Jan. 12, 1932. W. A. WHITING 1,841,233

WALL CONSTRUCTION

Original Filed Nov. 15, 1929

Fig. 1

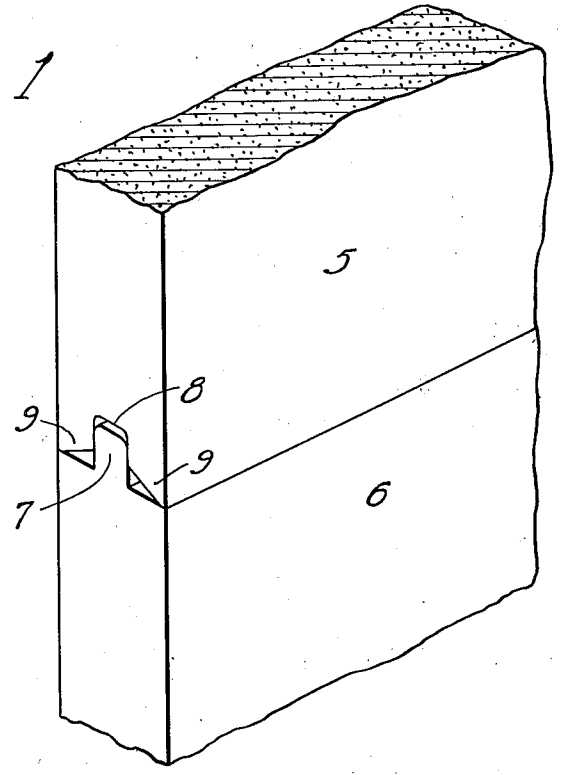


Fig. 2

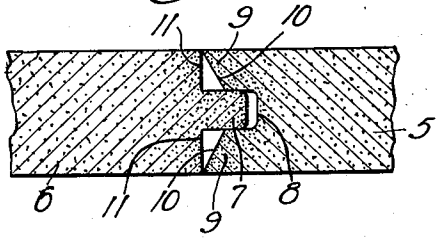
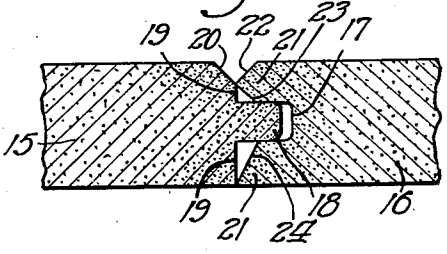


Fig. 3



Inventor
W. A. Whiting
By E. A. Wagoneller Atty.

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UNITED STATES PATENT OFFICE

WILLIAM A. WHITING, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED STATES GYPSUM COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

WALL CONSTRUCTION

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The present invention relates to a wall construction and more particularly to a joint for wall and insulating board. One object of the invention is to provide a joint for wallboard sections of an efficient and simple form, which is easy to manufacture and does not require exceptional care in packing and shipment. Another object of the invention is to provide a joint by means of which the sections of wallboard may be quickly and accurately secured to the studding and joists in assembled relation and in such manner as to effectively prevent infiltration of air between the sections. A further object of the invention is to provide a joint for wallboard sections which will compensate for relatively large amounts of expansion and shrinkage of the sections which would otherwise tend to weaken and crack a plaster coating applied thereto. A still further object of the invention is to provide a joint construction giving a maximum of accuracy of joint so that the meeting line between the sections will appear as a very fine line therebetween.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a fragmentary perspective view of two assembled sections of wall board provided with joints constructed in accordance with the present invention;

Fig. 2 is a fragmentary cross sectional view illustrating this type of joint; and

Fig. 3 is a fragmentary cross sectional view similar to Fig. 2 but illustrating a modified form of joint.

Similar reference numerals throughout the several views indicate the same parts.

The present invention provides a joint for fibre board sections which enables the sections to be quickly assembled with a minimum of effort to form a neat and accurate joint therebetween. The invention is particularly applicable for use in connection with fibre board sections intended for application to a wall where it is desired to cover the board with a coat of ordinary plaster.

