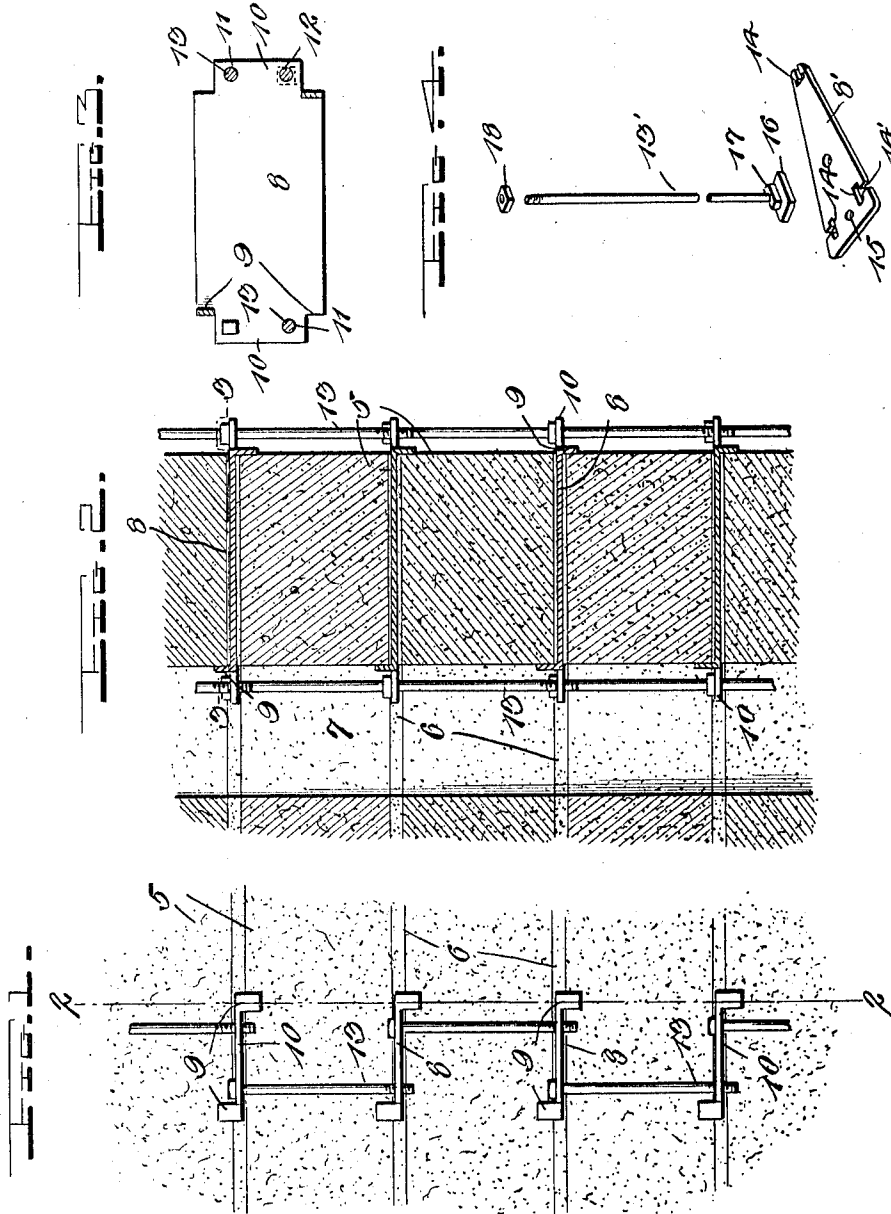


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 REINFORCING MEANS FOR BUILDING WALLS.
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To all whom it may concern:

Be it known that I, HENRY J. WAGNER, a citizen of the United States, residing at Dellwood, in the county of Erie and State of New York, have invented certain new and useful Improvements in Reinforcing Means for Building-Walls, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to reinforcing means for building walls and has for its primary object to provide a very simple device of this character the parts of which may be readily assembled in the wall where-
15 by the rigidity or stability of the wall structure is materially enhanced and liability of its collapse obviated.

Another and more specific object of the invention resides in the provision of rein-
20 forcing means for building walls constructed of superposed hollow plastic blocks, said means consisting of plates arranged between the wall blocks and tie rods connecting the several plates so as to permanently hold the
25 same in position and secure a maximum of rigidity in the wall structure.

