

PATENT SPECIFICATION

984,136

DRAWINGS ATTACHED.

Date of Application and filing Complete Specification:
Sept. 29, 1961. No. 35226161.

Application made in Australia (No. 65699) on Oct. 18, 1960.

Complete Specification Published: Feb. 24, 1965.

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Index at Acceptance:—E1 V95.

Int. Cl.:—E 04 d.

COMPLETE SPECIFICATION.

Sheet Metal Decking.

We, JOHN LYSAGHT (AUSTRALIA) LIMITED, a Company organised and existing under the laws of the State of New South Wales, Commonwealth of Australia, with registered office at 50 Young Street, Sydney, in the State of New South Wales, Commonwealth of Australia, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to metal decking sheets of the kind in which the joining of neighbouring sheets is effected by a male rib along one longitudinal edge of the sheet able to enter and lock within a female channel rib on the neighbouring sheet. Each of the sheets has such a male rib along one edge and a channel rib along the other.

The main purpose of the present invention is to provide decking sheets of the kind indicated, which, by comparison with those of the prior art are superior in their weatherproofing properties and particularly suited for incorporation therewith of simple fixing means whereby without impairment of the mutual locking ability of the male and channel ribs the sheets are firmly secured to purlines, battens, girts, or other decking supports; and this, without impairing the locking arrangements or the weatherproofing properties, without necessity for piercing the sheets in any way, (that is, by use of nails, screws, or the like) and without any necessity for weather exposure of the actual fixing means.

The invention provides sheet metal decking arrangements comprising, in combination, a pair of decking sheets each having along one edge a female channel rib with a shoulder formed in that flange of the rib adjacent the body of the sheet, and each having a hook-shaped male rib along the

opposite edge of the sheet so formed that the male rib of one sheet is able to enter the channel rib of another sheet; and a fixing strap comprising a base portion adapted for affixture to the decking support, and a shouldered end portion able to enter one of said channel ribs and when so entered embrace a male rib entered into that channel rib, the channel and male ribs respectively bearing against opposite sides of said end portion shoulder and said end portion taking hold upon both said male and channel ribs by embracing said male rib and by said end portion shoulder engaging said channel rib shoulder.

Examples of the invention are illustrated in the drawings herewith.

Fig. 1 is a perspective view showing part of a decking and a separated fixing strap on a decking support member.

Fig. 2 is a sectional end elevation showing, on an enlarged scale, parts of the decking sheets shown in Fig. 1 at a point where they are not engaged by a fixing strap.

Fig. 3 virtually repeats Fig. 2 except that it shows the sheets at a point where they are engaged by a fixing strap.

Fig. 4 in effect repeats that part of Fig. 2 encircled at 4 in illustrating a minor modification.

Each of the decking sheets has a male rib 5 formed along one edge and a channel rib 6 formed along an opposite edge. The body 7 of each sheet, between its edge ribs, may be ribbed, fluted, or otherwise formed; say, for example, with extra channels 8 in order to give the decking sheet such stiffness or rigidity as may be required having regard to the gauge of sheet metal out of which it is made.

The channel rib has a shoulder 9 formed in it and preferably also has a second shoulder 10 formed close to its free edge 11.

[Price 4s. 6d.]



male
purlins



45 male

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55

60

65

70

75

80

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The male rib on that web portion of it which extends contiguously from the body of the sheet preferably has a similar shoulder 12 formed therein, this shoulder being able to seat internally of the shoulder 10 and the free edge 13 (Fig. 2) of the male rib being similarly able to lock against the shoulder 9.

The channel rib is preferably provided (see Fig. 4) with a ridge or bead 14 which extends longitudinally as near as practicable to the free edge of the rib, this provision being desirable, otherwise the free edge 11 tends to be wrinkled; thus, the bead 14 is desirable so that the free edge will be straight so as to give a more closed joint against weather entrance.

