

Nov. 5, 1968

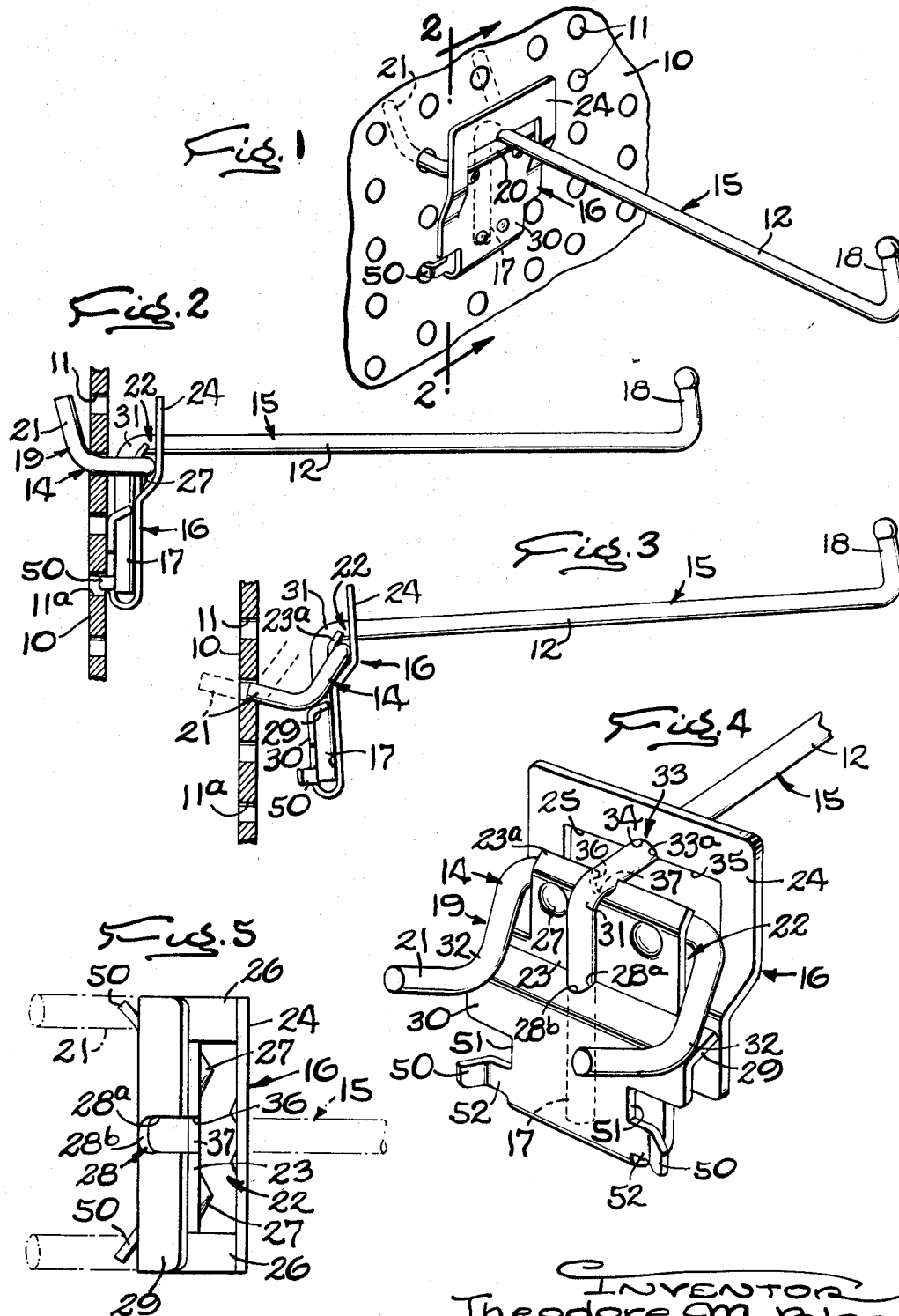
T. M. BLEED

3,409,260

HANGER FOR PERFORATED PANELS

Filed April 14, 1967

4 Sheets-Sheet 1



INVENTOR
Theodore M. Bleed
By Wolfe, Hubbard, Virdi & Quinn
