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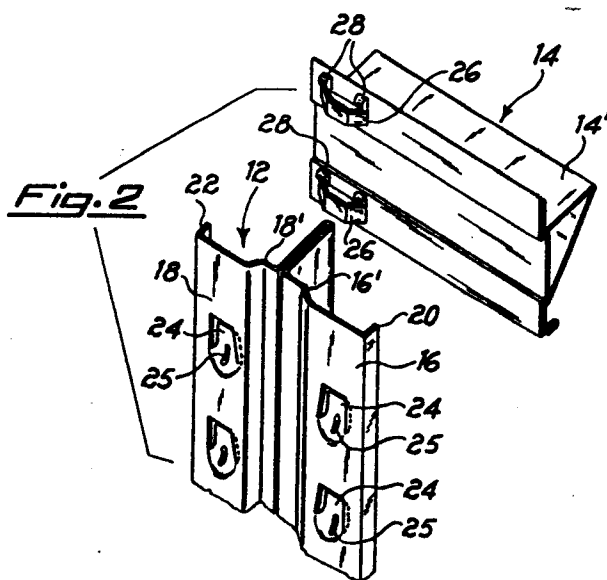
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I-20123 Milano(IT)(54) **Betterments to composite sheet metal shelvings.**

(57) This invention refers to betterments to composite sheet metal shelvings with a relatively limited thickness, fitted with up-rights and cross-members, betterments, that essentially are characterised by the said up-rights being structurally "T"-shaped and having numerous "teeth", made by cutting and without removing material on the shaped "wings" of the said "T", each one of the teeth has a side converging towards the upper horizontal face, being drawn and are spaced slightly and substantially parallel to the said wings, engaging on the teeth thereof, assisted by the said converging side and hooking thereto, "cavities" pre-arranged on the opposite ends of the cross-members, cavities that have slight projections uppermost that contrast both with the upper side of the respective inserted tooth, and sideways, with the said shapes of the wings, the whole complex is designed so that the connections between the up-rights and the cross-members ensure perfect stability and high mechanical resistance of the said shelvings, as well as hiding the said connections.



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"BETTERMENTS TO COMPOSITE SHEET METAL SHELVINGS"

This invention refers to betterments made to composite sheet metal shelvings.

Shelvings of the type defined above are known to the art, the said shelvings being essentially made-up of up-rights and cross-members of profiled sheet metal having a relatively limited thickness and suitably drawn and cut, the up-rights of which have numerous conical "teeth" co-planar to one of their surfaces, obtained by cutting away part of the sheet metal and designed to be inserted into suitable "cavities", or slots located at the opposite ends of the cross-members.

The connection and anchorage between the up-rights and cross-members of the shelvings is achieved by simply inserting the cavities over the teeth. These known shelvings, although being easy and quick to assemble, had several draw-backs and limitations, mainly due to the fact that the partial removal of material to form the said "teeth" significantly reduced the load-bearing cross-section of the up-rights and hence this weakened their mechanical resistance, in addition, the cross-members were not positioned in a perfectly stable manner with respect to the up-rights, since their mutual connection, by being made between the conical sides of the teeth with the coherent conical sides of the slots, did not ensure the stable connection. Finally, it must be noted that the partial removal of material, in relation to the teeth, made the connection between the up-rights and cross-members clearly visible, thereby worsening the aesthetic appearance of the said shelvings. The above having been said, the main aim of this invention is to overcome the limitations and draw-backs mentioned above and more specifically it consists in betterments made to composite sheet metal shelvings having a limited thickness fitted with up-rights and cross-members, betterments which are essentially characterised by having the said up-rights structurally "T"-shaped, on the shaped "wings" of which numerous "teeth" are produced by cuts and without removal of material, each of the teeth has one side converging towards the horizontal upper face which by being drawn appear slightly spaced and substantially parallel to the said wings, engaging with the teeth, assisted by the said converging side and hooking therein, "cavities" pre-arranged on the opposite ends of the cross-members, "cavities" that have slight projections in their upper sections designed to contrast both with the upper side of the respective inserted tooth, and sideways with the said forms of the wings, the whole com-

plex is designed so that the connections between the up-rights and cross-members ensure perfect stability and high mechanical resistance of the said shelvings, as well as hiding the said connections.

