Nov. 12, 1935. S. C. BRODY 2,020,991

SUPPORT

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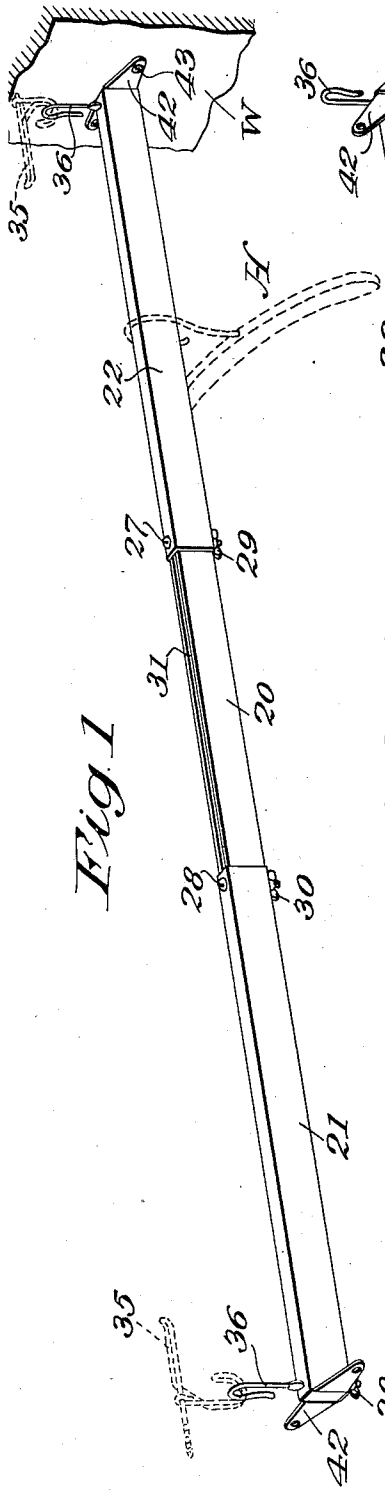