ATTORNEYS

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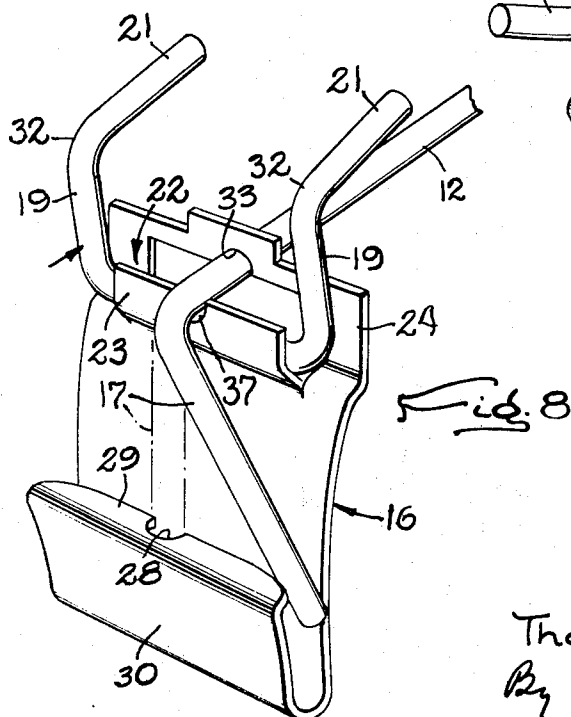
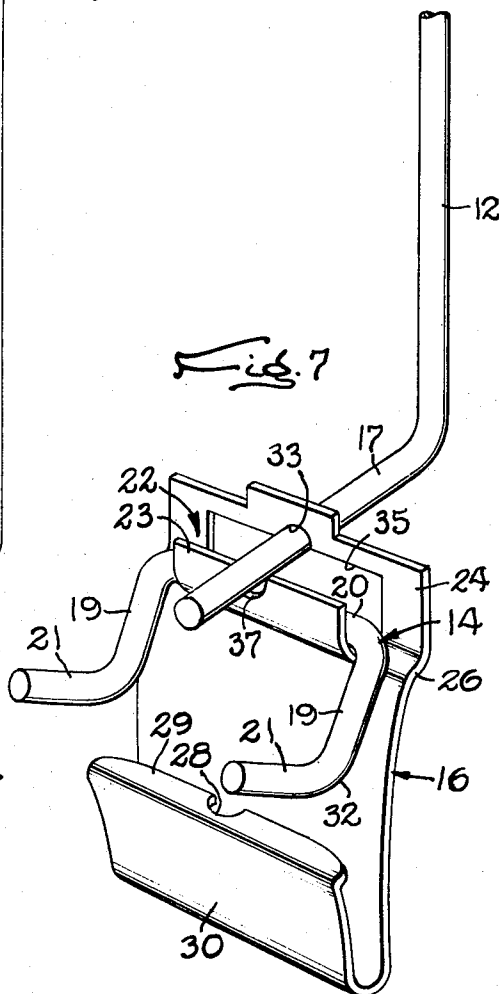
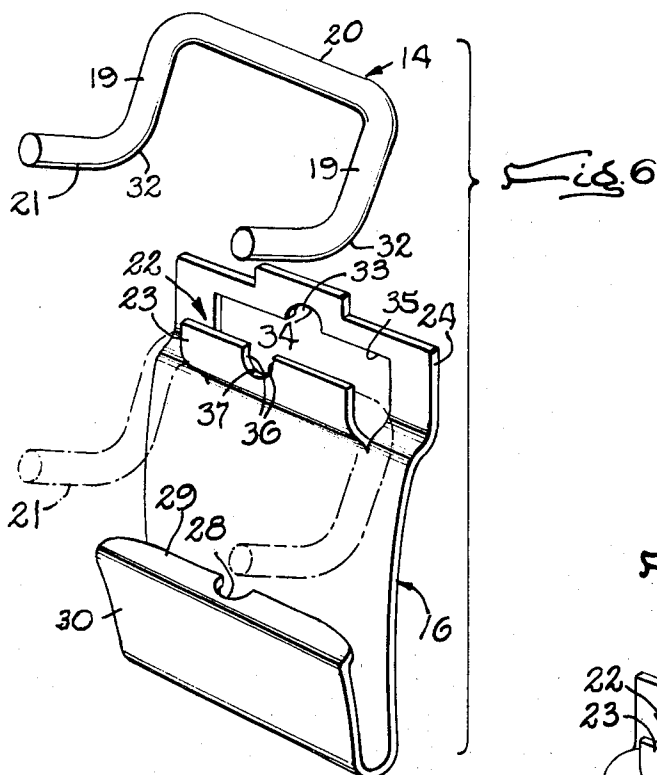
T. M. BLEED

