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 [45] Patented **Dec. 29, 1970**
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Assistant Examiner—J. Franklin Foss
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[54] **DETACHABLE FURNITURE SUPPORT**
 16 Claims, 17 Drawing Figs.

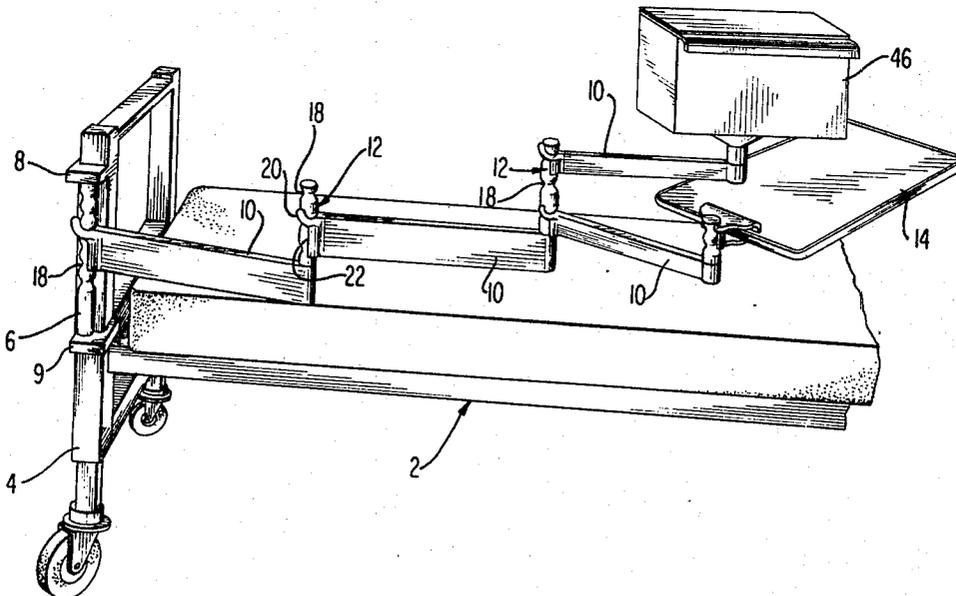
[52] U.S. Cl. **248/282,**
 108/152, 108/157; 248/125, 248/178
 [51] Int. Cl. **A47f 7/00**
 [50] Field of Search 248/278,
 279, 282, 283, 285, 289, 290, 250, 243, 223;
 211/102, 133, 148, 174; 248/124, 125; 287/100;
 312/323; 108/152, 157

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ABSTRACT: This disclosure relates to furniture construction, in which a plurality of arms can be interconnected through a connecting rod and rod gripping means on the arms, such that the arms are rotatable relative to each other. The ends of the rods are insertable into vertical holes in one end of the arms. The rods contain at least one indentation along the lengths thereof, and the arms contain fingers which are insertable through the indented portions of the arms, with the fingers extending above or below the indentations in back of the rods, to hold the arms onto the rods. The arms contain a bearing surface below the fingers, to support the arm for rotation about a vertical axis.

The arms can be connected to a bed post, for example, for supporting trays and cabinets over a bed surface. Means can be provided for adjusting the height of the trays and cabinets above the bed.



