

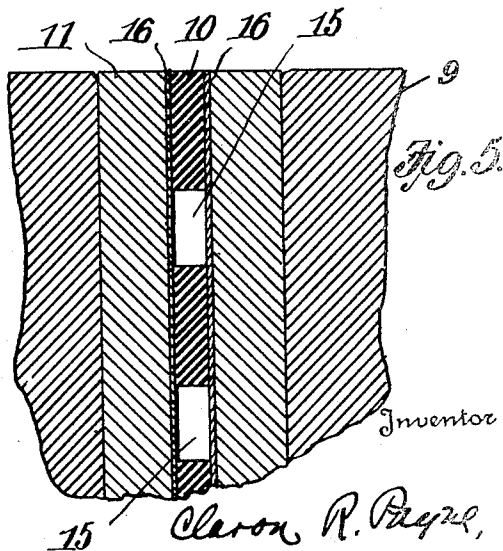
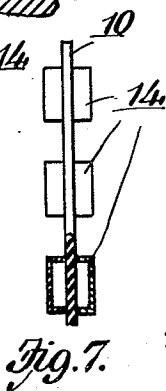
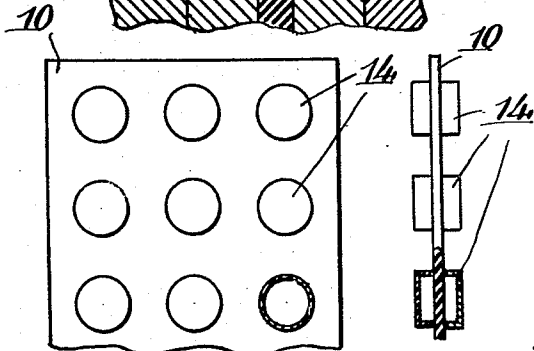
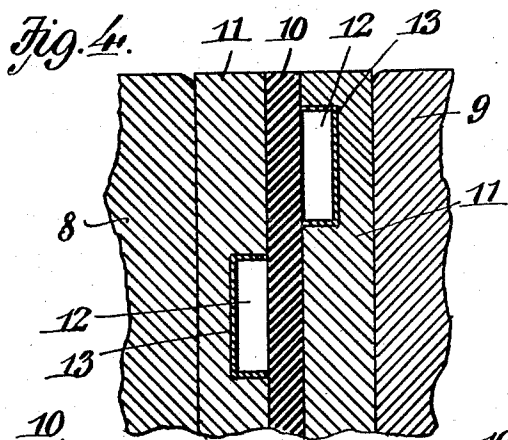
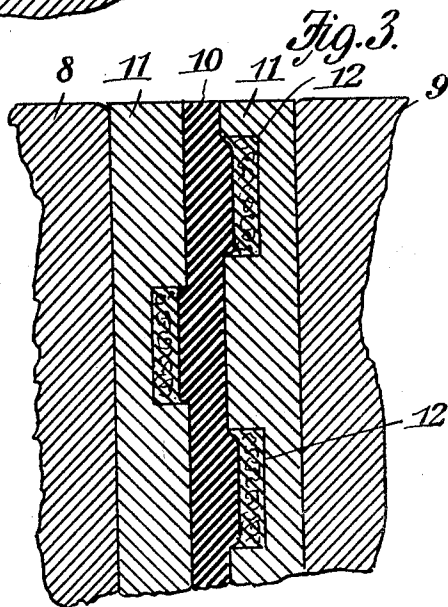
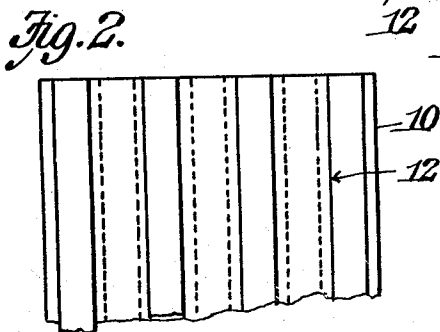
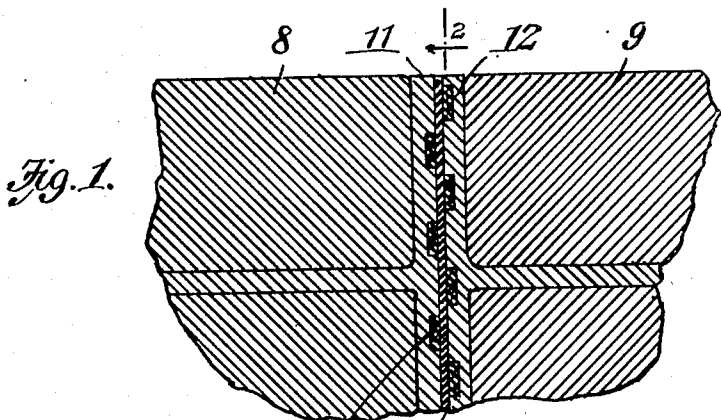
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C. R. PAYNE

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EXPANSION JOINT

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Inventor

Claron R. Payne,
By *Wright & Co.*
Attorney

UNITED STATES PATENT OFFICE

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EXPANSION JOINT

Claron R. Payne, Allentown, Pa., assignor to The
Atlas Mineral Products Company, Mertztown,
Pa., a corporation of Pennsylvania

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7 Claims. (Cl. 72-106)

This invention is an expansion joint and method of constructing the same, and while it is especially useful in the building of corrosion resistant masonry for tank linings, floors and the like, its use is not necessarily so restricted, as it is obvious that the joint may be found equally as practical, efficient and useful in structures other than those specifically set forth.

In the building of pickling tanks, floors, or other structures adapted to resist the corrosive action of acids or other corrosive chemicals, it is the practice usually to lay the corrosion resistant brick or tile in a fusible, relatively inelastic corrosion resistant cement, such as a mixture of sulphur and silica sand with or without softening agents or other ingredients. While by the exercise of careful workmanship a rigid structure of leakproof constructure may be had, the resulting structure when subjected to temperature changes and hydrostatic pressure is likely to crack or open at the joints. It is highly desirable to provide means for compensating for such changes of temperature or other causes which might develop defects in the structure. To this end, it has been found effective to provide the wall or floor sections at proper intervals with expansion joints including sheets of raw or unvulcanized rubber embedded in a bonding material to effect a leakproof joint and yet permit expansion and contraction of the wall or floor within reasonable limits. Inasmuch as raw or unvulcanized rubber is not compressible but is rather displaceable, expansion of the wall or floor sections causes the raw rubber to extrude at the open edges of the joint. The efficiency of such joint, therefore, depends upon the volume of rubber extruded from such joints. The use of compressible material in lieu of raw or unvulcanized rubber has not proved successful because such materials must necessarily have air spaces inherent in them which would not tend to an acid or liquid tight joint.

The principal object of the present invention is to provide a joint employing the desirable unvulcanized or raw rubber but at the same time including such an arrangement as will permit of a greater degree of expansion or contraction of the wall sections and at the same time maintain the same acid and liquid tight.

The invention and its further achievements will be best understood by reference to its following specification and claims, reference being had to the accompanying drawing wherein:

Figure 1 is a fragmentary view of a conventional wall section and illustrating the applica-

tion thereto of an expansion joint embodying the invention,

Figure 2 is an elevation taken substantially upon the line 2-2 of Figure 1,

Figure 3 is an enlarged fragmentary sectional view illustrating parts of the expansion joint in the position they will assume with pressure applied,

Figure 4 is an enlarged fragmentary sectional view of the improved expansion joint and showing a modification thereof,

Figure 5 is a similar view disclosing a further modification,

Figure 6 is a view similar to Figure 2 and showing a still further modified form, and

Figure 7 is an edge view, partly in section, of the expansion strip shown in Figure 6.

