May 26, 1925. 1,539,033

J. A. YOUNGBLOOD

METHOD OF AND MEANS FOR REENFORCING WALL FOUNDATIONS

Filed June 21, 1924

Fig. 1.

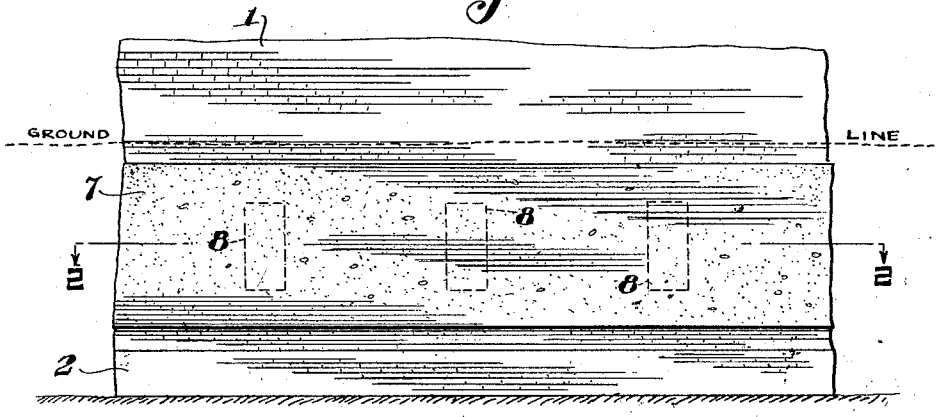


Fig. 2.

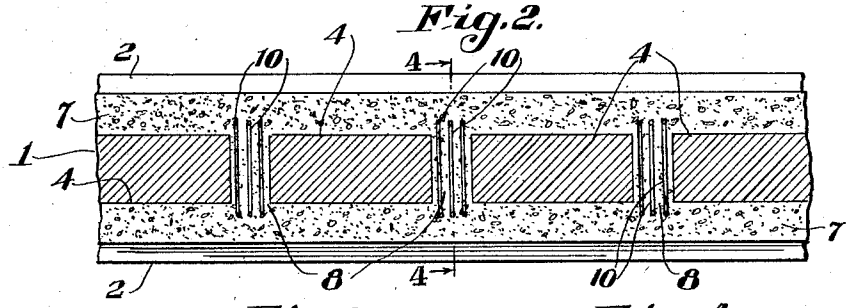


Fig. 3.

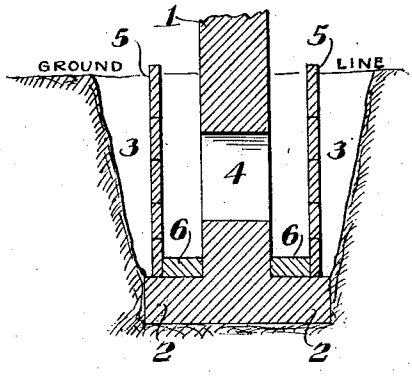
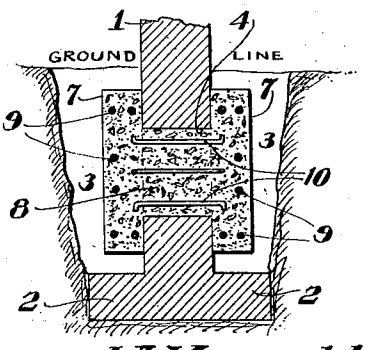


Fig. 4.



J. A. Youngblood
INVENTOR

WITNESSES
Louis Goodman
Howard D. Orr.

BY E. G. Siggers
ATTORNEY

Patented May 26, 1925. 1,539,033

UNITED STATES PATENT OFFICE.

JAMES ALGERNON YOUNGBLOOD, OF DALLAS, TEXAS.

METHOD OF AND MEANS FOR REENFORCING WALL FOUNDATIONS.

Application filed June 21, 1924. Serial No. 721,441.

