Sept. 21, 1948. R. W. RUMBLE 2,449,912

MOLD FOR FORMING CONCRETE WALLS IN SITU

Filed Sept. 30, 1944

Fig. 1.

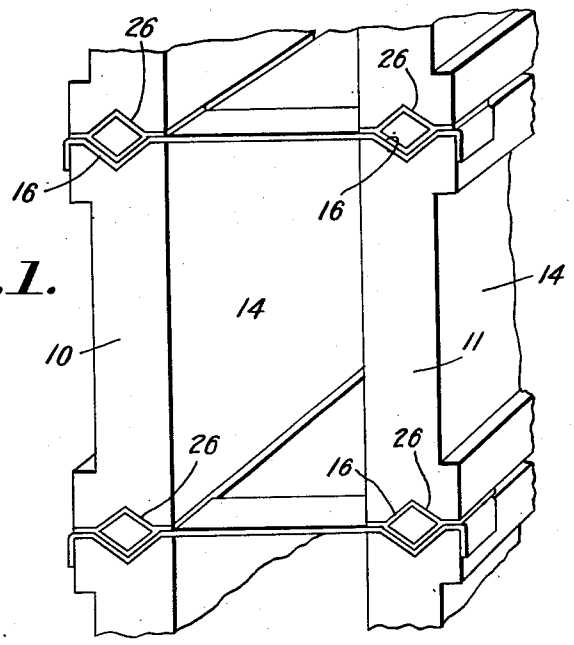


Fig. 2.

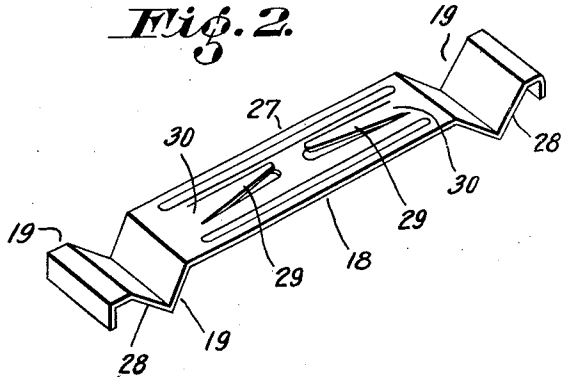
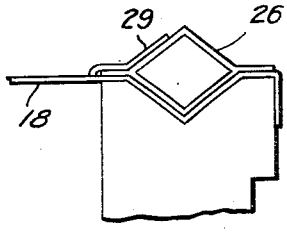


Fig. 3.



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2,449,912

MOLD FOR FORMING CONCRETE WALLS IN SITU

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In the Union of South Africa October 5, 1943

2 Claims. (Cl. 25—131)

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This invention relates to shuttering of the kind intended for repeated use and comprising two shuttering walls between which concrete mix or similar moulding material is moulded to form, for example, a concrete wall in situ.

One of the problems of erecting such a pair of shuttering walls is that of providing suitable means for spacing then apart and tying them together in order that they shall initially be given their proper spacing and maintain that spacing when subjected to displacing forces, particularly the bursting pressure of the freshly poured concrete mix. The problem is presented especially when the shuttering walls are built up from a number of manufactured shuttering panels that are assembled edgewise and are intended to be disassembled after the concrete has set, and to be re-used frequently.

According to this invention, such shuttering walls are tied to one another by cross ties having end formations that prescribe a shutter spacing and are shaped so to engage the shuttering walls as to hold the latter against displacement from said spacing.

It is a feature of the invention that said ties are pre-formed in standard sizes and shapes so that, numbers of them being provided at the building site, they can be assembled with the shuttering walls as the latter are erected and ensure that said walls are initially properly spaced without other precautions to that end having to be taken. The means for spacing the walls is thus divorced from the means for otherwise positioning them or for supporting them.

The ties are usually of elongated form, each comprising a middle portion to span the moulding cavity between the shuttering walls, and end portions to engage said walls; said end portion forming or including the above-mentioned formations.

Usually the ties engage with the edges of such parts of the shuttering wall as are suitable for such engagement; and in particular the end portions of the ties engage between the adjacent edges of panels or other units which are assembled edgewise to construct the shuttering walls.

