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W. L. BODMAN

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BUILDING WALL

Filed March 27, 1926

Fig. 1

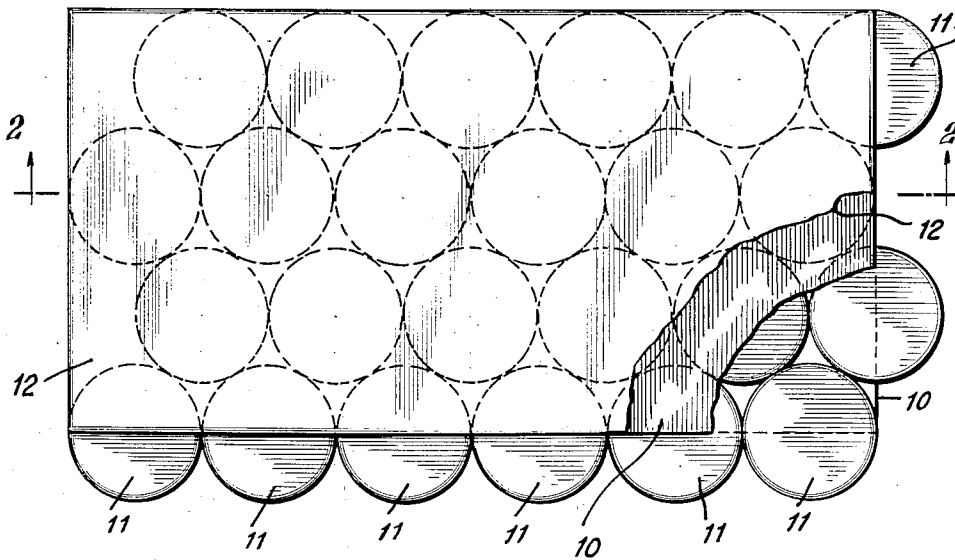
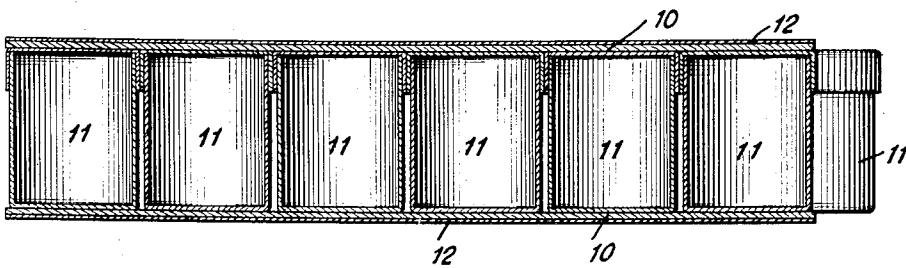


Fig. 2



Inventor,
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By his Attorney,
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UNITED STATES PATENT OFFICE.

WALTER LIGHT BODMAN, OF NEW YORK, N. Y., ASSIGNOR TO THE INSULATION CORPORATION, A CORPORATION OF DELAWARE.

BUILDING WALL.

Application filed March 27, 1928. Serial No. 97,902.

My invention relates to improvements in building walls, and more particularly in walls which are adapted to make partitions, and also exterior building walls. The object of my invention is to produce a cheap, strong wall or partition which can be easily erected, and which will have better insulation properties than walls heretofore in use. By the term insulation I refer particularly to insulation of heat and sound. My invention is intended to produce a hollow wall, and to fill the hollow of the wall with a poor conducting medium which will break up the sound waves and also prevent loss of heat by induction or convection, and further which will have a fire retarding effect. It is not feasible in practice to maintain a vacuum in a wall, but I find that by filling the wall space with a gas which is heavier than air, and a fire retardant, such for example as anhydrous carbon dioxide, I get a remarkable insulating effect, and that this gas can be best introduced by having it in closed or air tight cells or containers, which can be made to fill the space between the opposed sides of the wall, and which therefore will serve to interrupt both heat and sound waves and make a splendid insulating medium. Furthermore, in carrying out this construction, I can use for the exterior surfaces of the wall, thin boards, veneers, fiber boards, plaster board, or in fact almost any building material which is reasonably tough and not likely to crack, and by having the container secured to the wall sides, great strength but lightness is attained. This construction is also inexpensive. In carrying out the invention it is desirable to have the wall surfaces air tight, and I have found that this can be best attained by covering the wall and joints if any, with a metal foil, preferably tinfoil, which can be rolled or pressed into intimate contact with the surface.