5 The advantage achieved is that the shaped portions present a mixed-linear profile and are folded over at their opposite ends, thereby avoiding sharp edges, this mixed-linear profile also contributes to increase the mechanical resistance of the up-rights themselves.

10 A further advantage is that the teeth of the up-rights have a greater thickness, which besides strengthening the said teeth, contrasts at the rear and lower sections with the cavities of the relative inserted cross-member, thereby contributing to maintain the said cross-member positioned and anchored in a stable manner with respect to the up-rights.

15 These and other characteristics of the invention will appear clear during the following detailed description, referred to the attached drawings, in which:

20 fig.1 represents a perspective and partial view of a shelving according to the betterments of the invention;

25 fig.2 represents a perspective and partial view of an up-right and a cross-member connected to one another;

30 fig.3 represents a front view of the detail of an up-right with the cross-member anchored;

fig. 4 represents the plan view of the up-right with the cross member of fig.3;

35 fig.5 is a cross-section along line V-V of fig.4 and

figs 6 and 7 represent perspective and partial views of several structural shapes of various cross-members.

40 With an initial reference to figure 1, the shelvings, indicated overall by 10, consist of up-rights 12 and cross-members 14 made of sheet metal having a relatively limited thickness. The up-rights 12, one of which is high-lighted in the detail of figure 2, are structurally "T" shaped with "wings" 16 and 18, shaped at 16' and 18' with a mixed-linear profile and terminate with a fold in 20 and 22 at their opposite ends, thereby avoiding sharp edges.

45 Numerous teeth 24 suitably spaced are made on the said wings 16 and 18, via cuts and without the removal of material, each one of which has a vertical converging side on the horizontal upper face for the purposes detailed later, these said

teeth 24 which are drawn have a slightly greater thickness 25 and appear slightly spaced and substantially parallel to the said wings 16 and 18 of the up-rights 12.

The cross-members 14, as illustrated in figs.1,2,3,4 and 5 are structurally shaped with a variously worked, but substantially triangular profile and have at their opposite ends, one of which may be readily viewed in fig.2, two "cavities" 26 vertically aligned with one another, but spaced by a distance analogous to that of the teeth 24.

Two slight projections 28 are present above and at the side of each one of the cavities 26 which with the cross-member 14 connected to the up-right 12 by the insertion of the said cavities 26 about the teeth 24, contrast both with the folded part 20 and with the shaped part 16' (fig.4), as well as with the horizontal faces of the teeth 24 themselves, so that the said cross-member 14 appears perfectly positioned and anchored to two teeth.

Obviously, the said projections 28 will contrast with the folded part 22 and with the shaped section 18' respectively, whenever the cross-member 14 is connected to the teeth 24 forming part of the wing 18.

In addition, stable positioning of the cross-member 14 is integrated by engagement of the slightly increased thickness 25 of the teeth 24 with the rear and lower section of the cavities 26 as may be readily noted in fig.5, so that each of the said cavities 26 is inserted at the respective tooth 24, insertion that is made easy by the said convergence of one of its sides, with contrasting and engaging points as defined above, which prevent any displacement with respect to the up-right 12.

In fig. 3 it can be observed how connection of the cross-member 14 to the up-right 12 is virtually invisible frontally, thereby giving the shelving 10 a pleasant aesthetic appearance. The cross-members 14, when connected, present one side 14" positioned horizontally with respect to the up-rights 12 so as to form a supporting surface for the shelves 30, one of which is illustrated with a dashed line in fig.5, these thereby complete the shelving 10.