In order to exercise their tying and spacing function positively, the end formations have extension transverse to the length of the tie, and said formations engage with parts of the shuttering having opposing transverse dimensions.

By making the end portions of the ties thin enough, said ends can be inserted between joints of the constituent elements of the shuttering walls without opening said joints to the extent that would give trouble by allowing leakage of cement, provided the concrete mix is not unusually fluid.

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The ties would usually be of such a nature that they can be left in the moulded wall; although they may if desired be protected from the concrete by a surrounding tube, enabling them to be withdrawn. If they are left in the walls and their ends have extension transverse to their length, said ends should be sufficiently flexible to enable the shuttering unit that comprises the opposing transverse extension to be disassembled from its assembly by movement that requires the tie end to be bent or otherwise displaced with reference to the middle portion of the tie then locked in the moulded wall. By making the ties of sheet metal, which is bent to constitute the end formations, the latter are given both the mentioned properties of thinness and flexibility.

If the middle portion of the tie is to be left in the moulded wall, its end formations will project from the latter; and it is usually desirable they should then be removed. To facilitate this removal the tie may be formed with lines of weakness that demarcate its middle portion from its end portions.

A feature of the invention that facilitates the rapid erection of sectionalized shuttering walls is that the tie does not as a rule require to be fastened in position, at least when applied to horizontal joints between the shuttering elements, otherwise than by being clamped between contiguous edges of the shutter elements. The end formations of the tie are made to come into its shutter spacing engagement with said edges by merely laying it in place in the case of a horizontal joint. The next shutter element to be laid over it secures it in position and also so grips the formation that the latter cannot become unbent even when it is made of thin sheet metal.

This invention is illustrated in the accompanying drawings in which

Fig. I is a perspective view of a pair of shuttering walls with waling members and cross-ties in assembled position.

Fig. II is a perspective view of a cross-tie of Fig. I.

Fig. III is an end view of the cross-tie of Fig. II assembled with a panel and waling member.

Referring to Figure I, 10, 11 indicate two shuttering walls in the course of erection and defining between them a moulding cavity which is intended to be filled with concrete mix that sets to form a concrete wall.

The shuttering walls are built up from separate manufactured panels 14 that are assembled

edgewise. In the example shown in the horizontal edges of the panels are formed with grooves 16.

A shuttering tie 27 to engage with said grooves is shown in Figure II. It consists of a strip of sheet metal of the length proper to the intended spacing of the shuttering 10, 11. The strip comprises a middle portion 18 which spans the moulding cavity and end portions 19, 19 that are to be inserted respectively between each pair of upper and lower panel edges.

An advantageous arrangement in assembling the manufactured panels is to make both the horizontal edges as grooves and to insert between said edges a waling member indicated by 26, Figures I and III. In Figure II there is shown a shutter tie 27 the end formations 28 of which are such as to fit about half the periphery of the cross section of the waling member which in this case is shown as lozenge shaped. It is usually convenient to place the shutter ties in position before the waling piece is laid down; and the tie shown is shaped to fit the underside of the waling member cross section. A useful feature is the provision of tongues 29 which are pressed out of the metal of the middle portion of the tie with their roots 30 at about the position of demarcation between the middle portion 18 of the tie and the end portions 19. After the waling member is put into position, said tongues are bent over—as shown in Figure III—to clasp the upper surface of the said member and assist in retaining it in its proper position while the next upper row of panels is being put into place. Waling members of the kind shown are disclosed and claimed in my co-pending application for

Letters Patent, Ser. No. 556,677, filed October 2, 1944, entitled "Improvements in sectionalized structure providing a common rectilinear surface."

I claim:

1. The combination claimed in claim 2, in which the means for engaging the waling piece above consists of deformable tongues forming parts of the tie and suitable to be bent over the waling pieces when the latter are in position holding down the ends of the tie.

2. The combination with two shuttering walls, each composed of panels detachably assembled edgewise with waling pieces between, said waling pieces being interlocked with said edges, of cross ties extending between and interengaged with the two walls, and having their ends engaged between the waling piece and the edges of the panels, the ties providing means to engage the waling pieces above and below.

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