Referring more particularly to the drawings, 5 and 6 indicate fragmentary portions of two sections of wall board made in accordance with the present invention. The sections 5 and 6 are preferably in the form of relatively light sheets of porous fibre board and may either be homogenous throughout or laminated. These sections 5 and 6 have their edges formed with complementary extending portions having primary cooperating surfaces thereon for maintaining the sections in substantially the same plane when they are assembled on a wall. In the present instance the edges of the sections 5 and 6 are generally in the form of a tongue and groove arrangement, being the preferred manner of forming the sections for ready engagement with each other so as to provide for accuracy of assembly of the sections on the joists, studding or the like. The projection or tongue 7, in the present embodiment, is formed on the section 6 and is of such a thickness as to snugly slide within the groove 8 formed by projections 9, 9 on the section 5. This tongue and groove arrangement will thus tend to keep the board sections in alignment with each other so as to provide for smooth joints between them.

In constructions involving the use of a tongue and groove joint it has been found that if a major or substantial portion of the edge of one section is brought into snugly abutting relation with a surface of like extent on an adjacent section there will be a very considerable tendency toward buckling of the sections when any expansion occurs. On the other hand, if the edges of the sections are not brought into a snug engagement with each other they will first expand when wet plaster is applied to the board and, after the plaster has either set or has begun to set, the board will begin to shrink, leaving a crack at the junction of the sections which will materially weaken the plaster and induce cracking along the joint.

In order to avoid these difficulties the present invention provides secondary engaging portions forming what may be termed sub-

stantially a line contact between the edges of the sections. For this purpose certain portions of the edge of at least one of the sections are cut away or bevelled off to provide tapered corners, the angles of which are less than right angles. In the present embodiment the projections 9, 9 of the section 5 are bevelled off to provide shoulder surfaces 10, 10 inclined in the direction of the trough of the groove 8. The shoulder surface on section 6, indicated at 11, 11, will preferably be disposed at substantially a right angle to the plane of the face of the section.

While the angles which the respective faces 10 and 11 bear to the face of the sections may be varied, it is important, in carrying out the present invention, that these surfaces shall be inclined to each other so as to diverge toward the interior of the board.

As best shown in Fig. 2, the tongue 7 is preferably made of such a length that it will not contact with the inner end of the groove 8 when the sections are in assembled relation. By this arrangement, even though a large amount of linear expansion occurs in the sections, it will not be sufficient to bring the edge of the tongue 7 and trough of the groove 8 into contact.

In the modified form of the invention, illustrated in Fig. 3 the sections 15 and 16 are in general similar to sections 5 and 6 of Fig. 1 and the groove 17 and tongue 18 are also similar to the tongue and groove previously described. This form of the invention is designed to provide all of the advantages of the first form, as regards compensation for expansion, and as well, to provide an arrangement in which there will be formed a strengthening rib in the plaster sheet applied to the board. For this purpose one of the shoulders 19 of the section 15 is bevelled off or out away as indicated at 20 and one of the projecting portions 21 on the section 16 is similarly cut away or bevelled off as indicated at 22. On the other side of the bevelled-off portion 21 from the surface 22 is a bevelled face 23 which intersects the bevelled face 22 along a line adjacent the intersection of the square part of shoulder 19 and bevelled face 20 on section 15 when the sections are in assembled relation. There is thus provided a notch in the face of the joint between the assembled sections 15 and 16 and, when plaster is applied to the section upon this side of the board, it will enter the notch thus produced and form a strengthening rib in the plaster. This rib will tend to prevent cracking of the plaster along the joint even though there may be some degree of expansion and contraction which sets up undesirable bending stresses in both the board and the plaster covering. The opposite projecting portion on section 16 from the bevelled-off projecting portion just described is formed with a bevelled face 24 substantially identical with the bevelled faces 10 of the first form of the invention.

