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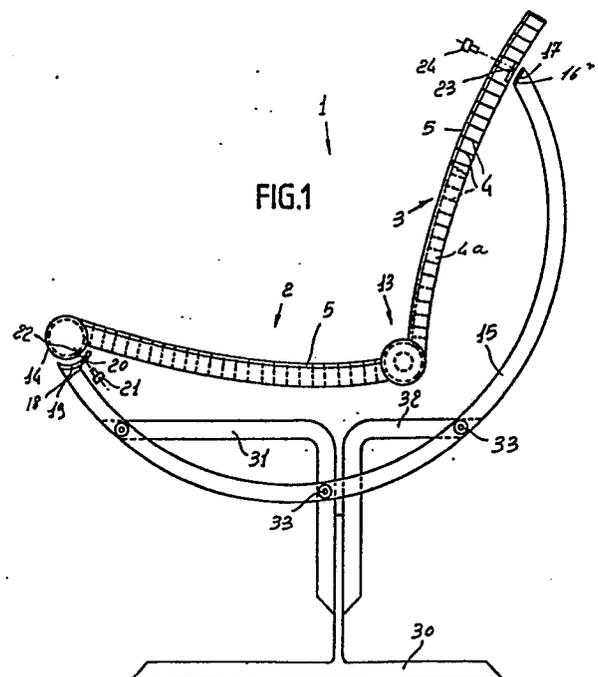
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**Dismantling bench with separate seat and backrest grille panels.**

In a dismantling bench (1) with seat (2) and backrest (3) in separate grille panels, the seat (2) and backrest (3) are hinged together and supported by two wide brackets (15), preferably C-shaped, tilted to the rear and having their ends fitted with drilled and optionally tapped plates (16, 18) in order to bolt them to the front edge of the seat (2) and to a predetermined point on the backrest (3), said brackets being fixable to means to support the structure onto the ground.



**EP 0 367 977 A1**

## DISMANTLING BENCH WITH SEPARATE SEAT AND BACKREST GRILLE PANELS

The object of the present patent is a dismantling bench with seat and backrest in separate grille panels.

At present, in order to manufacture benches, grille panels are also used of a type similar to that used in anti-heel footboard treads.

Benches of this type currently available usually have some disadvantages related to an inconveniency for the user in so far as the seating geometry is not very ergonomic, and to major difficulties with transport and storage.

Another shortcoming which can be found in the current benches is that once the seating geometry is chosen it is quite difficult to alter it since alteration implies using some differently shaped parts: on the other hand it would be very useful to be able to vary the seating geometry depending on such factors as: the height of the bench from the ground: the location where it should be installed; type and duration of expected use, etc.

The technical aim of the present invention is to overcome the aforementioned shortcomings and to produce a bench which can be dismantled to very reduced dimensions for storage and transport and where the seating geometry can be changed by minor structural modifications which do not involve manufacturing of custom-made parts.

This aim and function is achieved by the present dismantling bench with seat and backrest in individual grille panels characterized in the seat and backrest being hinged together and supported by two wide brackets, preferably C-shaped, tilted to the rear and having their ends fitted with drilled and optionally tapped mounting plates in order to bolt them to the front edge of the seat and to a predetermined point on the backrest, a means of supporting the structure on to the ground being fixable to the said brackets.

Further particulars will be more clear and evident, from the detailed description of a preferred, though not exclusive, embodiment of a bench according to the present invention, illustrated by way of example in a non-limiting way in the attached drawings, wherein:

Fig. 1 is a side-view of a dismantling bench with seat and backrest in individual grille panels according to the present invention;

Fig. 2 is a partial section front-view of a detail of the bench hinge;

Fig. 3 is a schematic partial section side-view of the means supporting the bench on the ground in a different embodiment.

With particular reference to these drawings, the dismantling bench according to the present invention is generally referred to with numeral 1, with the

seat 2 and backrest 3 made in separate grille panels.

The grille constituting the seat and backrest panels consists, preferably, of a number of metal straps 4 closely arranged on edge, and joined by more widely separated perpendicular rods 5 positioned on the seating faces.

The panels constituting the seat and backrest are slightly curved to give the seat and backrest a convex and a concave form respectively.

Along the bench sides, on the rims of the seat and backrest panels a covering strip 4a is edge welded, which protects the user from being scratched by sharp ends of the metal straps 4.