Now passing to figs.6 and 7, the said figs. illustrate possible structural variants of cross-members and more precisely fig.6 presents a cross-member 14a with a substantially "C"-shaped profile, while fig.7 presents a cross-member 14b with a virtually rectangular profile.

However, since the invention has been described and illustrated merely in an exemplificative, but non-limitative manner, it must be understood that the said invention may undergo variants and changes by experts of the art, without by so doing leaving the sphere of one, or more of the claims that follow.

Claims

1) Betterments to composite sheet metal shelvings, having a relatively limited thickness, complete with up-rights and cross-members, wherein the said up-rights (12) are structurally "T" shaped and on the shaped "wings" of which (16-18) numerous "teeth" (24) are made by cutting and without removing material, each one of which has one convergent side facing the horizontal upper face, which drawn are slightly spaced and substantially parallel to the said wings (16-18), the "cavities" (26) engage on the teeth (24) aided by the said convergent side and hook therein, the said cavities being pre-arranged on the opposite ends of the cross-members (14), cavities (26) which on their upper section have slight projections (28) that contrast both with the upper side of the respective tooth - (24) inserted, and laterally with areas (16'-18') of the said shapes of the wings (16-18), the complex is so designed that the connections between the up-rights (12) and cross-members (14) ensure perfect stability and high mechanical resistance of the said shelving (10), as well as hiding the connections.

2) Betterments to shelvings, according to claim 1, wherein the said shapes of the wings (16-18) present a mixed-linear profile and are folded at their opposite ends (20-22), avoiding sharp edges and this mixed-linear profile furthermore contributes to increase the mechanical resistance of the up-rights (12) themselves.

3) Betterments to the shelvings, according to claim 1, wherein the said teeth (24) have a bulged part (25) that, besides stiffening the said teeth (24) contrasts on the back and bottom section with the cavities (26) of the relative inserted cross-member - (14), thereby contributing to maintain the cross-member (14) positioned and anchored in a stable manner with respect to the up-rights(12).

4) Betterments to shelvings, according to claim 1, wherein the said cross-members (14) have at least two of the said cavities (26) at their relative opposite ends with the relative slight projections - (28).

5) Betterments to shelvings, according to claim 4, wherein the cavities (26) present at the ends of each cross-member (14) engage with two teeth - (24) of the up-right (12).

6) Betterments to the shelvings, according to the previous claims, wherein the cross-members - (14) when connected, have one of their sides (14') arranged horizontally with respect to the up-right - (12) to form a supporting surface for the shelves - (31) to complete the shelving structure (10).

7) Betterments to shelvings, according to claims from 1 to 6 wherein the cross-members - (14) are structurally shaped with a substantially rectangular profile with one, or more sides worked in various ways to increase mechanical resistance.

8) Betterments to shelvings, according to claims from 1 to 6, wherein the cross-members - (14a) are structurally shaped with a "C" profile having one, or more sides worked in various ways to increase mechanical resistance.

9) Betterments to shelvings, according to claims from 1 to 6, wherein the cross-members - (14b) are structurally shaped having a rectangular profile with one, or more sides worked in various ways to increase mechanical resistance.

10) Betterments to composite sheet metal shelvings, everything substantially as described and illustrated in an exemplificative manner.

