This invention relates to improved self-sustaining composite gypsum wall members and to methods of assembling same to form partition walls and the like.

Hitherto, gypsum slabs have been used for partition work and have been fabricated either as blocks or in the form of slabs covered with a tabular paper to permit the application of finishing coats. Such constructions are, of necessity, of appreciable thickness and weight due to the bulk of material required to impart a desirable strength. Partitions made of gypsum slabs require wooden or metal framing to properly support them, and thus increase the cost of installation, due to the extra labor and material required.

The disadvantages of these known constructions have been overcome by the present invention, in which a self-sustaining partition or wall member of gypsum is prepared by abutting two slabs of gypsum, provided with the usual paper covering, and interposing a structural supporting member such as a heavy wire mesh of carbon steel or a "Hy-rib" support provided with transverse spacing members of wire or rod. In addition to the metallic supporting member a filling of a gypsum cement is also interposed between the side members of the composite slab and in intimate contact with the metallic support, the whole assembly being suitably compressed, as by means of rollers, to insure a firm bonding of the parts and to permit the cement to be embedded in the paper facings of the juxtaposed slab members.

The composite members thus formed may be assembled in any suitable manner, and, due to their inherent strength and structural rigidity, do not require framing members.

The present invention comprehends a novel method and means of assembling such composite structures by providing the longitudinal edges of the members with grooved channels of various shapes, which are adapted to protect the edges of the members during shipment, as well as to serve as a retaining means for anchoring devices. Such anchoring devices may comprise a ridge member of cold rolled steel or the like having a pair of opposed lateral flanges. These members are cut into suitable lengths, usually approximately twice the depth of the lateral channel members above described, and are inserted at the top and bottom of the said channels, the flanged portions being severally abutted against the ceiling and floor and secured thereto in any desired manner, as by means of nails or screws. Successive composite slab members may be placed in position and anchored, being themselves locked in position by other like anchoring devices, as will be described more in detail hereinafter.

The grooved channels of shapes may be so configured and arranged as to provide locking means for abutting wall members in conjunction with suitable keys, or they may be so formed as to provide means for receiving longitudinal stiffening inserts having a variety of forms, as will be set forth more in detail hereinafter.

The channel members, while preferably of cold rolled steel, of relatively light gauge, may also be made from hot rolled steel or other suitable metal, such as aluminum, copper, duralumin and other light weight structural alloys. The thickness of metal to be used for this purpose will depend, of course, upon the size of the finished wall structure and the purpose to which it is to be put.

Partitions or walls made from the novel composite members herein described, may be readily assembled and require but a skim finish of gypsum plaster or the like to complete the wall or partition. Owing to the inherent structural rigidity of the members and the relatively light weight finish coat required to be applied thereto, the total weight of the finished wall is comparatively low as compared with other light constructions involving the use of spaced wall supports of metal or wooden laths having a thick coat of plaster, as well as a substantially thick finish coat.

A finished partition wall made according to the present invention, will be substantially one and three-eighths inches thick, as compared with a wall made from plaster board mounted on wooden frames, or gypsum block constructions, which constructions normally attain a thickness of from four to five inches.

In the accompanying drawings there has been disclosed an embodiment of the present invention, in which:

Fig. 1 is a front elevation of a finished wall including a plurality of composite slab members;

Fig. 2 is a horizontal section through a pair of abutting members showing the method of support;

Fig. 3 is a perspective view of a locking member;

Fig. 4 is a perspective view partly in section of an edge of the slab showing the bonded support;

Fig. 5 is a view similar to Fig. 4, showing a modification of supporting means; and

Figs. 6, 7 and 8 are horizontal sections through pairs of abutting members showing modified supporting and key constructions.
The composite members of the present invention comprise generally, a pair of opposed gypsum slabs 1, having the usual paper coating 2 there-around. These members are provided with a support 3, formed of two or more 4 wire rods 4 spaced in any suitable dimensions, and are embedded in a filling of gypsum cement 5, which may be of any suitable composition, depending upon the time of set desired. As above intimated, the composite member is provided with lateral protecting devices 6, of metal. These members are centrally channelled as indicated at 7, which channel fits in between the members 1 and is itself embedded in the cement 5. The members 6 are crimped or otherwise compressed onto the exterior surfaces of the composite slab members, as indicated generally at 8, and they may be provided with serrated flanges 9, adapted to engage and penetrate the body of the slab members 1. It will, of course, be appreciated that the serrated edges may be dispensed with, as shown in Fig. 5.