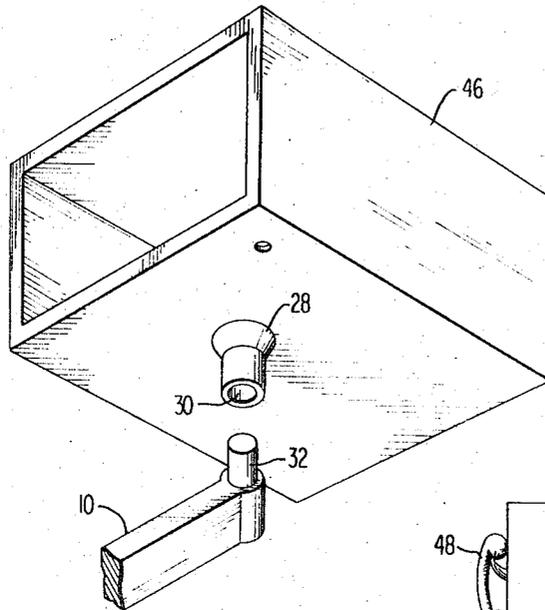


FIG 4

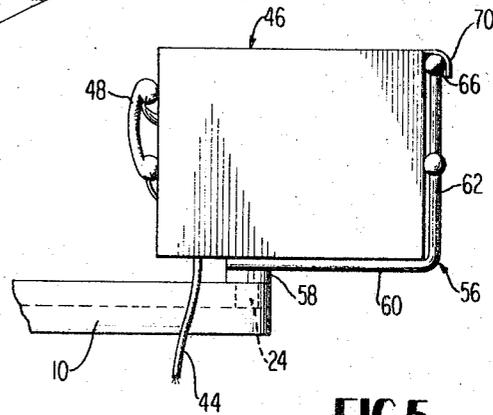


FIG 5

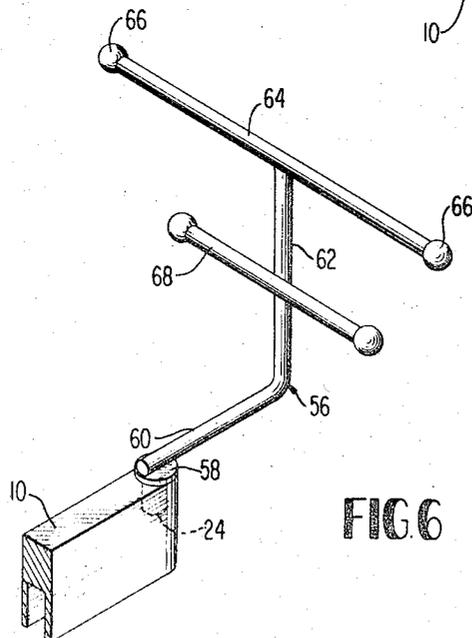


FIG 6

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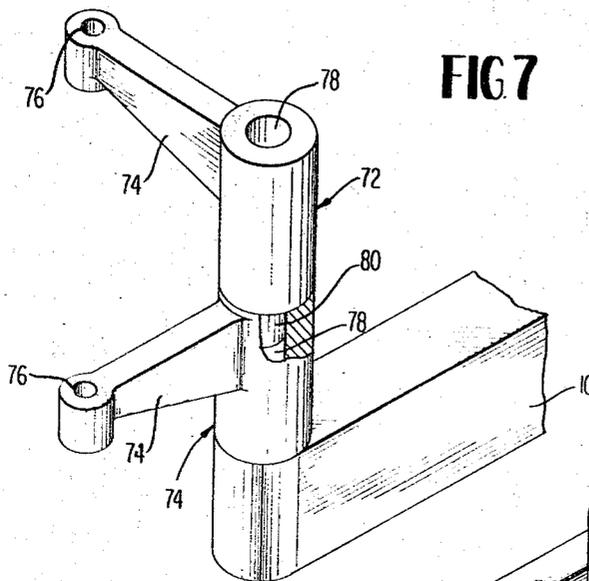


