Sept. 13, 1966 D. R. GREIG 3,272,463

INSULATOR BRACKET

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Fig. 1.

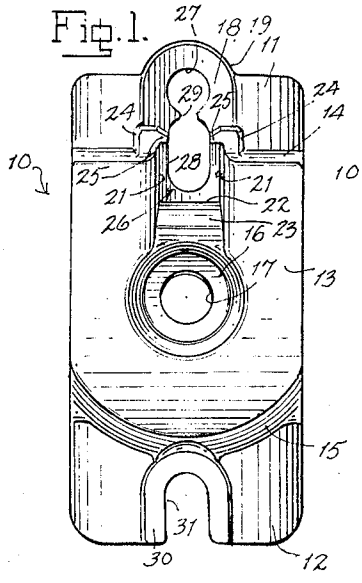


Fig. 2.

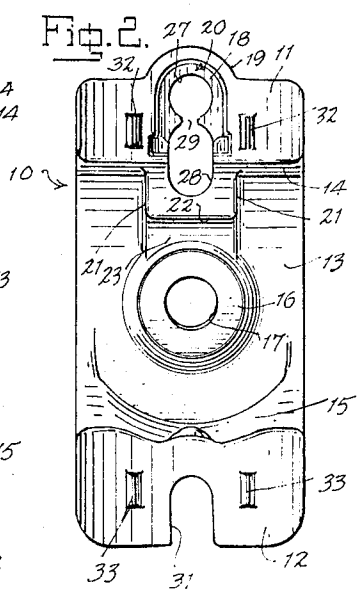


Fig. 3.

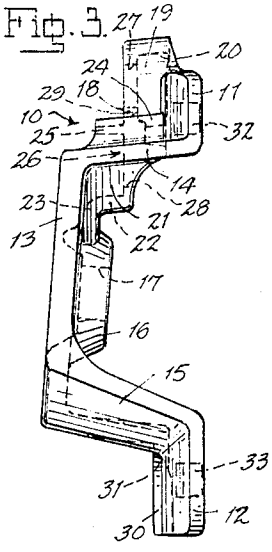


Fig. 4.

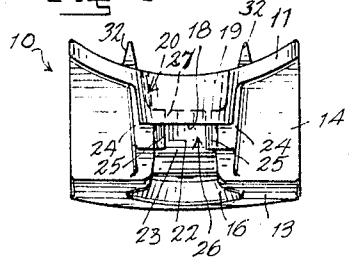


Fig. 5.

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Fig. 6.

