

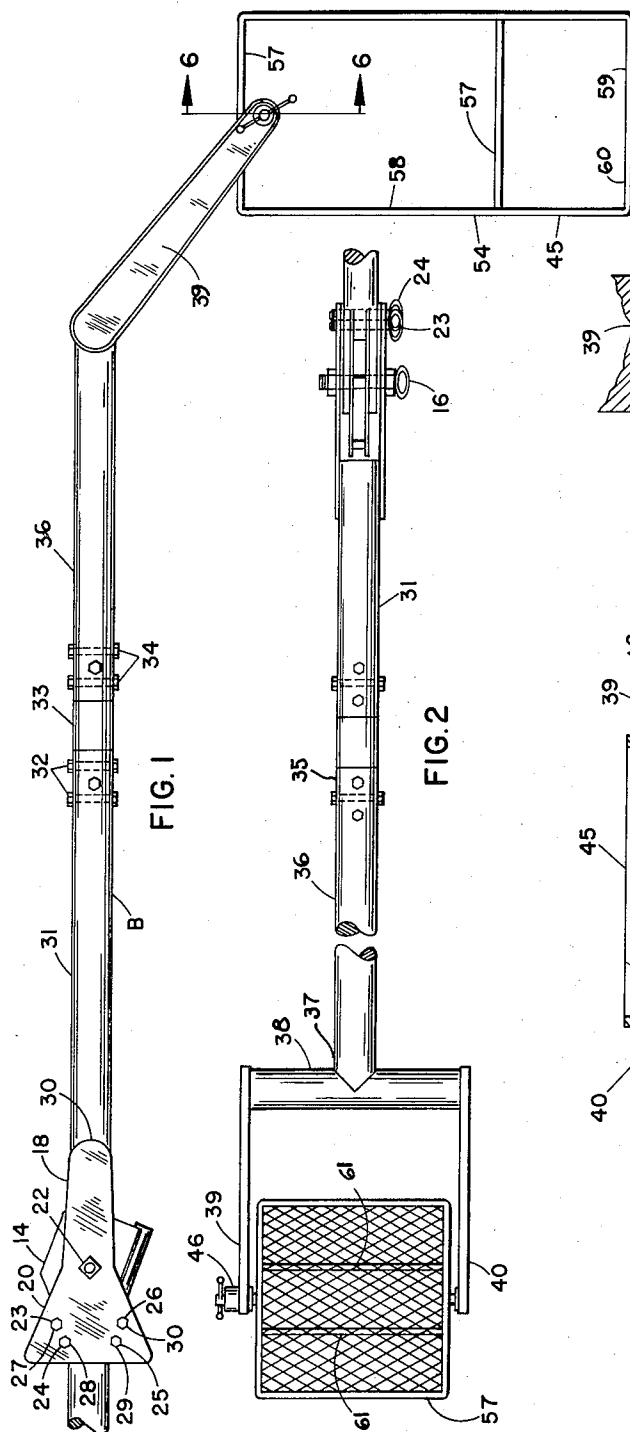
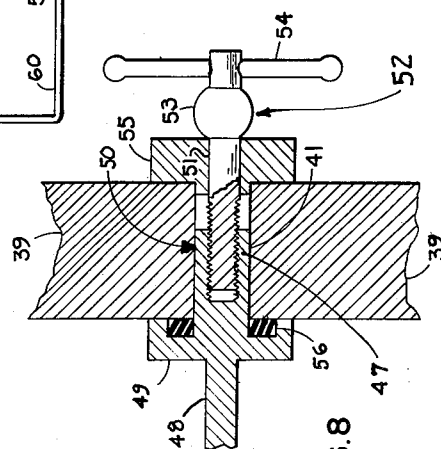
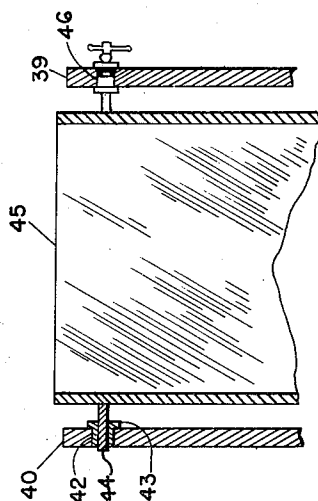
July 10, 1962