FIG 7

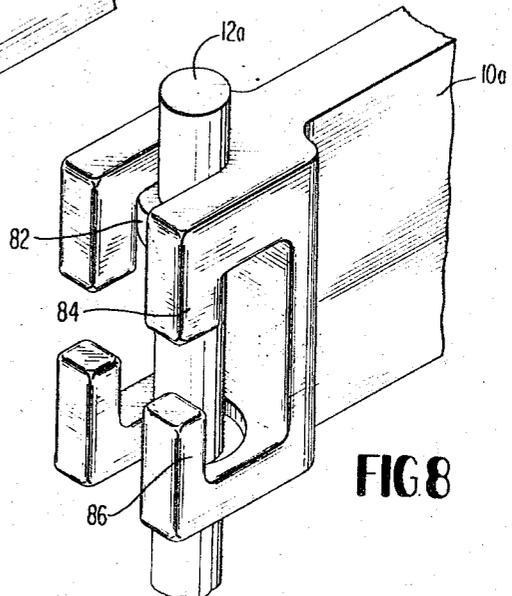


FIG 8

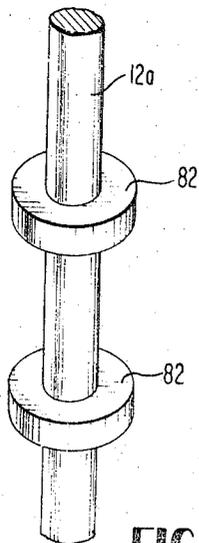


FIG 9

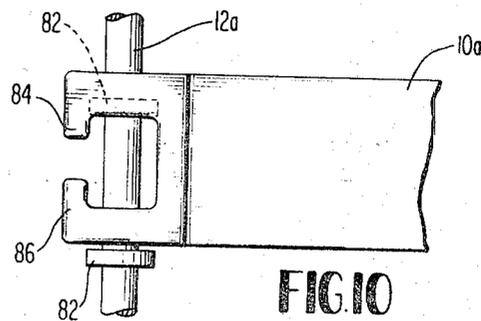


FIG 10

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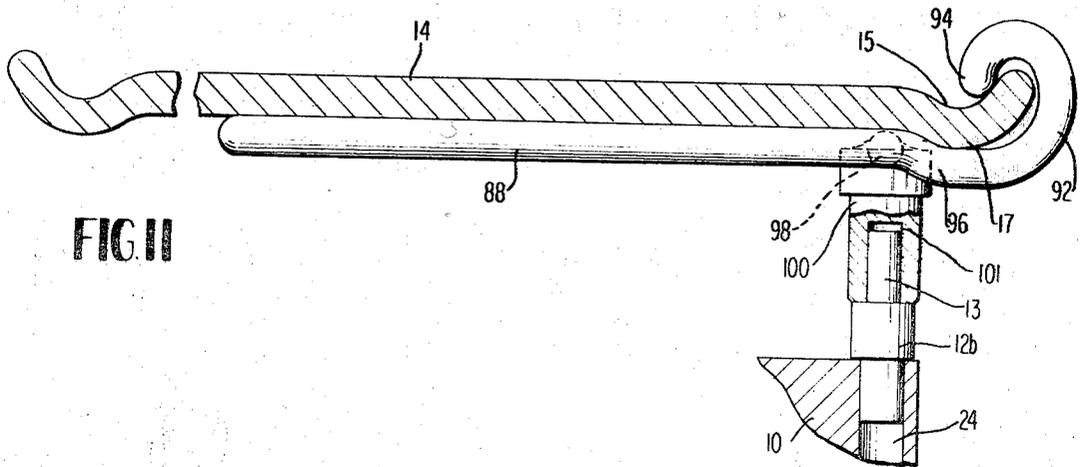


FIG 11

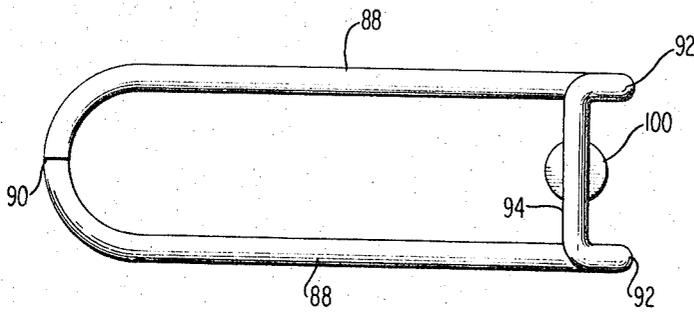


FIG 12

FIG 15

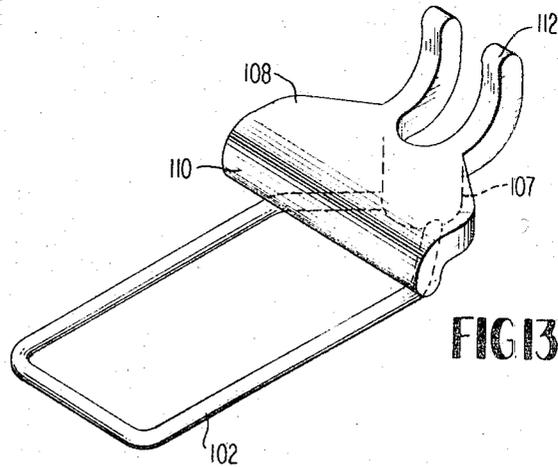
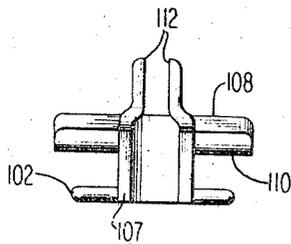
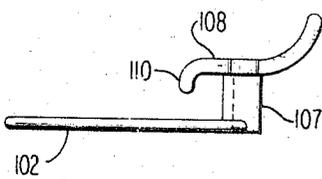