3,409,260

HANGER FOR PERFORATED PANELS

Filed April 14, 1967

4 Sheets-Sheet 2



INVENTOR
Theodore M. Bleed
By *Welf, Hubbard, Jil & O'Connor*
ATTORNEY

Nov. 5, 1968

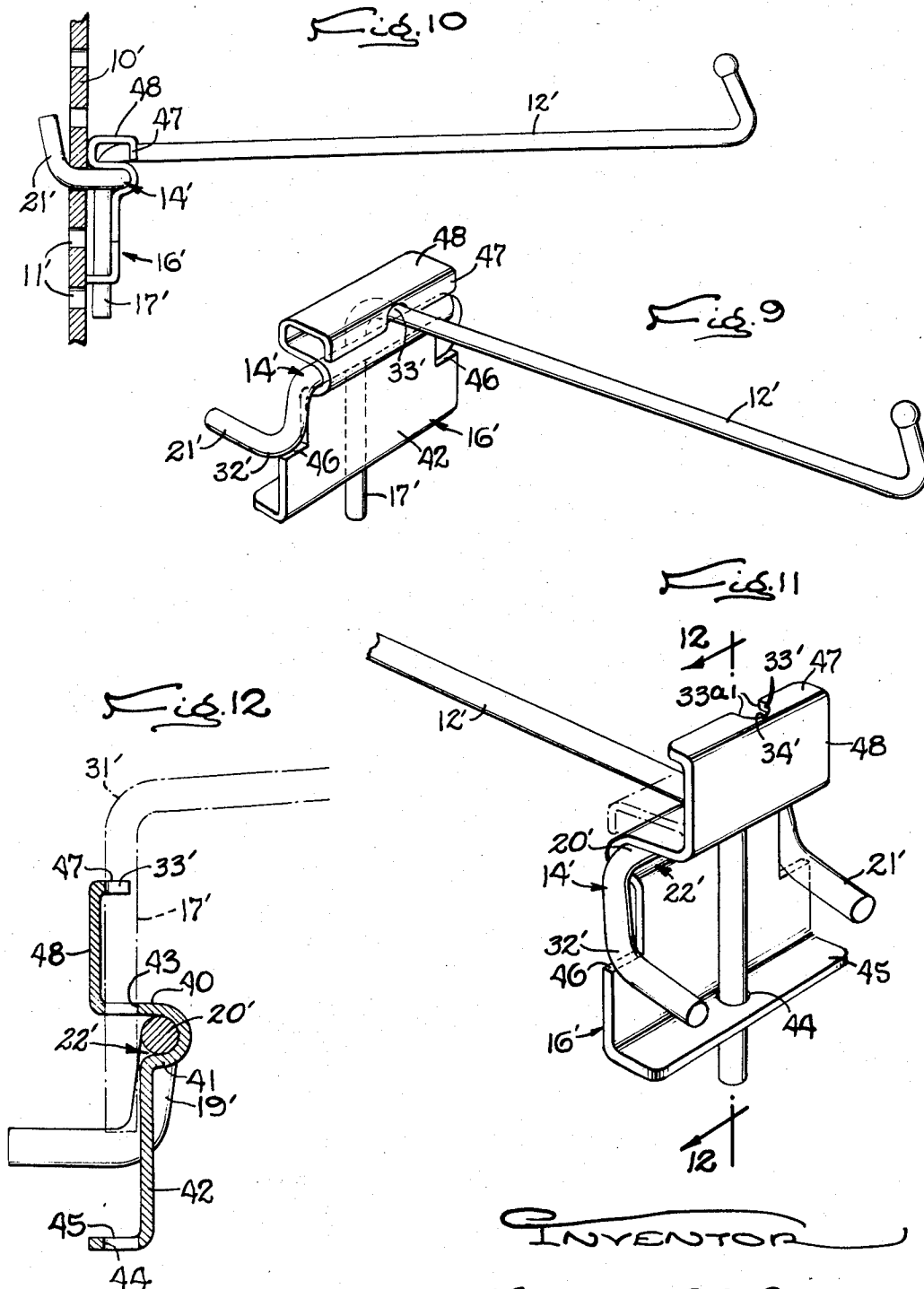
T. M. BLEED

3,409,260

HANGER FOR PERFORATED PANELS

Filed April 14, 1967

4 Sheets-Sheet 3



INVENTOR
Theodore M. Bleed
By Wolfe, Hubbard, Vint & Casan
ATTORNEYS

Nov. 5, 1968

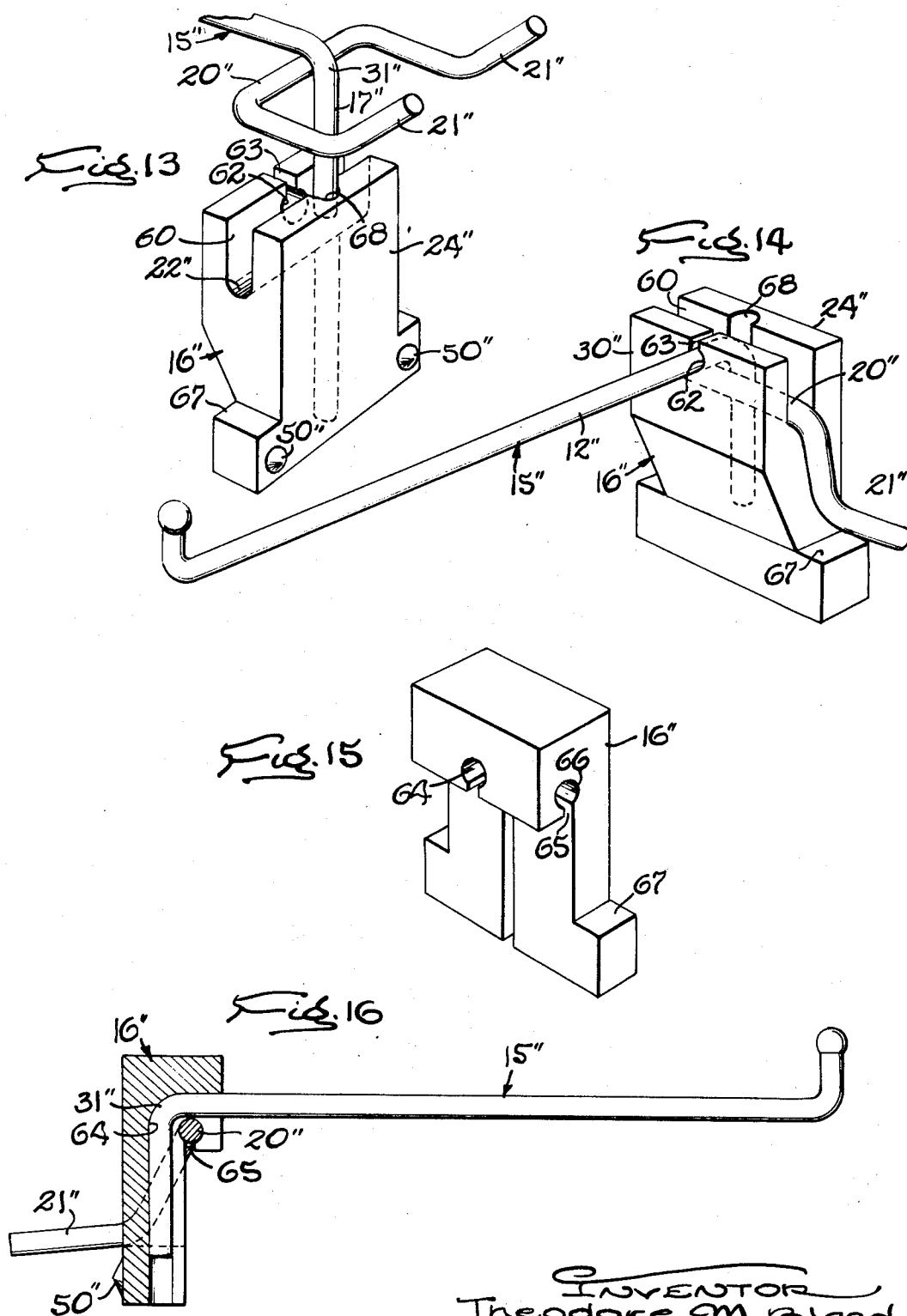
T. M. BLEED

3,409,260

HANGER FOR PERFORATED PANELS

Filed April 14, 1967

4 Sheets-Sheet 4



INVENTOR
Theodore M. Bleed
By *Welf, Hubbard, Wit & Pomeroy*
ATTORNEY

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3,409,260

HANGER FOR PERFORATED PANELS

Theodore M. Bleed, Rockford, Ill., assignor to Commercial Wire Products Co., Rockford, Ill., a corporation of Illinois

Continuation-in-part of application Ser. No. 592,063, Nov. 4, 1966. This application Apr. 14, 1967, Ser. No. 633,349

20 Claims. (Cl. 248—216)

ABSTRACT OF THE DISCLOSURE

The crosspiece 20 of a U-shaped hook member 14 is pivotally supported in an upwardly opening socket 22 in a bracket 16 of material such as sheet metal or plastic engaging the depending short arm 17 and the horizontal long arm 12 of an L-shaped piece of wire to join the wire and bracket together rigidly. With the long arm and the fingers 19 of the hook disposed horizontally, the fingers may be inserted through holes of a perforated board and then interlocked behind the board by downward bodily shifting of the bracket.

Cross-reference to related application

This application is a continuation-in-part of my co-pending application Ser. No. 592,063, filed Nov. 4, 1966, now abandoned.

Background of the invention

This invention relates to hangers adapted for mounting on upright panels having holes of regular and standardized spacing for receiving correspondingly spaced fingers or prongs on a hook member fulcrumed on an article-supporting hanger arm for insertion of the fingers through the holes of the panel during endwise horizontal movement of the arm and for interlocking behind the board during downward bodily movement of the arm. The invention has more particular reference to such a hanger in which the hook fingers and the hanger arm are pivotally coupled together through the medium of a separately formed bracket.

