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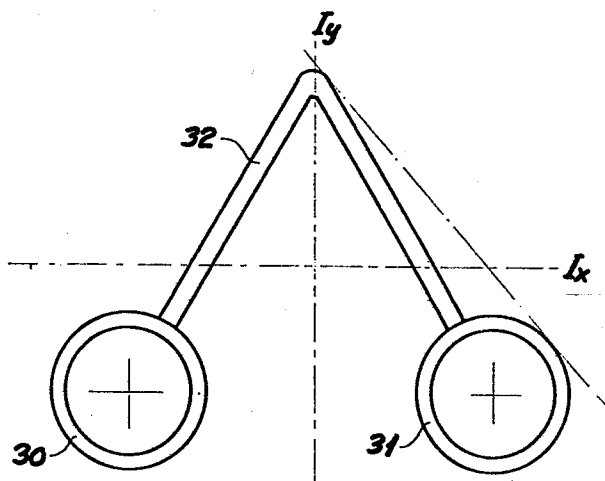
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⑤④ **A corner column for constructing a pile stand.**

⑤⑦ A corner column, in particular for a pile stand, comprises in its entire length a pair of metal profiles which are interconnected through a V-shaped rail (32). In a preferred embodiment (cross-section, see fig. 3), the metal profiles consist of round tubes (30, 31). This provides, in addition to a great moment of inertia around the axes I_x and I_y , a corner column which lends itself to automatic welding.



A corner column for constructing a pile stand

For the transport of general goods the industry increasingly uses rectangular pallets with a pile stand which has columns opposite the corners of the pallet, said columns being provided with supporting plates at the foot so that the supporting plates engage the top side and underside of the pallet and are rigidly connected at the top of the columns and have means to support a corresponding container stacked thereon. Such pallet containers are adapted to be stacked on top of each other, and it is a usual practice to stack not only two, but three, four or five containers on top of each other in warehouses. This subjects the corner columns to a quite considerable load, and very huge demands are therefore made on the bending and torsional rigidity of the columns.

The Danish Patent Specification 139 425 discloses a corner column which, in practice, has a rigidity sufficient for this purpose. The column consists of three tubes which are interconnected by means of fish joints so that in cross-section the tubes are disposed at the vertices of triangles to provide, with a reasonably low consumption of materials, a sufficiently great moment of inertia around mutually perpendicular axes of inertia for the column.

To obtain rational production the consumption of materials should desirably be reduced further, but by far the greatest saving can be achieved by automatizing the welding process.

The object of the invention is to provide a corner column which, besides having great rigidity with a

small consumption of materials, is particularly suitable for automatic welding.

Accordingly, the invention provides a corner column for the construction of a pile stand in which vertical
5 columns opposite each corner of a pallet are rigidly interconnected, said column comprising a pair of mutually fixed parallel metal profiles, characterized in that the metal profiles are interconnected through a substantially V-shaped metal rail whose free longitudinal
10 edges are fully or partly welded to their respective metal profiles.

Thus, the profiles can be placed in such a simple welding template that even this operation can be performed automatically, and then a pair of electric
15 welding guns can be moved along the profile and finish-weld it in one movement. During this movement the welding guns are preferably activated intermittently, it being possible to obtain only an insignificant improvement in strength in relation to the welding
20 time by full-welding the profiles. In comparison with the stated prior art it takes a relatively long time to fix the pipes and the fish joints correctly, and the position of the welds are moreover not suitable for automatic welding because the welds are disposed
25 relatively closely to each other.

The corner column of the invention also leads to a reduction in the consumption of materials in relation to the great moment of inertia obtained around an axis of inertia in parallel with a common plane for the
30 metal profiles. Further, an improvement with respect to the prior art is also obtained around another axis of inertia perpendicular to the first one in that the metal profile rail is instrumental in fixing the metal

profiles with a predetermined mutual spacing. The final dimensioning of the metal rail depends on the weighing of the mentioned main criteria.

5 When each of the said edges of the metal rail is welded on the associated metal profile at a distance from and between the tangential planes of the metal profile which extend through the base of the V-rail, flat and thus more impact-sensitive parts of the corner column are recessed with respect to the outer confinements of
10 the corner column, which are impact resistant. The angle of the external tangential planes is preferably about 90°.

The invention will be explained more fully by the following description of some embodiments with reference
15 to the drawing, in which

fig. 1 shows a first embodiment of a pile stand with corner columns according to the invention,

fig. 2 shows a second embodiment of a pile stand,

fig. 3 is a section through an embodiment of a corner
20 column according to the invention, while

fig. 4 is an explanatory sketch serving to explain a welding process.