In using sections of board having edge joints formed in the manner above described the workman, after securing one of the sections in place, will fit another section in assembled relation therewith and will then proceed to force this section into intimate contact with the section already secured in place. In this way the tapered edges on the sections corresponding to section 5 will be made somewhat blunt and will be somewhat imbedded in the shoulders 11 so that a practically perfect joint will be effected. In practice the imbedding and blunting of the tapered edges on section 5 will not be sufficient to prevent still further advancing movement of the edges of the board toward each other. Therefore, while a practically perfect joint is formed, it still retains its elastic or compressible characteristics in order to compensate for expansion of the board after application of the wet plaster thereto and therefore the tendency of the sections to buckle will be overcome.

Another important feature of the joint of the present invention is that it provides an effective support for the plaster coating applied to the sections notwithstanding that the board may shrink more than the plaster coating which has been applied to it. This may be explained somewhat as follows. After the plaster has set and is no longer plastic the board still retains considerable moisture which it has absorbed from the wet plaster. As soon as the board begins to dry out it starts to shrink and the amount of shrinkage is greater than the amount of shrinkage of the plaster. There will thus be a tendency toward slight relative movement between the plaster and the board throughout their contacting surfaces. This relative movement will be most pronounced along the meeting lines of the sections for the reason that the tendency of the sections is to move away from each other. Due to the fact, however, that the projecting tapered edges on one section permit a certain amount of compression along the lines of contact between the sections, instead of the sections becoming separated at their joint the compressed portions, upon being relieved of the pressure upon them, will re-expand sufficiently to maintain the contact between the sections so as to effectively support the plaster along the line of the joint after the board has been completely shrunk to its original condition. It has been found in practice that, in the use of wall board sections provided with joints of the type here disclosed, if, under abnormal conditions, cracks happen to occur in the plaster they will not follow the line of the joint but will be more likely to take positions somewhat inclined or transverse to the joint.

From the foregoing it is apparent that

the present invention provides a wall board joint which permits of quick and accurate assembly and at the same time requires a minimum of care and skill. The sections of board can be applied to the walls or ceiling with practically perfect joints between the sections by reason of the fact that the surfaces of the adjacent sections are maintained in perfect plane alignment by the efficient joint construction and at the same time the line along which the sections meet will be both straight and true and without any noticeable cracks. The board thus assembled may be used either with or without the added coating of plaster.

While the joint of the present invention may be provided on all edges of the sections it has been found very satisfactory to form the joints merely on the edges of the sections which lie at right angles to the supports on which the sections are to be nailed. The edges of the sections that are nailed to the studding, joists or other supports can be secured in a sufficiently firm manner so that no undesirable expansion or contraction effects will be produced. Also there is no particular need for an interlocking joint along the studding since the studding itself will prevent the infiltration of air along these joints.

The form of the invention shown in Fig. 3 may be used with a plaster coating to provide strengthening ribs in the plaster; or it may be used without a coating of plaster to utilize the decorative effect of the grooves.

While the present description sets forth a preferred embodiment of the invention, numerous changes may be made in the construction without departing from the spirit of the invention, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A wall construction comprising complementary sections providing extending portions having cooperating surfaces substantially parallel to the faces of said sections, cooperating shoulders on said sections extending respectively from said surfaces to the faces of said sections, said shoulders being formed with respect to each other so as to provide for a line contact therebetween and substantially coincident with the plane of the adjacent faces of said sections.

2. A wall construction comprising complementary sections providing extending portions having cooperating surfaces substantially parallel to the faces of said sections, cooperating shoulders on said sections extending respectively from said surfaces to the faces of said sections, one of said shoulders being bevelled to provide a surface disposed at an acute angle with the plane of the adjacent face of said section and also lying at an acute angle to the plane of the adjacent shoulder on the other of said sections when said sections are in assembled relation whereby the contacting shoulders will engage along a line or edge disposed substantially coincident with the plane of the corresponding faces of said sections.

3. A wall construction comprising complementary sections providing extending portions having cooperating surfaces substantially parallel to the faces of said sections, cooperating shoulders on said sections extending respectively from said surfaces to the faces of said sections, one of said shoulders being disposed at substantially a right angle to the plane of the face of its section, the other of said shoulders being bevelled so as to make a line contact with said first mentioned shoulder, said line contact being substantially coincident with the plane of the faces of said sections.

