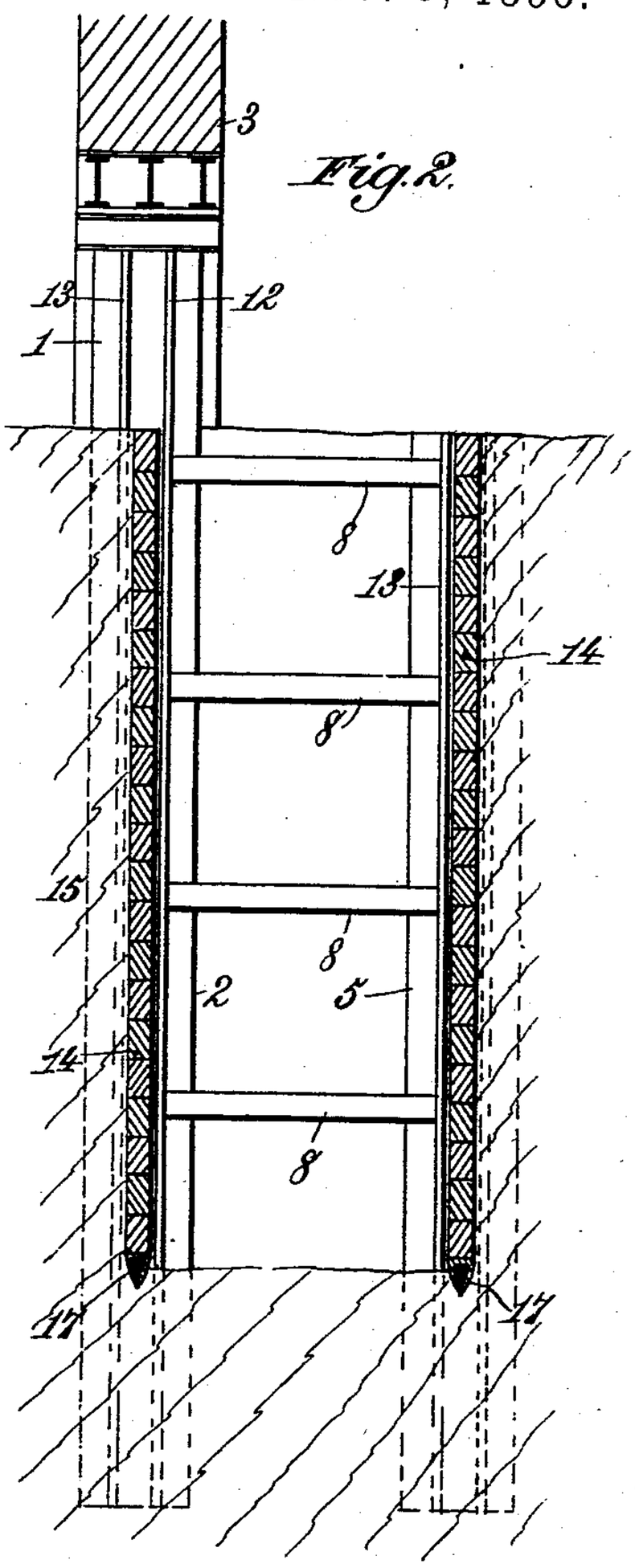
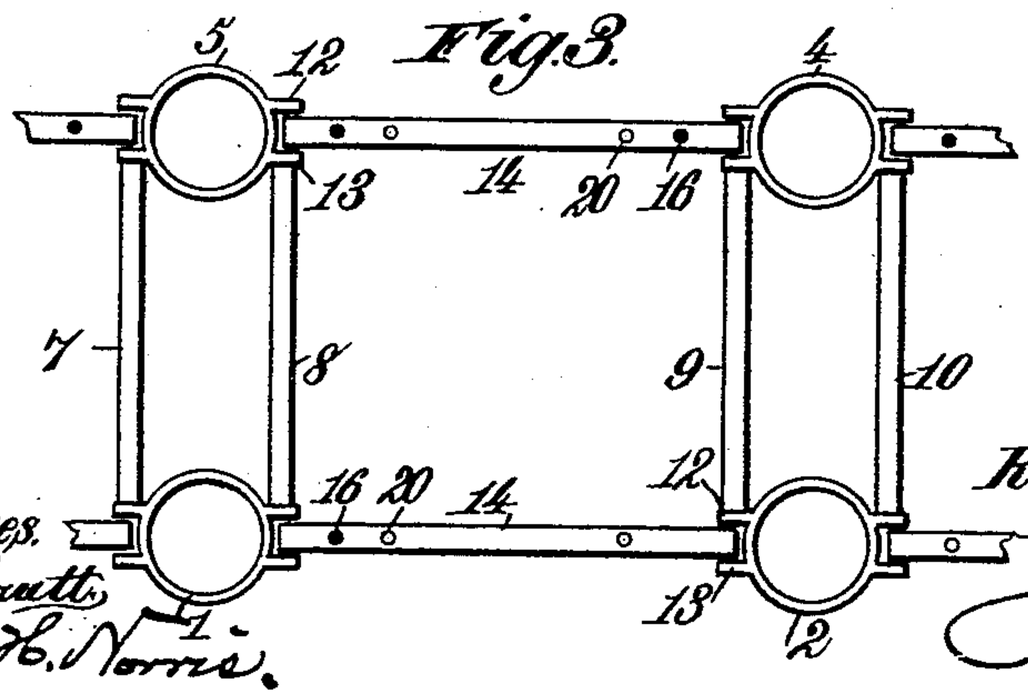