A tube 6 extending to a distance of about 30 cms from the panel sides is welded centrally onto the lower edge of the bench backrest. Two axially drilled washers 7 are welded into the ends of said tube; at each end of the seat are welded two short tubes 8a, 8b which have a drilled washer 9 welded into the inner end and a drilled washer 10 welded internally some centimetres from the outer end; a shaft 11 passes through the tubes 6 and 8, said shaft is centered by the washers and is provided with threaded ends onto which are screwed retaining nuts 12; this forms a hinge 19 running the full length of the bench end which allows the backrest to be folded onto the seat for transport. A tube 14 is welded along the entire length of the front edge of the seat 5.

Seat and backrest are supported by at least two wide brackets 15, preferably C-shaped, tilted slightly to the rear, and made of rectangular-section tube to whose upper ends are welded plates 16 with tapped holes 17 and to whose front ends are welded plates 18 which extend with extensions 19 having holes 20 to take bolts 21 which screw into tapped holes 22 in the tube 14; the rear of the seat 3 carries plates 4 to which are welded drilled plates 23 to take bolts 24 which screw into tapped holes 17. The plates 23 are welded to the grille of the backrest in different positions to give different relative angles between seat and backrest: thus, by welding the plates 22 in a higher or lower position, the angle can be varied according to how the bench is to be used.

Various types of supporting means can be fixed to the brackets 15, e.g. semicircular, fig. 3, or reversed T pedestal, fig. 1.

For the semicircular structure support, two H-pieces 25 are welded under the bracket 15, the central portion being drilled and tapped to take fixing bolts 26 which fix a curved rectangular-section tubular structure 27 with drilled anchor plates 28 at the ends: the H-pieces 25 may be covered

by discs 29 looking like the ends of tubes 13 and 14, which are opportunely provided with closing plugs.

For the reversed T pedestal, two reversed L rectangular-section tubes 31, 32 are welded to front and rear of the reversed T shaped supporting means 30, and are drilled and tapped to take fixing bolts 33 which pass through holes in the brackets 15.

It should be noted that as it is easy to change the angle between the seat and backrest by fixing the plates 23 in a different position so it is easy to change the structure inclination with reference to the ground by changing the fixing position of the brackets 15 with reference to the supporting means.

Basic features of the seating geometry and level from the ground can thus be easily changed to suit the use to which the bench is put.

Thus it can be seen how the present invention meets the proposed aims and particularly how the dimensions are greatly reduced for transport (the backrest is simply folded onto the seat and the support brackets removed) and how the angle between the seat and backrest, and the inclination of the entire unit can be varied by small adjustments without changing the structure of the grille panels. The present invention is open to many variations and modifications of the basic inventive concept. Furthermore, the details can be substituted by others which are technically equivalent.

In practice, any materials, shapes and dimensions can be used, according to need, without leaving the ambit of protection of the following claims.

**Claims**

1. Dismantling bench with seat and backrest in separate grille panels, characterized in the seat and backrest being hinged together and supported by two wide brackets, preferably C-shaped, tilted to the rear and having their ends fitted with drilled and optionally tapped plates in order to bolt them to the front edge of the seat and to a predetermined point on the backrest, said brackets being fixable to means to support the structure onto the ground.

2. Bench according to Claim 1, characterized by the said grille panels consisting of a plurality of metal straps being closely arranged on edge and connected by more widely spaced perpendicular rods positioned on the seating face.

3. Bench according to Claim 1 characterized by there being a tube welded to the front edge of the seat along its entire length, to which the lower end of the brackets can be fixed.

4. Bench according to Claim 1 characterized

by the panels being slightly curved to give the backrest and seat a slight convex and a slight concave form respectively.

5. Bench according to Claim 1 characterized by having plates fixable to the end of the brackets welded to the backrest for the fixing of the backrest to the brackets, the position of which plates determining the angle variation between the seat and backrest without any modification to the other components being required.

6. Dismantling bench with seat and backrest in separate grille panels according to one or more of the preceding claims and according to what described and illustrated for the specified aims.

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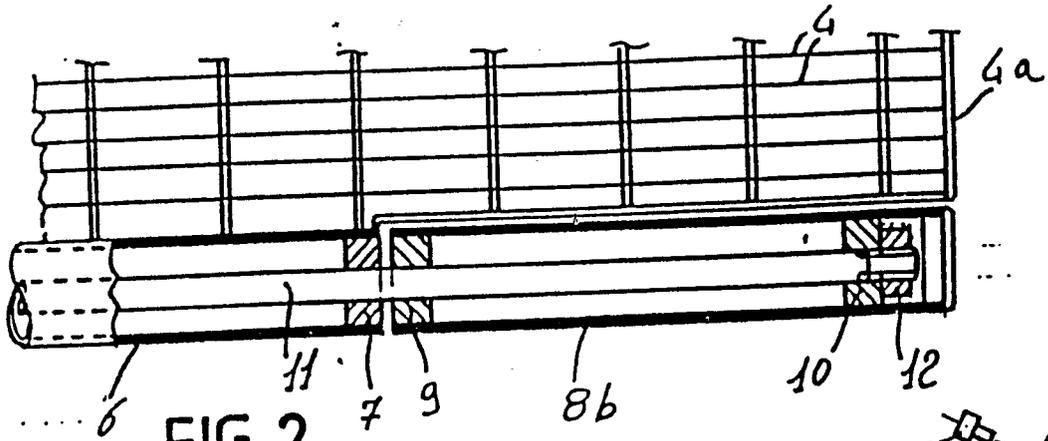