To all whom it may concern:

Be it known that I, JAMES A. YOUNGBLOOD, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Methods of and Means for Reenforcing Wall Foundations, of which the following is a specification.

This invention relates to a method of and means for reenforcing wall foundations.

The object is to provide an improved method and means for strengthening the lower portions and foundations of walls, especially old walls which may show signs of weakening or cracking through the uneven settling of the ground beneath the same, the improved method and means being carried on with a minimum amount of excavation or other labor and with little or no danger to the wall or the operatives.

The invention is designed as an improvement on the subject matter shown and described in Patent No. 1451799, issued to me on April 17, 1923, the present invention being much more simple in construction, entailing less labor and preparation to install, and having the added advantage of placing the actual strengthening and supporting means directly within the confines of the footing of the old wall, so as to avoid the possibility of weakening the support beneath the same, which often results where it is attempted to excavate at either side or below the lower level of said footing. However, the principal improvement is to prevent further uneven settling of the original foundations and to evenly support the wall over soft portions of the earth beneath the wall.

A full and complete understanding of the invention may be obtained from a consideration of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification, it being understood that while the drawing shows a practical form of the invention, the latter is not to be confined to strict conformity with the showing thereof, but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention, as specifically pointed out in the appended claims.

In the drawings, in which similar reference characters designate corresponding parts throughout the several figures:—

Figure 1 is a side elevation of a portion of a wall having the improved reenforcing means applied thereto.

Figure 2 is a horizontal sectional view through the same, taken on the line 2—2 of Figure 1.

Figure 3 is a transverse section, taken substantially on the line 4—4 of Figure 2 and showing the required excavation, with the necessary concrete forms in position, prior to the pouring of the concrete.

Figure 4 is a similar view, taken on the line 4—4 of Figure 2 and showing the completed structure in position and the forms removed.

The reenforced concrete wall strengthening structure shown and described in the aforesaid patent contemplated the erection of longitudinally disposed sills or beams along the lower or foundation portions of the wall and below the ground level, and supporting the sills by separate footings located at either side of the original footing of the wall. The said sills were arranged in spaced relation to the old wall, and tied to the same by cross beams passing therethrough and having a locking connection therewith. The spacing of the sills away from the wall did not afford a continuous contacting relation, and consequently no continuous strengthening or reenforcing of the wall by said sills, the weight of the old wall being supported, in the event of the settling of the ground, only at intervals by means of the transverse beams. This arrangement also necessitated considerable excavation at each side of the wall, resulting in disturbing the ground at each side of the old footing of the old wall, to provide room for the supplemental footings.

The structure shown and described in the present application eliminates these disadvantages, and provides means for strengthening walls which may be readily and cheaply applied to new walls as they are being erected, and which may be easily and cheaply applied to old, standing walls requiring a uniform continuous reenforcement support, whether of brick, stone or concrete, with a minimum amount of excava-

tion or other labor, and without loosening or disturbing the ground beneath the footing thereof.

Referring to the drawing, there is shown a portion of what may be considered an old wall, indicated at 1, the said wall having the usual widened base 2 at the bottom thereof and commonly known as a footing, which ordinarily extends outwardly equal distances from the wall proper, and is, of course, located some distance below the surface of the ground.

In the event of any uneven setting or sinking of the ground beneath the said footing, the wall often falls or cracks, thus causing loss of life and property or menacing the same, with the result that the building must be demolished or abandoned. As a preventive of such mishap, the invention is designed to be installed during the process of erection of the wall or walls of a building, which may then be easily done by reason of the initial excavation for the wall, and the same is true in the case of repair to an old wall, inasmuch as the improved means may be installed with a very small amount of excavation and labor, the said excavation being located close to the wall, at each side thereof, and above the footing.

As shown in Figures 3 and 4 of the drawing, the excavation 3 at each side of the wall need only be as wide, or a trifle wider, than the width of the extending footing 2 and such excavation may be easily, quickly and safely made along an old wall without danger to the same, even though the same be more or less cracked or damaged.