Summary of the invention

In the improved hanger, a hook member 14 comprising laterally spaced panel engaging fingers 21 rigidly joined by a crosspiece 20 is hingedly supported in a socket 22 on a separately formed bracket 16 which is coupled rigidly to the L-shaped end of a hanger 15 (FIG. 4) having an elongated arm 12 for supporting articles to be displayed. By virtue of the hinging, the fingers are adapted during horizontal shifting of the assembly relative to a perforated panel 10 (FIG. 3) to be inserted in or withdrawn from spaced holes 11 in the panel and interlocked with the latter by bodily downward shifting of the assembly (FIG. 2) or released therefrom after upward shifting of the assembly.

More particularly, the invention involves a novel construction of the bracket and coaction thereof with the L-shape of the hanger to enable all three parts to be formed cheaply by high production techniques and the bracket and hanger to be assembled into a rigid unit without welding or the like while leaving the hook member hinged on the bracket. Such rigid coupling is achieved through the provision of means on the bracket respectively engaging the arms 12 and 17 of the L at points spaced from the bend 31 and coacting to hold the hanger arm 12 against bodily vertical shifting and horizontal turning or swinging relative to the bracket. The bracket is also adapted to interlock in holes of the panel spaced

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vertically from the fingers 21 thus adapting the hanger for secure mounting on perforated panels composed of thin sheet metal.

Brief description of the drawings

FIGURE 1 is a fragmentary perspective view of a standard perforated board or so-called peg board equipped with an article-supporting hanger embodying the novel features of the present invention.

FIG. 2 is a section taken along the line 2—2 of FIG. 1.

