The present invention relates to apparatus for moulding concrete beams in situ and is more specifically concerned with a novel mould construction and with a novel clamp therefor.

According to the present invention a mold for forming a concrete beam in situ comprises in combination a sofit, side panels extending upwardly from the sofit to form a channel like mould, a pair of multi-stepped metal bracing members adapted to engage the sofit and the side panels, a plurality of sleeper members extending transversely of the mould and located in spaced relationship longitudinally of the mould, and a pair of clamping members wedgingly engaging each of the said sleepers and adapted to engage the said bracing members one on either side of the mould, so as to maintain the sofit and the side panels in rigid relationship.

It is a feature of the invention to provide a clamp which comprises in combination; a clamping element having a sleeper engaging member, a clamping face extending outwardly therefrom at substantially right angles thereto; and a wedge engaging member; inclined wedging surfaces arranged on said clamping element and on said wedge engaging member for wedging cooperation with each other on execution of the said elements on a sleeper, whereby relative movement between the elements in the wedging direction draws their sleeper engaging members into locking engagement with the sleeper.

According to a preferred embodiment of the invention a clamp comprising in combination; a clamping element having a channel like sleeper engaging member, a clamping face extending outwardly from one end thereof, a longitudinally extending rail like projection on the outside of each flange of the sleeper engaging member, said rail like projection being inclined at an angle to the longitudinal axis of the sleeper engaging member; and a wedge engaging member having a substantially U-shaped cross-section of wider web than the sleeper engaging member, and carrying on the inside of each of its flanges an inwardly directed longitudinally extending lip, which lip is longitudinally inclined and is adapted to wedgingly engage the rail like projections on erection of the said elements on a sleeper, whereby relative movement between the elements in the wedging direction draws their webs into locking engagement with the sleeper.

According to a preferred construction, the clamping face is provided with a stiffening member which stiffening member extends from the rear of the clamping face, from a point at or near its outermost edge to the sleeper engaging member and the lips of the wedging element are located on the outer edges of the flanges thereof.

Due to the simplicity of the construction in accordance with the present invention considerable savings in both material and labour are affected and the operator is provided with a strong and light mould for beam forming. Furthermore, many accurate and time consuming manipulations like the spacing and nailing of cleats to sides and soffits and the fastening of sides to the soffits hitherto necessary in the in situ moulding of concrete beams are eliminated.

The following is a description by way of example of one construction in accordance with the present invention. Reference being had to the accompanying drawings in which:

Figure 1 is a pictorial representation of a mould formed in accordance with the present invention;

Figure 2 is a pictorial view of one element of the clamp;

Figure 3 is an end elevation of the element shown in Figure 2;

Figure 4 is a pictorial view of the second element of the clamp; and

Figure 5 is a pictorial view of the two elements of the clamp shown in wedging engagement with a beam or sleeper.

Referring now to the drawings.

A mould in which a concrete beam is moulded in situ comprises a sofit 10 and side panels 11 and 12. A pair of stepped bracing elements 13 and 14 engage with underside of the sofit and the outer faces of the side panels 11 and 12. Located transversely of the longitudinal run of the mould are a plurality of beams or sleepers 16. Two such sleepers are shown in Figure 1 but it will be appreciated that their number will vary depending upon the length of the beam to be moulded.

Locked in wedging engagement with each of the sleepers 16 are a pair of clamps 20 with clamping faces 21 engaging the top outer faces of the stepped bracing elements 13 and 14. Ledgers and cleats 17 and 18 are provided as reinforcement for the backs of the side panels. Theledger 17 is forced against the cleat 18 which in turn back up the side panels 11 and 12 and the clamping face 21 of the clamps 20 are spaced apart on the sleepers so that the required degree of rigidity is imparted through the bracing members 13 and 14 to the sofit and side panels. A support 19 of wood extends across the top of the sleeper 16 beneath the sofit 10.