The purpose and the use of the pile stands in figs. 1 and 2 can be compared to the disclosure of the Danish
25 Patent Specification 139 425, and the stands shown in figs. 1 and 2 will therefore just be explained briefly below.

The pile stand in fig. 1 comprises four corner columns

1-4 according to the invention, the corner columns being welded together in pairs through cross members, with the columns 1, 2 welded at the top to a cross member 5 and at the bottom to a cross member 6, and with the columns 3, 4 welded to cross members 7 and 8. This provides a pair of rigid gables generally designated 9 and 10 and detachably interconnected by means of so-called wedge rods 11-14. More particularly, each corner column is provided with a wedge bushing 15-22 to receive corresponding wedge members which are rigidly connected with each end of the wedge rods 11-14 substantially at right angles to them. Moreover, each of the columns 1-4 is provided with some crossmembers which, with reference to the column 1, comprise a foot element 23 adapted to extend below the corner of a pallet in the operative position, an element 24 adapted to engage the top side of the pallet in the operative position, and a top element which is not shown in the drawing but corresponds substantially to the element 23 and is placed at the top end of the columns.

It will then be appreciated that the pile stand shown in fig. 1 can be mounted on a pallet by pushing the fronts 9, 10 against a pair of opposite sides of the pallet and then interconnecting them by means of the wedge rods 11-14 to provide a rigid pile stand fixed with respect to the pallet, partly vertically because of the above-mentioned plate members 23, 24, partly horizontally because of the opposite, lower wedge rod connections and cross members, respectively.

Fig. 2 shows a second embodiment of a pile stand which is placed on a pallet 25. The pile stand in fig. 2 differs from the pile stand of fig. 1 only in that the cross members 5-8 (fig. 1) are replaced by wedge rods

26-29 which have the same function as the wedge rods described in connection with fig. 1. This embodiment is particularly suitable for the transport of pile stands in the form of loose parts.

5 The above-mentioned means for interconnecting the corner columns provide a very rigid pile stand, provided of course that the corner columns themselves have a sufficient rigidity. As stated before, the above-mentioned Danish Patent Specification discloses a
10 sufficiently rigid corner column which, however, is relatively expensive to manufacture. The present invention concerns a new corner column combination which both has great rigidity and is inexpensive to manufacture, which will be explained in greater detail
15 in connection with figs. 3 and 4.

Fig. 3 is a perpendicular section through an embodiment of the corner column of the invention. In this embodiment the corner column consists of a pair of round metal tubes 30, 31, which are interconnected by means
20 of a V-shaped metal profile rail 32 (the welds are not shown in figs. 3 and 4). With respect to the prior art the metal profile rail 32 involves a two-tube construction with a significantly increased moment of inertia around the axis of inertia I_x shown in the figure, the
25 base of the V-profile being spaced somewhat from a diametral plane common to the tubes 30, 31. Another advantage is that the corner column does not prevent goods from being stacked right out to the corners of the pallet. With respect to the prior art the invention
30 moreover provides an increased moment of inertia around the axis of inertia I_y as the metal profile rail 32 counteracts movement of the tubes 30, 31 towards or away from each other. Finally, the consumption of

materials for the embodiment shown in fig. 3 is relatively modest.

As shown in the figure it is preferred that the edges of the V-profile welded to the tubes are recessed with respect to the shown line L so that external impacts will mostly occur on the resistant edges of the corner columns, while the more sensitive, plane parts of the V-profile are more protected.

