Dec. 13, 1960 E. T. PHILLIPS ET AL 2,964,281

RETRACTABLE ARM CONSTRUCTION

Filed Jan. 21, 1959 2 Sheets-Sheet 1

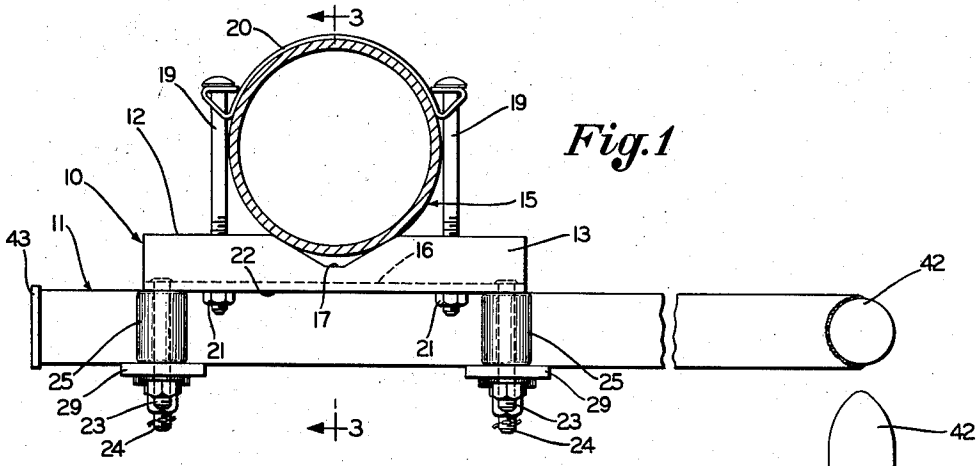


Fig. 1

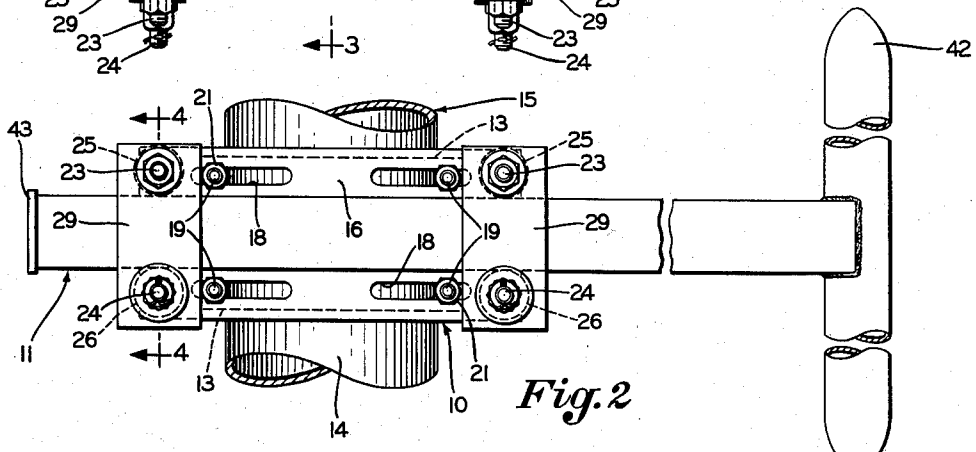


Fig. 2

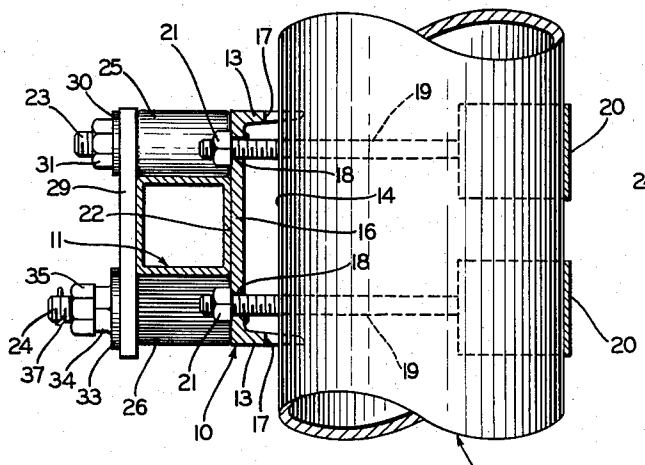


Fig. 3

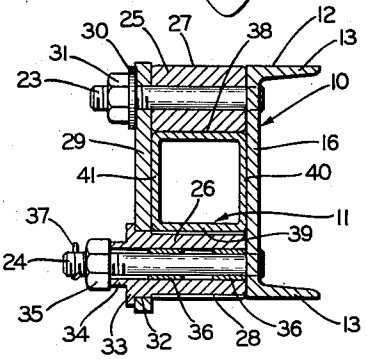


Fig. 4

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RETRACTABLE ARM CONSTRUCTION