Referring now more particularly to the drawing, reference characters 8 and 9 represent adjacent ends of wall or floor sections to be joined by the improved expansion construction. As is customary, a strip or sheet 10 of material inherently displaceable, such as unvulcanized or raw rubber, is interposed between the wall or floor sections and is bonded therein by a proper agent 11 preferably of sulphur cement to render the joint strong and impermeable. Such a cement bonds readily to the rubber and to the corrosion resistant brick or tile of which the wall or floor section is formed.

In order to compensate for displacement of the rubber sheet 10 when expansion of the wall section occurs, pockets or spaces 12 are provided in the joint so as to communicate with the sides of the rubber sheet 10. These pockets may extend from the top to the bottom of the wall section or may be arranged across the same if desired. Pockets may vary in size or shape, and are preferably disposed in staggered relation at opposite sides of the rubber sheet. In Figures 1 to 3 of the drawing these pockets include or are filled with a readily compressible material such as sponge rubber, but while such material has been found most desirable it will be understood that any other yieldable or compressible material may equally as well be employed.

In Figure 4 of the drawing the pockets 12 constitute open spaces formed in the bonding material and communicating with the sides of the rubber sheet. In this instance the pockets may be formed by placing open ended cups or channel members 13 upon opposite sides of the rubber sheet before the bonding material 11 is poured. The channels or cups may be coextensive with the depth or breadth of the wall or floor section, or

may be relatively shallow circular cups placed or arranged as indicated at 14 in Figures 6 and 7.

In the modification shown in Figure 5, the rubber sheet 10 may be provided with openings or channels arranged at proper intervals and indicated at 15. These openings may extend either part way through the rubber sheet or may entirely penetrate the same, in which event the sides of the rubber sheet will be covered with a thin sheet of paper, cloth or other material 16 to protect the channels or openings against entry thereto of the bonding material when the latter is poured.

Inasmuch as a sulphur bonding agent is well adapted to tie into or connect both with the unvulcanized rubber and the corrosion resistant material of which the wall or floor sections is formed, a leakproof and non-corrosive union is established. When expansion occurs this pressure is transmitted to the raw rubber sheet, whereupon the latter is displaced into the pockets provided. Due to the fact that these pockets are arranged at regular intervals throughout the breadth and depth of the elastic bonding sheet, uniform displacement of the body of the sheet occurs which greatly increases the flexibility of the joint. By reason of the fact that the raw rubber is elastic, the latter assumes its former position when contraction occurs, thus maintaining the joint leakproof.

While the foregoing is a description of the invention in its preferred forms it will be understood that variations from the form and materials shown may be made without departing from the spirit of the invention.

What I claim is:

1. In an expansion joint, a pair of bodies, a

sheet of elastic material between said bodies, and strips of compressible material arranged at intervals in spaced relation to each other between said sheet and said bodies.

2. In an expansion joint, a pair of bodies, a sheet of elastic material between said bodies, a bonding material between said sheet and said bodies, and compressible material between said sheet and said bonding material.

3. In an expansion joint, a pair of bodies, a sheet of elastic material between said bodies, a bonding material between said sheet and said bodies, and said bonding material having pockets therein arranged in staggered relation on opposite sides of said sheet.

4. A pair of wall sections, a sheet of unvulcanized rubber between said sections, a bonding agent between said sections and said sheet, said agent having pockets therein, and compressible material in said pockets in contact with said sheet.

5. A pair of wall sections, a sheet of unvulcanized rubber between said sections, a bonding material interposed between said sheet and said wall sections, and cups arranged in said bonding material and opening against said rubber sheet.

6. A pair of wall sections, a sheet of displaceable material between said sections, the adjacent faces of said sections having pockets therein, and compressible material in said pockets exposed to said sheet.

7. A pair of wall sections, a sheet of displaceable material between said sections, and cups arranged in the adjacent faces of said sections with their open ends disposed against said sheet.

CLARON R. PAYNE.