FIG. 3 is a section similar to FIG. 2 showing the hook in the process of attachment to the perforated board.

FIG. 4 is a fragmentary perspective rear view of the hanger.

FIG. 5 is a fragmentary plan view of the hanger as shown in FIG. 4.

FIGS. 6, 7 and 8 are fragmentary perspective views illustrating the manner of assembling the parts of the improved hanger.

FIGS. 9 and 10 are views like FIGS. 1 and 2 showing another modification.

FIG. 11 is a fragmentary perspective view of the modified hanger partially assembled.

FIG. 12 is a fragmentary section taken along the line 12—12 of FIG. 11.

FIG. 13 is an exploded perspective view of the parts including a modified form of the bracket for connecting the hook and hanger members.

FIG. 14 is a perspective view of the parts shown in FIG. 13 after assembly of the bracket with the hook and hanger members.

FIG. 15 is a perspective view of still another modified form of the bracket.

FIG. 16 is a side elevation of the latter bracket after assembly of the hook and hanger members, parts being broken away and shown in section.

Description of the preferred embodiments

In the forms shown in the drawings for purposes of illustration, the invention is incorporated in a hanger having fingers 19 adapted for protection through and interlocking with an upright board or panel 10 having laterally spaced holes 11 therein to support a horizontal arm 12 projecting cantilever fashion from the face of the board for supporting articles to be displayed. The holes 11 are spaced horizontally and vertically across the board in a regular and standardized pattern.

In the form shown in FIGS. 1 to 8, the hanger comprises three parts, namely a U-shaped hook member 14, an L-shaped hanger member 15 and a bracket 16 joining the bent end of the L and the hook member so as to suspend the latter for swinging up and down between a hook-inserting position (FIG. 3) and a position (FIGS. 1 and 2) of interlocking with the board. The short arm 17 of the L 15 is disposed at right angles to the arm 12 whose outer end portion 18 is usually bent upwardly to provide for retaining articles on the arm.

The hook member 14 is a single piece of wire somewhat smaller in diameter than the holes 11 in the board with end portions bent at right angles to form parallel fingers 19 at opposite ends of a straight crosspiece 20. The fingers are curved nearly through a right angle leaving substantially straight ends 21. In the forms shown in FIGS. 1 to 8 and 9 to 12, the bracket 16 is stamped from a generally rectangular plate of relatively thin sheet metal and shaped to receive and interlock mechanically with the bent end of the hanger 15 and also provides a hinge socket 22 in which the crosspiece 20 is seated and loosely held so as to suspend the fingers 19 for

downward swinging to the inserting position (FIG. 3) when the arm 12 is disposed substantially horizontal.

In the form shown in FIGS. 1 to 5, the hinge socket 22 opens upwardly and is formed by two opposed, upright and relatively flat walls 23, 24, the latter wall being the laterally offset upper end portion of the bracket plate 16. The wall 23 is struck out of the central area of the wall 24 below the upper end thereof leaving, in this instance, a generally rectangular aperture 25. By making the wall 23 nearly as wide as the spacing of the fingers 19, it serves to center the fingers on the bracket and longitudinally of the hinge socket 22. While the crosspiece 20 may rest on the inclined parts 26 of the plate resulting from the offsetting as in the modification shown in FIGS. 6 to 8, it is preferred that it be supported by horizontally spaced lugs or bosses 27 struck out of the wall 23 and toward the opening 25 as shown in FIGS. 4 and 5.

The short arm 17 is disposed between the fingers 19 and projects downwardly along the back of the wall 23 and through an upwardly opening hole defined by the wall 23 coacting with a notch 28 in a flange 29 whose free edge abuts the wall 23. This flange is at the upper edge of a reversely and upwardly bent lower end portion 30 of the bracket plate 16. The arm 17 is thus engaged by the side and bottom edges 28^a and 28^b of the hole 28 at a point spaced well below the bend 31 of the L and is held effectively against lateral swinging or back and forth bodily shifting relative to the bracket. By spacing the flange 29 a proper distance below the hinge socket 22, its opposite ends are utilized as a stop to limit the downward swinging of the fingers 19. This spacing is such that with the long arm 12 of the hanger disposed horizontally, the bends 32 of the fingers will engage the top of the flange 29 and thus locate the ends 21 of the fingers substantially horizontally and in a position (see FIG. 3) most advantageous for easy entry into the board holes 11 by an endwise horizontal movement of the hanger as naturally held manually with or without articles supported thereon.

In accordance with the present invention, abutment surfaces 33^a and 34 in addition to the surfaces 28^a and 28^b are provided on the bracket 16 for engaging the sides of the hanger arm 12 at points spaced away from the bend 31 so as to hold the arm positively against horizontal swinging relative to the bracket and also bodily vertical displacement. Herein this means includes the opposed side edges 33^a of a downwardly opening and, in this instance, semi-circular notch 33 formed in the upper edge 35 of the opening 25 near the upper end of the bracket wall 24. With the notch 33 thus formed, its bottom edge 34 also engages the top side of the arm 12 and thus constitutes a stop for holding the arm positively against bodily upward movement relative to the bracket.