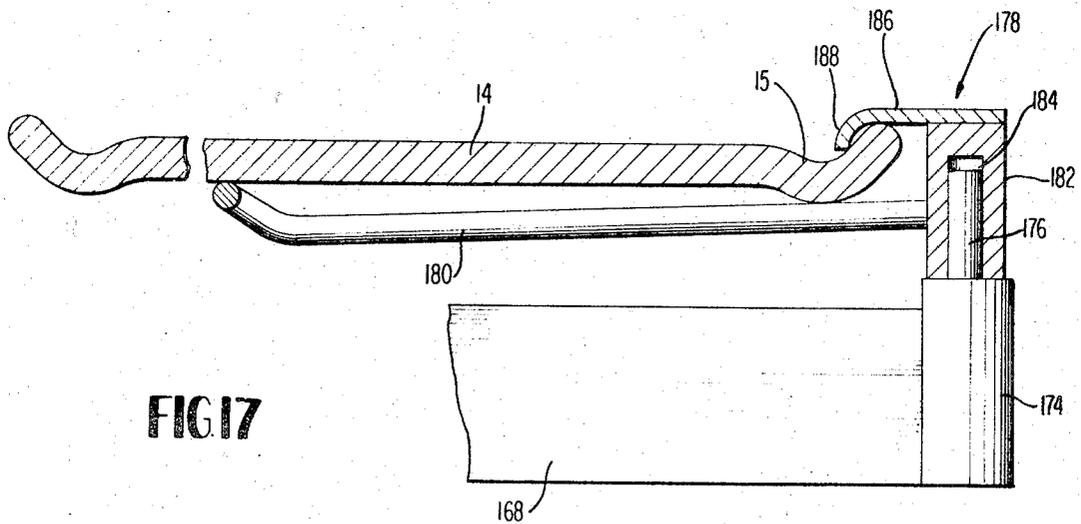
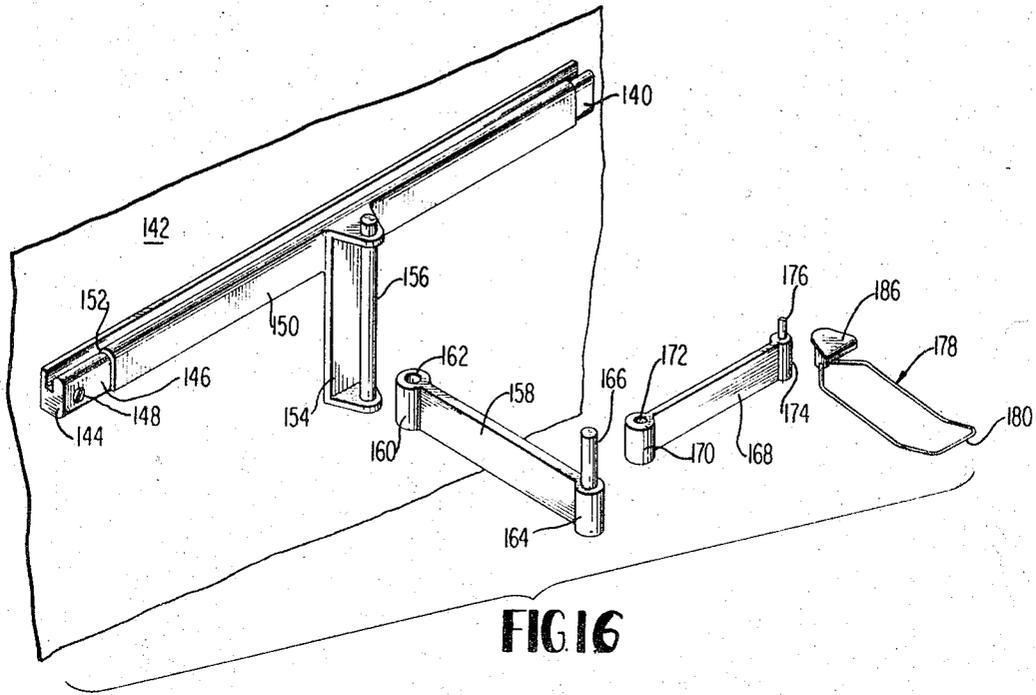
FIG 13

FIG 14



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DETACHABLE FURNITURE SUPPORT

This invention relates to furniture construction. In one of its aspects, it relates to a joint structure for cantilevered furniture comprising a rod having at least one indentation and/or area of expanded diameter, an arm with fingers spaced apart, approximately the distance of the indentation, but less than the area of the expanded diameter, extending outwardly from an end of the arm portion, the fingers extending behind an area of the expanded diameter, the arms containing a bearing surface, spaced below the ears to support the arm against rotation in a vertical plane, and to permit rotation of the arm about a vertical axis.

In another of its aspects, the invention relates to a furniture construction in which a cabinet is supported from the end of a cantilevered arm which is rotatable about the supported end, the cabinet having a downwardly extending flange at one side thereof wherein the cabinet support means comprises a downwardly extending rod, a laterally extending support, and an upwardly extending brace, the rod rotatably engages a socket, the laterally extending support is positioned beneath at least a portion of the cabinet, and the upwardly extending brace is positioned at the side of the cabinet, the brace having flange engaging arms extending outwardly at the top portion of the upwardly extending brace to engage the downwardly extending flange on the cabinet.

In still another of its aspects, the invention relates to a cantilevered structure in which an adjustable connection at the end of a supporting arm is provided, wherein the adjustable connection comprises a vertical cylindrical member at the end of the supporting arm, the vertical cylindrical member being surrounded partially by vertically extending ears, forming an arc-shaped channel between the cylinder and the ears, a slide member having a pair of arc-shaped vertical members adapted to fit into and slide within the arc-shaped channel and being relatively close in engagement with the vertical cylindrical member, the slide member having arm connecting means spaced laterally of the arc-shaped vertical members, whereby the slide member is wedged into the arc-shaped channel when force is applied to the arm supporting portion of the slide member, and wherein the slide member is vertically adjustable in the arc-shaped channel when there is an absence of force on the arm connecting portions of the slide member.