Fig. 3.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

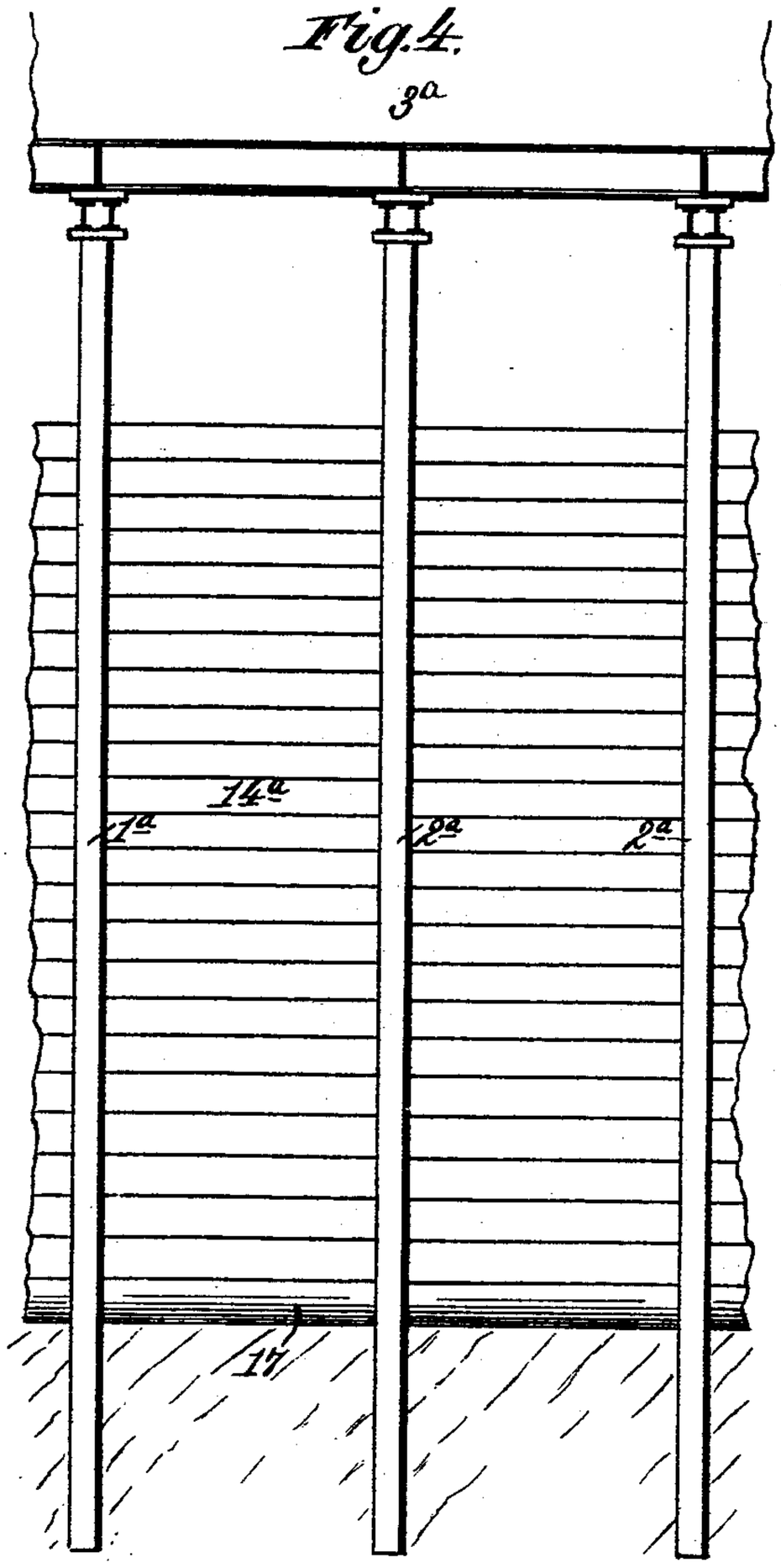

Fig. 5.

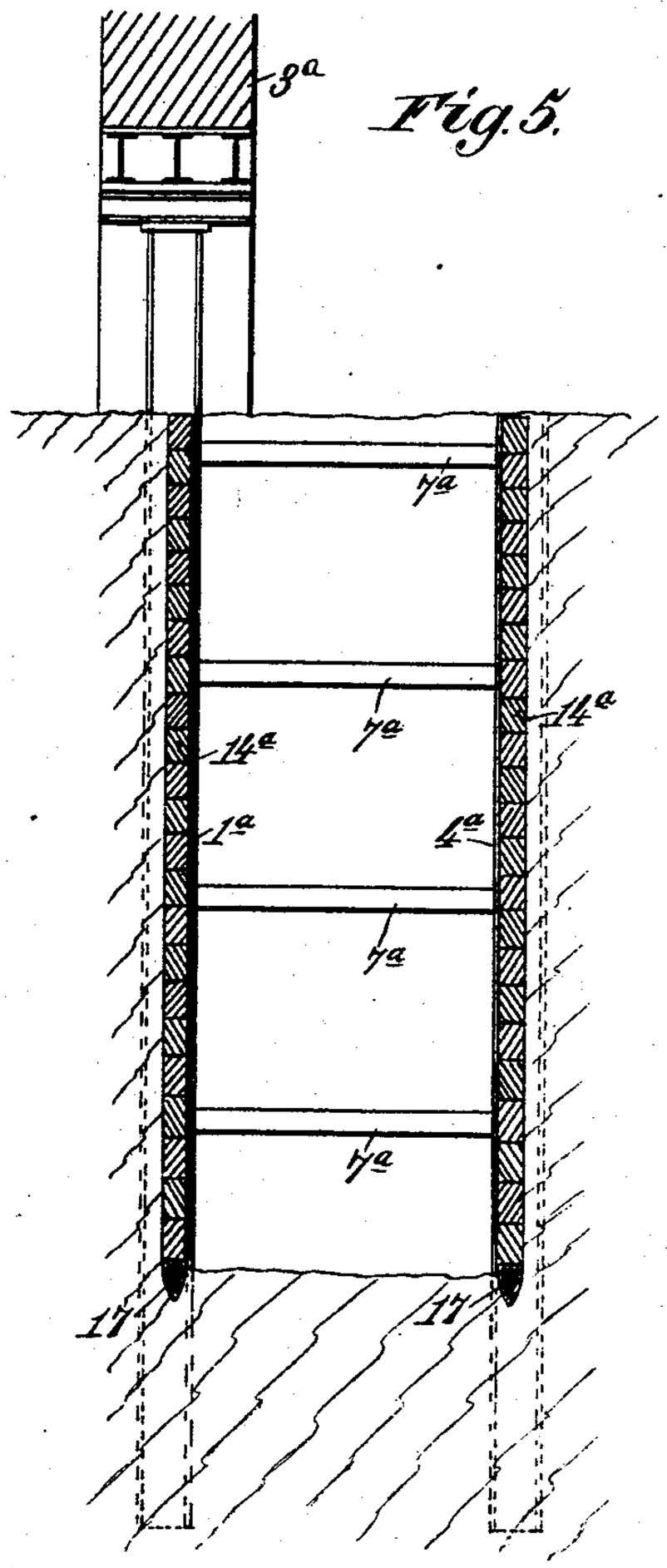

Fig. 6.