After the excavations are made, a series of transverse holes or openings 4 are cut through the wall, preferably at a point substantially midway between the upper face of the footing and the ground level, and such cutting operations may be easily accomplished from the surface of the ground, the small trenches allowing ample room for manipulating the cutting tools.

The forms 5 are then set up in the usual manner with the necessary supports and braces, the wall of the forms being preferably set in a short distance from the edge of the footing, as shown in Figure 3, and the bottom board 6 of the form may rest upon the said footing or, if desired, may be built up higher by any desired means.

The holes 4 may be rectangular, round or any other shape that may result in cutting through a hard wall and doing the same in the easiest manner, the inequalities that may result from encountering more or less hard portions in the wall having no effect on the result desired.

When the concrete, of any desired mixture, is poured or placed into the space between the wall and the forms, the same will flow or pass through the holes 4, thus intercommingling and forming a homogeneous mass and providing side belts or bands 7 at each side of the wall 1, the same tightly hugging and adhering to the wall, and connected by a series of transverse beams 8, integrally connected to the belts and passing through the holes 4 to permanently bind the members together.

As is customary, in forming concrete structures of any considerable magnitude or weight, reenforcing iron bars 9 are placed in position longitudinally of the bands 7, at spaced intervals from the bottom to the top thereof, and other transverse iron bars 10 are placed in position to more tightly bind the parts together and provide a practically indestructible reenforcement, as shown in Figure 4 of the drawing.

After the concrete is set or hardened, the forms 5, together with the bottom boards 6 are removed, and the small trench remaining is filled.

This invention is particularly valuable in strengthening a wall. Should the footing of the wall at any place become weak, or the foundation give way, the reenforced concrete band or belt surrounding the lower portion of the wall would give to the weakened portion a firmness and stability which would hold the entire wall without danger of falling.

From the foregoing it will be seen that a simple means and method of installing the same, for repairing or strengthening walls has been provided, requiring little labor and eliminating the danger usually attendant upon such operations.

What is claimed is:—

1. The method of reeinforcing old walls which consists in excavating at one side of said wall down to the footing but no wider than the same, cutting a hole through the wall between the ground level and the footing, forming a band or belt of concrete against the wall between the footing and the ground level, said band or belt having an integral beam traversing the hole and adapted to transfer part of the weight of the wall to the band and to tie the latter to the wall.

2. The method of reenforcing old walls which consists in excavating at each side of the wall foundation down to but no wider than the footing, cutting spaced holes through the wall between the footing and the ground level, building concrete forms with bottoms at each side upon the footing, then pouring concrete into the forms to traverse the holes, then removing the forms after setting to form opposite bands abutting the faces of the wall in spaced relation to the footing and joined together by beams beams passing through the wall.

3. A reenforcing structure for walls having a footing at the base, comprising oppo-

site bands of reinforced concrete running continuously with the wall at opposite sides thereof and between said footing and the ground level, said bands being joined together at intervals by reenforced concrete beams passing through the wall.

4. A reenforcing structure for walls comprising continuous bands of reenforced concrete at each side of the wall in abutting relation to the same and opposite each other, the lower edges of the bands being spaced from the footing of the wall, beams passing through the wall at intervals, said beams being integrally connected to the bands and of less height than the same.

5. A reenforcing structure for walls comprising opposite bands of reenforced concrete having strengthening rods arranged longitudinally therein, said bands abutting the opposite faces of the wall and spaced from the footing thereof, and transverse beams formed integrally with the beams and connecting the same together, said beams having longitudinal strengthening rods therein and traversing pre-arranged holes in the wall.

6. In reenforcing structures for standing walls having a footing wider than the same, opposite reenforced concrete bands of less thickness than the extension of said footing and arranged in contacting relation at each side of the wall, with their lower faces spaced from the footing and their upper faces below the ground level, and transverse reenforced concrete beams traversing holes in the wall arranged longitudinally of the bands, said beams being of less height than said bands and integrally joined thereto at each end.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

JAMES ALGERNON YOUNGBLOOD.