Increasing cost for hospitalization and medical services, demand that hospital personnel be utilized to their capacity, and that hospital equipment cost be reduced. Presently, hospital trays comprise a platform, supported by vertical legs which straddle the sides of the bed. When it is desirable to use the tray, the tray must be rolled in place by an attendant or nurse. Further, it is difficult for the patient to remove the tray and leave the bed without assistance.

I have now discovered an inexpensive tray unit which can be attached to the side of the bed and cantilevered over the bed, so that the tray could be placed in position and removed from position when, desirable by the patient. The structure can also be adapted to support other units, such as, telephone stands, etc.

By various aspects of this invention, one or more of the following, or other, object can be obtained.

It is an object of this invention to provide a novel arm and joint structure for a cantilevered furniture construction.

It is a further object of this invention to provide a novel furniture construction for supporting cantilevered units, wherein the length of the supporting arm can be changed by changing the number of arms in the construction.

It is still a further object of this invention to provide a novel cantilevered furniture construction in which each segment employed in making the unit is rotatable relative to adjacent units.

It is still a further object of this invention to provide a novel cantilevered furniture construction wherein the functional units are easily vertically adjustable.

It is yet another object of this invention to provide a cantilevered construction which is rapidly and easily assembled and disassembled.

Other aspects, objects, and the several advantages of this invention are apparent to one skilled in the art from a study of this disclosure, the drawings, and the appended claims.

According to the invention, there is provided a furniture construction in which a cantilevered arm supports furniture units. The cantilevered arm has a joint structure, comprising a support rod and a connecting arm. The support rod is insertable into a socket in one end of the connecting arm. The rod contains at least one indentation and area of expanded diameter adjacent the indentation for releasably attaching and rotatably supporting a second cantilevered arm. A pair of fingers, spaced approximately the distance of the indentation but less than the area of expanded diameter, extend from the other end of the connecting arm, and are positioned through an indentation and behind a second rod to support the one cantilevered arm on the rod of the second rod. A bearing surface is provided beneath the fingers to vertically stabilize the cantilevered arm. Preferably, the bearing surface is shaped as the support rod so that the first cantilevered arm will rotate about the second support rod.

The fingers can extend upwardly or downwardly behind the area of expanded diameter to maintain the arm in contact with the rod.

In one embodiment, the rod has the plurality of indentations and expanded diameters, or ball-like configurations, over which downwardly extending fingers of connecting arms can be attached.

According to another embodiment of the invention, a rod is supported by a bed frame and a plurality of cantilevered arms are employed to provide a cantilevered furniture construction for trays and the like over the bed surface.

According to still another embodiment of the invention, a supporting tray structure can be provided at the end of the cantilevered arms. The supporting tray structure has means for attaching the tray to the end of a cantilevered arm. The attaching means comprises a laterally extending member, which supports the tray, an upwardly extending member, and a second laterally extending member to clamp the tray in place. Preferably, the trays have an indentation to receive a downwardly extending portion of the laterally extending members.

The cantilevered arms can support cabinets and the like through a cabinet supporting means, in which, a rod on the cabinet supporting means is positioned in a socket in one end of the cantilevered arm, and the cabinet supporting means has a T-shaped member which hooks beneath a downwardly extending flange on the cabinet structure.

According to one embodiment of this invention, wires for a telephone or other electrical devices, can pass through the cantilevered arms, and be thus hidden from sight.

The furniture at the end of the cantilevered arms can be raised vertically by attaching the arms at different portions of the rods, or by a special slidable wedge member which permits simple raising and lowering of the connecting structure.

The invention will now be described with reference to the accompanying drawings, in which:

FIG. 1 is a perspective of an embodiment of the invention as applied to a hospital bed;

FIG. 2 is an exploded view of a socket, supporting rod, and connecting arm shown in FIG. 1;

FIG. 3 is a perspective view showing how the connecting arm is attached to the bar;

FIG. 4 is a perspective bottom view showing a means of attaching the cabinet to the end of the cantilevered arms;

FIG. 5 is a schematic view of a cabinet attached to the end of a supporting cantilevered structure illustrating a second means of supporting a cabinet on the end of the cantilevered arms;

FIG. 6 is a perspective view of a supporting member employed in the support of the cabinet shown in FIG. 5;

FIG. 7 is a perspective view of a modified form of the invention;

FIG. 8 is a perspective view of another embodiment of the invention;

FIG. 9 is a view of the connecting rod in the embodiment shown in FIG. 8;

FIG. 10 is a side elevational view of the joint structure shown in FIG. 8;

FIG. 11 is a side elevational view of a tray and a supporting apparatus therefor on the end of the cantilevered structure according to the invention;

FIG. 12 is a top view of the supporting structure shown in FIG. 11;

FIG. 14 is a side view of the tray shown in FIG. 13;

FIG. 15 is an end view of the tray supporting structure shown in FIG. 13;

FIG. 16 is an exploded view of still another embodiment of the invention; and

FIG. 17 is a side elevational view, partly in section, of a portion of the embodiment shown in FIG. 16.