T. R. HALL
BOOM ATTACHMENTS

3,043,394

Filed Feb. 3, 1960

2 Sheets-Sheet 1



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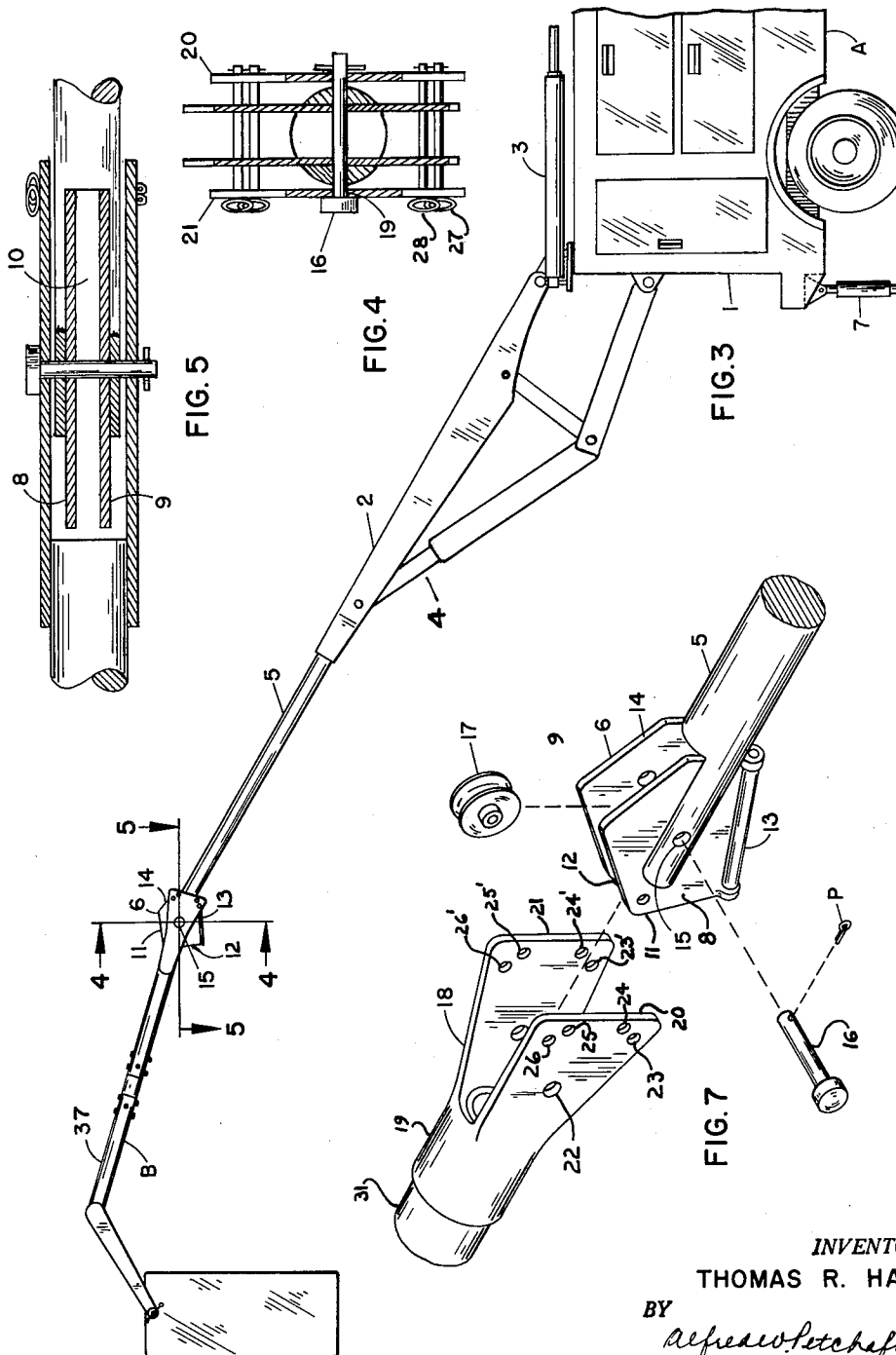
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BOOM ATTACHMENTS

3,043,394

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2 Sheets-Sheet 2



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3,043,394

BOOM ATTACHMENTS

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9 Claims. (Cl. 182-2)

This invention relates in general to new and useful improvements in boom attachments, and, more particularly, to a man-carrying boom attachment adopted for use with utility derricks and the like.