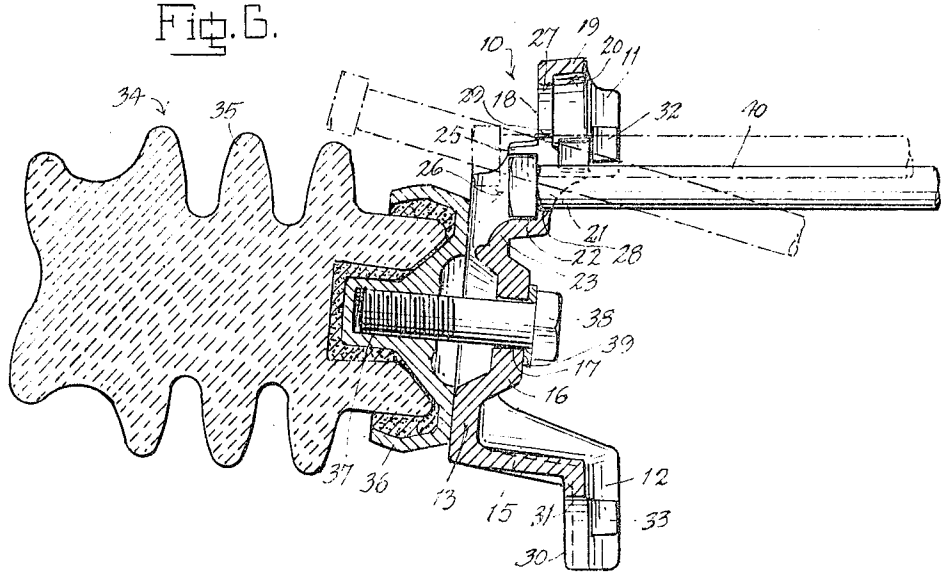
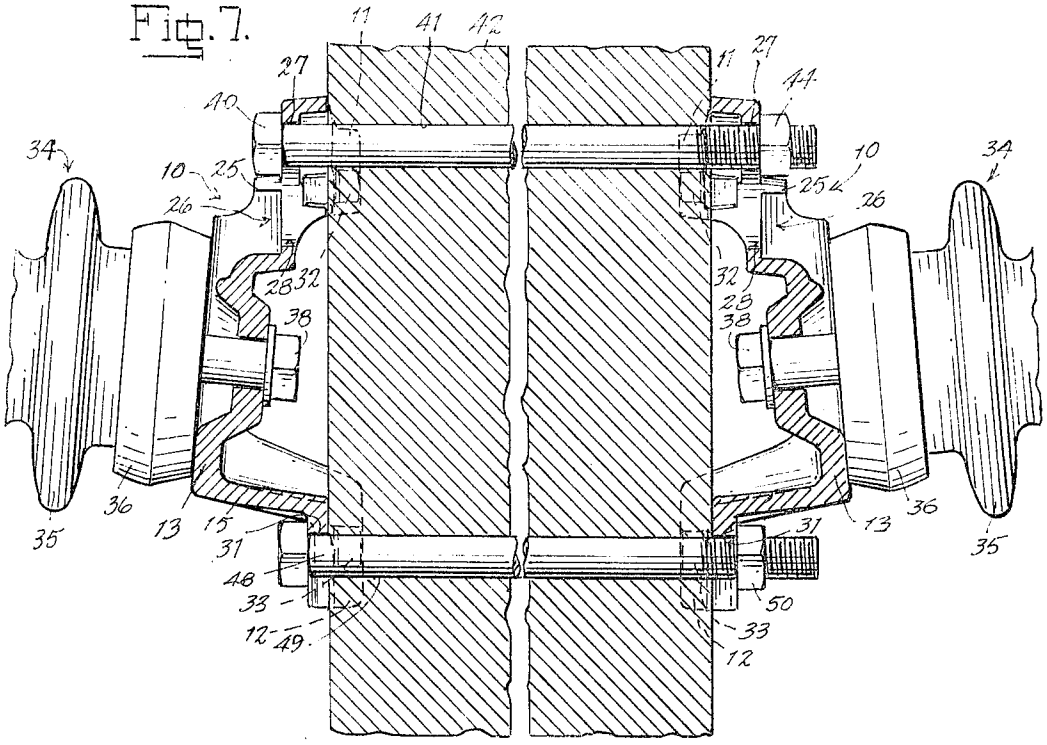


Fig. 7.



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3,272,463

INSULATOR BRACKET

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Filed Nov. 3, 1964, Ser. No. 408,625
6 Claims. (Cl. 248—65)

This invention relates to an insulator bracket particularly for use in pole-mounted electrical distribution systems. It is an object of the invention to provide an insulator bracket which may be attached to the pole with a single through-bolt extending horizontally through the pole and wherein under normal maximum loading conditions the bolt is in tension within its normal working strength limits.

A further object is to provide a bracket which facilitates the assembly of the insulator and through-bolt therewith enabling the insulator to be assembled with the bracket on the ground, brought up the pole and thereupon assembled with the bolt. To this end it is proposed to provide a bracket having bolt-receiving means permitting assembly of the bolt with the assembled bracket and insulator through shifting of the bolt from an assembling position clear of the insulator to an operative position in an opposed relation to the insulator best suited for optimum efficiency in transmitting the load from the bracket to the bolt. A further object is to provide a bracket which will enable the insulator to be readily removed therefrom for replacement purposes without the necessity for removing the bracket from the pole.

