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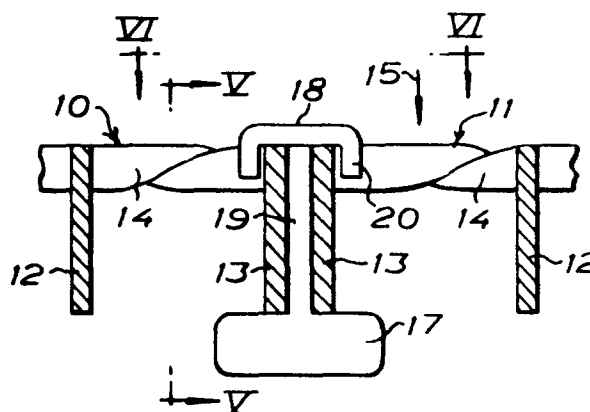
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⑤④ Load transmitting fastening elements for gratings.

⑤⑦ A fastening element (16) for the interconnection of gratings (10, 11). The fastening element is of I-shape and intended to be placed between the edge steel members (13) of two juxtaposed gratings so that the steel members rest on the supporting surfaces (21) formed on the lower flange (17) of the fastening element. The upper flange (18) of the fastening element has lugs (20) which are bent out of a flange side face in one direction longitudinally of the edge steel members. After the mounting of the fastening element said side face of the flange (18) is bent down into engagement with the upper edge surfaces of the edge steel members (13) whereby the lugs (20) are pushed down outside the remote side faces of the edge steel members (13).



LOAD TRANSMITTING FASTENING ELEMENTS FOR GRATINGS

When walkways or other supporting surfaces are formed with the aid of gratings which are placed in juxtaposition between two seatings, there may arise some difference in level between two freely juxtaposed gratings if one of the gratings is subjected to load or if both gratings are subjected to loads of different sizes. With large span widths and with gratings of insufficient strength the difference in level between the gratings may be particularly noticeable by and risky to pedestrians trafficking the walkways. It has therefore been found necessary to unite the juxtaposed gratings in some way or other. Usually, this has been done by screwing together the gratings before the laying thereof, or by connecting them together in some other manner with the aid of fastening elements, e.g. according to the published Swedish patent application 7403682-3. The prior-art connecting methods and fastening elements have, however, been troublesome in use and have often made it necessary to mount the fastening elements before the laying of the gratings, or to insert the fastening elements from below.

The present invention has for its object to provide a simple fastening element which after the laying of the gratings can be mounted in a simple manner without making it necessary to lift the gratings in relation to each other or to insert the fastening element from below.

To this end, the fastening element is substantially of I-shape having upper and lower flanges and a web between the flanges, which is adapted to extend downwards between the edge steel members of two juxtaposed gratings and which is of substantially the same length as the height of the edge steel members at right angles to the plane of the gratings, the lower flange of the fastening element being formed as a supporting surface for supporting

the edge steel members of the gratings, while the upper flange of the fastening element has holding lugs which are bent out of a flange side face in one direction longitudinally of the edge steel members, and which, after the mounting of the fastening element under downward bending of said side face of the upper flange into engagement with the upper edges of the edge steel members, are adapted to project downwardly outside the remote side faces of the two edge steel members.

10 The invention will be described in greater detail hereinbelow with reference to the accompanying drawing in which:

Fig. 1 shows a fastening element according to the invention, as seen from one large side;

15 Fig. 2 is a view taken on the line II-II in Fig. 1;

Fig. 3 is a view taken on the line III-III in Fig. 1;

20 Fig. 4 is a section of two juxtaposed gratings which have been united by means of a fastening element according to the invention;

Fig. 5 is a section taken on the line V-V in Fig. 4;