4. A wall construction comprising complementary sections, a tongue on one of said sections adapted to engage within a groove formed on the other section, a shoulder on each of said sections extending respectively outwardly from the base of said tongue and from the mouth of said groove, said shoulders being formed with respect to each other so as to provide for a line contact therebetween and substantially coincident with the plane of the adjacent faces of said sections.

5. A wall construction comprising complementary sections, a tongue on one of said sections adapted to engage within a groove formed on the other section, a shoulder on each of said sections extending respectively outwardly from the base of said tongue and from the mouth of said groove, one of said shoulders being beveled to provide a surface disposed at an acute angle with the plane of the adjacent face of said section and also lying at an acute angle to the plane of the adjacent shoulder on the other of said sections when said sections are in assembled relation whereby the contacting shoulders will engage along the line or edge disposed substantially coincident with the plane of the corresponding faces of said sections.

6. A wall construction comprising complementary sections, a tongue on one of said sections adapted to engage within a groove formed on the other section, a shoulder on each of said sections extending respectively outwardly from the base of said tongue and from the mouth of said groove, one of said shoulders being disposed at substantially a right angle to the plane of the face of its section, the other of said shoulders being bevelled so as to make a line contact with said first mentioned shoulder, said line contact being substantially coincident with the plane of the faces of said sections.

7. A wall construction comprising complementary sections, a tongue on one of said sections adapted to engage within a groove formed on the other section, a shoulder on each of said sections extending respectively outwardly from the base of said tongue and from the mouth of said groove, the shoulder on said tongue section disposed at substantially a right angle to the plane of the face of its section, and the shoulder on said groove section being bevelled so as to make a line contact with said first mentioned shoulder, said line contact being substantially coincident with the plane of the faces of said sections.

8. A wall construction comprising complementary sections, a tongue on one of said sections adapted to engage within a groove formed on the other section, a shoulder on each of said sections extending respectively outwardly from the base of said tongue and from the mouth of said groove, said shoulders being formed with respect to each other so as to provide for a line contact therebetween and substantially coincident with the plane of the adjacent faces of said section, said tongue being of such a length as to remain out of contact with the inner end of said groove when said sections are in assembled relation.

9. A wall construction comprising complementary sections, said sections providing substantially parallel, primary engaging surfaces at their edges to determine the alignment of said sections, and providing secondary engaging portions adapted to present a line contact substantially coincident with the plane of the adjacent faces of said sections when said primary surfaces are in engaging relation, thereby determining the proximate limit of approach of one section to the other.

10. A wall construction comprising complementary sections having edge portions thereon providing primary engaging surfaces to determine the alignment of said sections, said surfaces being substantially parallel to the faces of said sections, and said edge portions also providing secondary engaging portions adapted to present a line contact between the sections, said sections abutting edgewise only along said line contact.

11. A wall construction comprising complementary sections providing extending portions having cooperating surfaces substantially parallel to the faces of said sections, one of said sections having a shoulder surface extending from the plane of said cooperating surfaces to the face of such section, the extending portion on the other of said sections being bevelled to provide a narrow, tapered edge adapted to form a line contact with the shoulder surface of the opposite section along a line disposed outwardly with respect to said first mentioned cooperating surfaces, the surfaces of said shoulder and said bevelled extending portion converging in the direction of said line contact.

12. A wall construction comprising complementary sections providing extending portions having cooperating surfaces substantially parallel to the faces of said sections, a shoulder surface on one of said extending portions, a shoulder surface on the opposite complementary section adapted to cooperate with the first mentioned shoulder surface, said cooperating shoulder surfaces extending from the plane of said cooperating surfaces and converging substantially in the direction of the face of the assembled sections, said shoulder on one extending portion being formed to provide a narrow tapered edge adapted to form a line contact with the other shoulder surface along a line disposed outward relative to said first mentioned cooperating surfaces.

13. A wall construction comprising complementary sections providing extending portions having cooperating surfaces substantially parallel to the faces of said sections, cooperating shoulders on said sections extending respectively from said surfaces outwardly in the direction of the faces of said sections, said shoulders being formed with respect to each other so as to provide for a line contact therebetween, said line contact being disposed inwardly with respect to the plane of the adjacent faces of said sections.