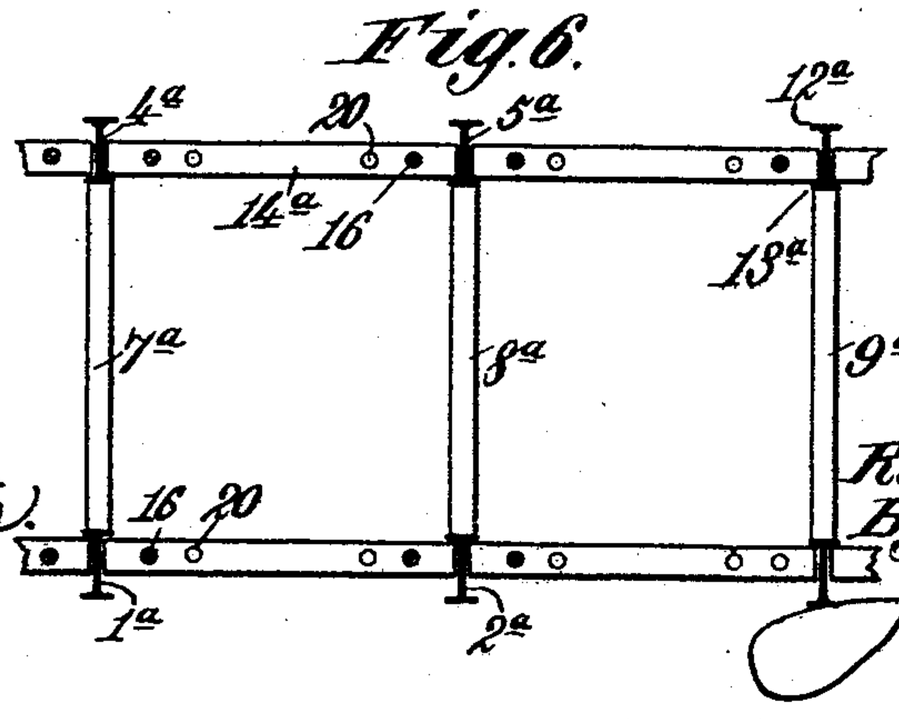

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Fig. 7.

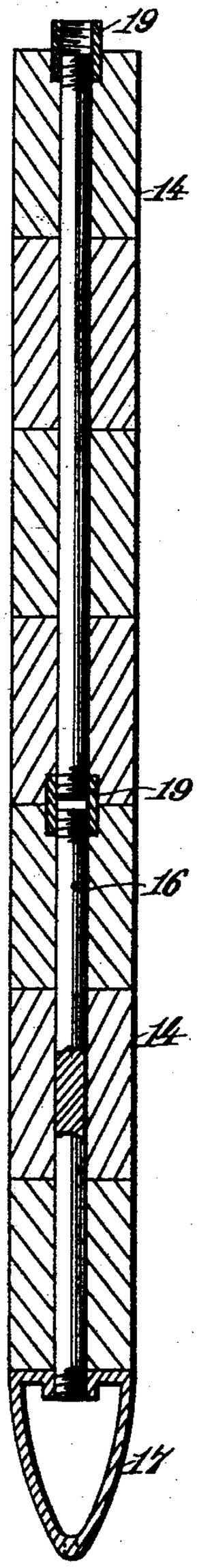
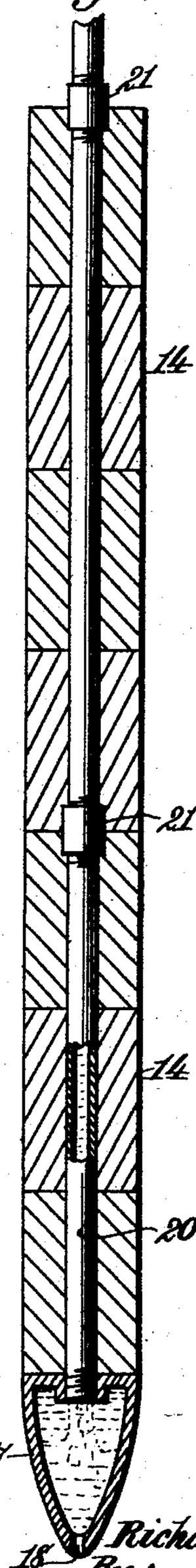


Fig. 8.



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UNITED STATES PATENT OFFICE.

