Dec. 8, 1936. C. F. NEERGAARD 2,063,115

WALL CONSTRUCTION

Filed March 29, 1935

Fig. 1.

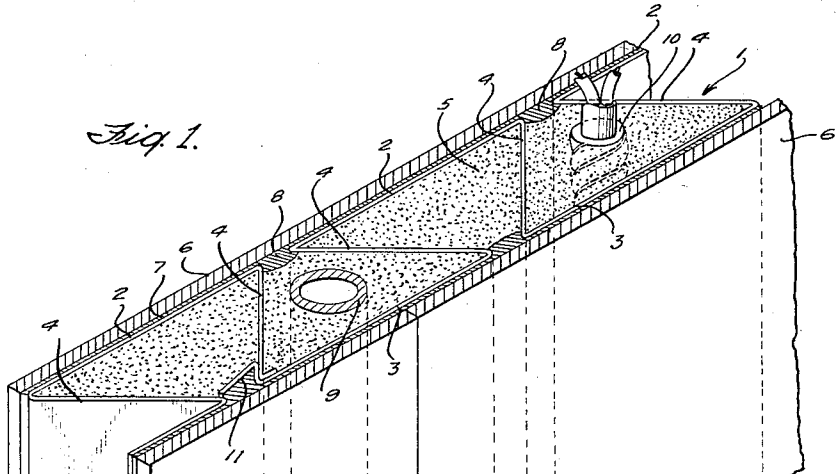


Fig. 2.

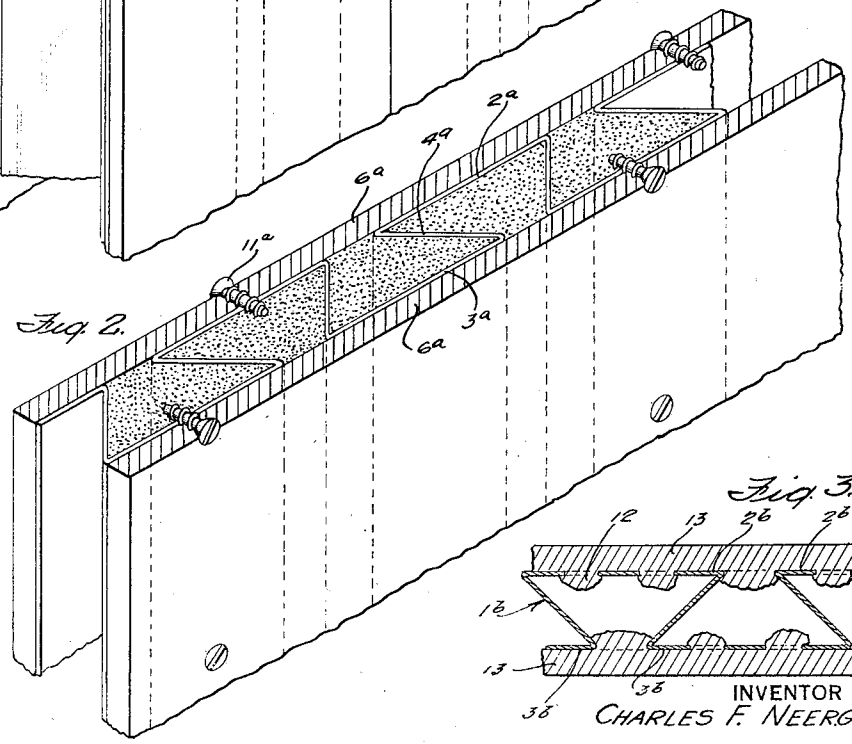


Fig. 3.

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WALL CONSTRUCTION

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7 Claims. (Cl. 72—16)

This invention relates to wall structures, and more particularly to wall structures for use in maritime vessels. It is desirable in such structures to provide a wall which is somewhat flexible so that it is not disintegrated by distorting strains. It is also desirable to provide a wall which may be thin and yet be sound-proof and fire-proof. It is also desirable that the wall structure be capable of some distortion when being erected so as to enable it to be conformed to curved or irregular surfaces, as where the wall is applied adjacent the side of a vessel.

The preferred embodiment of the present invention involves a construction having all of these desirable characteristics and having the further advantage of economy of manufacture and facility of installation. In the preferred embodiment another advantage realized is that moldings or fittings can be applied securely to the wall in any location desired.

In accomplishing these ends it is a feature of the invention that use is made of an internal metallic supporting member in the form of a continuous zigzag sheet of flexible metal, the metal being formed to provide a multiplicity of supporting surfaces disposed in two parallel planes, and successive surface supporting sections in each plane being connected through divergent web sections and through a supporting surface section of the other plane. The successive surface sections in each plane are disposed out of contact with one another but close enough together to substantially close the space bounded by the sections which connect them. By virtue of this arrangement a flexible and elastic supporting core is provided for the wall and the interior of the wall is divided into a succession of distinct polygonal spaces which are desirably filled with a suitable sound-proof and fire-proof material such as loose asbestos wool or like packing.