Referring to Fig. 5, it will be noted that certain of the wire or rod supports may be substituted by rigid metallic members 10. These members, due to their configuration, provide stiffening members for the construction and are readily and economically fabricated. The usual cross members 11 may comprise wires or rods of any suitable material, the rib supports being perforated, as indicated at 12, to receive them. While it is possible to provide the members 10 with notches adapted to receive other like members of similar configuration, it is preferred to use the perforated structures with the wires or rods threaded therethrough, as the notching of the members destroys their longitudinal rigidity.

The composite slab members just described are assembled in any desired manner and preferably, as shown in Fig. 1 by using anchoring devices 15 in a manner now to be described. The anchoring devices comprise a central rib 16, and integral lateral flanges 17 which may be provided with apertures 18 adapted to receive nails or screws. In assembling, a composite slab member 20 is abutted against a wall and properly aligned. Anchors 15 are then inserted in the channels 7 of the top and bottom of the composite slab in such a manner that the edges 19 of the anchors are forced well into the channels 7. The anchors are then nailed or screwed in place, thus holding the slab fixedly in position. Another slab is abutted against the anchor and is itself anchored at the opposite edge in the same manner. It will be seen that by means of the anchors 15 the composite slabs are secured at both top and bottom and are prevented from both longitudinal and lateral movement.

More specifically to Fig. 6, the channel members may be provided with the usual lateral flanges 8 and a half-cross central channel 30 having lateral flange portions 31. When a pair of these members are abutted it will be seen that they form a substantial cross-shaped central portion 32 with a stiffening or supporting member 33 may be fitted to give a desired longitudinal rigidity to the walls. The insert 32 will be engaged top and bottom by the anchoring device 15. The construction shown in Fig. 7 is similar to Fig. 6, with the exception that the central portion 32 is generally rectangular in shape and the longitudinal stiffening insert 41, which may be a rectangular tube member, is formed thereto. The flanges 8 may be provided with the usual gripping portions 32 adapted to be bent in gripping contact with the ball members.

In the construction shown in Fig. 8 the members 8 are provided with central keyways 50 adapted to receive spring key members 51 comprising opposed cylindrical members joined by an intermediate expansible web portion. This construction permits a very accurate and firm joining of abutted wall members and provides an extraordinary amount of longitudinal and lateral stability.

When a wall or partition has been thus assembled a skim coat of gypsum plaster or any other suitable material may be applied. However, if desired, the gypsum finish coat may be eliminated and any of the usual plastic decorative finishes substituted in its stead. This permits a marked possibility in the use of this material as it can be made to harmonize with any of the known wall finishes without requiring added labor or material.

It will now be appreciated that there has been provided an improved partition or wall structural member comprising abutted gypsum panels joined by an interposed cementing medium in which may be anchored or embedded metallic stiffening agents, the composite wall members being provided with metallic edge channels designed to receive anchoring devices at the top and bottom thereof, as well as to receive longitudinal stiffening and/or locking members of suitable configuration.

While certain novel features of the invention have been shown and described and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes in the forms and details of the devices illustrated and in its operating may be made by those skilled in the art or without departing from the spirit of the invention.

What I claim is:

1. A composite wall member comprising a pair of gypsum slabs, a metallic reinforcing member of spaced rods disposed between the slabs and inwardly of the edges thereof, a hardened cementitious material joining the slabs and embedding the reinforcing members and substantially coextensive in area with the said reinforcing members, whereby forming an edge channel in the composite member disposed in the so-formed channel between the slabs and secured to the member at the edges thereof.