It is the primary object of the present invention to provide a boom attachment of the type stated which is capable of being mounted upon the upper end of a derrick boom in such manner that the boom attachment is stable with respect to the derrick-boom, notwithstanding the application of any forces in any random directions.

It is another object of the present invention to provide a boom attachment capable of cooperating with a movable derrick-boom to support a man above the ground.

It is a further object of the present invention to provide a boom attachment adapted to afford a substantially horizontal platform for a workman regardless of the position of the boom upon which such attachment is mounted.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (2 sheets)—

FIG. 1 is a side elevational view of a boom attachment embodying the present invention;

FIG. 2 is a top-plan view thereof;

FIG. 3 is a side-elevational view of a truck employing a boom embodying the present invention;

FIG. 4 is a fragmentary sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a fragmentary sectional view taken along line 5—5 of FIG. 3;

FIG. 6 is a fragmentary sectional view taken along line 6—6 of FIG. 1;

FIG. 7 is an exploded perspective view of the upper end of a derrick-boom and the lower end of a boom attachment constructed in accordance with and embodying the present invention; and

FIG. 8 is an exploded-sectional view of the friction swing control.

Referring now in more detail and by reference characters to the drawings which illustrate a preferred embodiment of the present invention, A designates a truck having a rear platform 1 on top of which is mounted a derrick-boom 2 including a boom rotating hydraulic cylinder 3, a boom elevating hydraulic cylinder 4, and an extendable arm 5 which is provided at its outer end with a so-called sheave-block 6. Provided for supporting the truck when a load is placed on the boom 2 is an adjustable outrigger 7 which attaches to the rear platform 1 of the truck A and provides lateral support therefor. The derrick-boom 2 and the sheave-block 6 may be of any conventional design, as shown, for example, in U.S. Patents Nos. 2,786,581, 2,746,717, 2,687,809, or 2,636,717, and it suffices for present purposes to state that the boom 2 may be pivotally moved about the rear platform of the truck A and may be simultaneously elevated and extended. The sheave-block 6 comprises a pair of spaced parallel plates 8, 9, which are welded within a bifurcation 10 formed in the outer end of the arm 5. The plates 8, 9, of the sheave-block 6 are identical and aligned and each preferably has a quadrilateral side-view appearance including a pair of outer margins 11, 12, which are joined by a pair of outwardly diverging inner margins 13, 14,

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for purposes presently more fully appearing. The sheave-block 6 is centrally provided with an aperture 15 sized for receiving a removable pintle 16 adapted for rotatably supporting a removable pulley-wheel 17, the pintle 16 being held in place by a cotter-pin p or other similar retention device.

Provided for overlapping disposition upon the sheave-block 6, is a boom attachment B comprising a bracket 18 which integrally includes a cylindrical socket 19 and a pair of parallel plates 20, 21, extending from the end thereof. The plates 20, 21, are identical except for the fact that they are on opposite sides of the cylindrical socket 19 and a description of one fully describes the other. The parallel plate 20 is sized for substantial overlapping engagement with the sheave-block 6 and is provided with an aperture 22 which is in substantial alignment with the aperture 15 in the sheave-block 6 whereby the pintle 16 secures the sheave 6 and the bracket 18 one to the other as schematically illustrated in FIG. 7. The plates 20, 21, are each provided with four sets of aligned apertures 23, 23', 24, 24', 25, 25', 26, 26', sized for insertion of fasteners 27, 28, 29, 30, the apertures 23, 24, 25, 26, being separated one from the other on the bracket 18 in pairs, the apertures 23, 24, being aligned to conform and abut the upwardly presented margins 14 of the sheave 6 and the second pair of apertures 25, 26, being aligned one to the other to abut the lower margins 13 of the sheave 6, whereby the bracket 18 is securely held in fixed relationship to the sheave 6 by the fasteners 16, 27, 28, 29, and 30.

Snugly seated and welded within the socket 19 of the bracket 18 and extending outwardly therefrom is an elongated tubular arm 31 which is secured by means of bolts 32 on its outer end within a dielectric connector sleeve 33 which is, in turn, secured by means of bolts 34 to the lower end 35 of a second elongated arm 36. Welded to the outer end 37 of the arm 36 and extending equidistantly on opposite sides thereof is a horizontal cross-arm 38, which in turn, is provided with a pair of downwardly extending parallel members 39, 40, each being provided with an aperture 41, 42, for purposes presently more fully appearing. Threadedly inserted in the aperture 42 is a bearing collar 43 for pivotally mounting a rod 44 which is attached to a man-supporting basket 45. Threadedly inserted in the aperture 41 is an adjustable friction swing control 46 comprising a threaded section 47 including a rod 48 which is welded to the basket 45 in aligned relationship with the rod 44 and having a substantial arcuate shoulder 49 intermediate its ends, the threaded section 47 terminating with an internally threaded tubular end 50 sized for engagement with the inner walls of the aperture 41. Sized for threaded insertion within the end 50 of the swing control 47 is an elongated rod 51 provided substantially near its outer end 52 with a bead 53 and a handle 54 for purposes of rotating the rod 51. Preferably, though not necessarily, a shouldered washer 55 is interposed between the bead 53 and the member 39, and a washer 56 with a high coefficient of friction is provided intermediate the arcuate shoulder 49 and the member 39 whereby as said handle 54 is rotated, the washers 55, 56, are drawn together and the washer 56 is compressed against the inwardly presented face of the member 39, thereby presenting a surface of high friction to any forces which would normally cause the basket to swing.

The basket 45 is comprised of a downwardly tapering framework 57 including a plurality of vertically extending uprights 58, a floor 59, and a plurality of cross-braces 60 for giving the basket required structural support. The floor 59 may be fabricated from any suitable floor material and may even be provided with cross-braces 61 to give added support thereto. The floor 59 is depicted as having

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been constructed of heavy gauge screen wire as it has been found that this type of floor construction readily adapts itself to cleaning, although it should be noted that a screen type floor construction is not completely essential to my invention and solid floors may also be provided within the scope of my invention. The basket 45 is properly sized to permit a workman ample freedom therein and may also be provided with conventional brackets and attachments for holding tools thereon. It should be noted that the dielectric arm 33 completely insulates the basket 45 from the ground and may be used for electrical servicing such as would commonly occur on high tension wires. This insulating feature is unique inasmuch as an electrical lineman heretofore has been required to do most of line servicing operations from the pole itself, thereby exposing himself to substantial dangers from the charged line, whereas with the present invention he is supported above the ground in electrical isolation therefrom and will have both hands free to perform the required work.

In use, the sheave-block 6 is prepared for attachment to the boom attachment B by removal of the cotter-pin *p* from the pintle 16 and subsequent removal of the pintle 16 from the sheave-block 6. Upon removal of the pintle 16 the pulley-wheel 17 may be removed from the sheave-block 6 and stored in a compartment on the rear platform 1 of the truck A. It is not necessary that the pulley-wheel 17 be stored for successful attachment of the boom B to the sheave-block 6, but it has been found to be better practice to store the pulley-wheel 17. The boom attachment B is then placed over the sheave-block 6 while the arm 5 is in the unextended position and the boom 2 has been directed toward the ground so that the basket 45 rests on the ground while the boom attachment B is being attached to the sheave-block 6. The apertures 22, 22', in the plates 20, 21, are placed in alignment with the aperture 15 in the sheave-block 6 whereupon the pintle 16 is then placed therethrough and secured therein by the cotter-pin *p*. The boom 2 is then elevated slightly to a position wherein the apertures 23, 23', 24, 24', 25, 25', 26, 26', are in alignment with the outwardly diverging margins 13, 14, of the sheave-block 6, whereupon the fasteners 27, 28, 29, 30, are inserted respectively therethrough and secured therein to hold the boom attachment B in fixed relationship to the boom 2. As the boom 2 is then elevated, extended, and pivoted with respect to the truck A, the boom attachment B moves in fixed relationship therewith as if the attachment B were an original integral part of the boom 2. By adjustment of the friction swing control 46 the amount of friction of swing which the basket 45 has with respect to the members 39, 40, may be adjusted to the satisfaction of the workman therein and the basket may, by elevating, rotating, and extending means be freely positioned in space at the desired point in electrical isolation from the ground.

