(No Model.)

F. BAUMANN.

STRENGTHENING AND BUILDING FOUNDATIONS.

No. 457,144. Patented Aug. 4, 1891.

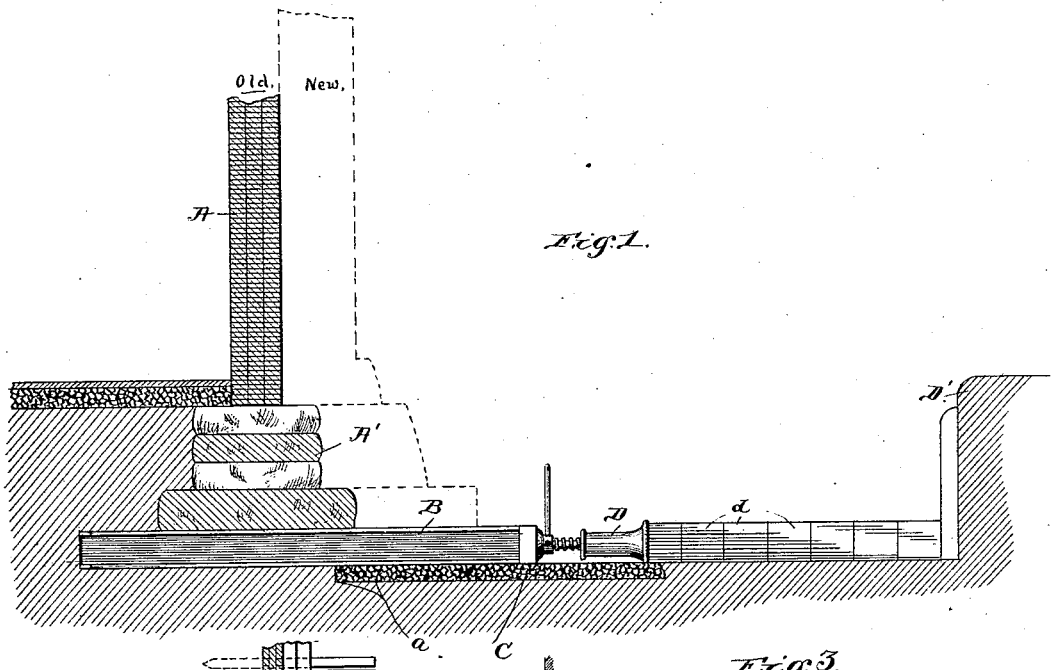


Fig. 1.

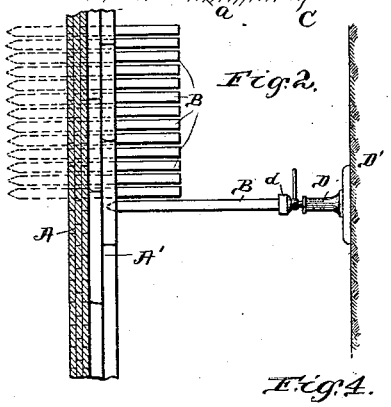


Fig. 2.

Fig. 3.

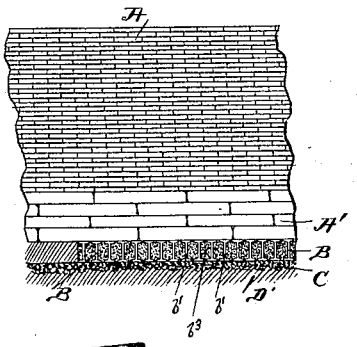


Fig. 4.

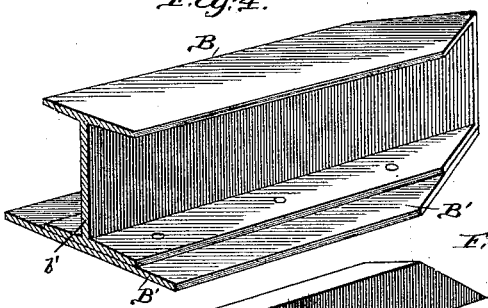
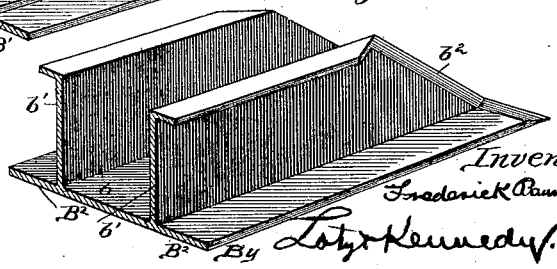


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK BAUMANN, OF CHICAGO, ILLINOIS.

STRENGTHENING AND BUILDING FOUNDATIONS.

SPECIFICATION forming part of Letters Patent No. 457,144, dated August 4, 1891.

Application filed February 9, 1891. Serial No. 380,851. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK BAUMANN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Strengthening and Building Foundations, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention covers a novel method for strengthening the foundations of walls. This method can be employed in various ways and to meet various exigencies; but for the purposes of illustration and explanation I have selected the case where it is desired to build a wall next to a standing wall of less weight. For instance, it is desired to build a nine or twelve story building next to a standing five or six story building, and the owners or occupants of the smaller building will not permit the adjoining wall to be removed nor the foundation to be strengthened from their side of the building. In this case it will be necessary to build a nine or twelve story wall next to the wall of the smaller building, and it is obvious that such new wall will require a stronger foundation than the old wall, and, further, that such new foundation should also serve in a manner to support the old wall; otherwise the said old wall will become out of plumb.

To the attainment of the foregoing and in accordance with my invention I provide an increased bearing-surface beneath the foundation of the old wall, which serves to support both the old and new walls.