Fig. 1

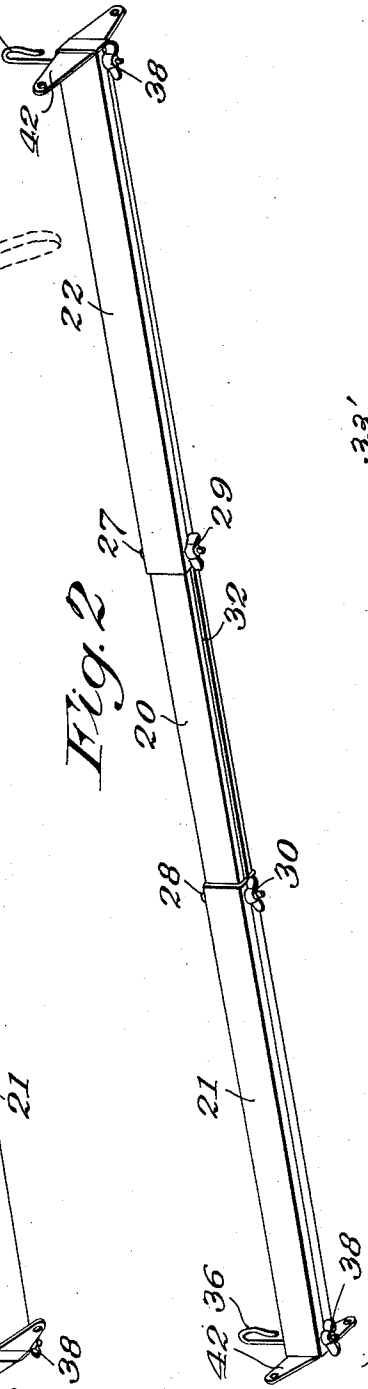


Fig. 2

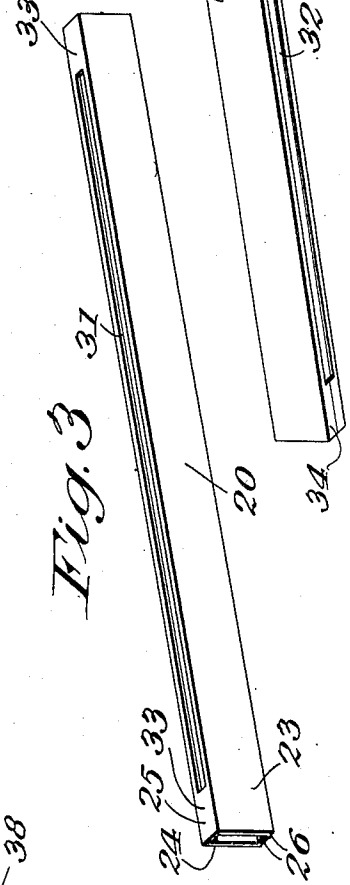


Fig. 3

Fig. 4

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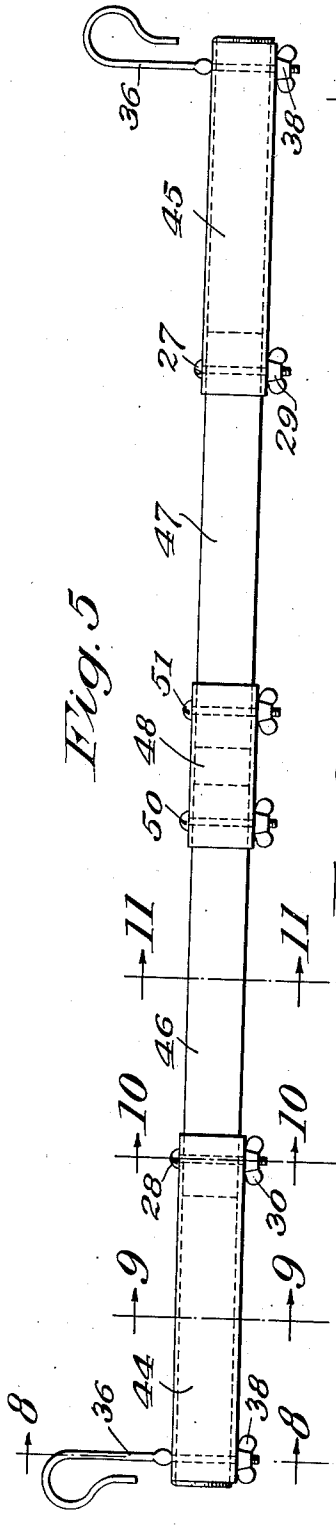


