

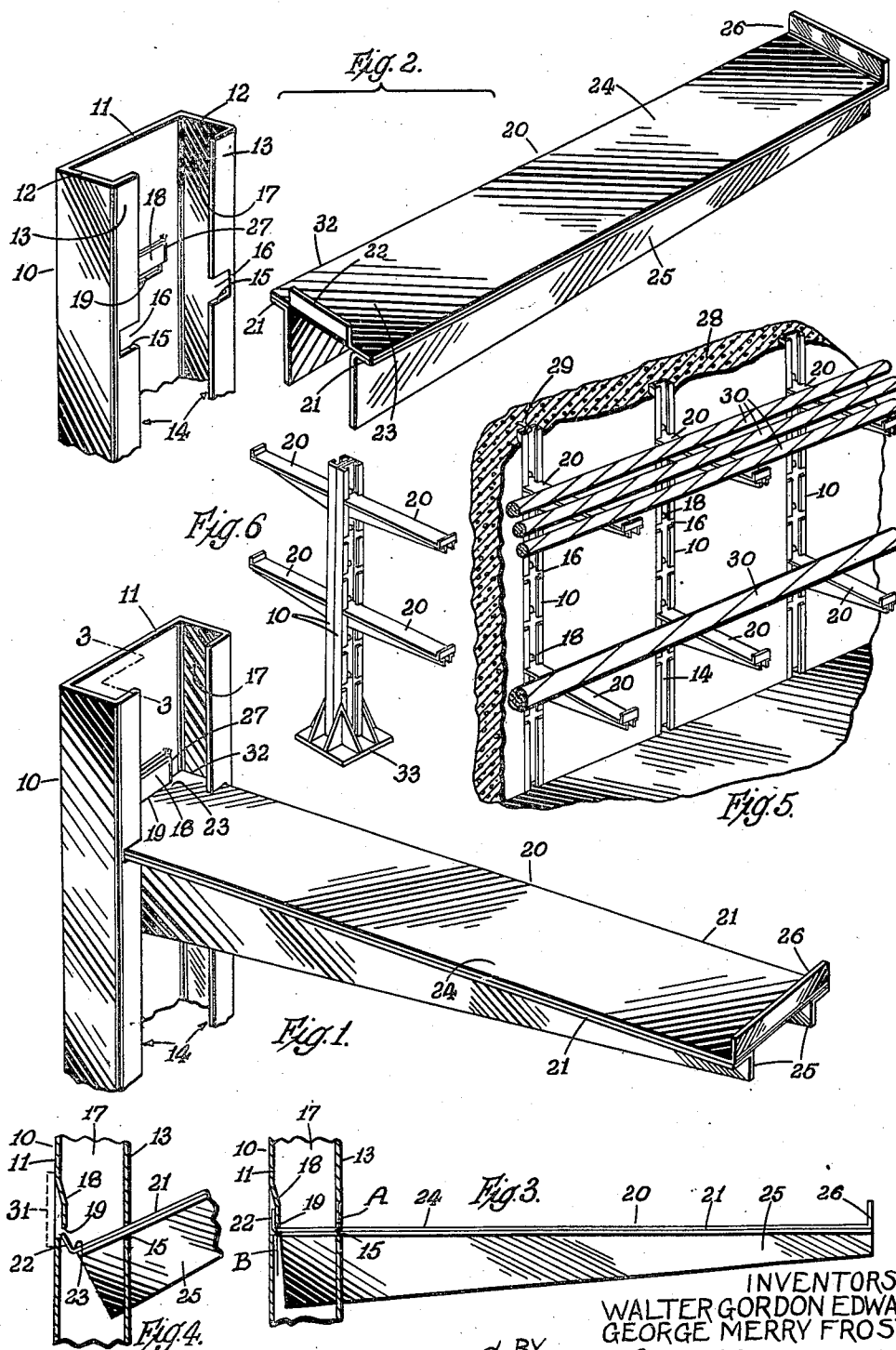
Dec. 14, 1943.

