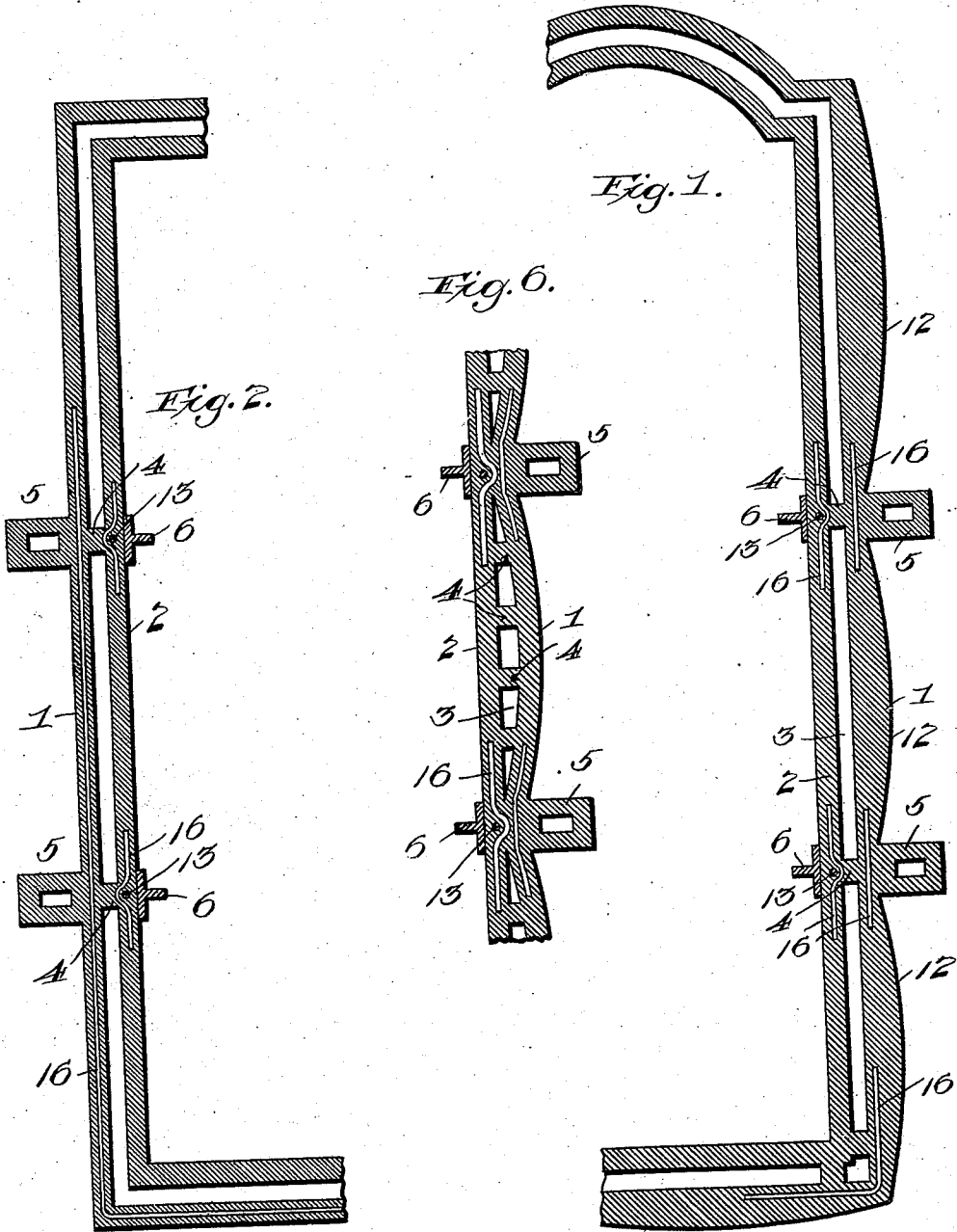


No. 853,702.

PATENTED MAY 14, 1907.