The effectiveness of the positive interlocking between the L and the bracket 16 without welding after assembly is increased in the present instance by an additional pair of edges 36 engaging opposite sides of the arm 12 adjacent the bend 31. These edges are the sides of an upwardly opening and semi-circular notch 37 formed in the upper edge of the wall 23 in axial alinement with the notch 33. With the arm 12 thus engaged at spaced points along its length and adjacent the bend 31, the arm becomes coupled rigidly to the bracket in the final assembly.

FIGS. 6, 7 and 8 illustrate the manner of assembling the three parts 14, 15 and 16 above described to interlock the same into the rigid unit above described without later welding, the parts corresponding to FIGS. 1 to 4 being indicated by the same reference numerals. In the bracket 16 shown, the walls 23, 24 of the hinge socket 22 are both offset from the plane of the plate. As the bracket 16 is initially formed, the portion 30 is inclined upwardly and away from the wall 23 to space the free edge of the flange 29 away from the wall a distance slightly greater than the diameter of the wire of the L 15. The assembly is effected by first seating the crosspiece 20 in the upwardly opening socket 22 (FIG. 6) followed by endwise insertion

of the short arm 17 of the hanger 15 through the aligned notches 33 and 37 as shown in FIG. 7. Then, the hanger arm 12 is turned to swing the arm 17 downwardly and in between the wall 23 and the free edge of the flange 29 as illustrated in FIG. 8. Finally and after disposing the arm 17 in the plane of the flange notch 28, the flange is pressed toward and against the bracket thus locking the arm in the hole defined by the notch and the bracket. The three parts are thus interlocked securely into the rigid assembly shown in FIG. 4.

As a result of the assembly, it is preferred to leave the crosspiece 20 seated somewhat tightly in the socket 22 but nevertheless free to swing up and down relative to the bracket. Such friction holding may be insured by bending the upper end portion 23^a of the wall toward the wall 24 in the course of assembling the wire parts in the bracket.

To mount the hanger assembly on a perforated panel, the fingers 21 are swung downwardly as shown in FIG. 3. Then, with the hanger arm 12 disposed horizontally, the arm is shifted horizontally to insert the fingers through the desired holes 11 as shown in phantom in FIG. 3. To swing the fingers upwardly and behind the panel, it is only necessary to lower the hanger arm and bracket, the wall 30 of the bracket coming against the front of the panel during such movement. With the bracket thus backed rigidly and the fingers interlocked with the panel, the hanger arm 12 is secured rigidly to the panel.

To remove the hook assembly with or without articles supported thereon, it is only necessary to grasp the arm 12 and raise the assembly along the face of the panel. As an incident to this, the fingers 21 are swung downwardly to a horizontal position and become withdrawn from the holes 11 simply by drawing the hanger away from the panel. The fingers 21 then remain parallel to the hanger arm 12 so as to be insertable in another selected pair of the holes where the hanger is to be relocated.

The hanger with the hook member constructed as above described is especially adapted for rigid mounting on perforated fiber board of conventional thickness, for example three-eighths of an inch. To adapt the assembly for similar rigid mounting on perforated panels composed of thinner material such as sheet metal, the invention, in another aspect, contemplates the provision on the bracket of one or more projections 50 which after insertion of the fingers 21 through the panel holes (FIG. 3) followed by lowering of the bracket to swing the fingers upwardly, become alined with holes 11^a of the panel spaced below the fingers and are adapted to enter such holes more or less automatically and as shown in FIG. 2 in the final downward shifting of the bracket and hanger assembly.

When the bracket is a sheet metal stamping (FIGS. 1 to 5), the projections 50 may be formed by notching out opposite sides of the bracket wall 30 near the lower end thereof as indicated at 51 in FIG. 4 to leave oppositely projecting lugs 52 narrower in width than the panel holes 11^a. The projections 50 having the proper spacing and vertical positions are formed by bending the lugs intermediate their ends and outwardly from the wall.

The mechanical interlocking of the hook member 14 and hanger 15 together by a connecting bracket to form a rigid assembly as above described may be achieved in various other ways, one of which is illustrated in FIGS. 9 to 12 in which the parts corresponding to those shown in FIGS. 1 to 5 are indicated by the same but primed reference numbers. In this modification, the bracket 16' is made from a strip of sheet metal deformed to form the socket 22' receiving the crosspiece 20' of the hook member 14', the socket in this instance opening horizontally and toward the perforated board and being defined by an upper horizontal wall 40 of the plate 16' and a shorter lower horizontal wall 41 which merges with the upright lower end portion 42 of the plate. The wall 40 is apertured at 43 to receive the arm 17' which extends downwardly past the wall 41 and through a hole 44 in a right

angular flange 45 at the lower end of the bracket. As before, the arm 17' is thus interlocked mechanically in the bracket against swinging or bodily sidewise movement while the fingers 19' are suspended from the bracket for free downward swinging. In this modification, the swinging is stopped by engagement of the bends 32' with the upper horizontal edges 46 formed on the bracket 16' at the proper distance below the hinge socket 22'.