Referring now to the drawings, and to FIGS. 1 through 3 in particular, a bed frame generally designated as 2, has vertical supporting end 4, with outwardly extending brackets 8. A supporting rod 6 is positioned between the brackets 6 and held firmly in place thereby. The supporting rod 6 has a plurality of indented portions 9 through one of which indentations pass fingers 20 of arms 10. Connecting rod 12, containing at least one indented portion 18, have a lower shaft 19 which is rotatably received within a socket 24 in the outer end of arm 10. The indentations 18 which are circular in configuration, separate gripping areas for fingers 20. The arm 10 also contains a bearing surface 22, which bearing surface is positioned beneath fingers 20 to vertically stabilize arm 10. The bearing surface 22 is preferably concave outwardly and arc-shaped in cross section to conform with the outer surface of rod 12, so as to permit the arm 10 to rotate horizontally relative to rod 12. A cabinet 46 is rotatably secured to the end of an arm 10.

The manner of connecting and disconnecting the arms to the connecting rods is shown in FIG. 3. The arm is tilted upwardly so that the ends of the fingers, easily pass through the indentations 18 of rods 12. As the arm is pushed inwardly, it is rotated downwardly with the bearing surface 22 ultimately abutting against rod 12. As the arm is rotated downwardly, the ends of fingers 20 are rotated upwardly behind the expanded diameter portion of the rod 12. In this manner, the arms are easily attached and detached from the structure. It can be further seen, that the arms are rotatable relative to one another, so as to provide a cantilevered structure which can be easily manipulated and positioned by the patient.

As illustrated in FIG. 4, the cabinet 46 has a socket 28 with a downwardly opening hole 30. The arm 10 has a pin 32 which fits into hole 30. When the cabinet is supported on the pin 32, through socket 28, the cabinet can rotate about pin 32.

The cantilevered arms can be used to support trays and/or cabinets. An alternate arrangement for supporting a cabinet having electrical components is shown in FIGS. 5 and 6. The cabinet 46 is supported by member 56 through a downwardly extending flange 70 on the cabinet. The supporting member has a downwardly extending rod 58, which is rotatably supported in a socket 24 of a supporting arm 10. The supporting structure has a lateral extending portion 60, which is positioned beneath the cabinet, an upwardly extending portion 62, and a transverse supporting rail 64, forming a T-shaped member. The T-shaped member fits beneath downwardly extending flange 70 of cabinet 46, and, thereby supports the cabinet. The supporting structure also preferably contains a pair of outwardly extending arms 68, which tends to prevent horizontal rotation of the cabinet 46. A pair of ball members 66 on the ends of member 64, provide a firm engagement of the T-shaped member with the downwardly extending rail 70. A telephone 48 is supported by cabinet 46.

Wires can be attached to the outer portion of arms 10 to thereby prevent dangling wires.

In FIG. 7 there is shown another embodiment of the invention, in which embodiment other forms of supporting arms are shown. The supporting arms 72 contain a vertical support member, having a downwardly extending pin 80 at the bottom

portion thereof, and a socket 78 at the upper portion thereof. Outwardly extending arms 74 contains a socket 76 for support of furniture units. As can be seen best in FIG. 7, the modified supporting structures can be placed one on top of the other without the need for a connecting linkage. Further, the downwardly extending rod 80 can be inserted into the socket 24 of an end arm 10.

The FIGS. 8 through 10 show another embodiment of the connecting members for arms 10. FIG. 8, in particular, shows the end structure of an arm, which would correspond to the connecting portion of arm 10. Arm 10a contains a pair of downwardly extending spaced fingers 84 and a pair of upwardly extending spaced fingers 86. A connecting rod 12a comprises at least one, and preferably two, spaced areas of expanded diameter 82.

The areas of expanded diameter 82 of rod 12a are so spaced as to be positioned between the fingers 84 and 86, so that they can easily slide between the same and be gripped by downwardly extending fingers 84. With the downwardly extending fingers 84 and upwardly extending fingers 86, arm 10a can be inverted and still grip and engage rod 12a.

A tray supporting structure is shown in FIGS. 11 and 12. The supporting structure comprises a pair of outwardly extending arms 88, which are joined at 90 to provide a rigid support. The arms are bent downwardly at 96 and upwardly at 92, and then downwardly again at 94. The support extends across the structure at 94 to complete the loop. The tray 14, preferably comprises a top from a storage unit, such as that disclosed in Propst, U.S. Pat. No. 3,241,898. The tray 14 has an indentation 15 and a corresponding bump 17 on the other side thereof. The bump 17 and the indentation 15 are engaged by the supporting structure and firmly positioned thereby. The weight of the tray 14 maintains the same locked in position beneath rod 94.