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2,336,604

DETACHABLE CANTILEVER BRACKET STRUCTURE

Filed Sept. 30, 1941



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UNITED STATES PATENT OFFICE

2,336,604

DETACHABLE CANTILEVER BRACKET
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Johannesburg, Transvaal, Union of South
AfricaApplication September 30, 1941, Serial No. 412,986
In the Union of South Africa, November 5, 1940

5 Claims. (Cl. 248-243)

This invention relates to bracket structures comprising a post which is fixed to or incorporated in upright structure such as a wall or may form part of a stand, and comprising also a cantilever bracket arm adapted to be detachably mounted at one end on the post and when so mounted to have horizontal extension therefrom. A horizontal row of such bracket structures is suitable for supporting horizontal lengths of pipes, shelves and other articles.

An example of the invention is shown in the accompanying drawing in which:

Figure 1 is a perspective view showing the post and bracket arm assembled.

Figure 2 is a similar view showing the parts separated.

Figure 3 is an elevation of the assembly, partly sectioned on 3-3, Fig. 1.

Figure 4 illustrates the procedure of mounting or dismounting the bracket arm.

Figures 5 and 6 show the invention in use.

The post indicated generally by 10 is made of plate bent to form a box section comprising the back element 11, the two side elements 12, and a front element consisting of two inward flanges 13, separated by a gap 14. At the positions where a bracket arm is intended to be mounted, the flanges 13 are notched to provide the upwardly directed and horizontal edge 15, 15 forming the supporting engagement point for the bracket. The notching preferably consists of the horizontal slots or gaps 16, 16 the vertical width of which is no more than is necessary to enable the bracket arm to tilt as shown in Fig. 4. Said slots preferably extend horizontally to the inner surfaces 17, 17 of the side elements or walls 12, actually dividing the flanges 13 into vertical series of spaced lugs or flange members. A vertical tongue 18 is pressed from the material of the back member 11 to provide the downwardly directed edge 19, forming the point of engagement for the inner end of the bracket. The tongue is preferably pressed somewhat out of the plane of the back element 11 and so as to be within the cavity of the post section.

The bracket arm 20, so far as concerns its formation to engage with the post, provides the lateral horizontal extensions 21 to engage in the slots 16; an upturned hook 22 to engage behind the tongue; and a flat surface 23 to contact with the edge 19 of the tongue. The arm generally is of girder-like form; and in the example shown comprises the horizontal plate 24 and the stiffening ribs formed of angle pieces 25 and welded to the underside of the plate 24. The lateral flanges

formed of the side edges of the plate 24 and the horizontal elements of the angles constitute the lateral extensions 21 and the plate provides the surface 23. The rear end of the plate is turned up to form the hook 22 and the front end 26 may be also turned up as a check against supported articles slipping off that end of the bracket. The gap 14 in the post is wide enough and extends sufficiently far below the slots 16 to admit the stiffening formations 25.

The metal of the tongue 18 is not severed, at its horizontal ends 27, from the metal of the back element 11 but is embossed out of the latter and thereby given a stiff form. The hook 22 and the tongue 18 are conveniently made only so wide horizontally that the former passes easily through the gap 14.

The post is usually associated with other structure that supports it vertically or materially so. In the case illustrated in Fig. 5 it is incorporated in the face of a concrete wall 28, and is retained in the wall by anchors 29. The concrete considerably reinforces the stiffness of the metal plate post when the latter is of some length. For carrying electric cables 30 (for instance), posts 10 are spaced along the wall equally to the desired length of the cable spans and each is provided with as many bracket receiving formations 16, 16 as the number of tiers of brackets that is likely to be required.

The advantage of the tongue 18 being within the boundaries of the post section is that no chase to receive it need be made in structure with which the back of the post contacts. When concrete is to be cast around the post, a slip indicated by the dotted lines 31, Fig. 4, may first be lightly secured in position to cover the hook recess; and if the upper end of the hollow post is within the concrete, it also is similarly covered.

Fig. 6 shows two of the posts 10 welded together to form a composite post rigid enough to stand by itself; the front of each component post facing outward so that each such component post functions as before in carrying its bracket arms. The composite post may have a foot such as 33 for standing on the ground or it may be sunk in a concrete base.