As before and to hold the hanger arm 12' positively against horizontal swinging and bodily upward movement, the arm is straddled at a point spaced outwardly from its bend 31' by edges 33a' and an overlying edge 34' defining a downwardly opening notch 33'. This notch is formed at the center of the edge of a flange 47 formed out of the upper end portion 48 of the plate which, as the bracket is formed initially, extends upwardly from the edge of the socket wall 40. In this position, the notch 33' is aligned vertically with the hole 43 so as to permit insertion of the arm 17' through the two from the preliminary position shown in phantom in FIG. 12. After entry of the arm 17' through the bracket holes to the position shown in FIG. 11, the end 48 of the bracket is bent over to the position shown in full in FIGS. 9 and 10 and in phantom in FIG. 11, thus bringing the walls of the notch 33' adjacent and in abutting relation relative to the arm 12'. By such mechanical interlocking, the arm is secured rigidly to the bracket.

The bracket for supporting the hook member 14 pivotally and the hanger arm 12 rigidly may be composed of other materials and take other forms. For example, it may be a block of suitable plastic material molded in a shape that provides the socket for hingedly supporting the hook member and the surfaces engaging the L-shaped hanger 15 on opposite sides of the bend to support the article supporting arm rigidly after interlocking of the hook fingers with a perforated panel. Relatively rigid but somewhat resilient plastic such as polypropylene as combinations with polyethylene are examples of the various materials that may be used.

One such modification is shown in FIGS. 13 and 14 in which the parts corresponding in structure or function to those of the forms above described are indicated by the same but double primed reference numbers. The hinge socket 22' is the bottom of a groove 60 opening upwardly at the top of the molded bracket block 16'' and defined by parallel walls 24'', 30''. The latter are spaced to receive the crosspiece 20'' quite snugly between them as shown in FIG. 14 with the fingers 21'' lying across the edges of the wall 24'' and projecting beyond the latter. Projections 50'' corresponding to and positioned in the same relation to the fingers as the lugs 50 above described are molded on the wall near the bottom of the plastic block.

Formed in the plastic bracket in the molding thereof is a hole 68 open at its upper end and extending through substantially the full depth of the wall 24'' along the center thereof for snugly receiving the full length of the short arm 17'' of the L 15''. A hole 62 and a connecting and upwardly opening slot 63 are molded in the upper end of the wall 30'' and disposed in the plane of the hole 68 so as to receive the arm 12'' when the hanger 15'' is pressed downwardly after telescoping of the depending arm 17'' into the hole.

The slot 63 is somewhat narrower than the diameter of the wire forming the hanger arm 12'' so that, by virtue of the resiliency of the plastic, the slot walls will be spread apart as this arm is pressed downwardly to become disposed within the cross hole 62 as shown in FIG. 14. Thus, in the final assembly, the walls of the holes 62 and 68 engage the arms 12'' and 17'' of the L-shaped wire 15'' at points spaced from the bend 31'' so as to hold the member securely against horizontal swinging or bodily vertical movement relative to the plastic bracket.

In FIGS. 15 and 16, an L-shaped groove 64 molded in the central vertical plane of the plastic block 16'' is

adapted to receive snugly the short arm 17'', the bend 31'' and the adjacent portion of the hanger arm 12''. After such seating of the L-shaped end of the hanger, the crosspiece 20'' of the hook member 14'' is forced upwardly through a narrower slot 65 and into a hole 66 crossing the hanger arm 12'' and holding the crosspiece upwardly against this arm as shown in FIG. 16 with the fingers 21'' disposed adjacent and projecting across opposite ends of the block.

As before, the hook member is hinged on the plastic bracket and disposed horizontally when swung down against stop surfaces 67. After insertion in holes of a perforated board and shifting of the block downwardly along the front of the board, the fingers are swung upwardly and interlocked behind the board the same as in the forms above described. Projections 50'' may be molded on the block 16'' for entry into lower holes 11a in the board when the block reaches the lower locking position.

I claim as my invention:

1. A hanger for interlocking with horizontally spaced holes in a perforated panel for supporting articles therefrom, said hanger comprising, in combination, a U-shaped hook member comprising a straight crosspiece and parallel fingers projecting from the ends thereof and bent substantially through a right angle for simultaneous insertion through two holes of the perforated panel, a bracket providing a socket receiving and supporting said crosspiece for up and down swinging of said fingers when the bracket is disposed in an upright position, an elongated substantially right angular and L-shaped hanger member extending endwise into said bracket with a first arm of the L depending from the bend thereof and along the bracket and with the second or hanger arm projecting horizontally and cantilever fashion from the side of the bracket opposite said fingers, first means on said bracket engaging said depending first arm below said bend and on opposite sides thereof and holding such arm against swinging and bodily shifting relative to the bracket, and second means on said bracket engaging said second arm outwardly from said bend, said two means coacting with each other and said members to hold said crosspiece seated and hinged in said socket and to hold said hanger member against turning or bodily movement relative to the bracket.

2. A hanger as defined in claim 1 in which said means holding said hanger member against upwardly bodily movement relative to said bracket includes a stop formed on said bracket and overlying said hanger arm.

3. A hanger as defined in claim 1 in which said second means comprises the walls of a downwardly opening notch formed in the upper portion of said bracket and receiving said hanger arm.