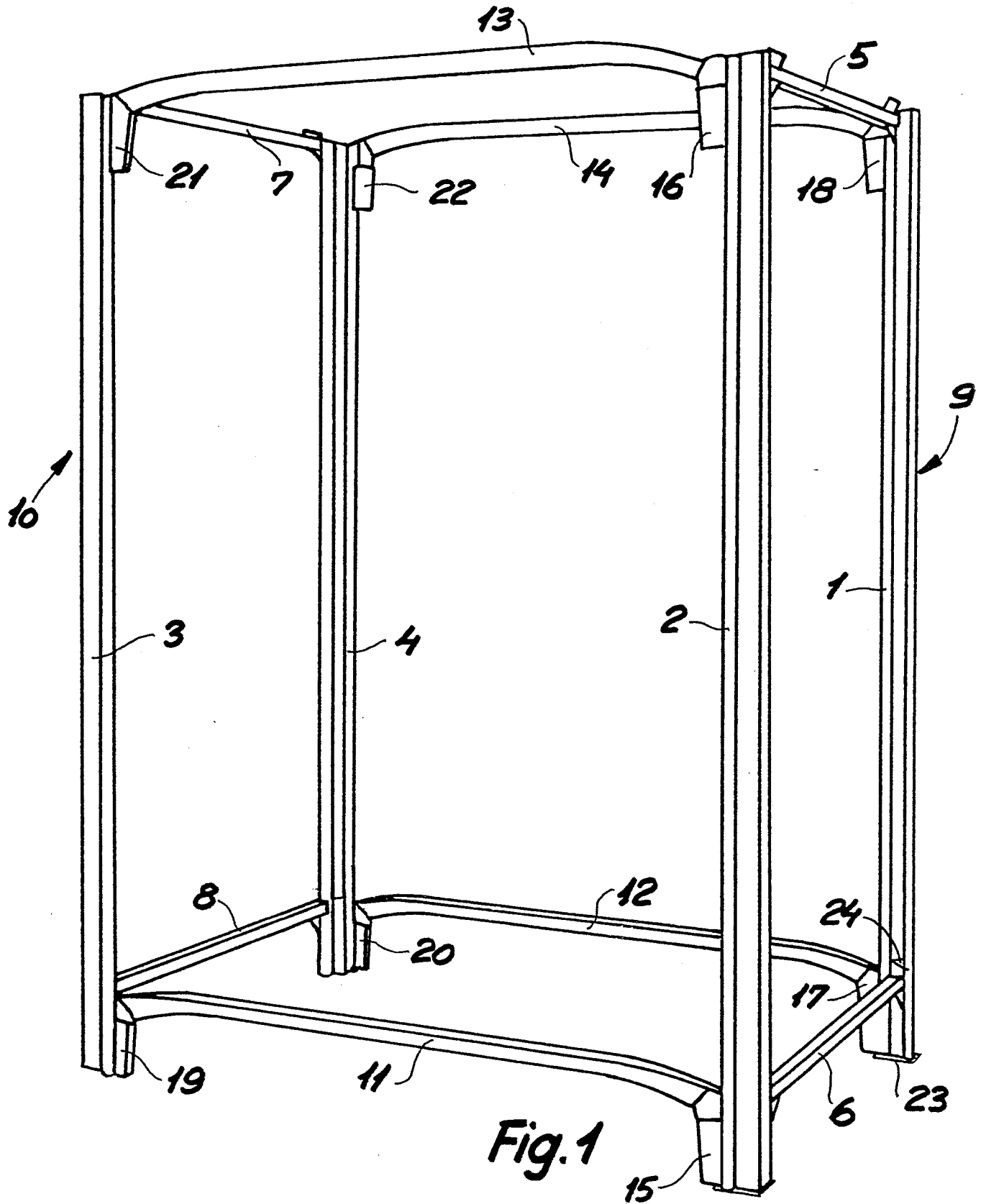
The most essential advantage of the corner column of the invention is that, in addition to the above-mentioned advantages, the manufacture of the corner column can be considerably rationalized. This is illustrated by means of fig. 4 in which the profile of fig. 3 is placed in a template 33 comprising an elongate base member 34 with recesses for the tubes 30, 31 and spaced guide ribs 35 to position the metal profile rail 32 during the welding process. The welding process can be effected by means of the automatic welding apparatus schematically shown in fig. 4; this apparatus comprises a holder 36 for two electric welding guns 37, 38 which are optionally, but not necessarily, movable on the holder 36 towards and away from each other. However, it is essential that the holder 36 and the welding template 33 are mutually movable longitudinally of the welding template. During the mutual movement between the welding guns and the welding template the welding guns may be activated constantly, but it is preferred to activate the welding guns intermittently so that the metal profile rail 32 is spotwise welded to the metal tubes 30, 31.