Fig. 5

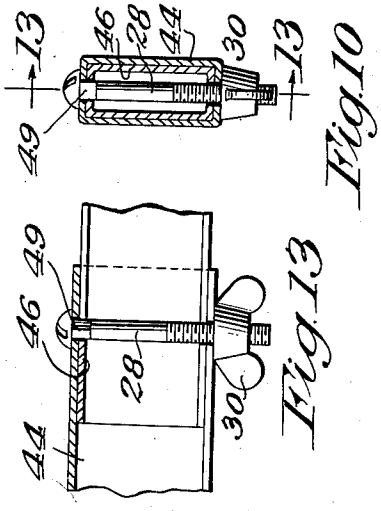


Fig. 10

Fig. 13

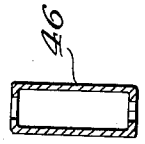


Fig. 11

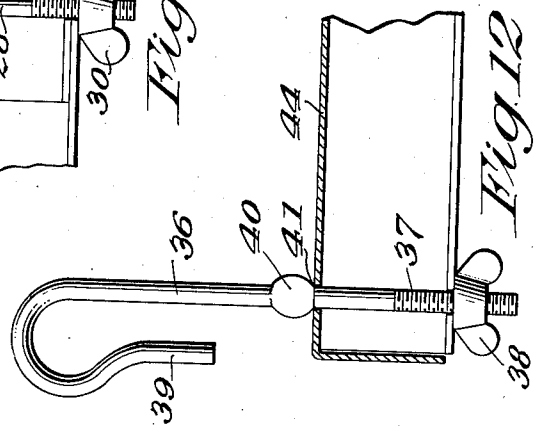


Fig. 12

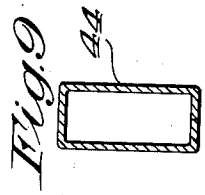


Fig. 9

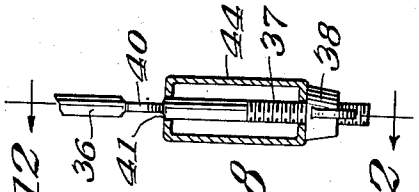


Fig. 8

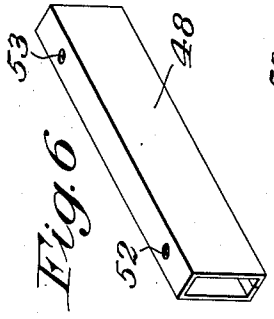


Fig. 6

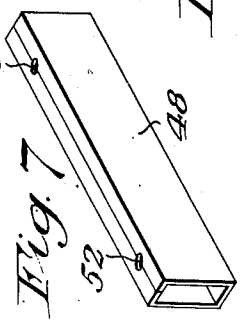


Fig. 7

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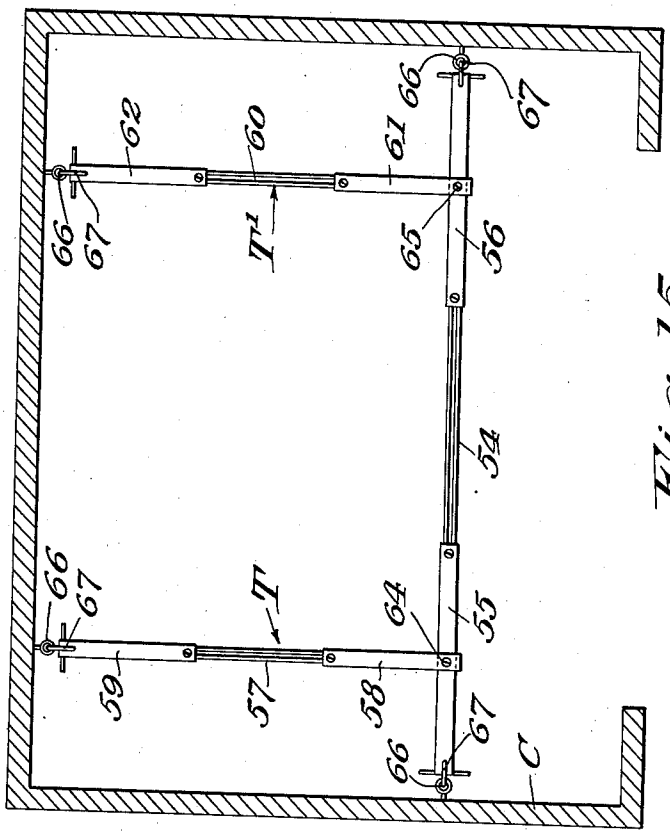