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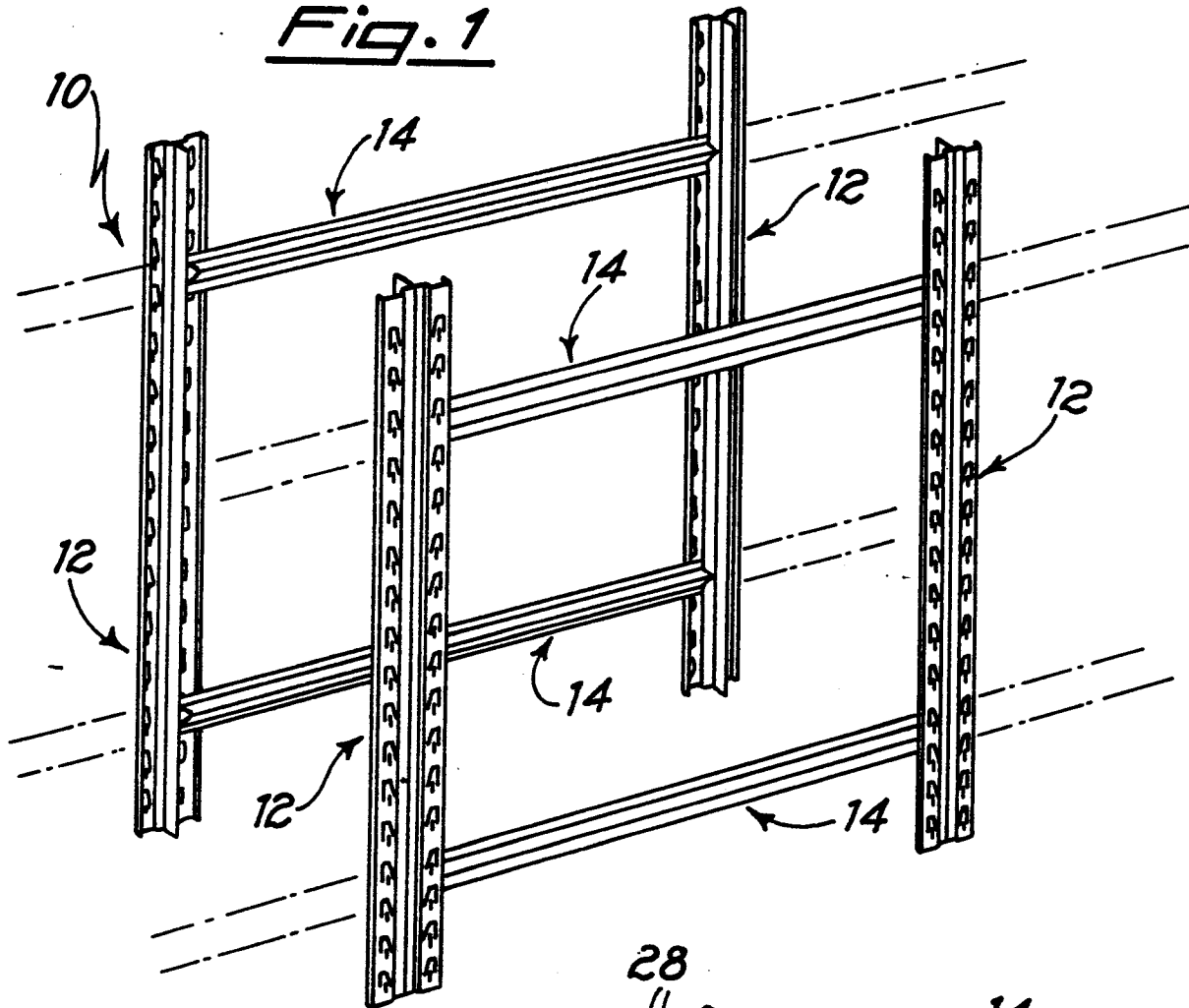