The fixing arrangements for decking sheets as discussed above comprise strip-like strap members which may be nailed or otherwise directly affixed to the purlins, girts, or the like on the indoor side of the decking sheets. These fixing straps are of somewhat heavier gauge material than the decking sheets and the straps may be of any convenient width (say two inches) and they may be secured in position at any convenient spacing, for example, every three feet. Each fixing strap comprises a base portion 15 adapted for direct nailing or other affixture to purlins 16 or the like. One end 17 of this strap projects upwardly and is shouldered and shaped as of substantially the same form as one of the male ribs 5. Thus it is able to nest within the channel rib of a decking sheet and is also able to receive within it the male rib of a neighbouring sheet as shown in Fig. 3; such male rib being slightly sprung or distorted (at 18), in the vicinity of the fixing strap, by comparison with its normal position inside the channel rib. Thus, the free edge of the male rib, at the point where each fixing strap occurs, is able to abut against the shoulder 19 of the fixing strap. In this way the fixing strap takes a hold upon the male rib. Similarly, the shoulder 9 of the channel rib engages on the opposite or outside of the fixing strap shoulder 19. Thus, both sheets are securely held down by the fixing strap without that strap being exposed to weather. If desired, the base portion of a fixing strap may be extended (away from that end of it which is shouldered as just discussed) and its extended end 20 formed in any convenient way to enable it to home within, or resiliently to snap within, an extra channel 8 which (as previously indicated) may be formed in the body of the decking sheet in order to impart stiffness thereto.

It will be appreciated that the form of the male ribs does not have to be one which nests closely within a channel rib, although the male rib preferably has a shoulder 12 able to engage with a free edge shoulder 10 on the channel rib, and preferably also has the free edge of the male rib, or a second

shoulder thereon, able to engage against the shoulder 9 of the channel rib and also against a shoulder such as 19 of the fixing strap. Much the same considerations apply to the formation of the fixing strap end portion such as 17, provided the fixing strap has at least one end portion able to engage against one of the shoulders of the rib elements mated thereabout thus to prevent recession of these mated ribs from the purlins or other supports. Thus, although it is preferred for the locking portion of the fixing strap to be disposed internally of a channel rib and wrapped externally about the male rib homed inside the channel flange as previously described herein; if desired, both of the mated flanges may externally enwrap the locking portion of the fixing straps.

WHAT WE CLAIM IS:—

1. Sheet metal decking arrangements comprising, in combination, a pair of decking sheets each having along one edge a female channel rib with a shoulder formed in that flange of the rib adjacent the body of the sheet, and each having a hook-shaped male rib along the opposite edge of the sheet so formed that the male rib of one sheet is able to enter the channel rib of another sheet; and a fixing strap comprising a base portion adapted for affixture to a decking support, and a shouldered end portion able to enter one of said channel ribs and when so entered embrace a male rib entered into that channel rib, the channel and male ribs respectively bearing against opposite sides of said end portion shoulder and said end portion taking hold upon both said male and channel ribs by embracing said male rib and by said end portion shoulder engaging said channel rib shoulder.

2. Decking arrangements according to claim 1 wherein the form of said ribs is such that the male rib of one sheet is able to enter the channel rib of another sheet by the free edge of the entering male rib resiliently riding over the shoulder of the channel rib being entered and then strutting against that shoulder.

3. Sheet metal decking arrangements according to claim 1 or claim 2 wherein said channel rib has a second shoulder formed in its flange remote from the body of the sheet and wherein said male rib has a shoulder formed in it so that when the male rib of one sheet is entered into the channel rib of another sheet the male rib shoulder bears against said second shoulder.

4. Sheet metal decking arrangements according to any one of the preceding claims wherein each of said decking sheets has an extra channel formed therein and said fixing strap has a tail-piece thereon able to home within the extra channel of a decking sheet within the channel rib of which the fixing strap end portion is engaged.

The male rib on that web portion of it which extends contiguously from the body of the sheet preferably has a similar shoulder 12 formed therein, this shoulder being able to seat internally of the shoulder 10 and the free edge 13 (Fig. 2) of the male rib being similarly able to lock against the shoulder 9.

The channel rib is preferably provided (see Fig. 4) with a ridge or bead 14 which extends longitudinally as near as practicable to the free edge of the rib, this provision being desirable, otherwise the free edge 11 tends to be wrinkled; thus, the bead 14 is desirable so that the free edge will be straight so as give a more closed joint against weather entrance.