The boom attachment B has an additional feature in that it may be readily removed from the sheave-block 6 by removal of the fasteners 16, 27, 28, 29, 30, leaving the sheave-block 6 available for other purposes, such as, for example, purposes employing the pulley-wheel 17.

It should be noted that changes and modifications in the form, construction, arrangement, and combination of the several parts of the boom attachments may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A boom attachment for use with a boom provided at its outer end with a sheave-block comprising a pair of aligned spaced parallel members having an aligned bore, each of said members being provided with a pair of outwardly diverging adjacent margins, said boom attachment comprising a bracket provided with a pair of aligned parallel plates spaced for overlapping engagement with said pair of parallel margins, each of said plates being provided with an aperture, a fastener extending through said

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apertures and said bore whereby to mount said bracket pivotally to said sheave-block, first restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting in one direction about said fastener, second restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting about said fastener in the opposite direction, a first elongated arm secured at one end to said bracket, a dielectric insulator secured to the other end of said first arm, a second elongated arm secured to said dielectric insulator, a cross-bar secured to said second arm and extending outwardly therefrom, a pair of parallel supports extending outwardly from said cross-bar, a basket swingably mounted between said supports, and swing control means operatively connected to said basket and at least one of said supports for controlling the degree of freedom of swing said basket has with respect to said supports.

2. A boom attachment for use with a boom provided at its outer end with a sheave-block comprising a pair of outwardly diverging spaced parallel plates having aligned bores, said sheave-block also being provided with an aperture for receiving a removable pintle, said pintle being adapted to rotatably support a removable pulley wheel, said boom attachment comprising a bracket provided with a cylindrical socket and a pair of aligned parallel plates on opposite sides of said socket, said plates being spaced for overlapping engagement with said pair of parallel margins, each of said plates being provided with an aperture, a fastener extending through said apertures and said bore, whereby to mount said bracket pivotally to said sheave-block, first restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting in one direction about said fastener, second restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting about said fastener in the opposite direction, a first elongated arm secured at one end to said bracket, a dielectric insulator secured to the other end of said first arm, a second elongated arm secured to said dielectric insulator, an arm secured to said second arm and extending outwardly therefrom, a pair of parallel support members extending outwardly from said arm, a basket swingably mounted between said support members, and adjustable friction control means for controlling the freedom of swing of said basket with respect to said supports.

3. A boom attachment for use with a boom provided at its outer end with a sheave-block comprising a pair of outwardly diverging spaced parallel plates having aligned bores, said sheave-block also being provided with an aperture for receiving a removable pintle, said pintle being adapted to rotatably support a removable pulley wheel, said boom attachment comprising a bracket provided with a cylindrical socket and a pair of aligned parallel plates on opposite sides of said socket, said plates being spaced for overlapping engagement with said pair of parallel margins, each of said plates being provided with an aperture, a fastener extending through said apertures and said bore whereby to mount said bracket pivotally to said sheave-block, first restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting in one direction about said fastener, second restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting about said fastener in the opposite direction, a first elongated arm secured at one end to said bracket, a dielectric insulator secured to the other end of said first arm, a second elongated arm secured to said dielectric insulator, a cross-bar secured to said second arm and extending outwardly therefrom, a pair of parallel supports extending outwardly from said cross-bar, a basket swingably mounted between said supports, and swing control means operatively connected to said basket and at least one of said supports for control-

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ling the degree of freedom of swing said basket has with respect to said supports.