25 Fig. 6 is a plan view taken on the line VI-VI in Fig. 4.

Fig. 4 shows two gratings 10, 11 which are placed in juxtaposition. The gratings consist of a series of juxtaposed supporting steel members 12, 13 which are interconnected by means of transverse rods 14 spaced suitable distances apart along the upper sides of the supporting steel members 12, 13. The supporting steel members and the transverse rods can be interconnected by pressure welding. In the embodiment illustrated the transverse rods are of square cross-section, the rods being twisted in their longitudinal direction. The outer longitudinal supporting steel members 13 will herein-

after be designated "edge steel members". The supporting steel members 12 and the edge steel members 13 rest freely on seatings (not shown). Between the seatings the gratings can therefore move vertically in relation to each other if the gratings are loaded differently much or if only one of the gratings is subjected to load. Thus, if the grating 11 is loaded in the direction of the arrow 15 the grating, if no special measures were taken, would sink a rather considerable distance down below the level of the grating 10, particularly if the gratings have been given too slender dimensions or have large free span widths. These movements between the juxtaposed gratings 10, 11 are eliminated by the use of a fastening element according to the invention.

Figs. 1-3 show an embodiment of a fastening element 16 according to the invention. In this instance, the fastening element is punched from a flat piece of sheet metal approximately into I-shape having upper and lower bars or flanges 17 and 18, respectively, with a web 19 therebetween. The upper flange 18 of the fastening element besides has outwardly bent holding lugs 20 which have been bent at right angles in one direction from the flat piece of sheet metal.

The lower flange 17 has upper supporting edge surfaces 21 on which the edge steel members 13 of the juxtaposed gratings 10, 11 are adapted to rest. In the embodiment illustrated, the edge surfaces 22 of the upper flange 18, which face the supporting edge surfaces 21, are cut obliquely outwardly and upwardly at an angle of say 15° to a normal of the web 19. In the embodiment illustrated the lower flange 17 has been given a larger height than the thickness of the piece of sheet metal so that the lower flange 17 can fulfill its task of a supporting cross beam in a better way.

The distance between the lower and upper flanges 17, 18, i.e. the length of the web 19, is so adapted

to the height of the edge steel members 13 that said steel members will be retained between the lower flange 17 and the upper flange 18 after the latter has been bent down, in connection with the mounting, into the position shown in Figs. 4-6, where the holding lugs project downwardly on either side of the edge steel members 13, thereby fixing the fastening element in position and preventing rotation of said element.

The fastening element according to the invention is preferably manufactured from stainless steel instead of ordinary hot-galvanized steel since the zinc layer of a hot-galvanized fastening element might crack, with resulting corrosion of the fastening element. The fastening element is manufactured in different sizes with regard to the heights of the supporting steel members and edge steel members of the gratings.

Mounting of the fastening element can be realized after the gratings have already been brought into position. It is not necessary to raise the gratings, and neither need the fastening element be inserted in position from below. For mounting, use is made of a screw driver to bend apart the edge steel members 13 of the gratings 10, 11 sufficiently for the fastening element, which at this time is of the appearance illustrated in Figs. 1-3, to be pushed down between the edge steel members 13, the lower flange 17 being parallel with the edge steel members 13. After the fastening element has been moved a sufficient distance downwards, the element is turned so that the lower flange 17 will extend transversely of the longitudinal direction of the edge steel members 13. Then the upwardly projecting upper flange 18 is hammered down into the position shown in Figs. 4-6. When the upper flange is hammered down in this way use can be made of a screw driver to keep the fastening element in the correct position, with the lower flange 17 directed transversely of the edge steel members 13.

If the fastening element is retained in this way the play between the fastening element and the edge steel members 13 will besides be the smallest possible. The fastening elements can be mounted spaced 3 to 4 dm apart, and normally use can be made of two to four fastening elements per length of grating, depending upon the span width and the permissible load.

The sloping surfaces 22 at the lower edge of the upper flange 18 facilitate turning the fastening element 16 during mounting since the surfaces 22 owing to their obliquity will function as guiding cam surfaces.

When the fastening elements according to the invention are to be dismounted the downwardly bent upper flange 18 is first bent up with the aid of a screw driver into upright position and then the fastening element is rotated through a quarter of a turn with the aid of a pair of tongs or other tool so that the lower flange 17 of the fastening element can be withdrawn from between the two edge steel members 13.