Filed Jan. 21, 1959 2 Sheets-Sheet 2

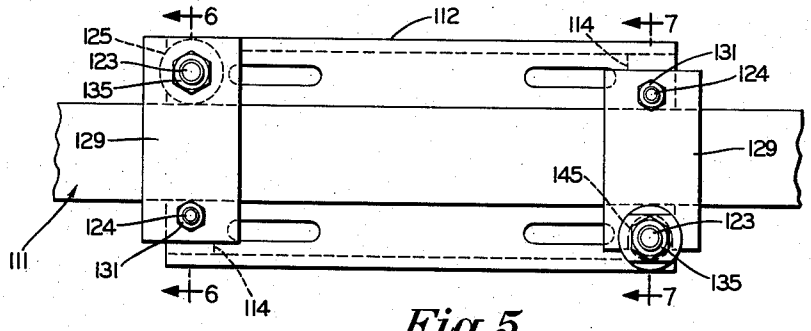


Fig. 5

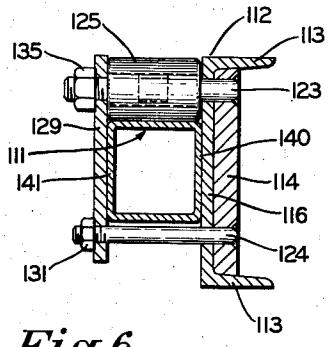


Fig. 6

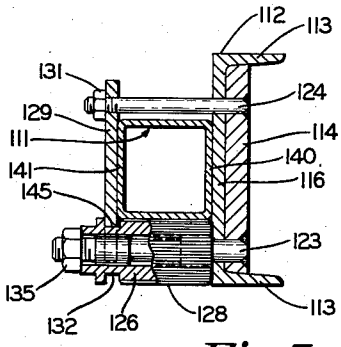


Fig. 7

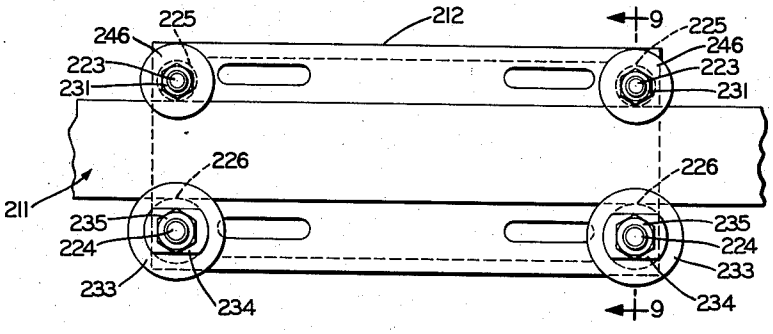


Fig. 8

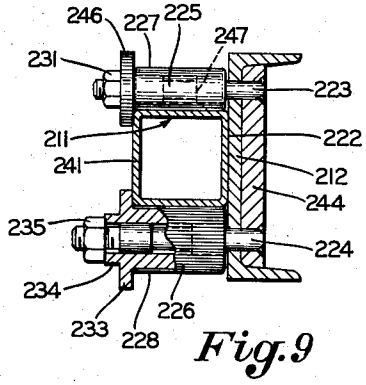


Fig. 9

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RETRACTABLE ARM CONSTRUCTION

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Filed Jan. 21, 1959, Ser. No. 788,110

15 Claims. (Cl. 248—298)

Our invention relates to improvements in retractable arm construction of the type for use in supporting devices such as antennas and the like on stationary supporting members such as poles. More specifically, the retractable arm construction of the present invention may be used advantageously for supporting an antenna laterally spaced from the side of a vertically extending support pole, with this retractable arm construction permitting selective lateral adjustment of the arm to provide convenient access to the antenna from the support pole.

Many prior constructions of various types of arms have been used for supporting antennas on their supporting poles and particularly at the side and spaced laterally from a vertically extending support pole. In most cases, however, to our knowledge, these prior constructions have always included a particular clamp construction which securely clamps one end of the arm to the vertical support pole, with the arm extending laterally from the pole and having a device such as an antenna mounted spaced from the pole up to distances as great as four to six feet.