J. LALLY.
WALL STRUCTURE.
APPLICATION FILED OCT. 6, 1905.

2 SHEETS—SHEET 1.

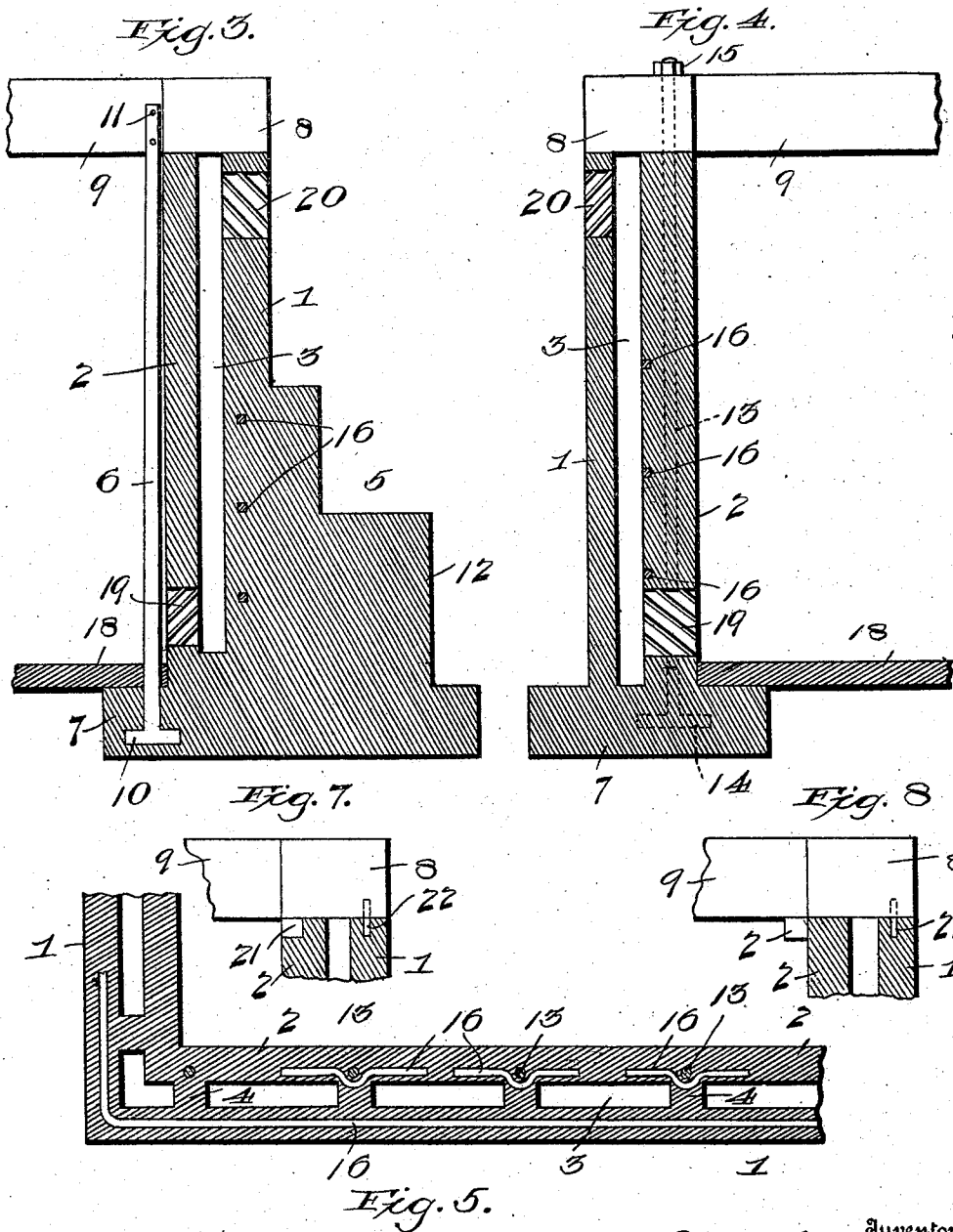


Witnesses
T. L. Moeckner
James F. Crown

Inventor
John Lally,
By Rexford M. Smith
Attorney

J. LALLY.
WALL STRUCTURE.
APPLICATION FILED OCT. 6, 1905.

2 SHEETS—SHEET 2.



Witnesses
T. K. Mochel
James F. Brown

Inventor
John Lacey,
By Rexford M. Smith
Attorney

UNITED STATES PATENT OFFICE.