RICHARD S. GILLESPIE, OF NEW YORK, N. Y.

CONSTRUCTION OF SUPPORTS FOR BUILDING-WALLS.

SPECIFICATION forming part of Letters Patent No. 570,792, dated November 3, 1896.

Application filed July 3, 1896. Serial No. 598,020. (No model.)

To all whom it may concern:

Be it known that I, RICHARD S. GILLESPIE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Construction of Supports for Building-Walls, &c., of which the following is a specification.

This invention relates to that class of wall and other supporting-columns which are driven or sunk into the earth and utilized to sustain the wall of an existing building while excavations are being made for the erection of a new building or other structure adjoining or contiguous to the old one, as described and shown in Breuchaud's Letters Patent No. 563,130, dated June 30, 1896.

In Breuchaud's system, and also in systems invented by me, a plurality of columns are driven or sunk by suitable means into the earth until they reach the required depth to sustain the superincumbent weight of the wall or walls of a building or other structure. These columns are more or less widely separated one from another, and consequently when an excavation is made at one side of the columns, while they temporarily or permanently sustain the building, the bank of earth between the columns being unsupported will, or is liable to, break loose or cave in. The same result will frequently occur wherever columns are driven or sunk into the earth at some distance from one another, and an excavation of greater or less depth is made at one side of the columns, as, for example, in constructing cribbing or cribwork in sinking shafts.

The chief object of the present invention is to effectually prevent the earth from caving in or breaking down between wall-supporting or other columns driven or sunk perpendicularly into the earth, and to facilitate, simplify, and greatly economize the construction of wall-supports for subbases or subfoundations and cribbing or cribwork, whereby the use of immense timbers ordinarily employed are avoided. This object is accomplished in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a detail side elevation illustrative of my invention and showing two columns driven or sunk perpendicularly into the earth with the space between the columns spanned by my improved sheathing, which serves to sustain the earth at one side of the columns, while a deep excavation can be made at the opposite side thereof. Fig. 2 is a vertical sectional view taken in a plane at right angles to the plane of Fig. 1. Fig. 3 is a detail plan view. Figs. 4, 5, and 6 are views similar to Figs. 2 and 3, showing a modification of my invention. Fig. 7 is an enlarged vertical sectional view taken on the line 7 7, Fig. 1; and Fig. 8 is an enlarged vertical sectional view taken on the lines 8 8, Fig. 1.

In order to enable those skilled in the art to practice my invention, I will now describe the same in detail, with special reference to the wall of an existing building, but it is to be understood that my invention is designed for many purposes, such as the construction of foundations or supports for new buildings, or for constructing cribbing or cribwork in sinking shafts.

In Figs. 1, 2, and 3 the numerals 1 and 2 indicate tubular, cylindrical columns which are driven or sunk in any suitable manner perpendicularly into the earth directly under the wall 3 of an existing building or other structure, and 4 and 5 indicate similar columns driven or sunk perpendicularly into the earth at one side of the existing building-wall 3 and at a greater or less distance from the columns 1 and 2, in such manner that while the columns 1 and 2 may be utilized, if desired, to support the wall of an existing building, the columns 4 and 5 may be used as the base or foundation for the wall of a new building or other structure.

The columns sunk in the manner described and shown are preferably connected together by transverse tie braces or bars 7, 8, 9, and 10, as will be best understood by reference to Fig. 3. The columns are each formed or otherwise provided at diametrically opposite sides with laterally-projecting perpendicular pairs of guide-flanges 12 and 13, adapted to receive the vertical edges of sheathing boards or planks 14, which are sunk perpendicularly into the

earth through the medium of water-jets, as will hereinafter appear, in such manner that the sheathing boards or planks engaged with the columns 1 and 2 will constitute a barrier to firmly and substantially support the earth 15 under the existing building and at one side of the said columns 1 and 2, while the earth at the opposite side of said columns and between the same and the columns 4 and 5 can be excavated to the required depth for the purpose of erecting the foundation for a new building, which foundation can thus be made to extend a greater or less distance below the original foundation of the existing building with absolute safety and without danger of the old building collapsing.

It will be obvious that the sheathing boards or planks will be firmly held by the perpendicular flanges on the tubular cylindrical columns so that the sheathing can successfully resist the pressure of the earth under any tendency to break or cave in.

