

J. E. ROBINSON.
FOUNDATION FOR BUILDINGS.

Patented Feb. 2, 1892.

Fig. 1.

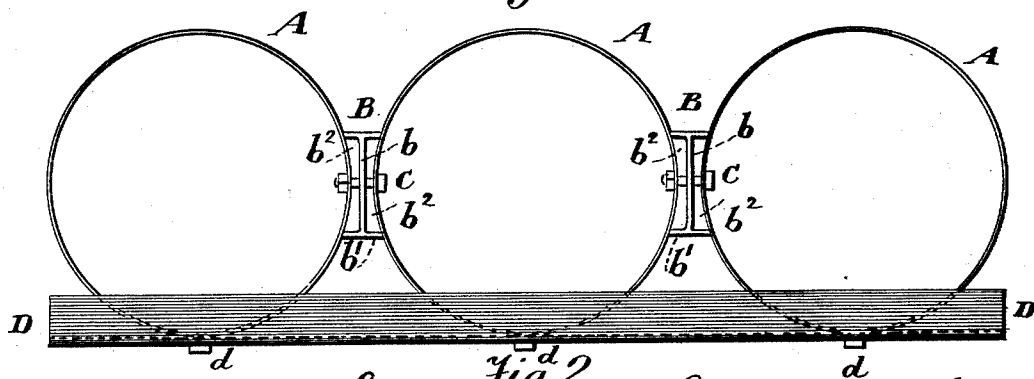


Fig. 2.

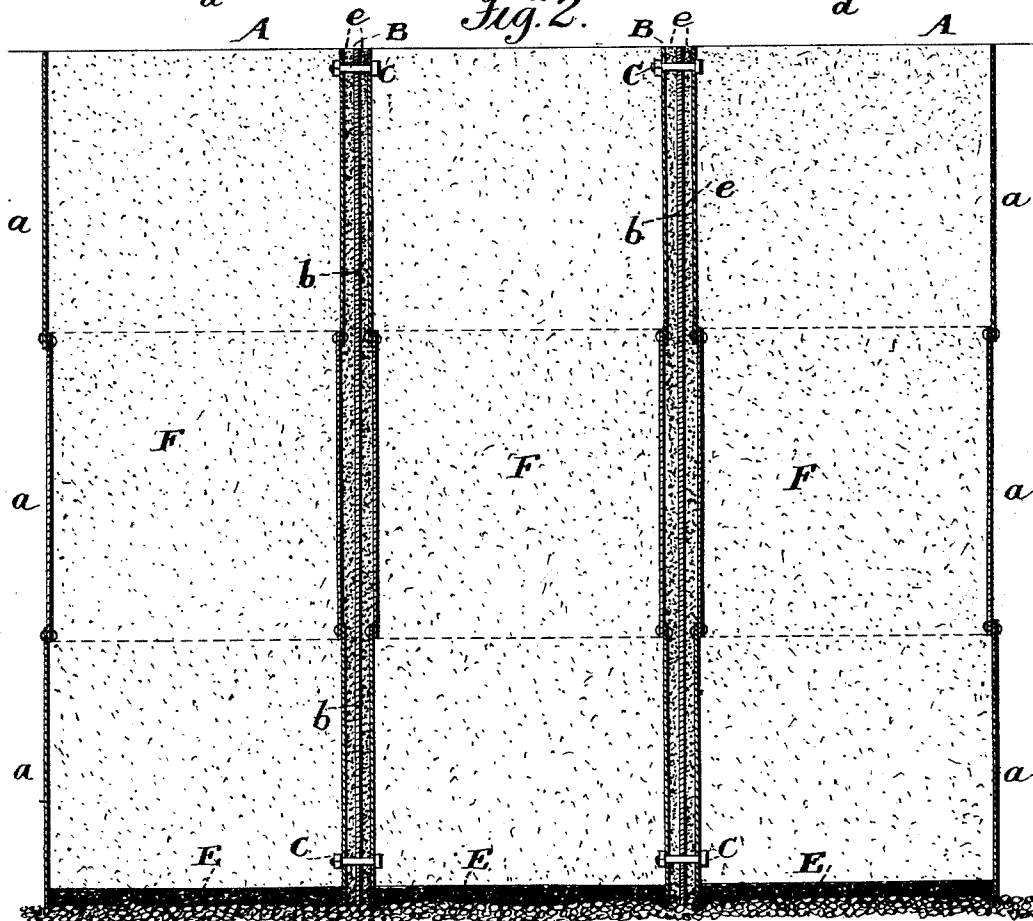


Fig. 3.

Witnesses
A. Ruppert.
E. Kruse.

Inventor:
John E. Robinson,
by Edw. M. Howard atty.

UNITED STATES PATENT OFFICE.

JOHN E. ROBINSON, OF PHILADELPHIA, PENNSYLVANIA.

FOUNDATION FOR BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 468,229, dated February 2, 1892.

Application filed October 31, 1891. Serial No. 410,513. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. ROBINSON, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Foundations for Buildings or other Structures, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object and nature of my invention will be fully set forth in the following specification and claims.

In the drawings, Figure 1 is a plan view of a portion of a foundation constructed in accordance with my invention. Fig. 2 is a vertical longitudinal section. Fig. 3 is a sectional view of a detail.

Similar letters of reference indicate similar parts in the respective figures.

A A A are metal cylinders, preferably of steel, each being made up of sections *a a*, bolted together, as shown.

B B represent I-beams extending down between adjacent cylinders their entire length. The cylinders and I-beams are secured together by bolts CC, the bolts passing through the web *b* of the I-beam and the adjacent portions of the two cylinders. The flanges *b' b'* of the beams abut against the cylinders on both sides thereof, two spaces *b² b²* being thus formed and inclosed at each beam by the web and flanges of the I-beam and the adjacent cylinders.

D is an angle-iron extending longitudinally of the row of cylinders. The horizontal member of the angle-iron rests on the top edges of the cylinders and its vertical member abuts against their sides, it being secured thereto by bolts *d d*.

The mode of constructing the foundation is as follows: One of the cylinders A is first sunk, the earth, &c., being removed from its interior as it sinks. When a suitable base—such as gravel, hard sand, or rock—is reached, I pour grout on the base inside the cylinder, which will in the case of gravel or sand permeate and spread outwardly in the base below the cylinder and bind the material immediately about the base in a hard integral mass, and the grout within the cylinder will adhere to it and anchor it firmly to the base. Should

the base be rock, the grout will fill up any depressions in the surface, and when it hardens will adhere firmly to the rock and cylinder. In the drawings the grout at the base is indicated by E. As soon as the first cylinder is in position, I proceed to sink the next, and with it the I-beam. When the second cylinder is in position on the base, I bolt the two cylinders and the I-beam together, pour the grout on the base within the second cylinder, and proceed to fill the first cylinder with a suitable foundation material, such as concrete or masonry, as indicated at F, leaving, however, sufficient space to permit the angle-iron D to be bolted in position. The operation thus proceeds until all the cylinders are sunk to place and filled with the foundation material. The angle-iron D is then bolted in position and the cylinders filled up to the level thereof with the foundation material. The spaces *b² b²* are also filled with grout, as indicated by *e*. The angle-iron D is placed on the outer side of the row of cylinders and is intended to bridge over the angular spaces between the cylinders and form a straight support for the outer portion of the wall. The cylinders should be wider than the wall to be supported on them, and the portion of the cylinders not built on should be on the inside of the building. The object of this arrangement is to prevent the cylinders being forced inwardly at the top by any pressure on the outside, for in order to tip them over the entire weight of the wall would have to be lifted.

While I deem the use of the I-beams between the cylinders to be very advantageous, I do not consider them absolutely essential in all cases to the construction of the foundation. Neither do I consider the angle-iron D to be an absolutely necessary element, for in some cases it might be advantageous to remove the dirt, &c., from the angular spaces between the cylinders on the outer side of the building and fill up such spaces to the level of the cylinders with concrete or other equivalent material. The I-beams and angle-iron are most advantageous when the cylinders have to be sunk through mud, quicksands, or water, for in such cases the I-beams form an effectual seal to prevent anything from oozing through between the cylinders. It would also

be a very difficult matter in such cases to properly fill the angular spaces between the cylinders with concrete, as suggested above.

From the foregoing description it is apparent that a foundation may be built up from a solid base irrespective of the character of the material between said base and the surface of the ground, and also that such foundation may be sunk below that of an adjacent building without underpinning the latter or in any way subjecting it to danger. Such a foundation as that described is burglar-proof, and therefore well qualified for banks, safe-deposit structures, jails, &c.

Having described my invention, I claim—

1. In a foundation for buildings, &c., the combination, with a series of metal cylinders sunk in the earth on the line of the foundation, of a cement adapted to permeate or adhere to the base on which the cylinders rest, and a filler, as concrete or masonry, within the cylinders, substantially as described.

2. In a foundation for buildings, &c., a series of metal cylinders sunk in the earth on the line of the foundation, combined with a series of **I**-beams arranged vertically between the cylinders, bolts to secure each **I**-beam and

its adjacent cylinders together, and a filler, as concrete, masonry, &c., within the cylinders, substantially as described.

3. In a foundation for buildings, &c., a series of metal cylinders sunk in the earth on the line of the foundation, combined with a series of **I**-beams arranged vertically between the cylinders, bolts to secure each **I**-beam and its adjacent cylinders together, a suitable foundation-filler within the cylinders, and a suitable filler in the spaces formed between the webs of the **I**-beams and the cylinders, substantially as described.

4. In a foundation for buildings, &c., a series of metal cylinders sunk in the earth adjacent to each other on the line of the foundation and a suitable foundation-filler within the cylinders, combined with an angle-iron secured to said cylinders and extending over and resting on a portion of their top edges, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand and affixed my seal.

JOHN E. ROBINSON. [L. S.]

Witnesses:

G. M. FINLEY,
W. H. BARNES.