4. A boom attachment for use with a boom provided at its outer end with a sheave-block comprising a pair of outwardly diverging spaced parallel plates having aligned bores, said sheave-block also being provided with an aperture for receiving a removable pintle, said pintle being adapted to rotatably support a removable pulley wheel, said boom attachment comprising a bracket provided with a cylindrical socket and a pair of aligned parallel plates on opposite sides of said socket, said plates being spaced for overlapping engagement with said pair of parallel margins, each of said plates being provided with an aperture, a fastener extending through said apertures and said bore whereby to mount said bracket pivotally to said sheave-block, first restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting in one direction about said fastener, second restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting about said fastener in the opposite direction, a first elongated arm secured at one end to said bracket, a dielectric insulator secured to the other end of said first arm, a second elongated arm secured to said dielectric insulator, a cross-bar secured to said second arm and extending outwardly therefrom, a pair of parallel supports extending outwardly from said cross-bar, a basket swingably mounted between said supports, and swing control means operatively connected to said basket and at least one of said supports for controlling the degree of freedom of swing of said basket with respect to said supports, whereby the basket may be freely positioned in space at a desired point in electrical isolation from the ground by elevating, rotating, and extending means.

5. A boom attachment for use with a boom provided at its outer end with a sheave-block comprising a pair of aligned spaced parallel members having an aligned bore, each of said members being provided with a pair of outwardly diverging adjacent margins, said boom attachment comprising a bracket provided with a pair of aligned parallel plates spaced for overlapping engagement with said pair of parallel margins, each of said plates being provided with an aperture, a fastener extending through said apertures and said bore whereby to mount said bracket pivotally to said sheave-block, first restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting in one direction about said fastener, second restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting about said fastener in the opposite direction, a first elongated arm secured at one end to said bracket, a second elongated arm secured to the other end of the first elongated arm, a cross-bar secured to said second arm and extending outwardly therefrom, a pair of parallel supports extending outwardly from said cross-bar, a basket swingably mounted between said supports, and swing control means operatively connected to said basket and at least one of said supports for controlling the degree of freedom of swing said basket has with respect to said supports.

6. A boom attachment for use with a boom provided at its outer end with a sheave-block comprising a pair of outwardly diverging spaced parallel plates having aligned bores, said sheave-block also being provided with an aperture for receiving a removable pintle, said pintle being adapted to rotatably support a removable pulley wheel, said boom attachment comprising a bracket provided with a cylindrical socket and a pair of aligned parallel plates on opposite sides of said socket, said plates being spaced for overlapping engagement with said pair of parallel margins, each of said plates being provided with an aperture, a fastener extending through said apertures and said bore whereby to mount said bracket pivotally to said sheave-block, a first set of pins removably mounted in and extending transversely across the spaced

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parallel plates of said sheave-block, said pins being so located to abut the upper margins of the parallel plates of said bracket for preventing said bracket from pivoting in one direction about said fastener, a second set of pins removably mounted in and extending transversely across the spaced parallel plates of said sheave-block in downwardly spaced relation to said first set of pins, said second set of pins being so located to abut the lower margins of the parallel plates of said bracket for preventing said bracket from pivoting in the other direction about said fastener, a first elongated arm secured at one end to said bracket, a dielectric insulator secured to the other end of said first arm, a second elongated arm secured to said dielectric insulator, a cross-bar secured to said second arm and extending outwardly therefrom, a pair of parallel supports extending outwardly from said cross-bar, a basket swingably mounted between said supports, and swing control means operatively connected to said basket and at least one of said supports for controlling the degree of freedom of swing of said basket with respect to said supports, whereby the basket may be freely positioned in space at a desired point in electrical isolation from the group by elevating, rotating, and extending means.

7. In combination, a boom provided at its outer end with a sheave-block comprising a pair of aligned spaced parallel members having aligned bores, said members each being provided with outwardly diverging adjacent margins, said boom attachment comprising a bracket provided with a pair of aligned parallel plates spaced for overlapping engagement with said pair of parallel members, each of said plates being provided with an aperture, a fastener extending through said apertures and said bore whereby to pivotally mount said bracket to said sheave-block, first restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting in one direction about said fastener, second restraining means operatively connected to said sheave-block and said bracket for preventing said bracket from pivoting about said fastener in the opposite direction, an elongated rod secured to said bracket, support means secured to the end of said elongated rod, said support means comprising two outwardly extending parallel members, said outwardly extending parallel members having a pair of transversely aligned apertures, a man-supporting basket swingably mounted between said parallel members by means of a transversely extending rod mounted in said aligned apertures, and swing-control means mounted in one of said apertures, said swing-control means comprising a threaded section including a swing-control rod which is secured to said basket in aligned relationship with the transversely extending rod, said swing-control rod having a substantial arcuate shoulder intermediate its ends, said threaded section having an internally threaded tubular end sized for engagement with the inner walls of said aperture, an elongated rod having a diametrically enlarged head, said elongated rod also having a handle threadedly mounted within said tubular end, a shouldered washer interposed between said head and one of the outwardly extending members, and a second washer with a high coefficient of friction interposed between said outwardly extending member and said handle whereby as said handle is rotated the washers are drawn together and compressed against the inwardly presented face of said outwardly extending member and thereby presenting a surface of high friction to any force which would cause the basket to swing.