The sheathing is sunk in sections and preferably each section is composed of three or four boards or planks coupled together by tie-bolts 16, as will be best understood by reference to Fig. 7. The uppermost or first section is provided at the lower edge with a horizontally-arranged hollow shoe, approximately V-shaped in cross-section or provided with converging side walls so that it will readily penetrate the earth. The contracted or narrow portion of the shoe is provided with a plurality of orifices 18 for the passage of water, thereby constituting a water-jet which can be utilized for sinking the sheathing perpendicularly into the earth while the vertical edges of the sheathing lie in engagement with the pairs of flanges 12 and 13, formed or provided on the tubular cylindrical columns which have been sunk perpendicularly into the earth, as before stated.

The sections composing the sheathing can be readily connected together, section by section, by screwing the bolts 16 into sleeve-nuts 19, set into the upper and lower edges of the sheathing-sections, as will be obvious by reference to Fig. 7.

The water is supplied to the shoe 17 through the medium of any desired number of water-pipes 20, (best seen in Fig. 8,) which water-pipes are each preferably constructed in sections coupled together by sleeve-nuts 21. The number of water-supply pipes 20 and tie-bolts 16 will depend, in a large measure, on the length horizontally of the sheathing, or rather the distance between the driven or sunk perpendicular columns 1 and 2 or 4 and 5. Ordinarily two water-pipes 20 will be used in the sheathing between two columns, as will be clear from reference to the dotted lines in Fig. 1, and likewise two sets of connecting-bolts 16 may be used in sheathing between two columns, as indicated by dotted lines in Fig. 1.

The hollow shoe or water-jet head 17 extends horizontally the full length or approximately the full length of the sheathing between two columns 1 and 2, or 4 and 5, and the numerous perforations 18 permit the ready escape of the water, so that it will loosen or soften the earth and enable the sheathing to be more or less easily sunk by the aid of pressure applied to the sections as they are lowered. This manner of constructing and sinking the sheathing between perpendicular columns driven or sunk into the earth renders it possible to entirely avoid the use of immense timbers ordinarily used in constructing cribbing or cribwork, and also greatly facilitates the repairing of old buildings, the construction of subbases or subfoundations for the walls of existing buildings, and the provision of strong, substantial foundations for new buildings, as will be obvious to those skilled in the art without further detailed explanations.

It will be obvious that my invention provides comparatively simple and economical means whereby the excavation of a lock of greater or less size can be executed without reference to the columns supporting the walls of old buildings, which is important in all cases where it is desired to remove all the earth from a lot preparatory to constructing or erecting the foundation for a large building or the foundations for several buildings.

The perpendicular columns illustrated in Figs. 1, 2, and 3 are in the form of tubular cylinders, as before stated, but the construction of these columns may be changed or varied, if desired. For instance, the columns may be made in the form of iron I-beams, as shown in Figs. 4, 5, and 6, or the columns may be of any form or shape in cross-section suitable for the purpose in hand.

If channel-iron beams are employed as columns, it is essential that they possess means whereby they will retain the sheathing in operative connection therewith, and for this reason the iron I-beams are preferable in that they possess pairs of lateral flanges 12^a and 13^a, as best seen in Fig. 6, between which the vertical edges of the sheathing will be located for the purpose of successfully resisting any tendency of the earth to break or cave in, if an excavation of greater or less depth is made at one side of the sheathing-columns.

In Figs. 4, 5, and 6 the numeral 14^a indicates the sheathings, which are sunk in sections, in the same manner as described with reference to Figs. 1, 2, 3, 7, and 8, and are provided with the tie-bolts and water-jet pipes, as shown in the enlarged sectional views, Figs. 7 and 8. The driven or sunk perpendicular columns in Figs. 4, 5, and 6 are indicated by the numerals 1^a and 2^a and 4^a and 5^a.

In Figs. 4 and 5 the columns 1^a and 2^a are shown as constituting a subbase or subfoundation for the wall 3^a of an existing building, the same as described with reference to Figs. 1 and 2, but it is to be understood, as before explained, that the columns may be utilized

for various purposes, as I do not wish to be understood as confining myself to the employment of columns as supports for the walls of an existing building.

In Figs. 3 and 6 the two sets of columns 1 1^a, 2 2^a, 4 4^a, and 5 5^a are represented as sunk in rectilinear lines parallel to each other, but it is possible to sink these columns in a circular path and sink the sheathings between the columns, so that the outline will be of polygonal shape. This enables the invention to be used in the construction of cribbing or cribwork in sinking shafts and the like.