With devices such as antennas, which may be of considerable size and weight and which may be supported on vertical poles at relatively great heights, it is very difficult using these prior constructions to originally install the arm with the antenna mounted thereon, yet this is necessary in view of the lateral extension of the arm away from the vertical pole a distance at which the extreme end thereof is not accessible from the pole. Frequently, in order to make an installation using these prior constructions, it is necessary to provide temporary support means for the arm and antenna mounted thereon until the clamping between the arm and pole can be accomplished.

Furthermore, in the case of devices such as antennas, it is necessary to perform certain maintenance operations from time to time after the original installation, such as the renewal of electrical connections, polishing of the antenna to improve the proper reception thereof, or possible complete replacement of the antenna after a period of time due to the weather causing the antenna to deteriorate beyond usefulness. Obviously, in every such case where these prior constructions are used, it is necessary to completely remove the arm and antenna from the vertical support pole in order to gain access to the end of the arm where the antenna mounted.

For these reasons, it is highly desirable to provide an arm construction for supporting devices such as antennas, and particularly those which must be mounted spaced laterally from a vertical supporting pole, with which the antenna is always conveniently accessible from the vertical supporting pole, even though the antenna in operating position is supported distances of from four to six feet away from the pole. Furthermore, particularly in the case of the supporting of antennas, it is desirable to have the arm supporting the antenna movable while it is securely retained on the vertical supporting pole so that the antenna may be conveniently set at a particular selected position or distance spaced from the vertical supporting pole.

It is, therefore, a general object of the present invention to provide a retractable arm construction which overcomes the foregoing discussed disadvantages of the prior construction and provides the desired features.

It is a primary object of the present invention to provide a retractable arm construction which promotes ease in installation of the arm construction on a supporting pole or the like and ease in installation of a device such as an antenna to be supported thereon spaced from the supporting pole.

It is a further object of the present invention to provide a retractable arm construction according to the foregoing and which also permits easy maintenance and servicing of the device such as an antenna supported thereon either at the time of original installation or at any desired occasion thereafter.

It is still a further object of the present invention to provide a retractable arm construction which, securely clamped to a supporting member such as a supporting pole, is easily retractable or extendable to any desired position within the limitations of its size for placing a device such as an antenna supported thereon at any desired position.

It is an additional object of the present invention to provide a retractable arm construction which may include means thereon for securely maintaining the particular position at which it is manually placed until manually moved from such position.

It is still an additional object of the present invention to provide a retractable arm construction which is formed with means for positively moving it between retracted and extended positions when desired.

Finally, it is an object of the present invention to provide a retractable arm construction which satisfies all of the foregoing objects, yet is relatively simple and durable in construction and economical to manufacture.

These and other objects are accomplished by the parts, constructions, arrangements, combinations and subcombinations comprising the present invention, the nature of which is set forth in the following general statement, preferred embodiments of which—illustrative of the best mode of which applicants have contemplated applying the principles—are set forth in the following description and illustrated in the accompanying drawings, and which are particularly and distinctly pointed out and set forth in the appended claims forming a part hereof.

In general terms, the retractable arm construction comprising the present invention may be stated as including a stationary frame member preferably having means thereon for supporting the frame member on a support member such as a vertical pole and at a given vertical location. Further, the stationary frame member is preferably provided with a longitudinally extending opening or slot formed therein within which is received an elongated arm preferably having a device such as an antenna mounted at one end thereof.

Further, the arm construction includes friction means preferably in the form of at least one friction roller rotatably mounted on the frame member abutting a longitudinally extending surface on the arm member for selectively moving the arm member longitudinally with respect to the frame member. Still further, the frame member may be provided with guide means such as guide rollers rotatably mounted thereon and also abutting a longitudinally extending surface on the arm member for guiding the arm member during its longitudinal movement by the friction means.

Finally, the arm construction may include clamping means for securely clamping the frame member and arm member together retained against relative longitudinal movement for securing the members in proper desired position between periods of selective movement.

By way of example, embodiments of the retractable arm construction of the present invention are illustrated in the accompanying drawings forming a part hereof, wherein like numerals indicate similar parts throughout the several views, and in which:

Fig. 1 is a fragmentary top plan view of the first embodiment of the arm construction having an antenna mounted at the end of the arm member and with the frame member being securely clamped on a vertical support pole, such support pole being shown in cross section.