8. A boom attachment for use with a boom provided at its outer end with a sheave-block comprising a pair of aligned spaced parallel members having aligned bores, each of said members being provided with a pair of outwardly diverging adjacent margins, said boom attachment comprising a bracket provided with a pair of aligned parallel plates spaced for overlapping engagement with said pair of parallel members, each of said plates being

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provided with an aperture, a fastener extending through said apertures and said bores in perpendicular relationship to said parallel plates whereby to mount said bracket pivotally to said sheave-block, a first pin extending through said pair of parallel plates and abutting one of the outwardly diverging adjacent margins of said pair of parallel members, a second pin extending through said pair of parallel plates and abutting the other outwardly diverging adjacent margins of said pair of parallel members, an elongated arm secured to said bracket, support means secured to the end of said elongated arm, said support means comprising two outwardly extending parallel members, said outwardly extending parallel members having a pair of transversely aligned apertures, a man-supporting basket swingably mounted between said parallel members by means of a transversely extending rod mounted in said aligned apertures, and swing-control means mounted in one of said apertures, said swing-control means comprising a threaded section including a swing-control rod which is secured to said basket in aligned relationship with the transversely extending rod, said swing-control rod having a substantial arcuate shoulder intermediate its ends, said threaded section having an internally threaded tubular end sized for engagement with the inner walls of said aperture, an elongated rod having a diametrically enlarged head, said elongated rod also having a handle threadedly mounted within said tubular end, a shouldered washer interposed between said head and one of the outwardly extending members, and a second washer with a high coefficient of friction interposed between said outwardly extending member and said handle whereby as said handle is rotated the washers are drawn together and compressed against the inwardly presented face of said outwardly extending member and thereby presenting a surface of high friction to any force which would cause the basket to swing.

9. A boom attachment for use with a boom provided at its outer end with a sheave-block comprising a pair of aligned spaced parallel members having aligned bores, each of said members being provided with a pair of outwardly diverging adjacent margins, said boom attachment comprising a bracket provided with a pair of aligned parallel plates spaced for overlapping engagement with said pair of parallel members, each of said plates being provided with an aperture, a fastener extending through said apertures and said boom in perpendicular relationship to said parallel plates, whereby to mount said bracket pivotally to said sheave-block, a first pair of spaced pins extending through said pair of parallel plates and abutting one of the

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outwardly diverging adjacent margins of said pair of parallel members, a second pair of spaced pins extending through said pair of parallel plates and abutting the other outwardly diverging adjacent margins of said pair of parallel members, an elongated arm secured to said bracket, support means secured to the end of said elongated arm, said support means comprising two outwardly-extending parallel members, said outwardly extending parallel members having a pair of transversely aligned apertures, a man-supporting basket swingably mounted between said parallel members by means of a transversely extending rod mounted in said aligned apertures, and swing-control means mounted in one of said apertures, said swing-control means comprising a threaded section including a swing-control rod which is secured to said basket in aligned relationship with the transversely extending rod, said swing-control rod having a substantial arcuate shoulder intermediate its ends, said threaded section having an internally threaded tubular end sized for engagement with the inner walls of said aperture, an elongated rod having a diametrically enlarged head, said elongated rod also having a handle threadedly mounted within said tubular end, a shouldered washer interposed between said head and one of the outwardly extending members, and a second washer with a high coefficient of friction interposed between said outwardly extending member and said handle whereby as said handle is rotated the washers are drawn together and compressed against the inwardly presented face of said outwardly extending member and thereby presenting a surface of high friction to any force which would cause the basket to swing.

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