JOHN LALLY, OF WALTHAM, MASSACHUSETTS.

WALL STRUCTURE.

No. 853,702.

Specification of Letters Patent.

Patented May 14, 1907.

Application filed October 6, 1905. Serial No. 281,635.

To all whom it may concern:

Be it known that I, JOHN LALLY, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Wall Structure, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to structural walls and has special reference to the construction of cellar walls, the object of the invention being to provide a light chambered wall to serve as a foundation or support for a superstructure and to combine with lightness, strength and the power of lateral resistance to a high degree.

The improved wall structure is designed with the special idea of resisting the inward pressure of the earth, which is often very great on account of changes in the seasons; also, to transfer the effect of such inward pressure of the earth to the anchoring devices which hold down the sill or sills of the superstructure, with the result that the greater the inward pressure against the cellar walls, the greater will be the tension and hold upon the sill or sills of the superstructure.

In addition to the pressure resisting properties of the wall, the latter, by reason of its chambered or hollow construction, is particularly adapted to cellars and foundation walls, affording as it does, an effective air space for preventing dampness, and the chambered wall is also cheaper in construction than the ordinary solid wall.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement hereinafter fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a sectional plan view of a wall structure embodying the present invention, showing the simpler and cheaper form of construction. Fig. 2 is a similar view showing a slightly different arrangement of the parts of the wall. Fig. 3 is a vertical transverse section through Fig. 1. Fig. 4 is a transverse section through the arrangement shown in Fig. 2. Fig. 5 is a sectional plan view of a slightly modified form of wall. Fig. 6 illustrates another modification in the wall structure. Figs. 7 and 8 are detail views showing a differ-

ent manner of bracing the joint between the wall and superstructure.

The structural wall contemplated in this invention is chambered or hollow and comprises essentially an outer side 1 and an inner side 2 arranged at a suitable distance apart to leave an intervening air chamber, 3. At suitable intervals, septums 4 extend across the space between the outer and inner sides and form bracing connections between the said sides. Piers 5 are also arranged at intervals along the outer side and preferably in line with the septums 4. In addition to the septums and piers, braces 6 may be located at inner side of the wall structure and these braces are preferably set at an inclination as shown in Fig. 3, extending from the supporting base 7 upward to the sill 8 or floor beam 9 of a superstructure supported upon the wall thus far described.

The base or foundation 7 may be of any suitable construction and the brace 6 may also be of any desired form, but, in the preferred embodiment of this invention, said brace is provided at its lower extremity, with a head 10, which is embedded in the base 7 as shown in Fig. 3. The upper end of the brace 6 may be bolted to the sill or floor beam of the superstructure as shown at 11 or otherwise connected thereto. The braces 6 are preferably equal in number to the piers, and are arranged in line therewith so as to assist the piers and septums in withstanding the inward pressure of the earth against the outer surface of the wall.

In the preferred embodiment of the invention, the outer surface of the outer side is provided with bowed portions 12, each bowed portion being of sufficient length to extend the distance between two adjoining piers 5. Thus, the inward pressure of the earth against the wall tends to spread the portions of the outer side between the piers and the latter serve to withstand such pressure and consequently prevent the breaking inward of the wall in a manner readily understood.