It is a further feature of the invention that the core or supporting member thus provided is combined with flexible surface sheeting which is desirably in the form of an asbestos composition.

It is a further feature of the invention that the metal forming the core or supporting member is of light enough gauge to adapt it for reception of case hardened screws of the kind known in the trade as Parker-Kalon "self tapping" screws. By employing a suitable prick punch and driving it through the coating or surfacing material and through the metallic sheet provision may be made for inserting attaching screws in any location desired after the supporting member has been erected and secured in place.

The invention is not limited, however, to use on ship board nor necessarily to the requirement of great flexibility. Where a supporting member of the kind indicated is employed in land structures the metal employed may be of heavier gauge and may be perforated at various points to afford interlocks for supporting plaster applied in plastic condition.

Other objects and advantages will hereinafter appear.

In the drawing forming part of this specification and illustrating certain preferred embodiments of the invention,

Figure 1 is a fragmentary sectional perspective view of a wall section embodying features of the invention;

Figure 2 is a view similar to Figure 1 but showing a modified form of wall structure, and

Figure 3 is a fragmentary sectional plan view illustrating a further modified form of wall structure.

In Figure 1 the wall comprises a supporting member 1 which consists of a continuous sheet of flexible metal. The supporting member 1 is made in zigzag form to provide a series of co-planar surface supporting webs or sections 2 at one side of the wall and a series of co-planar surface supporting webs or sections 3 at the opposite side of the wall. Adjacent sections 3 are connected to one another through divergent connecting webs or sections 4 which extend transversely of the wall and control the thickness thereof, and through the intervening or overlapping section 2 at the opposite side of the wall. Adjacent sections 2 are similarly connected through divergent webs or sections 4 and through the intervening or overlapping section 3 at the opposite side.

The adjacent sections on each side are out of contact with one another but they are located close enough together to substantially close the space bounded by the connecting webs and intervening surface section of the opposite wall. By virtue of this arrangement a wall support is provided which is flexible and elastic and at the same time deformable to produce a desired contour other than a flat contour. The interior of the support is divided by the transverse webs into a series of substantially triangular sections adapted to receive a loose filling or packing material. The division of the wall support into pockets or cells, enables loose packing material to be used since the packing inserted in each pocket

is confined against shifting longitudinally of the wall. This is a feature of substantial importance since the loose packing admits of greater flexibility and at the same time provides more effectively for sound-proofing.

A filling material 5 is employed which is effective for rendering the wall both sound proof and fire proof. A suitable filling for the purpose is asbestos wool or other like material. Such material is also very effective as a heat insulator.

After the supporting member has been erected in place surfacing sheets 6 are desirably applied to opposite sides of the support, the finished structure being adapted for use as a partition between adjacent rooms. Where one side of the supporting structure is used as a back for attachment to an external wall the surfacing sheet at that side is, of course, omitted. If desired, the wall structure may be prefabricated in panels of convenient size.

The surfacing sheet is desirably composed of asbestos fibres held together by a suitable binder and treated in any manner found desirable for making it attractive in appearance. Any other suitable type of surfacing material may be employed. The surfacing material referred to is very effective for rendering the wall or partition fire proof and for heat insulating purposes.

The surfacing sheet is adhesively united to the supporting member 1 by a suitable cement 7 which, in the spaces between adjacent sections 2 or adjacent sections 3, forms an interlock 8.

The fact that the core portion of the partition consists exclusively of vertically extending members enables water pipes such as 9 and electrical conduits such as 10 to be installed with great facility.

Provision is made for uniting successive supporting sections 1 to one another readily. To this end each section may be provided at one end with a web 11 adapted to be inserted between adjacent webs 4 of another section and interlocked between said webs. The web 11 is offset inward from the surface plane at the side of the supporting member at which it is located, and is broad enough to require that the webs 4 between which it is inserted shall be sprung apart to receive it. In case surfacing sheets of precut size are employed, care should be taken that the joint between adjacent sheets is laterally spaced from the joints, as 8 and 11 in the webs 4.