Still another object of the invention is to provide a device of the above character which may be inexpensively manufactured,
30 is strong and durable in construction and can be quickly assembled in the wall as the same is constructed.

With the above and other objects in view, the invention consists of the novel features
35 of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a portion of a
40 building wall which is provided with my improved reinforcing means; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 is a section taken on the line 3—3 of Fig. 2; and Fig. 4 is a perspective view illustrating a slightly modified form of the inven-
45 tion.

Referring in detail to the drawing 5 designates the superposed blocks of concrete or other plastic material which constitute
50 the wall of the building. Between the several blocks mortar or any other suitable binding agent is disposed as indicated at 6. The blocks 5 are hollow to provide the air passage 7 whereby moisture is excluded from
55 the inner face of the wall.

The reinforcing means forming the sub-

ject matter of the present application includes the steel plates 8 which are embedded in the binding agent 6 between the several superposed wall blocks, and in the illus-
60 trated embodiment of the device these plates are of rectangular form and at each of their ends and on their longitudinal edges are provided with the angularly bent
65 tongues 9 which form upon the ends of the plate the reduced extensions 10. The tongues 9 on one end of the plates are adapted to lie closely against the wall of the air
70 passage 7 while the tongues upon the other end of said plates engage the outer surface of the building wall. The extensions 10 project into the air passage 7 and outwardly
75 from the face of the wall and are each provided with the spaced openings 11 and 12. The openings 11 are threaded while the
80 edges of the openings 12 are smooth and of slightly greater diameter than the threaded openings. It will be observed from reference to Fig. 3 that the threaded openings 11 in the opposite ends of the reinforcing plate
85 are disposed out of longitudinal alinement or upon opposite sides of the transverse center of said plate.

The reinforcing plates 8 are connected by means of the tie rods 13, the alternate tie
90 rods connecting the series of plates in the building wall being disposed in longitudinal alinement. One end of the tie rods is provided with a rectangular head while the other end thereof is provided with screw
95 threads for engagement in the threaded openings 11 of the reinforcing plates. As shown in Fig. 1, each end of the reinforcing plate 8 has one of the tie bolts loosely disposed through the opening 12 thereof,
100 and the end of this bolt is adapted for threaded engagement in the opening 11 of the adjacent reinforcing plate to connect the tongues 10 on the ends of said plates. By arranging the bolts 13 which connect
105 the opposite ends of adjacent plates upon opposite sides of the transverse center of the plate, the strain upon the reinforcing plates when the threaded ends of the bolts move through the openings 11 in the tongues
110 10, is equally distributed throughout the area of said plates, and liability of breaking or distorting the reduced tongues 10 is overcome. By the staggered arrangement of the bolts connecting the opposite ends of the several reinforcing plates which are arranged between the blocks of the wall, an

extremely strong and rigid brace or connection between the wall blocks is secured so that they will be permanently held in place in the wall structure should the binding agent between the wall blocks be deleteriously affected by the elements so that the same no longer acts as a binder between the superposed blocks. It will of course, be obvious that if desired one of the tongues 9 on the ends of the reinforcing plates may be eliminated and single tongues provided thereon which are disposed at the diagonally opposite corners of the plate. As shown, the tongues on the opposite ends of the plate are preferably extended in opposite directions from the plate so that they engage respectively with the adjacent wall blocks. These wall engaging tongues may also be entirely omitted if preferred.

In Fig. 4 of the drawing I have illustrated a slightly modified form of the wall reinforcement wherein the plates 8' are of triangular form in plan. The wider ends of these triangular plates are adapted to project into the air passage 7 of the building wall while the narrower ends of the plates project from the face of the wall. One of the longitudinal edges of the plates 8' at their wider ends are provided with the openings 14 having the entrances 14' which open upon the edges of the plate. The openings 14 are of rectangular form and extend longitudinally of the reinforcing plate while the entrances 14' are contracted or of less width than the length of the openings. A similar opening and entrance thereto is provided in the narrower end of the plate, the longer dimension of the opening 14, however, being disposed transversely of the plate while the entrance to the opening extends longitudinally thereof. Adjacent to the other longitudinal edge of the reinforcing plate at its wider end, an opening 15 is provided. Each of the tie rods 13' is provided with an enlarged rectangular head 16 which has a reduced portion 17 on one face thereof to fit into the rectangular opening 14 in the edge of the reinforcing plate 8'. The other end of this tie rod 13' is threaded and is adapted to be inserted through the opening 15 of the adjacent reinforcing plate in the wall structure. A nut 18 is adapted to be threaded upon the end of the tie rod 13 to securely hold the same in position between the adjacent plates and retain the rectangular portion 17 thereof in the opening 14 of the plate 8'. In this manner the tie rods connecting the several plates may be easily and quickly placed in position by first inserting the cylindrical portion of the rod through the entrance 14', to the rectangular opening 14 of the plate and then moving the threaded end of the rod into the circular opening 15 of the adjacent reinforcing plate. In this