CLAIMS

1. A fastening element for interconnecting juxtaposed gratings (10, 11) extending between seatings and having edge steel members (13) along their side edges between said seatings, c h a r a c t e r i s e d i n
5 that the fastening element (16) is substantially of I-shape having upper and lower flanges (17, 18) and a web (19) between the flanges, which is adapted to extend downwards between the edge steel members of two juxtaposed gratings and which is of substantially the same
10 length as the height of the edge steel members at right angles to the plane of the gratings, the lower flange (17) of the fastening element being formed as a supporting surface (21) for supporting the edge steel members (13) of the gratings, while the upper flange (18) of
15 the fastening element has holding lugs (20) which are bent out of a flange side face in one direction longitudinally of the edge steel members, and which, after the mounting of the fastening element under downward bending of said side face of the upper flange (18) into engagement with the upper edges of the edge steel members
20 (13), are adapted to project downwardly outside the remote side faces of the two edge steel members (13).

2. A fastening element as claimed in claim 1, c h a r a c t e r i s e d i n that the lower flange (17) is
25 of a height larger than the thickness thereof.

3. A fastening element as claimed in claim 1 or 2, c h a r a c t e r i s e d i n that the edge surfaces (22) of the upper flange (18), which before the mounting of the fastening element (16) face the supporting surfaces
30 (21) of the lower flange (17), are inclined upwardly and outwardly from the web (19) of the fastening element.

FIG. 1

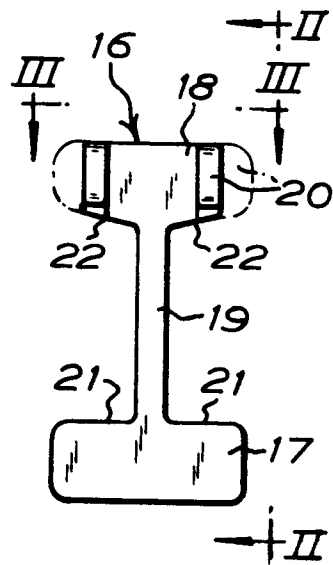


FIG. 2

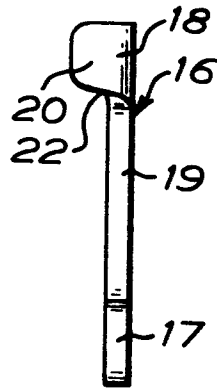


FIG. 3

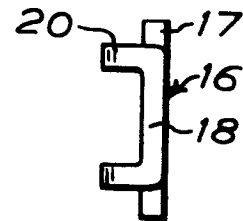


FIG. 4

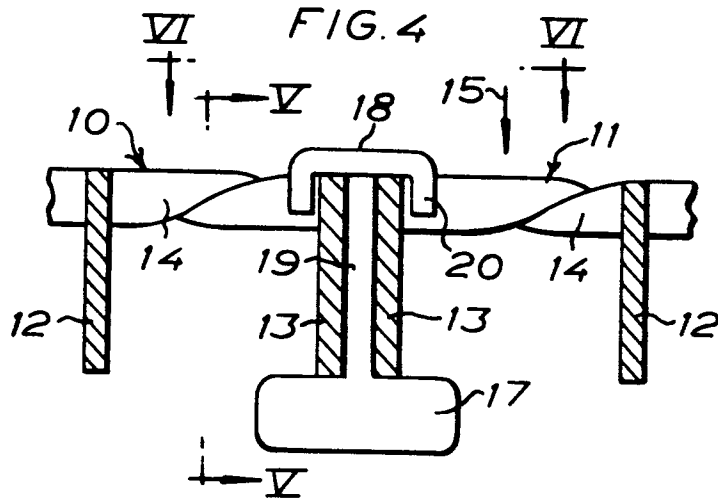


FIG. 5

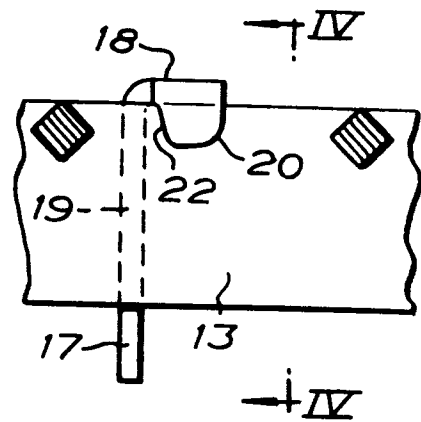


FIG. 6