It will be observed that the sofit 10 rests on the strengthening member 19 and on the stepped bracing elements 13 and 14 and that the side walls of the mould are held in rigid location by the bracing elements 13 and 14 which are in contact with the faces 21 of the clamp 20. Therefore, it is not necessary to use nails to form the mould in accordance with the present invention and where the mould is to be reused to form a further beam, the forms can be used immediately after chipping from the completed beam. Thus, a considerable saving in lumber and time is achieved.

Turning now to Figures 3 to 5 where the beam clamp is illustrated in more detail, it will be observed that the beam clamp 20 is made up of a clamping element 21 and a wedging element 23 (see Figures 4 and 5).

The clamping element has a channel like sleeper engaging member 24 formed by wedging an angled element 25 having an upstanding flange 26 to a plate 27. The plate 27 forms a strengthening member for the clamping face 21. Extending longitudinally on the outside of each of the flanges of the channel like sleeper engaging member 24 is a rail like projection 30 having wedging faces 31. The rail like projection extends upwardly from a point near the bottom of flange at the desired wedging angle.

The wedging element 23 has a substantially U-shaped configuration with wider web 35 than the web 25 of the channel like member of the clamping element. The outstanding flanges 36 of the wedging element 35 are tapered with an angle of inclination similar to that of the angle of inclination of the outstanding rails 30 and the tops of the flanges 36 are turned inwardly to form
lips 38 which lips are inclined at the same angle as the rails 31. In operation the sleeper engaging member is mounted on the sleeper 16 and is positioned thereon so that the clamping face 21 is positioned correctly with respect to a similar clamping face 21 of a similar element on the sleeper 16 (see Figure 1) and the wedging element is then arranged on the underside of the sleeper 16 so that the lips 38 contact the faces 31 of the rails 30. Movement of the wedging element in the wedging direction causes the lips 38 to ride on the faces 31 and to cause the webs 35 and 25 of the elements 20 and 23 to lock against the top and bottom faces of the sleeper, thereby rigidly securing the clamp to the sleeper.

It will be observed that lugs 40 are welded to the wedging element 23 to provide a hammering surface.

What I claim as my invention is:
1. A clamping structure for use with a beam member comprising in combination; a clamping jaw having a substantially channel-like beam engaging member with a web and depending flanges, a clamping face extending outwardly from the web thereof substantially at right angles thereto; and a wedging element of substantially U-shaped cross-section, inclined wedging surfaces arranged on the flanges of the beam engaging member and on the side walls of the U-shaped wedging element and adapted to co-operate with each other in relative wedging movement between the clamping jaw and the wedging element when erected on a beam to draw the channel of the beam engaging member and the U-shaped wedging element towards each other into locking engagement with the beam.
2. A clamping structure for use with a beam member, comprising in combination; a clamping jaw having a channel-like beam engaging member with a web and depending flanges, a clamping face extending outwardly from said web in opposite direction to the flanges, a longitudinally extending wedging projection on the outside of each flange of the beam engaging member, said wedging projection being inclined at an angle to the longitudinal axis of the beam engaging member; and a wedging element having a substantially U-shaped cross-section of wider web than the beam engaging member, and carrying on the inside of each of its flanges an inwardly directed longitudinally extending lip, which lip is longitudinally inclined and is adapted to wedgingly engage the wedging projection on erection of the said elements on opposite sides of a beam, whereby relative movement between the clamping jaw and the wedging element in the wedging direction draws the channel of the beam engaging member and the wedging element into locking engagement with the beam.

3. A clamp for use with concrete moulds comprising in combination; a beam, a pair of opposed clamping elements each having a substantially channel-like beam engaging member, a clamping face extending outwardly from the web thereof substantially at right angles thereto; and a wedging element for each of said clamping elements, each said wedging element having a substantially U-shaped cross-section, inclined wedging surfaces arranged on the side members of the beam engaging member and on the side members of the wedging element and adapted to cooperate with each other in relative wedging movement between the elements when erected on the beam to draw the webs of the said elements toward each other into locking engagement with the beam.

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