14. A wall construction comprising complementary sections providing extending portions having cooperating surfaces substantially parallel to the faces of said sections, cooperating shoulders on said sections extending respectively from said surfaces outwardly in the direction of the faces of said sections, one of said shoulders being disposed at substantially a right angle to the plane of the face of its section, the other of said shoulders presenting two converging bevels forming a narrow edge adapted to make a line contact with said first mentioned shoulder, said line contact being disposed inwardly with respect to the plane of the adjacent faces of said sections.

15. A wall construction comprising complementary sections, a tongue on one of said sections, spaced projections on the other section forming a groove adapted to receive said tongue, one of said projections being tapered to present a relatively narrow edge which provides for a line contact between the sections and intermediate the tongue and the plane of the faces of said assembled sections.

16. A wall construction comprising complementary sections, a tongue on one of said sections, spaced projections on the other of said sections forming a groove adapted to receive said tongue, said projections also presenting shoulders adapted to contact with the tongue section, one of said shoulders providing a narrow edge adapted to make a line

contact between the sections and intermediate the tongue and the plane of the faces of said assembled sections.

17. A wall construction comprising complementary sections, a tongue on one of said sections, spaced projections on the other of said sections forming a groove adapted to receive said tongue, one of said projections being tapered or bevelled from both of its lateral faces so as to present a narrow edge at its extremity whereby when said sections are in assembled relation there will be established a line contact therebetween.

18. A wall construction comprising complementary sections, a tongue on one of said sections, spaced projections on the other of said sections presenting a groove adapted to receive said tongue, one shoulder on said tongue section being bevelled to provide a surface inclined to the face of said section which joins a surface substantially at a right angle to the face of said section, the corresponding projection on said groove section being bevelled substantially the same as the bevel on said tongue section so as to provide a symmetrical notch at the joint between the sections, said bevelled projection being also bevelled substantially from the apex of said notch toward the trough of said groove whereby said bevelled projection makes a line contact with the meeting surface of said opposite section.

19. A wall construction comprising complementary sections, a tongue on one of said sections, spaced projections on the other of said sections presenting a groove adapted to receive said tongue, one shoulder on said tongue section being bevelled to provide a surface inclined to the face of said section which joins a surface substantially at a right angle to the face of said section, the corresponding propection on said groove section being bevelled substantially the same as the bevel on said tongue section so as to provide a symmetrical notch at the joint between the sections, said bevelled projection being also bevelled substantially from the apex of said notch toward the trough of said groove whereby said bevelled projection makes a line contact with the meeting surface of said opposite section, the opposite projection being bevelled on its inner corner to provide a line contact on the opposite side of said tongue from said first mentioned edge and substantially coincident with the plane of the faces of the assembled sections.

20. A wall construction comprising complementary sections, a tongue on one of said sections, spaced projections on the other of said sections forming a groove adapted to receive said tongue, one of the shoulders on said tongue section being bevelled to provide an inclined surface and an adjacent surface substantially perpendicular to the face of said section, the projection on the groove section adapted to engage said bevelled shoulder being bevelled off on both its inner and outer corners to provide for a line contact between said projection and said bevelled shoulder and disposed substantially at the intersection of said inclined and perpendicular faces, the opposite shoulder on said tongue section having at least its outer portion substantially perpendicular to the face of the section and the corresponding projection on said groove section being bevelled on its inner corner so as to present a narrow edge making substantially a line contact with the shoulder on said tongue section and substantially coincident with the plane of the face of the assembled sections.

21. A construction as defined in claim 20 in which the extremity of the tongue is out of contact with the trough of the groove when the sections are in assembled relation.

22. A wall construction comprising complementary sections, a tongue on one of said sections, spaced projections on the other section forming a groove adapted to receive said tongue, one of said projections being tapered to present a relatively narrow edge which provides for a line contact between the sections intermediate the tongue and the plane of the faces of said assembled sections, said tongue being of such a length as to remain out of contact with the inner end of said groove when said sections are in assembled relation.

Signed at Chicago, Illinois, this 12th day of November, 1929.

WILLIAM A. WHITING.