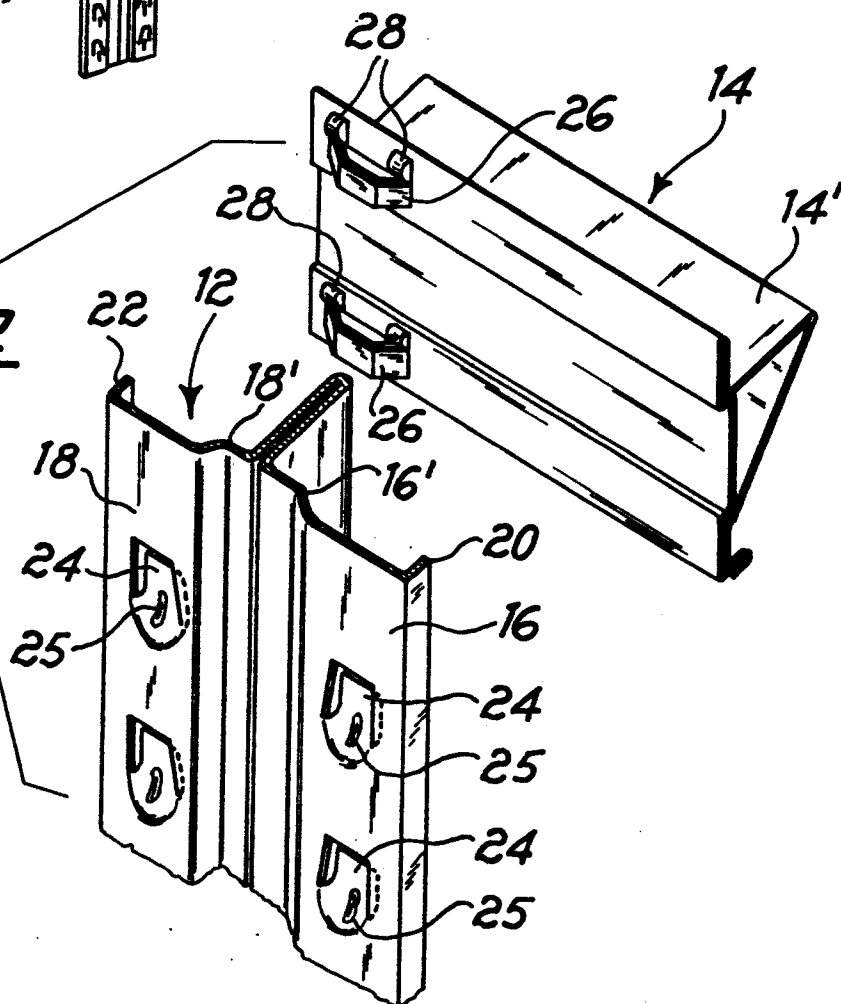
Fig. 1Fig. 2

