

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Flange Locking Arrangements for Metal Decking Sheets

We, JOHN LYSAGHT (AUSTRALIA) PTY. LIMITED, (formerly Lysaght's Works Pty. Limited), a Company organised under the Laws of the State of New South Wales, Commonwealth of Australia, of Newcastle, 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 those decking sheets, usually of steel, used for roofing and wall coverage purposes, of the kind which have, along one edge, a channel flange composed of a floor, a first web and a second web, and along the opposite edge a male flange able to enter the channel flange of a similar sheet.

Such decking sheets are usually assembled with the male flange of one sheet entered downwardly into the channel flange of a neighbour sheet, the decking thus being finished, when used for roofing purposes, by application of bituminous materials, synthetic board or other coverage materials suitably waterproofed or otherwise treated, as well understood.

The jointing arrangements between sheets as above described are objectionable in several respects because the male flanges are capable of relative movement laterally within the channel flanges and therefore it is difficult to secure what amounts to a positive lock between the two. It has been proposed to dimple the mated flanges by the use of punches or the like but that in itself involves extra labour and is not satisfactory in creating a definite lock between the mated flanges.

The object of this invention is to overcome the stated difficulty in a very simple

way giving an interlocked joint which gives sufficient strength across the seams to enable the decking to be walked upon without relative movement between the interlocking flanges, which in case of fire is a sufficiently liquid-tight joint to prevent molten bitumen or the like flowing to the underneath side of the joint, and in the case of side walling is rattle free and substantially weather-tight.

In one aspect of the present invention there is provided a metal decking sheet of the kind having, along one edge, a channel flange composed of a first web, a floor and a second web, and along its opposite edge a male flange able to enter the channel flange of a like sheet; characterised by the incorporation therein of flange locking arrangements comprising at least one punched-out tongue extending outwardly from said male flange, so as to ride resiliently against the first web of the channel flange of a like sheet while being laterally entered therein, and so as to strut against the said first web of said channel flange to oppose lateral withdrawal of said male flange therefrom.

In a further aspect of the present invention a metal decking sheet is provided of the kind having, along one edge, a channel flange composed of a first web, a floor and a second web, and along its opposite edge a male flange able to enter the channel flange of a like sheet; characterised by the incorporation therein of flange locking arrangements wherein said first web of said channel flange is formed with a shoulder and said male flange is provided with a tongue or tongues formed along the free edge thereof to extend outwardly away from said male flange and then upwardly so as to ride resiliently against the first web of the channel flange of a like sheet while being laterally entered therein and so as to strut against said first web of said channel flange with the biting edge engaged

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under said shoulder to oppose lateral withdrawal of said male flange from said channel flange of said like sheet.

5 The present invention is illustrated in the accompanying drawings in which:—

Fig. 1 is an isometric view of two decking sheets (with parts broken away) locked together.

10 Fig. 2 is a sectional end elevation (on an enlarged scale) taken on line 2—2 in Fig. 1.

Fig. 3 is a view similar to Fig. 1 showing a modified form of the invention.

15 Fig. 4 is an end elevation of the flange portions of the sheets shown in Fig. 3 with the male flange being entered into the channel flange.

Fig. 5 repeats Fig. 4 but with the male flange fully entered.

20 Referring to Figs. 1 and 2, the male flange 6 of a decking sheet 7 has tongue-like projections 8 punched therefrom at selected pitch distances, say 12" centres, or it may be more or considerably less, as may be required. These tongues are pressed from the flange 25 from the free edge thereof and then bent away from the body of the flange so that such flange with its projecting tongues can be laterally thrust into a channel flange (comprising first web 9, floor 10 and second web 11) as a tight neat fit therein. The extent to which the tongues project from their male 30 flanges and their angular disposition relative thereto are such that each tongue is slightly deflected upwardly when being jammed into the channel flange. Thus the tongues are able to ride resiliently against the first web 9 and then strut against the web (as shown in Fig. 2). When the joint is subjected to any 35 laterally directed force which would tend to separate the joined flanges the projecting tongues strut tightly across the channel flanges thus firmly holding the male flange against the web 11 in a manner substantially proof against lateral dislodgment except by collapse 40 of the tongues 8.

45 In the arrangement shown in Figs. 3 to 5 the male flange 6A of a deck sheet 7A has a locking tongue 8A formed continuously along its "free" edge (that is, its edge further 50 from the deck portion of the sheet). The tongue (8A) is roughly L-shaped as shown, and because its free or "biting" edge 8B is more steeply inclined (by comparison with tongue 8 in Fig. 2) the strutting action required of it is assisted by providing in the 55 first web 9A of the channel flange comprising first web 9A, floor 10A and second web 11A, a shoulder 12 under which the biting edge 8B (of a similar sheet) may engage. The second web 11A may have a similar shoulder 13 to give the channel flange uniformity of 60 appearance when viewed from below. Extra channels 14 may be formed in sheets 7A is

required, to give structural strength to the sheet portions between joints. The extent to which the tongue projects from the male flange and its angular disposition relative thereto is such that the tongue is slightly deflected upwardly when being jammed into the channel flange. Thus the tongue is able to ride resiliently against the first web of the channel flange over the shoulder therein. When the decking sheets are subjected to any force which would tend to lift the male flange out of the channel flange the projecting tongue strikes the shoulder in the channel flange and thus is caused to strut tightly across the channel flange to prevent separation of the sheets.

WHAT WE CLAIM IS:—

1. A metal decking sheet of the kind having, along one edge, a channel flange composed of a first web, a floor and a second web, and along its opposite edge a male flange able to enter the channel flange of a like sheet; characterised by the incorporation therein of flange locking arrangements comprising at least one punched-out tongue extending outwardly from said male flange so as to ride resiliently against the first web of the channel flange of a like sheet, while being laterally entered thereto, and so as to strut against the said first web of said channel flange to oppose lateral withdrawal of said male flange therefrom.

2. A metal decking sheet of the kind having, along one edge, a channel flange composed of a first web, a floor and a second web, and along its opposite edge a male flange able to enter the channel flange of a like sheet; characterised by the incorporation therein of flange locking arrangements wherein said first web of said channel flange is formed with a shoulder and said male flange is provided with a tongue or tongues formed along the free edge thereof to extend outwardly away from said male flange and then upwardly so as to ride resiliently against the first web of the channel flange of a like sheet while being laterally entered thereto and so as to strut against said first web of said channel flange with the biting edge engaged under said shoulder to oppose lateral withdrawal of said male flange from said channel flange of said like sheet.

3. Flange locking arrangements for metal decking sheets as herein described with reference to Figs. 1 and 2 of the accompanying drawings.

4. Flange locking arrangements for metal decking sheets as herein described with reference to Figs. 3 to 5 of the accompanying drawings.

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Fig. 5 repeats Fig. 4 but with the male flange fully entered.

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2. A metal decking sheet of the kind having, along one edge, a channel flange composed of a first web, a floor and a second web, and along its opposite edge a male flange able to enter the channel flange of a like sheet; characterised by the incorporation therein of flange locking arrangements wherein said first web of said channel flange is formed with a shoulder and said male flange is provided with a tongue or tongues formed along the free edge thereof to extend outwardly away from said male flange and then upwardly so as to ride resiliently against the first web of the channel flange of a like sheet while being laterally entered therein and so as to strut against said first web of said channel flange with the biting edge engaged under said shoulder to oppose lateral withdrawal of said male flange from said channel flange of said like sheet.

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