Fig. 15

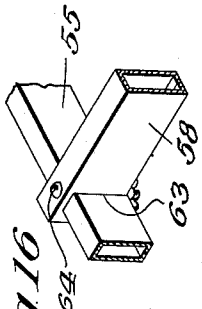


Fig. 16

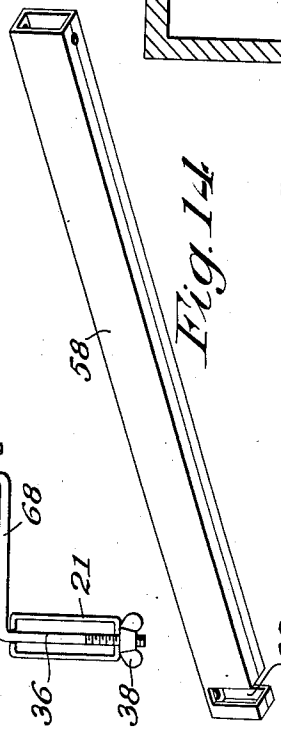


Fig. 14

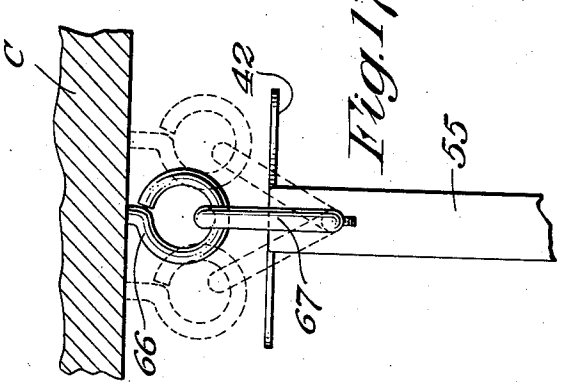


Fig. 17

Fig. 18

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UNITED STATES PATENT OFFICE

2,020,991

SUPPORT

Samuel C. Brody, Brighton, Mass.

Application January 2, 1935, Serial No. 13

13 Claims. (Cl. 211—123)

This invention has to do with an adjustable expansive and extensible unit composed of a plurality of sections which permits the adding, attaching and detaching of additional sections or members in both adjustable and stationary positions.

This plurality of sections and/or attaching members or sections is adapted to be assembled, adjusted and/or regulated in such a manner as to provide a non-collapsible and extremely endurable and strong support for any article or object suspended or supported therefrom or thereon.

This plurality of sections or members is constructed in such a manner that they are adapted to be assembled and adjusted at will and may be extended in any direction and are adapted to permit cross members to be attached thereto and/or suspended therefrom, while permitting both the main sections or members and cross members to extend in any desired directions or positions.

Another feature of my invention is that all end sections are designed to hold and are equipped with an adjustable detachable and expansive attachment means which permits either the end sections by themselves or together in the assembly unit to be fastened, adjusted (swinging or otherwise) expanded or secured at any desired angle, position or direction.

Moreover, my unit is so constructed as to enable it to be adjustably and instantly installed or attached to any of the ordinary supports, such as closet hooks or other hooks, nails and equivalent and/or independent supporting means, thus eliminating and obviating the necessity of any labor, such as nailing, screwing, or hammering during the course of installation of the unit. It is equally simple, easy and instantly detached.

My invention is simple and strong of construction and can be manufactured at an extremely low cost, thereby permitting the merchandising of the item at the minimum retail price. Among other advantages the unit is constructed so that it will not sag, bend or rattle when installed and/or adjusted and is adapted to hold or suspend practically any weight that the independent wall or other outside supports will bear. My invention readily lends itself and is adaptable to be manufactured in any size or thickness.

In the accompanying drawings.—

Fig. 1 is a perspective view as seen from above of a preferred form of my sectional extension unit in installed or fixed position.

Fig. 2 is a perspective view as seen from below.

Fig. 3 is a perspective view as seen from above of the center section of said unit, removed.

Fig. 4 is a perspective view of said center section removed, and as seen from below.

Fig. 5 is a side view of a modified form of unit with additional sections or members.

Fig. 6 is a perspective view as seen from above of the reinforcing coupling or collar used in the unit shown in Fig. 5.

Fig. 7 is a perspective view of said reinforcing coupling or collar as seen from below.

Figs. 8 to 11 inclusive are cross-sections on the lines 8—8, 9—9, 10—10, and 11—11, respectively, of Fig. 5.

Fig. 12 is a section on the line 12—12 of Fig. 8.

Fig. 13 is a section on the line 13—13 of Fig. 10.

Fig. 14 is a perspective view as seen from below of one of the rod cross members shown in the assembly of Fig. 15.

Fig. 15 is a plan section through a closet or other partly enclosed space equipped with an assemblage of sectional extension units in accordance with my invention, although not limited to two cross sections shown there as any number of cross members and counter cross members may be installed or attached with my invention.

Fig. 16 is a fragmentary perspective detail illustrating the positive interlocking and adjustment action between the various sections or members shown in Fig. 15.

Fig. 17 is an enlarged detail diagrammatically illustrating in full and dotted lines the capacity for pivotal rotating or adjusting movements of the ends of the sections or members shown in Fig. 15 relative to the wall or any other support, and

Fig. 18 is a detail showing a further modification of the attachment means which permits the unit to be positioned closer to or farther away from the independent attaching means or supports.

As illustrated in these drawings, my extension unit consists of a plurality of telescopic sections. When composed of three sections, as shown in Figs. 1 to 4 inclusive, my supporting unit has a center section 20 and a pair of end sections 21 and 22. The end sections are duplicates of each other and the center section telescopes into the end sections.

This arrangement may, however, be reversed and the center section be made to telescope over the end sections rather than into the same, as actually shown in these drawings.

The several sections may likewise be variously designed to permit and hold the telescopic adjust-

ment. As here shown, the several sections are formed as hollow members of generally oblong cross-section. So formed they present each a pair of spaced parallel front and rear walls 23 and 24, respectively. These are connected along their upper edges by a top wall 25. Their lower edges are turned inwardly preferably at right angles towards each other as co-planar flanges 25 which together constitute the bottom wall.

My invention, however, is not limited to a supporting unit of oblong or any other particular cross-section. The several sections may be of any desired cross-section.

The end sections 21 and 22 are each provided near its inner end with means for permitting and holding the adjustment or locking means of the telescopic center section 20. These means may be of any desired character.

As here shown they are simple wing bolts 27 and 28 fixed vertically through the end sections. The heads of the wing bolts are substantially flush with the upper walls of the end sections, and have a square shoulder extending below their heads so as to prevent the bolts from rotating inside the members while the wing nuts are being tightened. The wing bolts may be varied in construction to suit our particular needs. The wing nuts 29 and 30 of the wing bolts are positioned beneath the bottom walls of said end sections. For example, so positioned they are out of the way of the garment hangers, one of which is shown in dotted lines at H in Fig. 1, and hence do not interfere with the free adjustment of the hangers H longitudinally along the end sections or the center section. My invention, however, is not limited to the supporting of hangers, garments or the like, but may be used for the support or reinforcement of anything.

The wing bolts are received in and slide freely along registering longitudinal slots 31 and 32, formed respectively in the top and bottom walls of the center section 20. These slots terminate short of the ends of the center section itself leaving at such ends unslotted wall portions or webs 33, 33' and 34, 34' at both the top and bottom edges of the center sections. These webs function as limiting stops against which the wing bolts 27 and 28 contact to prevent accidental disassembly of any of the several sections.

When deliberately disassembling the several sections, it is only necessary to unscrew the wing nuts of the wing bolts and remove the bolts from said slots 31 and 32. When the wing bolts are positioned within the slots, the adjustment of the several sections relative to one another is held by tightening the wing nuts against the bottom walls of the end sections. This clamps the sections firmly and reliably, and enables the adjustment to be changed instantly by simply loosening up on the wing nuts, sliding the sections to the desired new position, and re-tightening said nuts. My invention is not limited in the use of wing nuts or wing bolts but will function just as reliably with the use of any equivalents thereto.

Adjacent their outer ends the end sections are provided with means adapted for quick detachable engagement with any suitable supporting devices, as the conventional hooks 35 found in any closet or other enclosed space.

As here shown such quick-detachable suspension means are themselves hooks 36 or their equivalents. These hooks 36 are set vertically through the end sections, and as detailed in Figs. 8 and 12, comprise each a threaded portion 37 on which is threaded a wing nut or its equivalent 38 and a hooked end portion 39.