2. A composite wall member comprising at least two gypsum slabs having a ribbed metallic reinforcing member of spaced rods therebetween, a cementitious material joining said slabs and embedding the reinforcing member, the said cementitious insert terminating short of the edge of the slabs so as to form an edge channel between said slabs, a metallic channel member fitting in said channel and having integral flanges overlying and secured to the exposed edges of the slab.

3. A composite wall member comprising a pair of opposed gypsum slabs, a ribbed metallic reinforcing member of spaced rods therebetween, a cementitious material in contact with the said slabs and the reinforcing member, the said material terminating short of the edges of the slabs so as to form an edge channel between the said slabs, a metallic channel member fitting in said channel and having integral flanges overlying and abutting the exposed edges of the slabs.

4. A composite wall member comprising a pair of opposed paper-covered gypsum slabs, a ribbed
metallic reinforcing member of spaced rods therein,
by which a cementitious material in contact with the said slabs and the reinforcing member and
inwardly of the edges of the composite member,
defining a channel between the said edges,
and a channeled metal member disposed between
the edges of the slabs, the base of said channel
abutting the edge of the cementitious material,
and the free edges of the channel being bent over
in gripping contact with the outside edges of said
slabs.

5. A composite wall member comprising a pair
of opposed paper-covered gypsum slabs, a ribbed
metallic reinforcing member of spaced rods there-
between, a cementitious material in contact with
said slabs and the reinforcing member and in-
wardly of the edges of the composite member
thereby defining a channel between said edges,
and a channeled metal member disposed be-
tween the edges of the slabs and overlying and
abutting the exposed faces of the slabs and se-
cured thereto.

6. An improved wall construction comprising a
plurality of abutting bound plastered wall mem-
bers, said wall members having aligned abutting
channeled metallic edges, and anchoring devices
fitting in said aligned and abutting channels at
the top and bottom thereof and secured respec-
tively to the floor and ceiling.

7. An improved wall construction comprising a
plurality of abutting wall members, said wall
members having aligned and abutting channeled
metal edges, anchoring devices fitting in said
aligned abutting channels on the top and bottom
thereof and secured respectively to the floor and
ceiling whereby to prevent lateral and longitudi-
nal movement of the abutting wall members.

8. An improved wall construction comprising a
plurality of abutted wall members, said members
comprising a pair of gypsum slabs having an in-
terposed metallic reinforcing member, the whole
being bonded by a gypsum cement, the said mem-
ers having channeled edges provided with a met-
talic overlay, anchoring devices in said abutting
channels at the top and bottom thereof and se-
cured respectively to the floor and ceiling.

9. An improved wall construction comprising a
plurality of abutted wall members, said wall
members comprising a pair of gypsum slabs hav-
ing an interposed ribbed metallic reinforcing
member, the whole being bonded by a gypsum
cement, the said members having channeled
edges provided with a metallic overlay, anchoring de-
VICES in said abutting channels at the top and
bottom thereof and secured respectively to the
floor and ceiling.

10. An improved wall construction comprising a
plurality of abutting bound plastered wall mem-
bers, said wall members having aligned abutting
channeled metallic edges, and anchoring devices
forming longitudinal stiffening members fitting
in said aligned and abutting channels at the top
and bottom thereof and secured respectively to
the floor and ceiling, the said channeled edges
being so configured and arranged as to engage
the longitudinal stiffening members.

11. An improved wall construction comprising a
plurality of abutting bound plastered wall mem-
bers, said wall members having aligned abutting
channeled metallic edges, and anchoring devices
fitting in said aligned and abutting channels at
the top and bottom thereof and secured respec-
tively to the floor and ceiling, the said channeled
gaps being so configured and arranged as to pro-
vide keyways for longitudinal keying members.

12. A composite wall member comprising a pair
of gypsum slabs, a metallic reinforcing member
of spaced rods disposed between the slabs and
inwardly of the edges thereof, a hardened cemen-
titious material joining the slabs and embedding
the reinforcing members and substantially co-
extensive in area with the said reinforcing mem-
ers, thereby forming an edge channel in the
composite member, and a channeled metallic
member disposed in the so-formed channel be-
tween the slabs and secured to the member at
the edges thereof, the said channel member being
so formed as to provide a key-way for locking
keys.

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