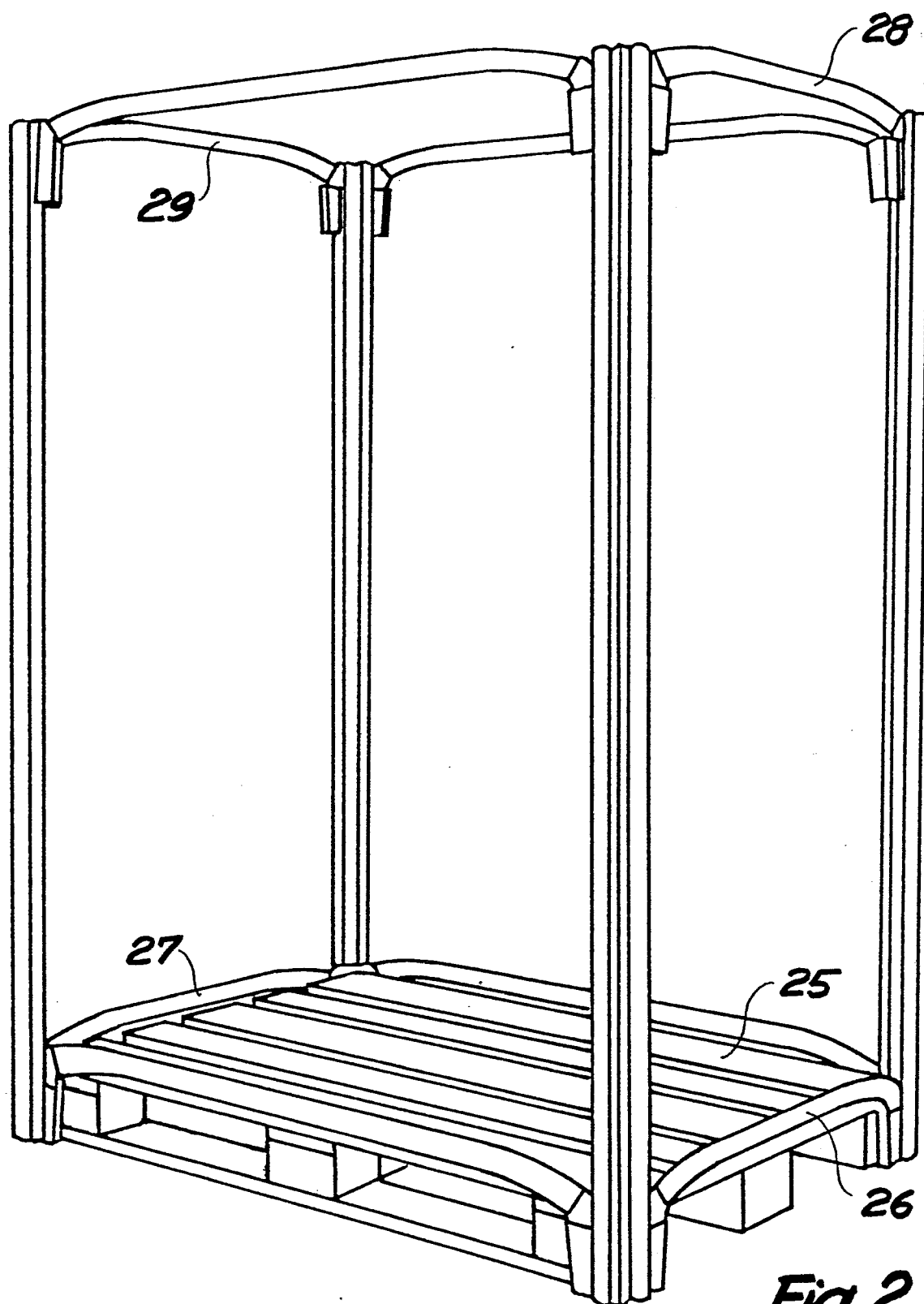
The welding process explained in connection with fig. 4 is readily useful for the welding of corner columns

where the metal profile rail is pre-bent and all parts are shortened. However, it will be appreciated that the welding process can be made additionally continuous by bending the metal profile rail continuously from a metal strip roll with the simultaneous use of long metal tube sections which are a multiple of the length of the finished corner columns. It is evident that the cross sectional shape of the metal tubes and of the metal profile rail can be varied within the scope of the invention to provide various embodiments of rigid corner columns which can be manufactured inexpensively and rationally.

P a t e n t C l a i m s :

1. A corner column for the construction of a pile stand in which vertical columns opposite each corner of a pallet are rigidly interconnected, said column comprising a pair of mutually fixed parallel metal profiles, c h a r a c t e r i z e d in that the metal profiles are interconnected through a substantially V-shaped metal rail whose free longitudinal edges are fully or partly welded to their respective metal profiles.
2. A corner column according to claim 1, c h r a c t e r i z e d in that each of said edges of the metal rail is welded on the associated metal profile at a distance from and between the tangential planes of the metal profile which extend through the base of the V-rail.
3. A corner column according to claim 2, c h a r a c t e r i z e d in that the angle between the external tangential planes is about 90°.



*Fig. 2*