Another object is to provide a bracket having means for receiving a second through-bolt or a lag screw in a position below the load for use under conditions where uplift or unbalanced span is encountered. Another object is to provide a bracket having auxiliary bolt-receiving means for the mounting by means of a single bolt of a pair of brackets in back-to-back relation at opposite sides of the pole. A further object is to provide a bracket having spurs for imbedding into a wood pole to effectually distribute the load on the wood and resist down-slotting of the bracket under load.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein a satsifactory embodiment of the invention is shown. However, it will be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawings:

FIG. 1 is a front elevation of an insulator bracket according to the invention;

FIG. 2 is a rear elevation;

FIG. 3 is a side elevation;

FIG. 4 is a top plan view;

FIG. 5 is a side elevation showing the bracket mounted upon a pole with an insulator assembled therewith;

FIG. 6 is a sectional view showing the assembly of the bracket, the insulator and the through-bolt, and showing in broken lines transistory positions of the through-bolt as it is engaged or disengaged with respect to the bracket; and

FIG. 7 is a view partially in vertical section and partially in side elevation showing a pair of brackets and insulators mounted upon a pole in back-to-back relation at opposite sides of the pole, portions of the insulators being broken away.

Referring to FIGS. 1–4 of the drawings, the insulator bracket according to the exemplary embodiment of the invention illustrated therein is preferably formed of malleable cast iron and in use is adapted to be disposed substantially vertically at the side of a utility pole. It will therefore be described hereinafter with reference to that position.

The bracket **10** comprises upper and lower rearwardly disposed bearing pad portions **11** and **12** concavely curved at their rearward surfaces to substantially conform to the substantially cylindrical surface of a round utility pole, a forward bearing wall portion **13** disposed at a slight downward and forward inclination and presenting a forward transversely disposed planar face for engagement by the base of an insulator as will hereinafter more fully appear, a top wall portion **14** connecting the upper end of the forward wall portion **13** to the lower end of the upper pad portion **11** and disposed at a slight upward and rearward inclination, and a bottom wall portion **15** connecting the lower end of the forward wall portion **13** to the upper end of the lower pad portion **12** and disposed at a slight downward and rearward inclination. The upper end of the forward wall portion **13** is disposed in a horizontal straight line and its lower end is convexly curved so that the top wall portion **14** presents a generally planar upper surface and the bottom wall portion **15** presents a generally convexly curved lower surface.

The front wall portion **13** is provided substantially centrally with a dished formation **16**, the base of which presents a rearward planar face parallel to the planar face of the forward wall portion and is provided centralley with a bolt-receiving hole **17** having its axis normal to said planar faces. The lower curved end of the forward wall is preferably concentric to the axis of the bolt hole. The rearward planar face of the dished formation **16** provides a bearing face for a bolt head which is laterally clear of obstructions at each side, so that wrench room is provided for engaging a wrench with such bolt head, and the side edges of the top and bottom wall portions **14** and **15** are so spaced from each other in planes substantially above and below the dished formation **16** that ample room is provided at each side of the bracket for swinging of the handle of a wrench engaged with the bolt head.

A bolt-receiving hub formation is provided centrally of the upper portion of the bracket above the bolt hole **17**, and includes an apertured transversely disposed vertical wall **18** positioned intermediate the front wall portion **13** and the upper pad portion **11** and extending above and below the top wall portion **14**. The part of the wall **18** extending above the top wall portion is connected to the upper pad portion **11** and the top wall portion by a rearwardly extending wall portion **19** of inverted U-shape having its upper arched part projecting above the upper edge of the upper pad portion and its side wall parts connected to the forward side of the upper pad portion and the upper side of the top wall portion **14**. The resultant structure defines a rearwardly facing pocket **20** opening to the rearward surface of the upper pad portion.

The part of the wall **18** extending below the top wall portion is connected to the under side of the top wall portion and the rearward side of the front wall portion **13** by side walls **21—21** and a forwardly extending bottom wall **22** terminating at its forward end in a downwardly curved forward wall **23** rearwardly offset from the front wall portion **13**. At the upper side of the top wall portion **14** along the sides of the wall portion **19** there are provided ridge formations **24—24** which extend forwardly from the vertical wall **18** to a point rearwardly of the forward wall portion **13**, and upon the inner opposed sides of the forwardly extending portions of the ridge formations there are provided laterally projecting opposed ribs **25—25** upwardly spaced from the base wall **22** a distance substantially corresponding to the lateral

spacing of the side walls **21**. As clearly seen in FIG. 1 the resultant structure defines a forwardly facing square pocket **26** for receiving the square head of a bolt, as will hereinafter more fully appear.