The method consists, primarily, in inserting beneath the foundations a plurality of strengthening-beams, which abut against the lower face of said foundation and also extend beyond the same at both sides, and upon which the new foundation and wall are built.

In the accompanying drawings, which illustrate one way in which this method can be carried out, Figure 1 is a vertical transverse section of a wall and foundation, showing the application of my improved method. Fig. 2 is a plan view of the same, the positions of parts being slightly changed. Fig. 3 is a partly sectional side elevation. Figs. 4 and 5 are perspective views of two forms of strengthening-beams employed.

Referring to said drawings, A indicates the standing wall, and A′ the foundation for the same, which rested originally on the earth. In Fig. 1 is also shown in dotted lines the position and shape of a new and heavier wall and foundation that it is desired to build, and which will necessitate an increased bearing-surface. To obtain this said increased bearing-surface and to strengthen the foundation of the old wall, strengthening-beams B, of any desired or convenient construction, are inserted beneath the foundation of the old wall. These strengthening-beams are conveniently inserted one at a time, and abut against the lower face of the foundation A, so that said foundation rests upon said strengthening-beams instead of upon the earth. The said beams extend beyond the inner edge of the foundation, but project a great distance beyond its outer edge. The new foundation and wall is then built upon the said projecting portions, as shown in dotted lines in Fig. 1. The increased bearing-surface thus obtained is amply sufficient to support both the old and new walls, and it is made without interfering in any manner with the standing wall.

The method embraces in detail the following steps, namely: The earth on the outside of the wall A and the foundation A′ is first removed to a level a little below the lower face of the said foundation, and the foundation is also undermined a trifle, as shown at *a*. A layer C, of concrete or analogous substance, is then laid and extends from the undermined portion outwardly a considerable distance, as shown. The distance between the upper surface of this layer C and the lower face of the foundation A is the same as the height of the strengthening-beams B, to be inserted. The said layer provides a smooth and even surface, upon which the beams are laid previously to being inserted, that they may be properly and correctly located, and also forms a guide for the beams during their insertion to prevent their taking other than a straight and direct course. To force said strengthening-beams beneath the foundation, any suitable device may be employed, preferably a hydraulic jack; but for convenience of illustration I have shown an ordinary lifting-jack D. An abutment D′, of earth, is provided, against which the jack is located. Be-

fore insertion the butt-end of the strengthening-beam will be located near the abutment; but as it is driven in, suitable blocks *d* are placed behind the jack, as shown.

It will be understood that any desired form of strengthening-beam may be employed, and three forms are illustrated. In Figs. 1, 2, and 3 an ordinary **I**-beam is shown. In Fig. 4 an **I**-beam is shown, provided with an extended bearing-surface, formed by a plate B′, secured to its lower face. In Fig. 5 a cast beam B^2 is shown, having a bearing-plate *b* and a plurality of webs *b′ b′*. The said beams B^2 are preferred when an exceedingly great weight is not to be supported. It will be understood, of course, that the dimensions of the beams vary according to various circumstances. The said beams are pointed or sharpened to make their insertion easy. The said **I**-beams are beveled from both sides to the center. The cast-beam B^2 is beveled from top to bottom, while the web portions thereof are beveled vertically from their inner edge, as shown at b^2.

As indicated in Fig. 3, the spaces between the beams and between the webs *b′*, as also of the cast-beams B^2, may be packed or rammed with cement, concrete, or other desired material, as shown at b^3, in said Fig. 3. The said cement or concrete is rammed therein by any desired means, and forms a solid and durable packing.

For illustration I have shown the strengthening-beams inserted at right angles to the wall; but it will be understood that my improved method embraces the broad idea of inserting strengthening-beams, and therefore the beams can be inserted at any angle desired.

I claim as my invention—

1. The herein-described method for strengthening foundations, which consists in longitudinally forcing substantially horizontal strengthening-beams beneath the foundation.

2. The herein-described method for strengthening foundations, which consists in longitudinally forcing substantially horizontal strengthening-beams into the earth beneath the foundation.

3. The herein-described method for strengthening foundations, which consists in removing the earth from one side of the foundation to a level slightly below the bottom thereof, and then longitudinally forcing substantially horizontal strengthening-beams beneath the foundation.

4. The herein-described method for strengthening foundations, which consists in removing the earth from one side of the foundation to a level slightly below the bottom thereof, placing a layer of concrete or analogous material in the excavation below the level of the foundation, placing strengthening-beams upon said layer, and finally forcing longitudinally said strengthening-beams beneath the foundation.

5. The herein-described method for strengthening foundations, which consists in removing the earth from one side of the foundation to a level slightly below the bottom thereof and undermining said foundation a trifle, placing a layer of concrete or analogous material in the excavation below the level of the foundation and in the undermined portion, placing strengthening-beams upon said layer and projecting into said undermined portion, and finally forcing longitudinally said strengthening-beams beneath the foundation.

6. The herein-described method for strengthening foundations, which consists in inserting strengthening-beams beneath the same transversely to the length of said foundation.

7. The herein-described method for strengthening foundations, which consists in inserting strengthening-beams beneath the same, and then ramming or forcing cement, concrete, or analogous material in between said strengthening-beams.

8. The herein-described method for strengthening the foundation of a standing wall and building an additional wall next to said standing wall, which consists in bringing the surface of the earth adjacent the standing wall to a level slightly below the bottom thereof, placing strengthening-beams on the earth adjacent the standing wall, forcing said strengthening-beams partially beneath the foundation of the standing wall and then building another foundation and wall upon the projecting portions of said strengthening-beams adjacent to said standing wall.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK BAUMANN.

Witnesses:

HARRY COBB KENNEDY,

WM. H. LOTZ.