In the arrangement shown in Fig. 1 the opposite inner surfaces of the outer and inner sides of the wall are straight and parallel. If desired, however, the outer side 1 may be concavo-convex or bowed both as to its outer and inner surfaces, and the number of septums 4 may be increased as shown in said Fig. 6. Again, the outer side 2 may be per-

fectly straight, both as to its outer and inner surfaces as shown in Fig. 2, but the arrangement shown in Fig. 1 is preferred, because of its capability of withstanding a greater amount of inward pressure. Anchor rods 13 extend from the base upward through the wall structure and connect with the superstructure as best illustrated in Fig. 4, in which it will be seen that each anchor rod is provided with an enlarged head at its lower end, which is embedded or let into the base 7. The upper end of the rod preferably extends through the sill or beam of the superstructure and receives a retaining nut 15 threaded thereon. Extending horizontally across each of the anchor rods 13 is a plurality of stays 16. These stays are arranged usually upon the outer sides of the anchor rods and project horizontally into the portions of the wall lying on opposite sides of said rods so as to obtain a firm hold thereon, and prevent the breaking down of the wall at the angles formed by the septums which intervene between the outer and inner sides of the walls. In this way the inward strain or pressure against the wall is to a considerable degree transmitted to the anchor rods 13, and the latter are thereby caused to exert a greater tension on the superstructure, holding the latter firmly down upon the wall as a whole. The stays 16 may be arranged both within the inner side and the outer side of the wall, and, as shown in Figs. 2 and 5, the stays may be made practically continuous, running horizontally the entire length of the wall, or as far as may be found necessary in order to give the required strength to the wall as a whole. 18 designates the floor or floor timbers which may rest directly upon the base 7. The bowed or outwardly offset portions of the wall need only extend to a point adjacent to the grade or ground level as indicated in Fig. 3, while the remainder of the wall above grade may be constructed as shown in Figs. 2 and 4, Fig. 1 illustrating a section of the underground portion of the wall, and Fig. 2 illustrating a section of the wall above ground.

The structural wall hereinabove described may be formed of concrete in suitable molds or may be made up of blocks of suitable shape, in which latter case the blocks will be provided with cavities to receive the heads 10 and 11 of the braces and anchor rods. The blocks will also be formed with passages for the anchor rods and stays. Not only is the wall lighter than the ordinary solid wall, but, by reason of the particular construction described, such wall has much greater resisting power in a lateral direction, and also provides for an efficient air space between the

Ventilating openings, 19 and 20, may be

formed in the inner side, 2, near the floor, 18, and in the outer side, 1, above the surface of the ground, and said openings may be slatted if desired. The openings, 19 and 20, afford ventilation for the air spaces and permit the evaporation of moisture which may accumulate therein in rainy weather.

In some cases, the braces, 6, and stays or anchors, 13, may be omitted, and in lieu thereof stops, 21, may be secured to the sills, 8, or floor beams, 9, as shown respectively in Figs. 7 and 8, said stops being fastened to the bottoms of the sills or floor beams in contact with the inner surface of the inner side of the wall for bracing the wall against the inward pressure of the earth. Stays, 22, in the form of dowel-pins may, in such case, be placed across the joint between the wall and superstructure, as shown in Figs. 7 and 8.

I claim:—

1. An integral foundation or cellar wall structure embodying inner and outer sides leaving an intervening air chamber between said sides, septums crossing the air chamber and connecting the sides, a supporting base for the sides a superstructure resting on the sides, and upright braces at the inner side of the wall structure having means at opposite ends thereof to engage the base and superstructure.

2. An integral foundation or cellar wall structure embodying outer and inner sides leaving an intervening air chamber, septums connecting the sides, a supporting base for said sides, a beam resting upon both of said sides, anchor rods extending from the base upward in line with the septums and connected to said beam, and stays extending across and beyond the planes of the septums and anchor rods and located within one of the sides and upon the outer sides of the anchor rods.

3. An integral foundation or cellar wall structure embodying outer and inner sides leaving an intervening air chamber, septums connecting the sides, a supporting base for said sides, a beam resting upon both of the sides, anchor rods extending from the base upward in line with the septums and connected to said beam, stays extending across and beyond the planes of the septums and anchor rods and located within one of the sides and upon the outer side of the anchor rods, and other stays parallel to the first named stays embedded in the other side of the wall.

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

JOHN LALLY.

Witnesses:

FRANK P. KENNEY,
THOMAS F. KEARNS.