The tray engaging portion is supported by a laterally extending rod 98, which is welded to the sides 88. Also welded to rod 98 is a vertical tube 100 having an inner hole 101 for receiving shaft 13 of rod 12b. Arm 10 supports rod 12b through socket 20 and lower shaft 19.

Alternately, shaft 100 can have a tapered thickness and diameter which would correspond to lower shaft 19 so that the bottom of shaft 100 could be inserted into socket 24 and be rotatably supported thereby.

An alternate tray support mechanism is shown in FIGS. 13 through 15. In this tray support mechanism, a U-shaped rod 102 is bent inwardly and welded at 104 to a vertical arc-shaped bearing member 106. At the top portion of bearing member 106, a triangular plate 108 having downwardly extending portion 110 is attached. Plate 108 also contains outwardly extending ears 112 which are similar in construction and shape to the ears 20 of arm 10. Bearing member 106 has a circular shaped bearing surface 107 for contact with the outer portion of a connecting rod 12. In this manner, the tray can be directly attached to a standard connecting rod.

A tray 14 similar to that shown in FIGS. 11 and 12 can be positioned on supporting arms 102 with the use of the tray support. The indentation 15 would be positioned beneath downwardly extending member 110 of triangular holding bar 108. In this manner, the weight of the tray would maintain the end portion of the same beneath the downwardly extending portion 110 of holding member 108.

For the sake of simplicity, the tray supporting structure has been described with regard to a relatively flat surface which can be a portion of the storage unit. However, it is within the scope of the invention to employ other tray structures. For example, a tiltable tray could be employed in place of the above described tray.

Referring now to FIGS. 16 and 17, a still further modification of the invention is disclosed. In this modification, the overbed arm is attached to a wall rail instead of being attached to the edge of the bed. The rail 140 is attached to a wall 142 through suitable screws 148. The rail has an upstanding flange 144 and a relatively flat front face 146.

The arm is attached to the rail through an attaching flange 150 having a depending hook 142 which hooks behind the upstanding flange 144 and a supporting surface bearing against face 146. The attaching flange 140 has a bracket 154 with a rod 156 suitably attached between two spaced horizontal flanges. The rod 156 is removable for insertion of arms 158 which will be described hereinafter.

The arms have circular ends 160 and 164. The circular end 160 has an axial hole 162 into which fits rod 156. Circular end 164 has an upstanding rod 166 which is used for attaching other arms to extend the arm as far as desired. Another such arm 168 has an end 170 with an axial hole 172 for fitting over rod 166. The rod 168 also has an end 174 with an upstanding rod 176 for supporting trays, cabinets, and the like. Other arms can be attached to a common joint through a joint such as that disclosed in FIG. 9.

For example, a tray supporting member 178 can be attached to the end of the arm 168 in a manner shown more completely in FIG. 18. The tray supporting member comprises a circular rail 180 which is slightly bent to support a tray 14. The rail 180 is fixed to shaft 182. A head member 186 having a depending hook 188 is also attached to shaft 182 for holding the tray in place. The tray has an indentation 15 and an upturned end which is engaged by the depending hook 88 of head 186. The shaft 182 has an axial hole 184 which fits over the rod 176 in the end 174 of arm 168.

Reasonable variations and modification are possible within the scope of the foregoing disclosure, the drawings, (and the appended claims), without departing from the spirit thereof.

I claim:

1. A joint structure for cantilevered furniture, comprising: a support rod with at least one indented portion; a supporting arm, having parallel fingers turned upwardly at the ends thereof and spaced apart such that said fingers fit between said indented portion with the upturned ends of said fingers extending behind said indented portions of said rod; and a bearing surface on said supporting arm, positioned below said fingers, adapted to contact said support rod when said fingers are positioned within said indentation, said bearing member having means to vertically stabilize said arm when said fingers are positioned within said indentation; said indented portions of said rod being sufficiently narrow such that said arm can be coupled to said rod only by lifting an opposite end of said arm upwardly at an angle to said rod so that said upturned ends of said fingers pass through said indented portions of said rod while being substantially perpendicular thereto, and then rotating said end of said arm downwardly to position said bearing surface against a nonindented portion of said rod.
2. A joint structure according to claim 1 wherein said rod has a plurality of said indentations spaced between the areas of enlarged circular diameter.
3. A joint structure according to claim 1 wherein said rod has a plurality of ball shaped protrusions spaced along the length thereof.
4. A joint structure according to claim 1 wherein said arm has a vertical socket hole at an end spaced from said fingers adapted to receive and support the end of a second rod so that multiple cantilevered arms can be cantilevered from said joint.
5. A joint structure according to claim 1 wherein said bearing surface is arc-shaped in cross section and substantially conforms with the external configuration of said support rod.
6. A cantilevered supporting structure for hospital furniture comprising the joint structure of claim 1 wherein said support rod is attached by a pair of flanges to the side of a bed frame, and a plurality of supporting arms, each having one of said joint structures, are interconnected through said joint structures.
7. A cantilevered furniture construction comprising: a plurality of supporting arms interconnected through joint structures according to claim 1; a support rod of one of said joint structures attached to a fixed support member; a tray having a