The threaded portion 37 is set through the bottom wall of each end section and the wing nut 38 threads on said threaded portion and clamps against said bottom wall. By loosening said nut and rotating the hook about its own axis, its hooked end portion 39 may be swung to various positions and again clamped. This enables the supporting unit to be suspended from the hooks 35 or their equivalent supporting devices regardless of the position of said devices 35, and locked in such adjusted position by tightening up on the wing nut.

The hooks 36 are also adjustable vertically in their bearings in the end sections so as to be engageable with suspension devices 35 positioned at different heights. In order to permit this action, the hook 36 is provided just above the top wall of the end section with a thin rounded portion or key 40. This normally rests on the top wall of the end section at right angles to the similarly shaped hole 41 therein through which the hook passes. If the hook is to be lowered, the wing nut 38 is first loosened, the hook rotated through a quarter revolution to align the thin part of the key 40 with the hole 41 and the hook lowered through said hole to the desired level and locked by tightening up on the wing nut 38.

In order to provide a fixed or stationary bearing at the ends of the supporting unit, the end sections 21 and 22 are desirably provided with wall engaging bearing elements 42 adapted to rest flatly against a wall or other supporting surface W. (See Figs. 1 and 2.)

These may be conveniently formed as oppositely extending flanges which are bent outwardly at right angles from the front and rear walls of the end sections 21 and 22, and are adapted to be screwed or otherwise fastened as at 42 to the wall or other support W.

While desirable, such bearing flanges 42 are not essential and may be omitted where not needed without affecting the efficiency of the supporting unit, or they may be made and formed from any angles from the front and rear walls of the end section 21 and 22.

In the form of my invention illustrated in Fig. 5 and the figures based thereon I provide for unlimited extensibility of the supporting unit while at the same time providing that strength and rigidity against collapsing, sagging or buckling so essential in a multi-section extension unit of this class.

The unit of Fig. 5 is a multi-section unit which may be indefinitely expanded as to length by the addition of detachable and interchangeable members or sections, these being reinforced and strengthened against collapse by means of novel reinforcement or coupling members so that the ultimate unit in whatever length to which it has been expanded is strong and rigid at all points along its extent.

For convenience of illustration I have shown in Fig. 5 a four-section supporting unit equipped with only one reinforcement member. It will be understood however that this showing is only illustrative and that units of far greater length may be built up by simply adding on extra members or sections and extra reinforcement coupling or collar members.

As shown in Fig. 5 the unit consists of two end sections 44 and 45 corresponding to the end sections 21 and 22 of Fig. 1, two intermediate sections 46 and 47 corresponding generally to the

intermediate section 20 of Fig. 1 and a central reinforcement member, coupling or collar 48.

The end sections 44 and 45 are provided at their outer ends with hooks or equivalent suspension elements similar to the hooks 36 of Figs. 1 and 2. The intermediate sections 46 and 47 are slotted at top and bottom similarly to the intermediate section 20 of Figs. 1 and 2, and the sections 44 and 45 are adjustably assembled with the sections 46 and 47 respectively by means of wing bolts similar to the wing bolts 27 and 28, which, incidentally, may have squared portions 49 below their heads (see Figs. 10 and 13) which fit within the longitudinal slots 31 and 32 of sections 46 and 47 and/or any other similar slotted sections and prevent accidental rotation of the bolts therein.

The inner ends of the sections 46 and 47 are received within the tubular reinforcement collar 48, being held therein by means of other wing bolts 50 and 51 similar to the bolts 27 and 28, the collar adjacent either end being apertured as at 52 and 53 (Figs. 6 and 7) to fixedly receive said bolts, and the heads of the bolts being received in the slots 31 and 32 of the sections 46 and 47. Both inner ends of 46 and 47 abut firmly up against each other when reinforced and locked by collar 48, which positively prevents any movement in any direction of any or either 46, 47 or 48 even if wing nuts are not screwed up tightly. When reinforced or locked in position with the collar abutment stop 33—33 in Fig. 3 positively prevent outward inward or any movement relative only thereto. Thus longitudinal adjustment of the individual sections 44 and 46 and 45 and 47 relative to each other and to the reinforcement collar or sleeve 48 is permitted and held by means of the individual wing bolts 27 and 28 and 50 and 51, the reinforcement member 48 strengthening and stiffening the unit against collapse, sagging or bending in any and all positions of adjustment.