Fig. 4

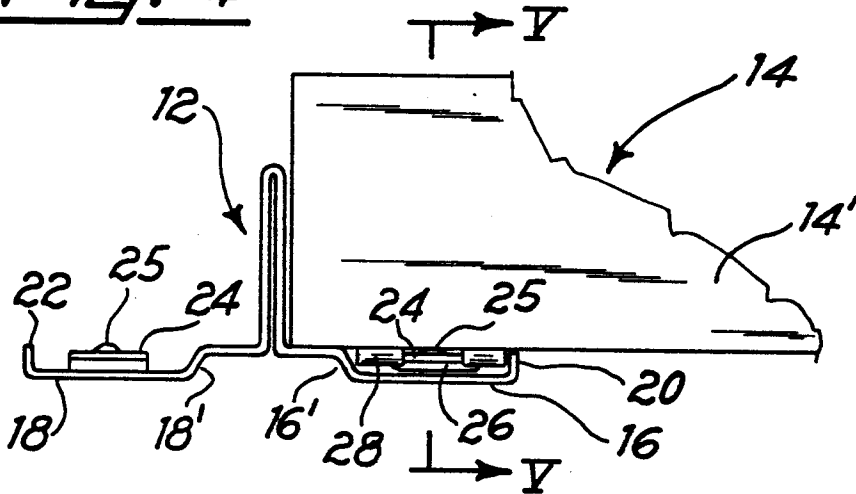


Fig. 3

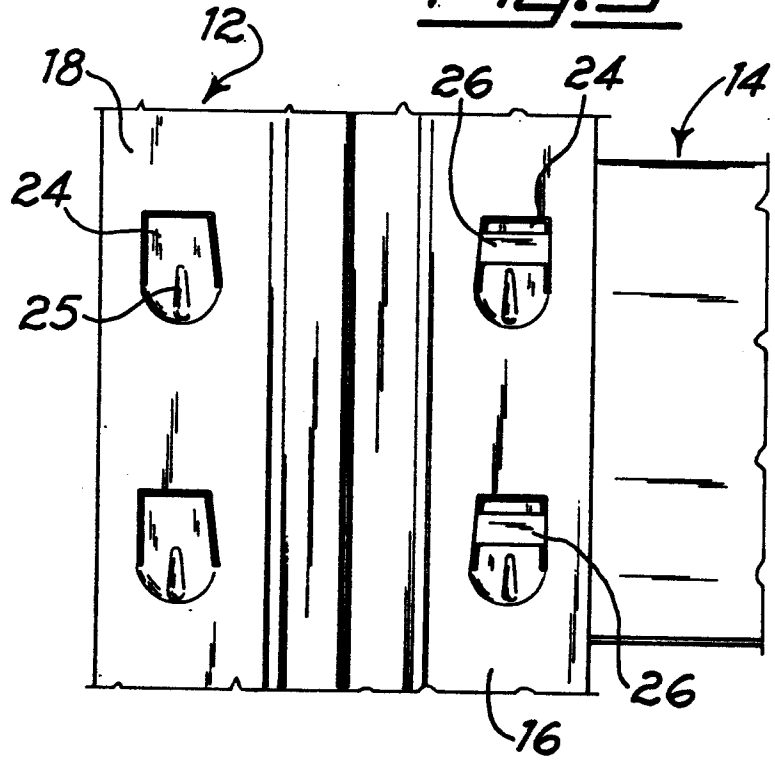


Fig. 5

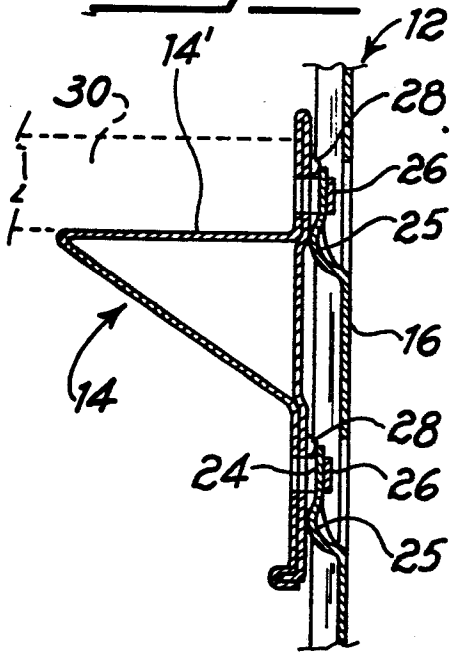


Fig. 7

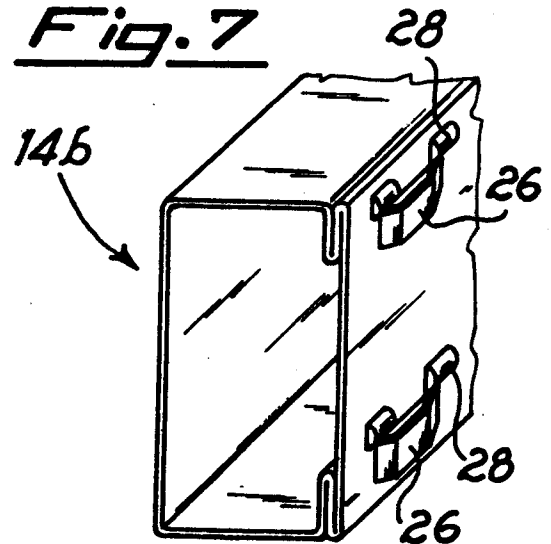


Fig. 6