It will be evident that when the columns are buried or sunk and arranged in the manner illustrated in Figs. 1 to 6, inclusive, the transverse tie rods or braces 7, 8, 9, and 10, Fig. 3, or 7^a, 8^a, and 9^a, Fig. 6, constitute struts which brace the columns 1 and 2 or 1^a and 2^a, when the excavation is made at one side of the latter or between the two sets of columns.

I prefer to construct the sheathing boards or planks of wood, but they may be made of iron or any other metal or material suitable for the purpose in hand.

My invention possesses many advantages which render it particularly useful in the construction of new buildings, in that one set of columns can be utilized to support the wall of an existing building and an excavation of any required depth can be made immediately at one side of the old wall for the purpose of laying a foundation for the wall of a new building. The columns and the sheathing may, if desired, be removed from the earth after the necessary new foundation has been laid, but ordinarily the columns and sheathing will be permitted to remain permanently in position.

The sheathing herein described and shown can of itself be utilized as a foundation or support for a building-wall or other structure by sinking the sheathing perpendicularly into the earth the required distance and then making a pressure-resisting connection between the upper edge of the sheathing and the base portion of the existing wall, or the sunk sheathing can be utilized as the foundation or support for the wall of a new building or other structure.

Having thus described my invention, what I claim is—

1. The combination of a plurality of columns buried or sunk perpendicularly into the earth and provided with pairs of lateral flanges and sheathings sunk into the earth in engagement with said flanges, and each provided at the lower end with a water-jet head, and means for supplying the said head with water to facilitate sinking the sheathings, substantially as described.

2. The combination of a plurality of columns buried or sunk perpendicularly into the earth and provided with pairs of lateral flanges with sheathings each made up of sections coupled together by tie-bolts, the lowermost section having a hollow water-jet head for distributing water to facilitate sinking the sheathings, and water-supply pipes extending through the sheathings and communicating with the water-jet head, substantially as described.

3. The combination of a plurality of columns buried or sunk perpendicularly into the earth, sheathings sunk into the earth between the columns and having their perpendicular edges engaged with the latter to successfully resist earth-pressure at one side while permitting a deep excavation to be made at the opposite side, a water-jet head applied to the lower portion of the sheathing, and means for supplying the water-jet head with water, substantially as described.

4. The combination of a plurality of columns buried or sunk perpendicularly into the earth under the wall of an existing building, a plurality of columns buried or sunk at one side of the said wall, and water-jet sheathings sunk into the earth between the columns and having their vertical edges engaged therewith, and connecting-braces between the two sets of columns, substantially as and for the purposes described.

5. The combination of a plurality of columns buried or sunk perpendicularly into the earth under the wall of an existing building, a plurality of columns buried or sunk at one side of the said wall, all the columns having lateral flanges, transverse or cross tie rods or bars connecting the two sets of columns so that one set serves to brace the other set, and sheathings sunk into the earth between the columns and having their vertical edges engaged with the lateral flanges thereof, substantially as and for the purposes described.

6. In a foundation or support for the wall of a building or other structure, a sheathing sunk perpendicularly in the earth and composed of boards or planks arranged one above the other in the same vertical plane, tie-bolts extending vertically through said boards or planks, a water-jet shoe located at the lower edge of the sheathing, and a water-supply pipe communicating with said shoe, substantially as described.

7. In a foundation or support for the wall of a building or other structure, a sheathing sunk perpendicularly into the earth and composed of sections arranged one above the other in the same vertical plane, tie-bolts and nuts firmly connecting the said sections together and the bolts extending vertically through the same, a water-jet shoe having converging sides and located at the lower edge of the sheathing, and a water-supply pipe communicating with the said shoe, substantially as described.

8. In a foundation or support for the wall of a building or other structure, a sheathing sunk perpendicularly into the earth and composed of sections arranged one above the other in the same vertical plane, tie bolts and

nuts firmly connecting the said sections together and the bolts extending vertically through the same, a water-jet shoe having converging sides and located at the lower edge of the sheathing, and a water-supply pipe extending through the bodies of the said sections and communicating with said water-jet shoe, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RICHARD S. GILLESPIE.

Witnesses:
ALBERT H. NORRIS,
THOS. A. GREEN.