Fig. 4 indicates the procedure of mounting a bracket arm on the post. The flanges 21 are slid through the slots 16; the hook 22 and body section of the arm passing freely through the gap 14. The outer end of the arm is tilted up sufficiently to enable the hook 22 to be passed under the lip 19; and the advantage of making the flanged notching in the form of narrow slots

is that the latter provides the arm with a somewhat positive pivotal connection with the post which facilitates the combined tilting and sliding manipulation of the arm in this operation. The outer end of the arm is then lowered to the locked position of Fig. 3. The arm is disconnected by the reverse operation.

A load on the bracket arm exerts a turning moment about the connection of the bracket to the post. Said moment is applied to the post as a force couple consisting of the downward pressure A, Fig. 3, on the edge 15 and the upward pressure B exerted on the edge 19 of the tongue 18. Because 15 and 19 are substantially level, said forces are both vertical and therefore, to the extent that the post is vertical, these forces exert only compressive stresses on the metal of said edge and said tongue; which compressive stresses are readily resisted by said parts when made of thin metal arranged in or materially in the planes of the stresses. This is substantially true even if the post is slightly inclined since the departure from true compressive stress is proportional to the sine of the angle of inclination, which is negligibly small in the case of small angles. Such small bending moment as is exerted on the post metal due to the inseting of the tongue 18 is amply compensated for by the special stiffness imparted to the tongue by its being embossed out of the flat metal of the back member.

When electric cables are strung on the brackets they are usually pulled tight; and it is necessary that the brackets should properly resist the consequential side thrust. The cutting back of the slots 16 to the surfaces 17 enables the edges 32 of the arm to contact with said surfaces 17 and so secure the arm against such side thrust.

We claim:

1. In a bracket structure including a bracket arm and a hollow post for supporting the same having a rear wall and two side walls extending forwardly therefrom so as to leave a front opening between the forward edges of said walls, the combination of a series of inwardly projecting and aligned lugs or flange members fixed on each of said forward edges of the side walls and spaced apart at predetermined points by notches or gaps, each series of flange members being disposed opposite to, and projecting directly toward the other with the gaps between the members in one series registering with those of the other to form corresponding opposite pairs, a series of stops upon the rear wall within said post substantially corresponding in their individual positions with said pairs of gaps, horizontally disposed edges extending laterally to both sides of the bracket arm and downwardly extending flange means longitudinally disposed beneath said bracket arm within the side edges thereof and at the rear end of the same extending into the

space between said forward edges and the rear wall when the laterally extending side edges extend inwardly through a pair of said gaps and the rear end of the arm engages beneath a corresponding stop of the series on said rear wall.

2. A bracket structure according to claim 1, having a series of downwardly directed tongues forming the stops on the rear wall of the post, and having an upwardly projecting retaining tongue or hook fixed upon the rear end of the bracket arm for engaging under one of the tongues in the series in order to prevent accidental outward withdrawal of said bracket arm from said post.

3. A bracket structure according to claim 1, having the downwardly extending flange means of the bracket arm fit between the two opposite series of lugs in the front opening between the side walls of the post, and having the lateral or transverse dimension of the bracket from one side edge to the other being substantially equal to the distance between said side walls of said post in the gaps thereof.

4. A bracket structure according to claim 1, having the bracket arm made of a substantially straight sheet of material having at its rear an upwardly projecting tongue or hook serving to engage one of the stops on the rear wall of the post, and having a pair of angle plates fixed beneath the same to form the downwardly extending flange means, the lower edges of the latter being inclined downwardly from the forward end toward the rear end of said bracket arm.

5. In a bracket structure including a bracket arm and a hollow bracket receiving post for receiving the same having a rear wall and two side walls extending forwardly therefrom so as to leave a front opening between the forward edges of said walls, in each bracket receiving position of the post the combination of an inwardly projecting lug or flange member fixed on each of said forward edges and followed by a notch or gap, each flange member being disposed opposite to, and projecting directly toward the other with the one gap registering with the other gap to form a corresponding opposite pair, a rigid stop upon the rear wall within said post substantially corresponding in its position with said pair of gaps, horizontally disposed edges extending laterally to both sides of the bracket arm and downwardly extending flange means longitudinally disposed beneath said bracket arm within the side edges thereof and at the rear end of the same extending into the space between said forward edges and the rear wall when the laterally extending side edges extend inwardly through said pair of gaps and the rear end of the arm engages beneath said stop on the rear wall.

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