The fixing arrangements for decking sheets as discussed above comprise strip-like strap members which may be nailed or otherwise directly affixed to the purlins, girts, or the like on the indoor side of the decking sheets. These fixing straps are of somewhat heavier gauge material than the decking sheets and the straps may be of any convenient width (say two inches) and they may be secured in position at any convenient spacing, for example, every three feet. Each fixing strap comprises a base portion 15 adapted for direct nailing or other affixture to purlins 16 or the like. One end 17 of this strap projects upwardly and is shouldered and shaped as of substantially the same form as one of the male ribs 5. Thus it is able to nest within the channel rib of a decking sheet and is also able to receive within it the male rib of a neighbouring sheet as shown in Fig. 3; such male rib being slightly sprung or distorted (at 18), in the vicinity of the fixing strap, by comparison with its normal position inside the channel rib. Thus, the free edge of the male rib, at the point where each fixing strap occurs, is able to abut against the shoulder 19 of the fixing strap. In this way the fixing strap takes a hold upon the male rib. Similarly, the shoulder 9 of the channel rib engages on the opposite or outside of the fixing strap shoulder 19. Thus, both sheets are securely held down by the fixing strap without that strap being exposed to weather. If desired, the base portion of a fixing strap may be extended (away from that end of it which is shouldered as just discussed) and its extended end 20 formed in any convenient way to enable it to home within, or resiliently to snap within, an extra channel 8 which (as previously indicated) may be formed in the body of the decking sheet in order to impart stiffness thereto.

It will be appreciated that the form of the male ribs does not have to be one which nests closely within a channel rib, although the male rib preferably has a shoulder 12 able to engage with a free edge shoulder 10 on the channel rib, and preferably also has the free edge of the male rib, or a second

shoulder thereon, able to engage against the shoulder 9 of the channel rib and also against a shoulder such as 19 of the fixing strap. Much the same considerations apply to the formation of the fixing strap end portion such as 17, provided the fixing strap has at least one end portion able to engage against one of the shoulders of the rib elements mated thereabout thus to prevent recession of these mated ribs from the purlins or other supports. Thus, although it is preferred for the locking portion of the fixing strap to be disposed internally of a channel rib and wrapped externally about the male rib homed inside the channel flange as previously described herein; if desired, both of the mated flanges may externally enwrap the locking portion of the fixing straps.

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1. Sheet metal decking arrangements comprising, in combination, a pair of decking sheets each having along one edge a female channel rib with a shoulder formed in that flange of the rib adjacent the body of the sheet, and each having a hook-shaped male rib along the opposite edge of the sheet so formed that the male rib of one sheet is able to enter the channel rib of another sheet; and a fixing strap comprising a base portion adapted for affixture to a decking support, and a shouldered end portion able to enter one of said channel ribs and when so entered embrace a male rib entered into that channel rib, the channel and male ribs respectively bearing against opposite sides of said end portion shoulder and said end portion taking hold upon both said male and channel ribs by embracing said male rib and by said end portion shoulder engaging said channel rib shoulder.

2. Decking arrangements according to claim 1 wherein the form of said ribs is such that the male rib of one sheet is able to enter the channel rib of another sheet by the free edge of the entering male rib resiliently riding over the shoulder of the channel rib being entered and then strutting against that shoulder.

3. Sheet metal decking arrangements according to claim 1 or claim 2 wherein said channel rib has a second shoulder formed in its flange remote from the body of the sheet and wherein said male rib has a shoulder formed in it so that when the male rib of one sheet is entered into the channel rib of another sheet the male rib shoulder bears against said second shoulder.

4. Sheet metal decking arrangements according to any one of the preceding claims wherein each of said decking sheets has an extra channel formed therein and said fixing strap has a tail-piece thereon able to home within the extra channel of a decking sheet within the channel rib of which the fixing strap end portion is engaged.



5. Sheet metal decking arrangements according to claim 4 wherein said tail-piece is able to home in the extra channel of a decking sheet in the same manner as the male rib of one decking sheet is able to home in the channel rib of another.
6. Sheet metal decking arrangements according to any one of the preceding claims wherein each of said decking sheets has a bead formed longitudinally along the free edge of its channel rib.
7. Sheet metal decking arrangements sub-

stantially as herein described with reference to Figs. 1 to 3 or Fig. 4 of the drawings herewith.

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Abingdon: Printed for Her Majesty's Stationery Office, by Burgess & Son (Abingdon), Ltd.—1965.
Published at The Patent Office, 25 Southampton Buildings, London, W.C.2,
from which copies may be obtained.