In Fig. 15 and the figures based thereon, I have shown a further adaptation of my invention particularly designed to provide extensibility in several directions as well as a highly desirable flexibility and universality of attachment or positioning.

In said Fig. 15, the unit designated generally by the reference character L may be considered as a lengthwise span for a closet or other enclosure C and the units designated generally by the reference characters T and T' may be considered as cross or transverse supports.

The sections constituting both the lengthwise and the cross-wise spans may be considered as the same or equivalent to the end sections 21 and 22 and the center section 20 of the unit shown in Fig. 1, the several sections of these several units L and T and T' being interchangeably usable. For convenience of description, however, the sections of the span L are designated as 54, 55, and 56; those of the cross span T as 57, 58 and 59; and those of the cross span T' as 60, 61 and 62.

The sections 58 and 61 are formed for quick detachable interlock with the sections 55 and 56, respectively, of the span L, the sections 58 and 61 being cut out or equivalently machined as indicated at 63 in Figs. 14 and 16 to interlock or attach with the sections 55 and 56, and being fastened in such interlocking relation by means of the wing bolts or equivalent fastenings 64 or 65.

In some instances where desired, the assembly of supporting units shown in Fig. 15 or any of the individual units or members may be provided with means for suspending it in a pivotal manner from any fixed support, as the screw eyes 66. When so constructed, the end sections of any or all of the units carry swivel attachment devices 67 (see Fig. 17). By means of said swivels 67 the units may be suspended from eyes 66 which do not happen to exactly aline with the units, as indicated in full and dotted lines in Fig. 17.

A still further variant of the attachment hook or its equivalent is illustrated in Fig. 18, wherein the hook is generally similar in type and method of clamping as that illustrated in Figs. 8 and 12, but is especially designed to enable the supporting unit to be positioned in offset relation to a fixed suspension hook or equivalent supporting device. In the embodiment of Fig. 18 the shank of the hook 36 above the rod section 21 is bent upon itself at right angles and extends laterally of the rod section as an arm portion 68. This is bent upwardly and over upon itself to form the hook proper 39. Thus the hook portion 39 is offset with respect to the shank 36. By rotating the hook in its bearing in the section 21 the hook portion 39 may be adjusted relative to the section 21 and to any fixed suspension hook or equivalent supporting device.

Either the attachment means of Fig. 17 or of Fig. 18 may be used with the assembly of Fig. 15, or the span units shown in Fig. 15 may be equipped some with the devices of Fig. 17 and some with those of Fig. 18.

Similarly as to the arrangement of span units shown in Fig. 15, these may be arranged in various combinations. They may extend at any angle and in any direction. There may be any number of them and they may be composed of any desired number of individual members or sections.

What I therefore claim and desire to secure by Letters Patent is:—

1. An extension unit, comprising a pair of longitudinally slotted end sections and a longitudinally slotted intermediate section telescopically adjustably and detachably engageable therewith, and means adjustably and detachably mounted adjacent the outer ends of the end sections for detachably and adjustably mounting the extension unit in operative position said means comprising hook-like elements each having a threaded shank portion passing through spaced apertures disposed in the outer end of the respective end section, and securing means engaging said threaded shank portion.

2. An extension unit as claimed in claim 1 wherein the mounting means are angularly adjustable about their own axes relative to the end sections.

3. An extension unit as claimed in claim 1 wherein the mounting means are adjustable vertically relative to the end sections.

4. An extension unit as claimed in claim 1 wherein the mounting means are rotatively adjustable relative to the end sections and have support-engaging portions which are offset with respect to the plane of the end sections to enable the extension unit to be positioned at variable projections from the supports engaged by said support-engaging portions.