The embodiment of Figure 2 is generally similar to that of Figure 1, and hence will not be described in detail as to corresponding parts. Corresponding parts have been designated by the same reference numerals used in Figure 1 with the subscript *a* added. In the embodiment of Figure 2 advantage is taken of the fact that the supporting member is formed of sheet metal and provision is made for securing the surface sheets 6*a* to the webs 3*a* and 4*a* in a very convenient and effective manner which does not necessitate any prearrangement of either the surface or supporting members. This is accomplished by using screws 11*a* of the type known as Parker-Kalon "self tapping" screws for attaching the surface members to the supporting member. These screws have the contour of ordinary wood screws but are case hardened so that they are capable of cutting their own threads in sheet metal of the hardness of soft iron or soft steel. The hole for one of these screws is prepared by means of a prick punch having a cylindrical shank. The punch may be driven through the surface member 6*a* and then through the web 2*a* or 3*a* in any location desired. A hardened screw is then inserted and threaded home. The construction thus provided is especially useful on shipboard because the union effected between the sheet metal supporting member and the screw is vibration proof.

Moldings, panels or fittings may be secured to the wall in any location desired in a similar manner.

The construction of Figure 3 is generally similar to the construction already described. It is primarily designed, however, for use in land buildings and it is not, therefore, required to be particularly flexible. A supporting member 1*b* is employed, generally similar to the supporting member 1 of Figure 1 although it may be of heavier gauge metal if desired. The supporting member 1*b* is provided with perforations 12, and plaster 13 is applied in a plastic state. The plaster penetrates the perforations 12 and also the spaces between adjacent supporting sections 2*b* and between adjacent supporting sections 3*b* to form interlocking keys with the supporting member.

I have described what I believe to be the best embodiments of my invention. I do not wish, however, to be confined to the embodiments shown, but what I desire to cover by Letters Patent is set forth in the appended claims.

I claim:

1. An internal supporting member for use in walls or partitions comprising a continuous zigzag sheet of flexible metal formed to provide a multiplicity of supporting surfaces disposed in two parallel planes the successive surface sections in each plane being connected through divergent web sections and through a supporting surface section of the other plane, said metal sheet having along one of its terminal edges a bent portion adapted to enter a space formed by converging walls in an adjoining similar zigzag sheet-metal member and form therewith an interlocking connection between said adjoining members whereby said wall or partition may be fabricated to an indefinite extent.

2. An internal supporting member for use in walls or partitions comprising a continuous zigzag sheet of flexible metal formed to provide a multiplicity of supporting surfaces disposed in two parallel planes the successive surface sections in each plane being connected through divergent web sections and through a supporting surface section of the other plane, the successive surface sections in each plane being disposed out of contact with one another but close enough together to substantially close the space bounded by the sections which connect them, said member constituting the chief structural element to enclose and support a series of masses of flocculent insulating material having little structural strength.

3. An internal supporting member for walls or partitions comprising a continuous sheet metal member formed to provide alternate supporting sections for opposite wall surfaces, the adjacent sections on one side being disposed out of contact but near enough together to substantially close the space between them, thereby forming adjacent upright cells adapted to receive prisms of flocculent material deriving their lateral support from walls constituted by said continuous sheet-metal chamber.

4. In an upright wall structure, in combination, an internal supporting member comprising a continuous zigzag sheet of flexible metal formed to

provide a multiplicity of successive supporting surfaces disposed in two parallel planes, the successive surface sections in each plane being connected through divergent web sections and through a supporting surface section of the other plane, the successive surface sections in each plane being disposed out of contact with one another but close enough together to substantially close the space bounded by the sections which connect them and a loose packing of sound deadening material disposed in said space.

5. In a wall structure, in combination, an internal supporting member comprising a continuous zigzag sheet of flexible metal formed to provide a multiplicity of successive supporting surfaces disposed in two parallel planes, the successive surface sections in each plane being connected through divergent web sections and through a supporting surface section of the other plane, the successive surface sections in each plane being disposed out of contact with one another but close enough together to substantially close the space bounded by the sections which connect them, and a flexible surface coating of cementitious material secured to a face of said supporting member.

6. In a wall structure, in combination, an internal supporting member comprising a continuous zigzag sheet of flexible metal formed to provide a multiplicity of successive supporting surfaces disposed in two parallel planes, the successive surface sections in each plane being connected through divergent web sections and through a supporting surface section of the other plane, the successive surface sections in each plane being disposed out of contact with one another but close enough together to substantially close the space bounded by the sections which connect them, a flexible surface sheeting applied to a face of said supporting member, and cement uniting the sheeting to the member, the cement forming interlocks with the supporting member in the spaces between successive surface sections.

7. In a wall structure, in combination, an internal supporting member comprising a continuous zigzag sheet of flexible metal formed to provide a multiplicity of successive supporting surfaces disposed in two parallel planes, the successive surface sections in each plane being connected through divergent web sections and through a supporting surface section of the other plane, the successive surface sections in each plane being disposed out of contact with one another but close enough together to substantially close the space bounded by the sections which connect them, a flexible surface sheeting applied to a face of the supporting member, and hardened screws tapped in the said sheet metal supporting member.

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