recessed end portion supported on an outer end of said cantilevered structure; support means for said tray comprising a downwardly extending connecting member adapted to engage an end of one of said supporting arms, a laterally extending support member having at one end thereof an upwardly extending portion, an upper laterally extending portion above a portion of said support member and a slightly downwardly extending portion on said upper laterally extending portion to engage said recessed end portion of said tray so that said tray is releasably held by said support means, said support member being rotatably supported by said supporting arms.

8. A furniture construction according to claim 7 wherein said tray supporting member comprises a pair of outwardly extending arms joined at the ends thereof.

9. A cantilevered furniture construction according to claim 7 wherein said attaching means further comprises a pair of laterally extending fingers; a bearing surface beneath said fingers; and a support rod containing at least one indentation whose width is slightly less than the distance between said spaced fingers, said fingers being positioned behind said rod to hold said tray supporting structure in engagement with said supporting rod.

10. A cantilevered furniture construction comprising: a plurality of supporting arms interconnected through joint structures as defined in claim 1; a cabinet supported by an end of one of said supporting arms, said cabinet having a downwardly extending horizontal flange at one side thereof; a cabinet support having means for rotatably engaging said end of said arm, said engaging means having a laterally extending support member, and an upwardly extending T-shaped brace, said laterally extending portion being positioned beneath said cabinet, and the upper portion of said T-shaped brace being positioned in said horizontal flange so that the cabinet on said cabinet support is stabilized against horizontal and vertical movement.

11. A furniture construction according to claim 10 wherein said upwardly extending T-shaped brace of said cabinet support member contains a pair of laterally extending arms at a lower portion thereof, said arms abutting against said cabinet on either side of said brace to horizontally stabilize said cabinet.

12. A joint structure according to claim 1 wherein said arm has at the other end thereof, a vertically extending socket hole, a second arm is provided, said second arm having a downwardly extending rod positioned in and rotatably supported by said socket hole.

13. A joint structure according to claim 12 wherein said second arm member has at the top portion thereof, a vertically extending socket hole, spaced substantially vertically above said downwardly extending rod, said socket hole is adapted to support still another arm with a downwardly extending rod.

14. An overbed furniture construction for cantilevering furniture parts over a bed comprising:

a plurality of arms pivotably joined at the ends thereof, said arms comprising at least first and second arms, said first arm having a socket at one end thereof;

means pivotably and detachably mounting said arms to said wall, said mounting means including a longitudinal rail fixed to said wall and having an upstanding flange and a vertical bearing face spaced from said wall; a bracket having a downwardly extending hook portion extending behind said upstanding flange of said rail and a supporting surface contacting said bearing face such that said rail supports said bracket member in spaced relationship with respect to said wall; a rod vertically supported by said bracket and passing through said socket of said first arm to pivotably support said first arm in a cantilevered manner from said bracket; and

a tray pivotably supported by an end of said second arm whereby said tray can be moved over a bed adjacent said wall by moving said arms, and all of said arms can be alternately positioned adjacent said wall when said furniture parts are not in use.

15. An overbed furniture construction according to claim 14 wherein said tray has a recessed end portion and means are provided to support said tray on said end of said second arm; said support means for said tray comprising a tubular connecting member pivotably supported on said end of said second arm, a laterally extending support member extending beneath said tray from said tubular member, an upper flange member extending from an upper portion of said tubular member

above an edge of said tray and having an outer portion extending slightly downwardly to engage said recessed end portion of said tray so that said tray is releasably held by said support means.

5 16. An overbed arm furniture construction according to claim 14 wherein a furniture part is pivotably joined to said plurality of arms, spaced from said wall.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,550,892 Dated December 29, 1970

Inventor(s) Robert L. Propst

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 44;
"and medical services, de-" should be --- and
medical services de- ---;

Column 1, line 55;
"position when, desirable" should be --- position
when desirable ---;

Claim 16 should read as follows:

--- 16. An overbed arm furniture construction accord-
ing to claim 14 wherein a furniture part is pivotably
supported by a third arm, said third arm being pivotably
joined to said plurality of arms, spaced from said wall.

Signed and sealed this 8th day of June 1971.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents