

June 7, 1932.

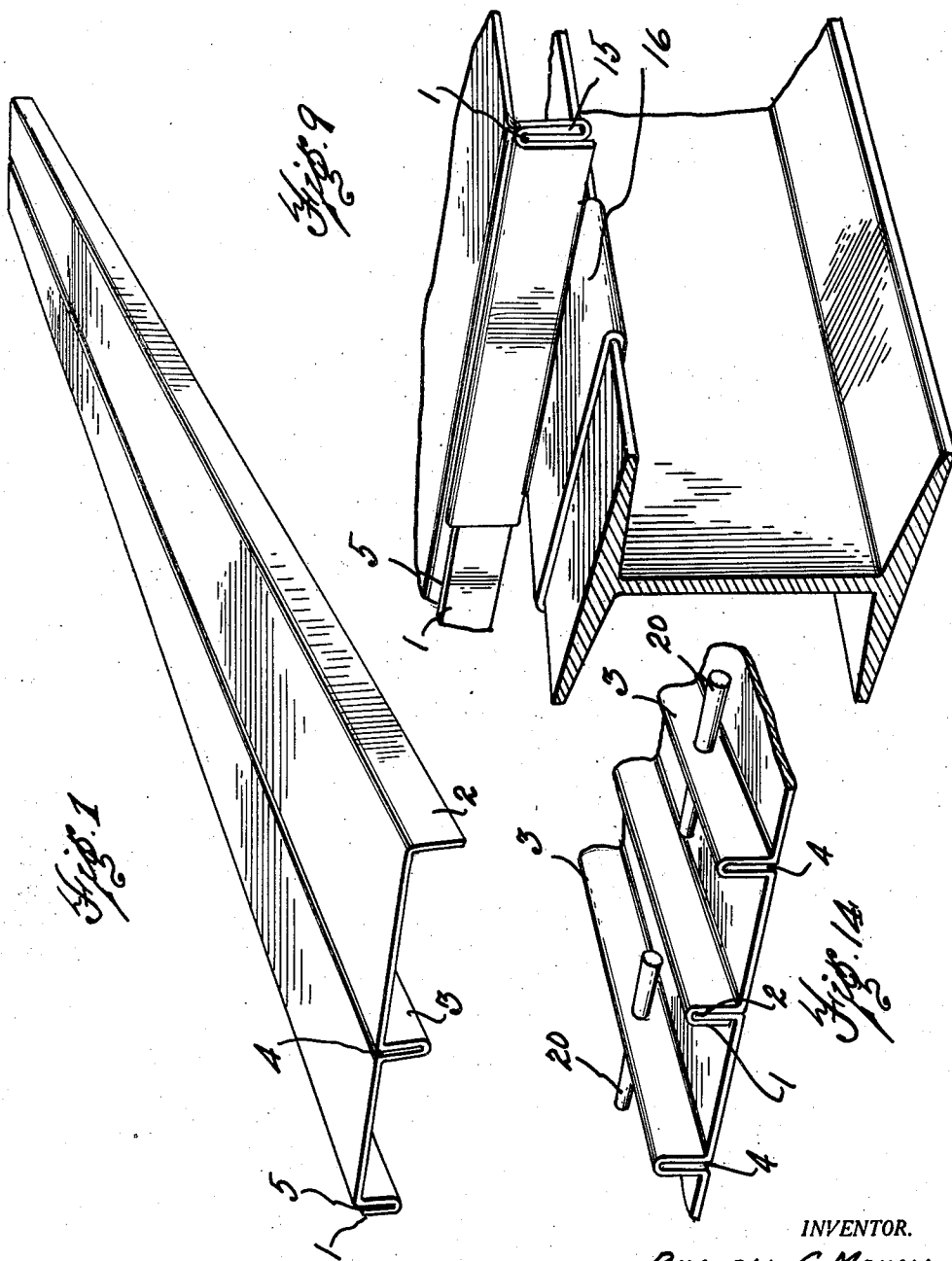
R. C. MAHON

1,862,227

DECK PLATE

Filed Sept. 14, 1928

5 Sheets-Sheet 1



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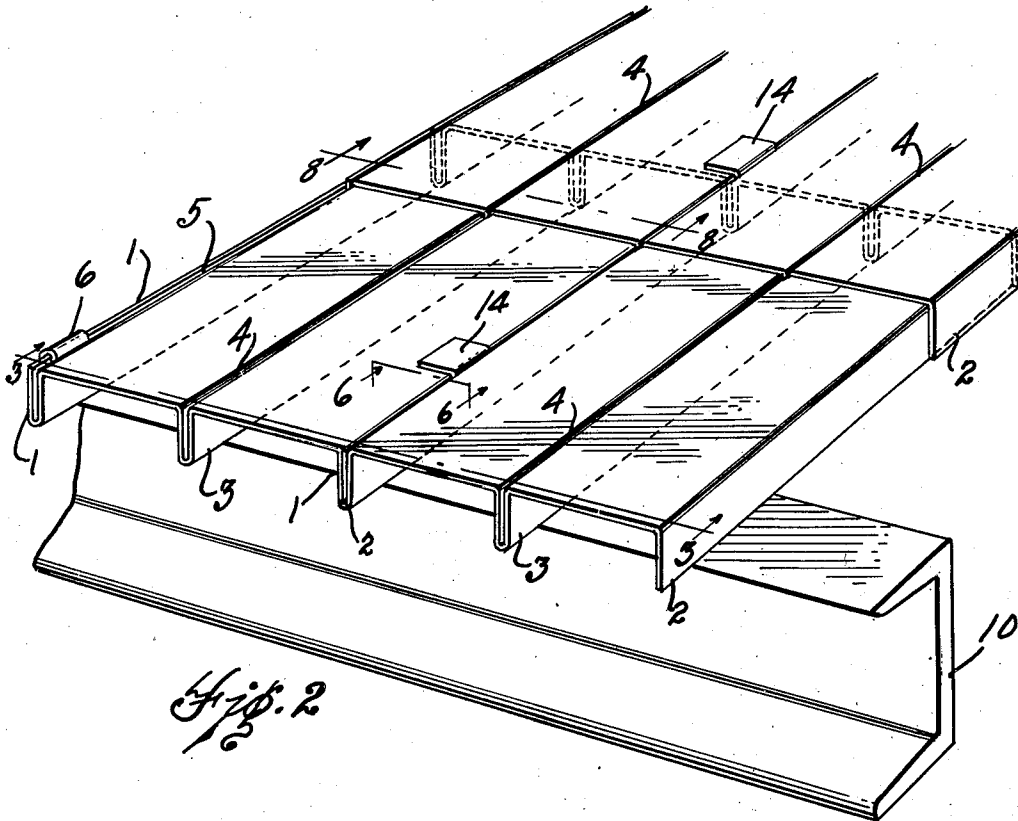
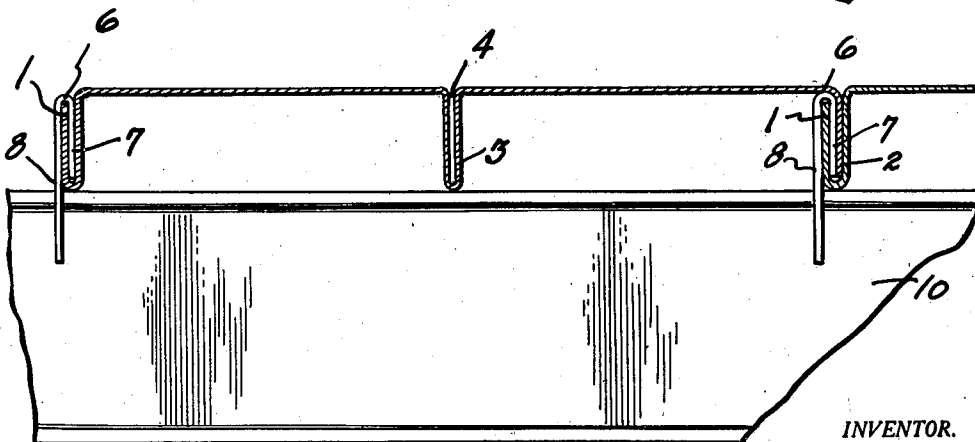
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DECK PLATE

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5 Sheets-Sheet 2



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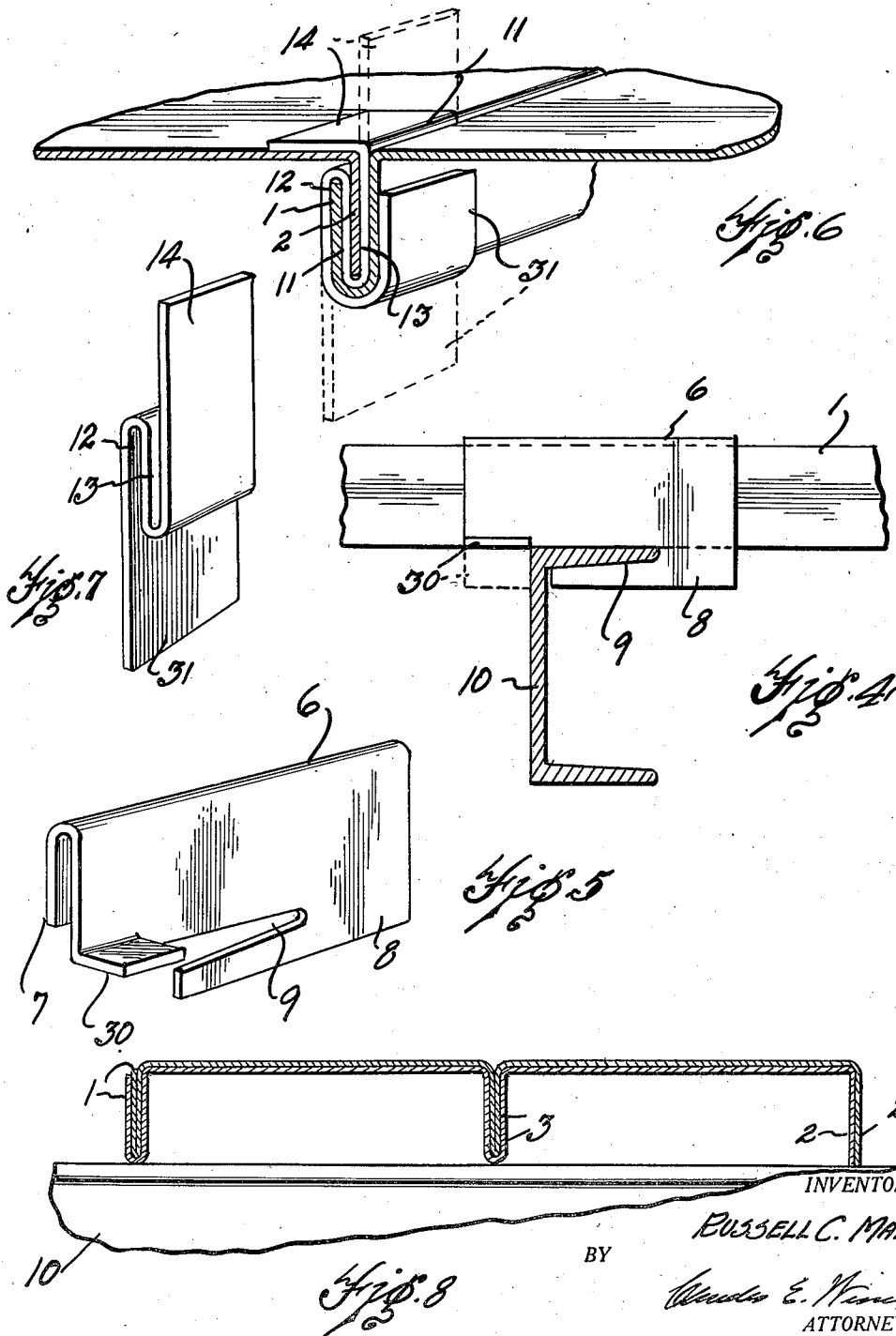
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DECK PLATE

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5 Sheets-Sheet 3



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DECK PLATE

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5 Sheets-Sheet 4

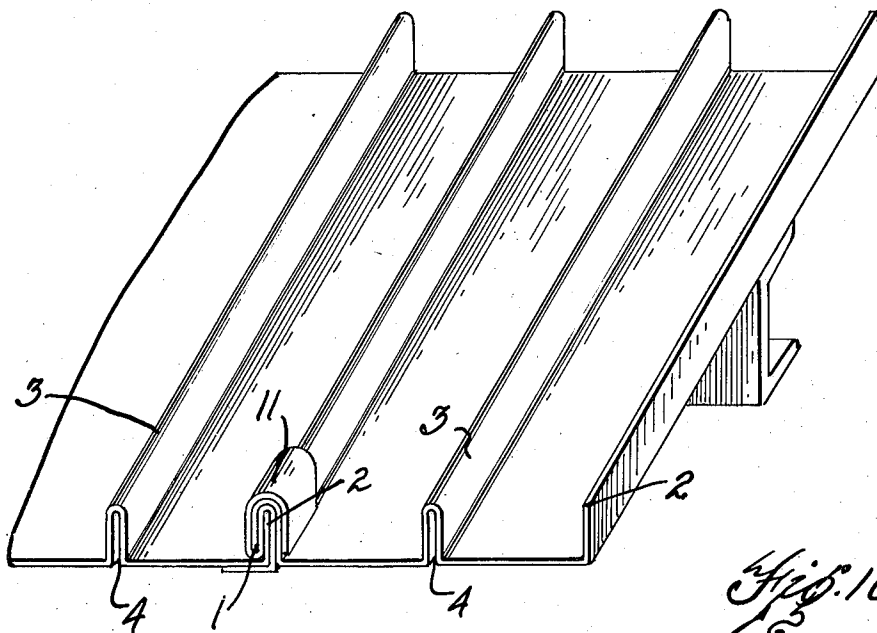


Fig. 10

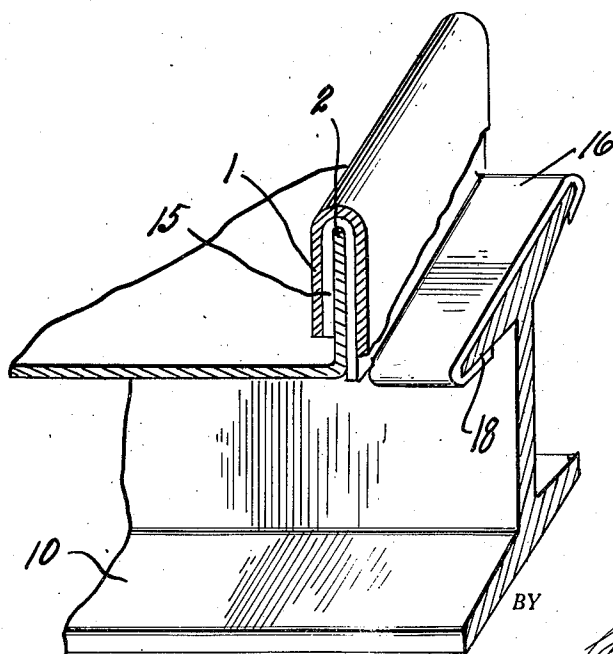


Fig. 13

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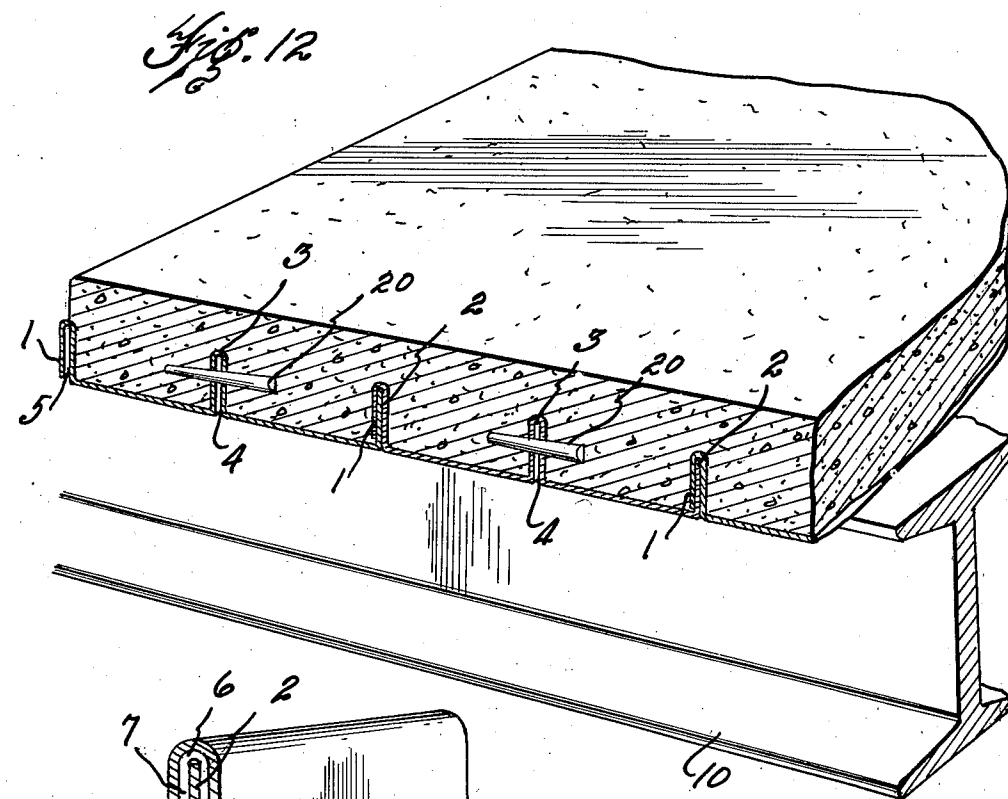
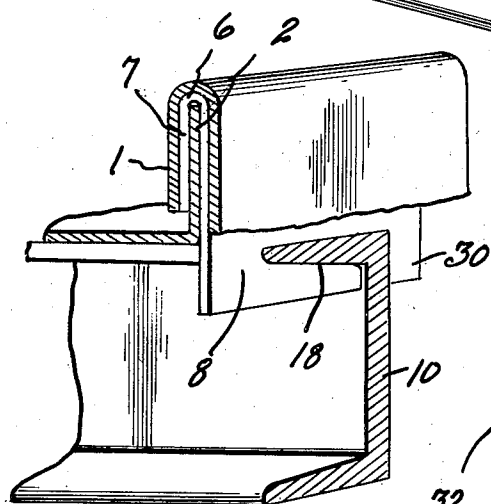
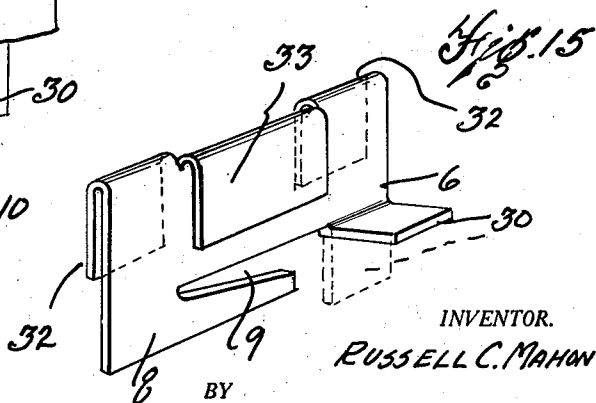
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5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

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DECK PLATE

Application filed September 14, 1928. Serial No. 305,889.

This invention relates to deck plates and the object of the invention is to provide a deck plate which may be used in the construction of roofs, decks, floors and the like.

5 Another object of the invention is to provide a means for securing the deck plates to the supporting beams on which the deck plates are supported and to provide a means arranged to hold the adjacent deck plates in
10 position with the surfaces extending at the same level.

Another object of the invention is to provide a means for firmly securing the deck plates to the supporting beams with a minimum of time and labor.

A further object of the invention is to provide a deck plate which may be utilized for building up roofs, decks or floors in sections.

20 These objects and the several novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction by which these objects are attained is shown in the accompanying drawings in which—

25 Fig. 1 is a perspective view of a deck plate embodying my invention.

Fig. 2 is a perspective view of the deck plates as assembled for the ordinary flat roof or deck.

30 Fig. 3 is an enlarged section taken on line 3—3 of Fig. 2.

Fig. 4 is a side view showing one of the clips for securing the deck plates to a channel beam.

35 Fig. 5 is a perspective view of the clip ready for use.

Fig. 6 is a section in perspective taken on line 6—6 of Fig. 2.

40 Fig. 7 is a perspective view of the clip shown in Fig. 6 before assembly with the deck plates.

Fig. 8 is a section taken on line 8—8 of Fig. 2.

45 Fig. 9 is a perspective view showing a clip for securing the deck plates to an I beam.

Fig. 10 is a perspective view showing the deck plates reversed with the ribs and flanges on the upper side to provide a ribbed roofing.

50 Fig. 11 is a sectional perspective showing

the clip for securing this type of roofing to the channel beam.

Fig. 12 is a sectional perspective showing the deck plates reversed to bring the ribs and flanges on the upper side and showing the
55 deck plates and ribs covered with concrete to provide a deck or floor.

Fig. 13 is a perspective view showing the I beam clip used in the construction in Fig. 12.

Fig. 14 is a perspective view showing the
60 pins which may be embedded in the concrete in Fig. 12.

Fig. 15 is a view showing an alternative form of clip.

The deck plate is shown in Fig. 1 and is
65 formed from sheet metal having a depending return bent flange 1 at one edge and a depending flange 2 at the opposite edge. Intermediate the edges this deck plate is provided with a depressed rib 3 equal in depth
70 to the flanges 1 and 2 providing a space 4 therein and the return bent flange 1 provides a space 5 along the edge of the deck plate. These deck plates are assembled as shown in
75 Fig. 2 with the flange 2 of one deck plate engaging in the space 5 of the next adjacent deck plate and these deck plates are also assembled in alignment endwise and inter-engage as will be understood more particularly
80 from Fig. 8. In order to secure the deck plates to the supporting beam 10 a clip 6 is provided, shown in Fig. 3, having a depending flange 7 adapted to be inserted in the space 5 in the return bent edge 1 of the deck
85 plate and having a depending portion 8 which, as shown in Fig. 3, is provided with a notch 9 for the flange of the channel beam 10. This clip is inserted in the edge of the deck plate as shown and as it is movable
90 longitudinally of the deck plate it may be driven onto the flange of the channel beam with a hammer to firmly secure the deck plate thereto. This clip is shown in perspective
95 in Fig. 5 and is provided with an outwardly turned lug 30 which may be bent down to the position shown in dotted lines in Fig. 4 after the clip has been driven onto the channel beam to engage behind the channel beam and thus prevent movement of the clip in either
100 direction. The flange 2 of the next adjacent

deck plate is then inserted in the space 5 as shown at the right of Fig. 3 and engages over the clip as shown.

In order to hold the adjacent deck plates in position between the supporting beams so that the surfaces extend in a common plane and the two deck plates are locked together a clip 11 is provided as shown in Fig. 7. This clip is formed from sheet metal and is provided with a channel 12 in which the return bent edge of the flange 1 of one deck plate may be inserted and the lower end 31 of this clip is bent around the return bent flange as shown in Fig. 6. The depending flange 2 of the next adjacent deck plate is then inserted in the channel 13 in the clip and the end 14 of the clip is then bent over the adjacent deck plate as shown in Fig. 6. By this arrangement the deck plates are secured together and the adjacent edges of the deck plates are held at a common level and are prevented from moving up or down in relation to each other. The deck plates are built up in this manner and the flanges 1 and 2 together with the depending ribs 3 provide girders which strengthen the deck plates to withstand pressure. As the deck plates overlap endwise expansion or contraction longitudinally is readily absorbed and by providing the longitudinal spaces 4 in the central ribs of the deck plates lateral expansion or contraction is readily absorbed. When the deck plates are used in this manner to provide a flat roof as shown in Fig. 2, layers of insulating material, such as asbestos board or the like, may be laid thereon and covered with weatherproofing material such as tar and a final layer of gravel may be used to complete the roofing surface.

When the deck plates are to be secured to I beams instead of channel beams as hereinbefore described a different form of clip is provided which is shown in Fig. 9. In this form the clip is provided with a depending flange 15 adapted to be inserted in the space 5 in the return bent edge 1 of the deck plate and this clip is provided with a portion 16 bent at a right angle to the body of the clip and having ends adapted to be bent under the edges of the I beam as shown. This prevents movement of the clip in either direction in the space 5 and the flange 15 may be covered by the depending flange 2 of the next adjacent deck plate in the same manner as is shown at the right of Fig. 3.