Such a wall has the advantage of high insulation, lightness, cheapness, strength, and practical non-combustibility, and the further advantage that plaster or other finish can be readily applied to the wall. A wall of this kind can be made with continuous side plates or surfaces, or it can be built up in convenient blocks or sections, as will be hereinafter described.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar reference characters

indicate corresponding parts in all the views. 55

Figure 1 is a broken face view of a wall section showing my improvements, and

Figure 2 is a cross section on the line 2—2 of Figure 1.

The drawings show a simple and convenient way of carrying my invention into effect. As here illustrated a section of the wall is shown in the form of a rectangular block having opposed plates 10 between which and entirely filling the space are cells or containers 11 which are filled with a heavy inert non-combustible gas, preferably anhydrous carbon dioxide as this is not readily combustible, and has exceedingly low conductivity. These cells can be arranged row-wise one upon the other or in staggered relation, as the drawing shows. As illustrated in the drawing, however, the containers are staggered in one direction and parallel in the other. The particular arrangement of the containers or cells is not important, but they should fill the space between the members 10. Obviously these members 10 might be large enough to make a complete partition or wall, but it is more convenient to make them in sizes which can be readily handled, and in such cases the block or section thus formed has the cartons around two edges arranged to project as shown in Figure 1, so that the projecting cartons of one section may extend in the corresponding space of the next section, and thus enable the wall to be easily built up, and to be strong where the sections meet.

The containers 11 are preferably cemented at their ends to the plates 10. It is also desirable to cover the plates 10 on their exterior surfaces with metal foil or other sealing material 12, which can be firmly secured to the surface, and which can be made to cover the joints where blocks are used. I have found tinfoil excellently adapted for this purpose, and a thin light foil can be used and rolled or pressed firmly upon the surface of the plates and into the pores, so as to make an air seal.

The foregoing description makes it clear that my invention is not limited to any particular form of wall block or container, but embodies broadly the theory of filling the hollow space of the wall with a heavy gas of low conductivity, preferably holding this gas in containers in cells, and rendering the ex-

terior surface impervious to air. It will be noted also that the cellular arrangement adds enormously to the strength and lightness of the wall, and that while the heavy low conducting gas is a good insulator, the insulating effect is augmented by the arrangement of cells which breaks up any currents which might otherwise be generated, and also breaks up and dissipates sound and heat waves.

I have referred to this invention as a building wall, but obviously the wall structure can be used in not only buildings of all varieties, but in cars, marine vessels, or other places where an insulating wall or partition is desirable. It will be further noticed that while to get the best results, it is desirable to have the cells filled with gas, they serve even of themselves to greatly strengthen a light wall and to break up any sound or heat waves so as to produce better insulation. It is also desirable to have the cells water proof and air tight.

From the above description it will be seen that I have produced a wall and a block making the wall which are light and inexpensive but sufficiently stiff and strong. The structure also, while fulfilling the above requirements, is to a certain extent resilient and not likely to crack by knocks or temperature changes. Where walls of cement, plaster or rigid materials are used they are likely to crack and become inefficient, particularly if they are to afford means of insulation.

It will be further noted that where a confined body of insulating gas, which is heavier than air, is used—e. g. carbon dioxide—the insulating material acts as a fire retardant and if the wall is injured or attacked by fire

the liberated gas has even a tendency to extinguish the flames by excluding oxygen.

I claim:—

1. A sectional wall construction comprising a plurality of complementary wall sections each section comprising a rectangular block having opposed plates, a plurality of cellulosic water proof containers disposed between said plates, each of said containers having their ends covered with a sealing material of metal foil, said foil being pressed firmly upon the surface of the plates and into the pores thereof so as to make an air seal, each of said containers being filled with a heavy inert non-combustible gas having a low coefficient of thermal conductivity.

2. A sectional wall construction comprising a plurality of complementary wall sections each section comprising a rectangular block having opposed plates, a plurality of cellulosic water proof containers disposed between said plates, each of said containers having their ends covered with a sealing material of metal foil, said foil being pressed firmly upon the surface of the plates and into the pores thereof so as to make an air seal, each of said containers being filled with a heavy inert non-combustible gas having a low coefficient of thermal conductivity, said containers being arranged between said plates in rows and in staggered relationship, a row of said containers adjacent corresponding edges of said plates projecting outwardly whereby the sections may be readily built up and reinforced at the point of juncture.

In testimony whereof, I have signed my name to this specification this 25th day of March, 1926.

WALTER LIGHT BODMAN.