movement of the rod, the rectangular portion 17 thereof will be disposed in the opening 14 and rotation of the tie rod which would permit the nut to work off of the end thereof is thereby prevented. The tie rods to connect the outer narrower ends of the reinforcing plates are provided with the enlarged portions 16 and 17 at intervals to be received in the openings 14 in the ends of the reinforcing plates, one end of said rod being threaded to receive a securing nut as above described.

From the foregoing it is believed that the construction and manner of assembling the various parts of my improved wall reinforcement will be clearly understood. By means of the device it will be seen that an absolutely rigid connection between the several superposed wall blocks is obtained whereby a maximum of rigidity is secured and liability of buckling of the wall is obviated. Owing to the simple form of the several elements employed it will be obvious that the device can be manufactured at comparatively small cost, is extremely strong and durable in practical use and highly efficient in actual operation. While I have shown and described the preferred construction and arrangement of the various parts, it will be understood that the same are susceptible of considerable modification without departing from the essential feature or sacrificing any of the advantages of the invention.

Having thus described the invention what is claimed is:—

1. The combination with a building wall consisting of a plurality of blocks, plates disposed between the adjacent wall blocks, tongues formed upon the ends of each plate, at the opposite longitudinal edges thereof, said tongues extending in reverse directions for engagement with the faces of the respective wall blocks, and means connecting the several plates.

2. The combination with a building wall consisting of a plurality of hollow plastic blocks arranged in superposed relation, of plates disposed between the adjacent wall blocks and projecting at one of their ends into the passage through the blocks and at their other ends beyond the face of the wall, and tie bolts connecting the projecting end portions of the several plates and disposed between the same in staggered relation.

3. The combination with a building wall consisting of a plurality of superposed hollow plastic blocks having a suitable binding agent arranged between the same, of plates embedded in the binding material and projecting at their ends from one face of the wall and into the passage through the wall blocks, and tie bolts loosely disposed at one of their ends in each end of the plates and means for removably engaging the other

ends of said bolts with the adjacent plate, said tie bolts being arranged in staggered relation between the several plates.

4. The combination with a building wall consisting of a plurality of superposed hollow plastic blocks and a binding agent between the same, of plates embedded in the binding agent and projecting at their ends beyond one face of the wall and into the passage through the wall blocks, said projecting ends of the plates each having spaced openings therein one of which is provided with screw threads, said threaded and non-threaded openings respectively being disposed in diagonally opposite corners of the plate, and tie rods connecting the ends of the several plates and loosely disposed through the non-threaded openings thereof and adapted for threaded engagement in the threaded openings of adjacent plates.

5. The combination with a building wall consisting of a plurality of superposed hollow plastic blocks and a binding agent between the same, of plates embedded in said binding agent, the opposite ends of said plates being provided with angularly bent tongues to engage one of the outer surfaces of the wall and the wall of the passage

through the blocks, the provision of said tongues forming reduced extensions on the ends of the plates, said extensions being provided with spaced openings, and tie rods disposed through said openings and connecting the several plates, said tie rods being arranged between the plates in staggered relation.

6. The combination with the building wall consisting of a plurality of hollow blocks, of plates disposed between the adjacent wall blocks, said plates having oppositely extending tongues formed upon each of their ends and adjacent to the longitudinal edges of the plate whereby reduced extensions are formed on the ends of the plate projecting into the passage through the wall and beyond the face of the wall, and tie bolts connecting the projecting end portions of the several plates in the wall structure.

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

HENRY J. WAGNER.

Witnesses:

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LEVANT D. LESTER.