4. A hanger as defined in claim 1 including a stop formed on said bracket and acting when said second arm is disposed substantially horizontally to limit the downward swinging of said fingers and thereby position the ends thereof for easy insertion through holes of the board by endwise movement of said second arm.

5. A hanger as defined in claim 1 in which said bracket comprises a sheet metal plate and said first means is defined by the walls of an upwardly opening hole in a horizontally disposed flange formed from the lower end portion of said bracket.

6. A hanger as defined in claim 1 in which said hinge socket opens upwardly and is defined by walls formed on said bracket and said hanger arm extends across and overlies the cross piece of said hook member thereby holding the crosspiece seated and hinged in the socket.

7. A hanger as defined in claim 3 in which said hinge socket is disposed between first and second upstanding walls formed on said bracket, one wall having said notch formed therein, the other wall having an upwardly opening second notch receiving said hanger arm at a point spaced from said first notch and disposed adjacent said bend.

8. A hanger as defined in claim 3 in which said bracket is a plate of sheet metal and said hinge socket opens upwardly, one side wall of the socket being formed by the upper end portion of the plate while the opposed wall is an upright flange struck out of such portion of the plate, the upper edge of said flange and the upper edge of the aperture left in said plate being formed respectively with upwardly and downwardly opening notches through which said second arm extends over the top of said crosspiece.

9. A hanger as defined in claim 5 in which said hole is defined by a notch in the edge of said flange which projects toward the bracket from an upwardly and reversely bent lower portion of the bracket.

10. A hanger as defined in claim 4 in which said finger stop is the edge portion of a flange bent upwardly from the lower end of said bracket.

11. A hanger as defined in claim 1 in which said first and second arms are short and long portions of a single piece of wire bent into an L shape.

12. A hanger as defined in claim 1 in which said second means are the opposed sides of a notch in the free edge of a flange formed at the top of said bracket and overlying the bend in said L and extending downwardly to dispose said second arm in said notch.

13. A hanger as defined in claim 1 in which said bracket is a plate of sheet metal deformed intermediate its ends to form said socket which opens horizontally and toward the ends of said fingers, the upper and lower end portions of the plate being bent laterally to form substantially parallel flanges disposed above and below the socket opening, vertically aligned holes in said flanges receiving the depending arm of said wire with said second arm extending across the top of the upper one of said flanges, and an extension of said upper flange having an edge notch in the plane of said L and being bent reversely over the top of the bend in said wire and then downwardly to dispose said second arm in said notch at a point spaced from the bend.

14. A hanger as defined in claim 1 in which said bracket comprises a block of plastic having said socket and said first and second holding means molded therein.

15. A hanger as defined in claim 14 in which said first and second holding means are the walls of holes molded in said block.

16. A hanger as defined in claim 15 including a slot communicating with and extending along the side of one of said holes, said slot being narrower than the diameter of the member disposed therein to permit seating of such member in the communicating hole by pressing the same transaxially into and through the slot.

17. A hanger for interlocking with horizontally spaced holes in a perforated board for supporting articles therefrom, said hanger comprising, in combination, a U-shaped hook member comprising a straight crosspiece and parallel fingers projecting from the ends thereof and bent substantially through a right angle for simultaneous insertion

through two holes of the perforated board, a bracket providing an open-sided hinge socket receiving and supporting said crosspiece for up and down swinging of said fingers when the bracket is disposed in an upright position, an elongated substantially right angular and L-shaped member extending endwise into said bracket with a short arm of the L depending from the bend thereof and along the bracket and mechanically interlocking therewith to project the other hanger arm horizontally and cantilever fashion from the side of the bracket opposite said fingers, said socket opening horizontally and with the upper and lower walls thereof projecting along said fingers beyond said crosspiece, vertically aligned holes in said walls beyond said crosspiece receiving the depending arm of said L whereby to hold the bracket against sliding upwardly around the bend of said L, and means formed on said bracket engaging said second arm adjacent but spaced from said bend to hold the wire against bodily upward movement and also lateral swinging relative to the bracket.

18. A hanger as defined in claim 17 in which said last mentioned means includes a notch in a flange extension of the upper wall of said socket overlying the bend of said L and projecting along said second arm toward the free end thereof.

19. A hanger for interlocking with horizontally spaced holes in a perforated panel for supporting articles therefrom, said hanger comprising, in combination, a U-shaped hook member comprising a straight crosspiece and parallel fingers projecting from the ends thereof and bent substantially through a right angle for simultaneous insertion through two holes of a perforated panel, a bracket receiving and supporting said crosspiece for up and down swinging of said fingers while projecting from one side of the bracket, an article supporting arm rigid with and projecting horizontally and cantilever fashion from the opposite side of the bracket whereby to permit coupling of the hanger to said panel by horizontal insertion of the fingers through spaced holes therein followed by downward bodily shifting of said bracket, and a projection on said bracket brought into alinement with and adapted for entry into a third hole of said panel spaced below said first holes.

20. A hanger as defined in claim 19 including a second projection on said bracket similar to said first projection and spaced therefrom to enter a fourth hole in said panel simultaneously with said first projection.

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JOHN PETO, *Primary Examiner*.