FIG. 2

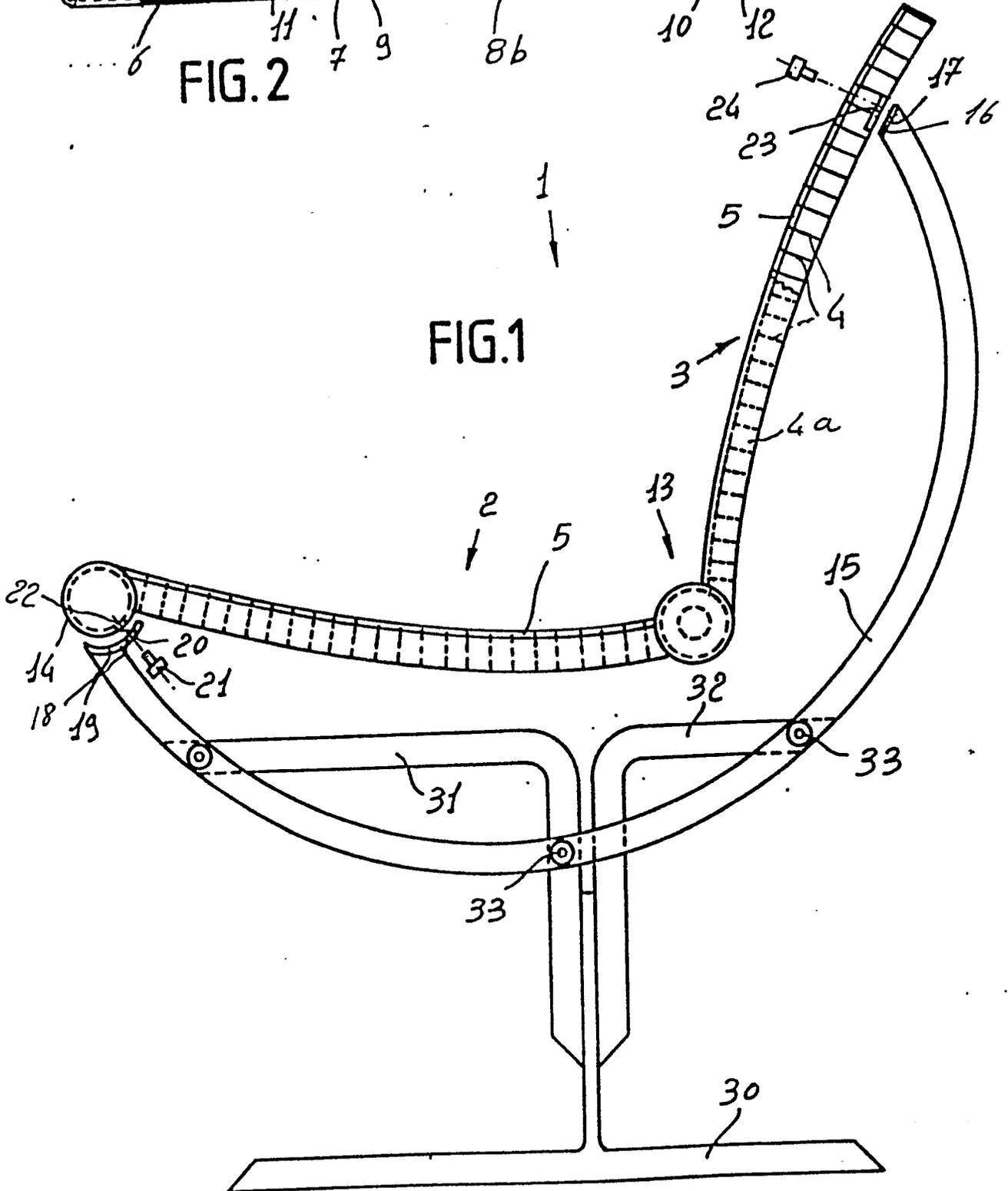
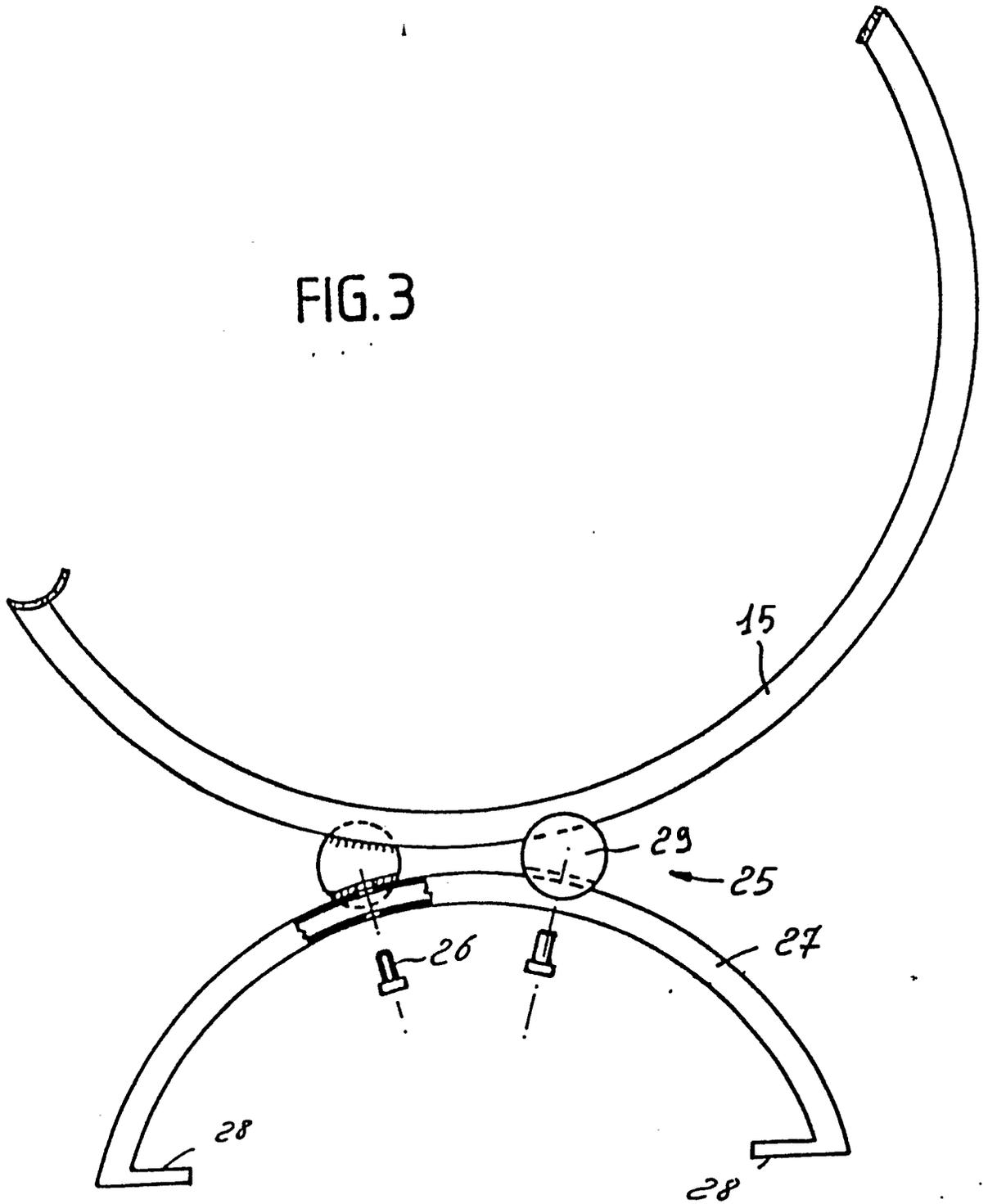


FIG. 1

FIG. 3





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y A	US-A-2 454 912 (CUNNINGHAM) * col. 4, 34-70; fig. 5,7,8 *	1 4,5,6	A 47 C 11/00 A 47 C 5/04
Y A	FR-A-1 238 474 (LACAZE) * The whole document *	1 3,6	
A	US-A-4 511 179 (GREEN) * col. 4, 19-20; fig. 1 *	1,2,3,6	
A	DE-U-8 802 360 (MWH) * Fig. 1,2 *	4	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 47 C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10-01-1990	Examiner VANDEVONDELE J.P.H.
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			