5. An extension unit as claimed in claim 1 wherein the mounting means are formed as hooks or loops which are angularly adjustable about their own axes relatively to the end sections, and wherein the adjustment of each hook or loop is held by adjustable locking or clamping means mounted on the stems of said hooks or loops and

active against the adjacent walls of the end sections.

6. An extension unit comprising a pair of end sections, at least two intermediate sections, the outer ends of the intermediate sections being engaged with the inner ends of the end sections, and a reinforcement member connecting the inner ends of said intermediate sections to each other, and hooks or loops extending through the end sections adjacent the outer ends thereof and adjustable angularly about their own axes for mounting the unit in operative position.

7. An extension unit, comprising a pair of end sections of tubular cross-section, each section having spaced front and rear walls, a top wall connecting the same, and a bottom wall, and an intermediate section of like cross-section telescopically engaging said end sections, said intermediate section having registering slots in both its top and its bottom walls extending longitudinally thereof, the slots terminating short of the ends of the intermediate section, the top and bottom walls of the intermediate section beyond said slots being closed and functioning as abutment stops, and means extending through the registering slots of the intermediate section and adjustably fixed in the end sections of the assembly for permitting and holding the adjustment of the intermediate section relative to said end sections, said means adapted to contact said abutment stops of the intermediate section to limit the adjustment thereof.

8. An extension unit comprising a pair of end sections and one or more intermediate sections or members which are slidably, telescopically adjustably and detachably engageable therewith, said intermediate section or sections being longitudinally slotted, and said end sections having means extending through said slots for permitting and holding desired adjustment of the intermediate section or sections relative to the end sections, and attachment means adjustably and detachably and rotatably mounted adjacent the outer ends of the end sections for detachably and adjustably mounting the extension unit in operative position, and stationary bearing means extending from the outer end of each section through which may be inserted or attached nails, screws, hooks, clamps or the like thereby giving the entire unit unlimited rigidity and strength.

9. An extension unit as claimed in claim 8 which permits an unlimited number of intermediate members or sections to be extended to or engageable with either of both end sections or to each of the intermediate members or sections, each two of the intermediate members being detachably and firmly joined by a coupler or collar connecting their inner ends to each other.

10. An extension unit comprising a pair of end sections, a pair of intermediate sections the outer ends of which telescopically engage the inner ends of said end sections, and a detachable reinforcing member locking at will and connecting the inner ends of said intermediate sections, all of said sections and said reinforcing member being of tubular cross-section, said intermediate sections having longitudinal slots, means fixed in said outer sections and disposed in said slots for permitting and holding the adjustment of said intermediate sections relative to said outer sections, and means fixed in said reinforcing member and disposed in said slots for permitting and holding the adjustment of said intermediate sections relative to the entire unit.

11. An extension unit, comprising a pair of end sections and an intermediate section telescopically engageable therewith, all sections being tubular, and said intermediate section having registering slots terminating adjacent the ends of said intermediate section in webs constituting abutment stops, and means fixed in the end sections and extending through the registering slots of the intermediate section for permitting and holding the adjustment of the intermediate section relative to said end sections, said means adapted to contact said abutment stops of the intermediate section to limit the adjustment thereof.

12. An extension unit comprising a pair of end sections and at least two intermediate sections telescopically engageable therewith, all sections being tubular, and a pair of oppositely disposed flanges extending outwardly from each end of the end sections and adapted for facial contact with a pair of spaced supporting surfaces and constituting both stabilizing bearings and attachment means for rigidly mounting the unit in fixed position on such supporting surfaces.

13. An extension unit, comprising a pair of end sections and an intermediate section telescopically adjustably and detachably engageable therewith, and means adjustably and detachably mounted adjacent the outer ends of the end sections for detachably and adjustably mounting the extension unit in operative position, said means being angularly adjustable about their own axes relative to the end sections.

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