The vertical wall **18** is provided with a two-part bolt-receiving opening including an upper circular hole **27** disposed substantially centrally of the part of the wall **18** disposed above the rib portions **25** and a vertically elongated slotted hole **28** having a semi-circular lower end having its axis central of the square pocket **26** and a broken semi-circular upper end disposed above the rib **25** and in communication with the upper circular hole **27** through a restricted neck opening **29**.

Thus the hub formation provides a forwardly opening square pocket **26** extending substantially downwardly from the upper wall portion **14** and disposed in rearwardly offset relation to the forward wall **13** to non-rotatably receive a bolt head, and an exposed planar bearing surface above the ribs **25** in surrounding relation to the circular hole **27** for engagement by a bolt head or a nut and providing clear wrench room for turning the bolt head or nut by means of a wrench.

The lower pad portion **12** is provided centrally of its forward side with a bearing boss formation **30** presenting a forward planar bearing face and having a slotted hole **31** opening to the lower edge of the pad portion and adapted to receive a lag screw or through-bolt.

Pairs of spurs **32** and **33** are respectively provided upon the rearward sides of the upper and lower pad portions **11** and **12** and are adapted to be driven into the utility pole at the time of installation of the bracket to anchor it against vertical dislodgement or down-slotting.

As seen in FIGS. 5 and 6 the insulator unit **34**, illustrated as of conventional type including a finned porcelain body **35** secured in a circular cupped metal base **36** having a central internally threaded socket portion **37**, is adapted to be secured to the bracket with the flat surface of the circular base **36** drawn tightly against the planar bearing face of the front wall **13** of the bracket by means of a bolt or stud **38** engaged through the hole **17** of the dished formation **16** and screwed into the threaded socket **37**, with a lock washer **39** interposed between the head of the bolt and the rearward planar face of the dished formation. It will be noted that the rearwardly disposed space defined by the forward, top and bottom wall portions of the bracket provides ample wrench room easily accessible from both sides of the bracket for tightening or loosening the bolt **38**, thus facilitating the assembly or disassembly of the insulator unit with respect to the bracket either upon the ground or with the bracket installed upon the pole.

In the assembled relation of the insulator unit the upper portion of the base **36** is forwardly opposed to the square bolt-head-receiving pocket **26**, and thus constitutes an obstruction to the insertion or removal of the through-bolt when the latter is in a horizontal position and the bracket is in its normal vertical position upon the pole. This disposition of the pocket **26** is for the purpose of placing the through-bolt at the most favorable point with respect to the axis of the insulator unit and the bolt **38** to transmit the outboard load carried upon the insulator through the bracket to the through-bolt with the latter in tension, as will presently more fully appear. Following assembly of the insulator unit with the bracket upon the ground it may be brought up the pole and assembled with the through-bolt **40** as indicated by broken lines in FIG. 6.

The through-bolt is first inserted through the upper portion of the slotted hole **28** at an angle so that the head of the bolt clears the insulator unit. It is then brought into a horizontal position in the upper part of the slotted hole with the bolt head in the vertically clear space between the forward ends of the ribs **25** and the rearward side of the insulator base, being then vertically moved in the slotted hole to bring the bolt head into line with the square pocket **26**. Thereupon the bolt is moved axially to bring the head into the pocket **26**. The through-bolt is then

inserted through the diametrically extending hole **41** in the pole **42**, its threaded end is engaged through a bearing washer **43** at the opposite side of the pole, and a securing nut **44** is screwed thereon which, upon tightening, draws the bracket into tight engagement with the pole with the spurs **32** and **33** imbedding therein.

The wrench room provided about the head of the bolt **38** permits easy removal or replacement of the insulator unit without removal of the bracket from the pole. Under conditions where the insulator unit may be subjected to uplift, as in hill and valley installations, or when unbalanced span is encountered, the bracket may be additionally secured by a lag screw **45** engaged through the lower pad **12** or by a second through-bolt similarly engaged through the lower pad.

As seen in FIG. 5 the load of an electrical distribution conductor **46** secured by a lashing wire **47** upon the outer end of the insulator unit imposes a counter-clockwise overturning moment upon the bracket forcing its upper end outwardly from the pole and its lower end to press inwardly against the pole, the major component of the load being imposed as tension upon the through-bolt. The optimum condition is realized when the axis of the through-bolt is brought as close as practicable to the axis of the insulator unit.