The deck plates may be reversed in position as shown in Fig. 10 to provide a ribbed roofing. In this case the deck plates fit together in the same manner as shown in Fig. 2 but are reversed so that the ribs and flanges extend from the upper side of the deck plates. In this form of roof the flanges of the deck plates extend upwardly and fit together in a manner to prevent leakage and it is necessary to secure these deck plates to the purlins

or supporting beams without cutting openings through the deck plates through which leakage could occur. For this purpose when the roof is supported on channel beams the clip 6 shown in Figs. 4 and 5 is used with the exception that in this case the flange 7 engages over the flange 2 of one of the deck plates, as shown in Fig. 11, and the return bent flange 1 of the next adjacent deck plate engages over the flange 7 of the clip 6. Clips 11 are also used as shown in Fig. 10 to secure the deck plates together and of course, the clips are reversed in position due to the reversing of the deck plates. If the supporting beams for this type of roofing are I beams the clip shown in Fig. 9 is utilized for securing the deck plates to the I beams and are inter-engaged with the deck plates as shown in Fig. 13.

These deck plates may also be used in the reverse position for building up a floor or a flat deck as will be understood from Fig. 12. In this case the deck plates are laid on the supporting I beams with the ribs and flanges extending upwardly as shown and the clip shown in Fig. 9 is used to secure the deck plates to the I beams as shown in Fig. 13. In this case the flange 15 of the clip engages over the flange 2 of one deck plate and the return bent flange 1 of the next adjacent deck plate fits over the clip as shown and the ends of the clip are bent over the edges of the I beam to secure the deck plates thereto. Between the beams clips 11 are used as shown in Fig. 10 to secure the deck plates together and hold them at the same level and the concrete is poured over the ribs and flanges of the deck plates as shown in Fig. 12. The ribs and flanges provide strength and combine with the concrete to form reinforcements and in order to firmly anchor the deck plates in the concrete the intermediate ribs 3 of the deck plate may be apertured and tapered pins 20 may be driven through these apertures as shown in Figs. 12 and 14. When the concrete is poured these pins are embedded in the concrete and prevent any possibility of the ribs freeing themselves in the concrete after the concrete has set. Reinforcing bars may be laid between and over the ribs of the deck plates if desired to strengthen the concrete floor when considerable weight is to be supported by the floor. This arrangement allows a floor or deck to be laid without providing mold boards for the under side of the floor and without using jacks to hold the mold boards in place. This provides a floor of low cost and the ribs reinforce the concrete between the supporting beams and combine with the concrete to provide an efficient floor unit.

For supporting greater weights the deck plates may be made of heavier gauge steel and may be provided with deeper ribs and flanges to increase the strength of the deck plates as will be readily understood. As the

deck plates may overlap at the ends to any extent desired deck plates of the same length may be used in a building in which the spacing of the beams for supporting the deck plates varies to considerable extent.

5 The channel beam clip shown in Fig. 5 may be made reversible by slitting the flange 7 to provide end portions 32 which may be bent over onto the opposite side of the clip as shown in Fig. 15. This clip is used when the
10 deck plates are arranged as shown in Fig. 3, and the lugs 32 may be engaged over the return bent flange 1 of the deck plate when the upper edge of the supporting channel beam extends in one direction while by reversing
15 the clip the flange 33 may be engaged over the return bent edge 1 of the deck plate when the edge of the channel beam extends in the opposite direction as will be understood from
20 Figs. 3 and 15. This provides a clip which is reversible to engage the channel beam flange from either side and may be driven onto the flange to firmly secure the deck plates thereto.

From the foregoing description it becomes
25 evident that the device is very simple and efficient in operation, may be used in several different ways, is of low manufacturing cost and provides a device which accomplishes the objects described.

30 Having thus fully described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is—

A clip for locking the flanges of deck plates
35 in inter-engaged relation to prevent relative movement of such deck plates at joints lying between and unsupported by supporting joists or purlins, said clip being formed in substantial S shape of a single piece of material and comprising top and bottom members
40 connected by an intermediate member, said top and bottom members lying on opposite sides of and being substantially parallel to said intermediate member, said top member
45 having an extension lying in the same plane therewith and projecting beyond one end of said intermediate member, and said bottom member having an extension lying in the same plane therewith and projecting beyond
50 the opposite end of said intermediate member, said extensions being adapted to be bent over the flanges of said deck plates in the assembly thereof.

In testimony whereof I sign this specification.
55

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