In FIG. 7 a pair of brackets and assembled insulator units are shown mounted in back-to-back relation at opposite sides of the pole **42**. In this case the through-bolt **40** is preferably engaged through the upper circular holes **27** of both brackets so that the brackets are oppositely aligned and both the head of the bolt and the securing nut **44** are fully exposed and accessible for engagement by a wrench. The exposed planar bearing surfaces of the brackets surrounding the holes **27** provide ample wrench room for this purpose.

While the lower pole-engaging pads of the brackets may remain unsecured under conditions making this practicable, they may if desired be secured by lag-screws engaged through the slotted holes **31** as illustrated in FIG. 5, or a second through-bolt **48** disposed in a diametric hole **49** through the pole may be engaged with the lower pole-engaging pads of both brackets and secured by a nut **50**.

What is claimed is:

1. An insulator bracket, for mounting an insulator upon a utility pole wherein said insulator includes an insulation body, a base supporting said body having an exposed bearing surface, and a headed securing bolt projecting from said base with its axis substantially central and normal to said bearing surface; said bracket comprising a forward wall portion presenting a forward bearing face for engagement by the bearing surface of said insulator and having a bolt-receiving hole extending therethrough to a rearward bearing face parallel to said forward bearing face and laterally clear of obstructions at each side for receiving said bolt with its head bearing upon said rearward bearing face, top and bottom wall portions extending rearwardly from the upper and lower ends of said forward wall portion in laterally clear relation to said rearward bearing face and defining therewith a wrench space opening to each side of said bracket for wrench manipulation of said bolt, upper and lower pole-engaging pad portions respectively extending upwardly and downwardly from the rearward ends of said top and bottom wall portions, and through-bolt-receiving means including an upright transversely disposed wall portion formed with a through-bolt-receiving hole opening to the rearward side of said upper pad portion and having a forwardly facing bearing surface surrounding said hole for bearing engagement of a bolt head.

2. The invention as defined in claim **1**, wherein said forward bearing face of said forward wall portion is a planar face disposed at an upward and rearward inclination, wherein said top wall portion is disposed at an upward and rearward inclination, and wherein said bottom wall portion is disposed at a downward and rearward inclination.

3. The invention as defined in claim 1, wherein said forward wall portion is provided with a rearwardly dished formation the rearward surface of which constitutes said rearwardly disposed bearing face.

4. An insulator bracket, for mounting an insulator upon a utility pole wherein said insulator includes an insulation body, a base supporting said body having an exposed bearing surface, and a headed securing bolt projecting from said base with its axis substantially central and normal to said bearing surface; said bracket comprising a forward wall portion presenting a forward bearing face for engagement by the bearing surface of said insulator and having a bolt-receiving hole extending therethrough for receiving said bolt with its head bearing upon the rearwardly facing side of said forward wall, top and bottom wall portions extending rearwardly from the upper and lower ends of said forward wall portion and defining therewith a wrench space opening to each side of said bracket for wrench manipulation of said bolt, upper and lower pole-engaging pad portions respectively extending upwardly and downwardly from the rearward ends of said top and bottom wall portions, and through-bolt-receiving means including an upright transversely disposed wall portion extending partially above and partially below said top wall portion and rearwardly spaced from said front wall portion, formed with a through-bolt-receiving hole opening to the rearward side of said upper pad portion, and means defining a bolt-head-receiving pocket at the forward side of said upright wall portion disposed at least partially below said top wall portion and to which said through-bolt-receiving hole opens, said

pocket having a forwardly facing bearing surface surrounding said hole for bearing engagement of a bolt head.

5. The invention as defined in claim 4, wherein said bolt-head-receiving pocket is defined at its upper side by a pair of laterally opposed spaced ribs having their forward ends terminating in rearwardly spaced relation to said bearing face of said forward wall portion, the space between said ribs being less than the width of the through-bolt head and greater than the diameter of the through-bolt shank to allow upward movement of said shank between said ribs when said bolt head is forwardly disengaged from said pocket, and said through-bolt-receiving hole being vertically elongated to permit said upward movement of said shank.

6. The invention as defined in claim 5, wherein said upright wall portion is extended above said opposed ribs and is formed with a through-bolt-receiving hole adapted to receive a through-bolt with the head of said bolt engaged with the forward face of said upright wall above said opposed ribs.

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