Fig. 2, a fragmentary side elevation, part in section, of the retractable arm construction of Fig. 1 and the vertical support pole;

Fig. 3, a sectional view, part in elevation, looking in the direction of the arrows 3—3 in Fig. 1;

Fig. 4, a sectional view, part in elevation, looking in the direction of the arrows 4—4 in Fig. 2;

Fig. 5, a fragmentary side elevation of a second embodiment of the retractable arm construction comprising the present invention;

Fig. 6, a sectional view, part in elevation, looking in the direction of the arrows 6—6 in Fig. 5;

Fig. 7, a sectional view, part in elevation, looking in the direction of the arrows 7—7 in Fig. 5;

Fig. 8, a fragmentary side elevation of a third embodiment of the retractable arm construction comprising the present invention; and

Fig. 9, a sectional view, part in elevation, looking in the direction of the arrows 9—9 in Fig. 8.

The first embodiment of the retractable arm construction comprising the present invention is shown in Figs. 1 through 4 in a form for supporting an antenna spaced laterally or horizontally from a vertical support pole at any given vertical location on the pole. As shown, the construction includes a stationary frame member generally indicated at 10 and an arm member generally indicated at 11.

The frame member 10 is provided with the back supporting bracket 12 preferably formed from a length of structural channel member positioned with the flanges 13 thereof extending generally horizontally toward the vertical surface 14 of the supporting pole 15, and with the connecting leg 16 of the channel member spaced from and extending generally parallel to the pole surface 14. Further, the channel member flanges 13 are preferably each formed with vertically aligned cutouts 17 generally conforming to the outer circular configuration of pole 15, so that this supporting bracket 12 may be received inwardly partially over the circular contour of pole 15 with the pole extending partially within the cutouts 17 to properly locate this supporting bracket with reference to the pole.

Still further, the supporting bracket 12 is provided with spaced upper and lower slots 18 which are formed through the connecting leg 16 at locations preferably spaced vertically only short distances from the flanges 13. These slots 18 receive the end portions of pairs of upper and lower supporting bolts 19 which extend generally horizontally adjacent either side of the pole 15 and are connected through rear supporting straps 20.

Thus, as best seen in Figs. 1 and 3, with the supporting bracket 12 abutting the pole 15 and the pole received in the cutouts 17, the supporting bolts 19 are adjusted within the slots 18 to extend closely adjacent the sides of pole 15 and with the supporting straps 20 abutting the side of the pole 15 opposite from the supporting bracket 12. Then, after the exact vertical height of the supporting bracket 12 has been determined on the pole 15, the nuts 21 of the bolts 19 may be tightened against the front surface 22 of the supporting bracket to tightly clamp this supporting bracket against the pole at its proper vertical position on the pole.

Outwardly of the slots 18 and at about the same vertical level as these slots, spaced pairs of upper stud shafts 23 and lower stud shafts 24 are received through the connecting leg 16 of the supporting bracket 12 extending outwardly from the front surface 22 and away from the pole 15. As shown, preferably each of the upper stud shafts 23 is vertically or laterally aligned with one of the lower stud shafts 24.

Thus, a generally horizontally or longitudinally extending slot or opening is formed through the stationary frame member 10, as defined by the front surface 22 of supporting bracket 12, the upper stud shafts 23 and the lower stud shafts 24, and within this opening or slot is received the horizontally or longitudinally extending arm member 11, as will be hereinafter described.

In this first embodiment of the retractable arm construction comprising the present invention, each of the upper stud shafts 23 has positioned thereon a guide roller 25, with one of these rollers 25 being merely telescoped over each of these upper stud shafts for free rotation with reference thereto. Further, for the purposes of this first embodiment, each of the lower stud shafts 24 has positioned thereon a driving roller 26, with again each of these driving rollers being merely telescoped over its respective lower stud shaft for rotation with reference thereto.

The guide rollers 25 are preferably provided with smooth outer cylindrical or circumferential surfaces 27, as best shown in Figs. 3 and 4, and the driving rollers 26 are preferably provided with outer cylindrical or circumferential roughened friction surfaces, preferably in the form of the knurled surfaces 28. Mounted at the forward ends of the guide roller surfaces 27 and driving roller surfaces 28 are the horizontally spaced and vertically extending clamping plates 29, with each of plates 29 connecting and having received therethrough one of the upper stud shafts 23 and its directly vertically underlying lower stud shaft 24, so that of these clamping plates 29 is positioned at either side of the supporting bracket 12, as shown.

Each of the guide rollers 25 merely extends between the front surface 22 of the supporting bracket 12 and the back surface of the clamping plates 29, with the upper stud shafts 23 being received through the upper ends of the clamping plates 29 and in turn receiving a washer 30 and nut 31. Each of the driving rollers 26, however, at the clamping plates 29 is provided with a circumferential bearing surface 32 the same or slightly larger in diameter than the knurled surface 28, with this bearing surface 32 extending through plate 29 and terminating outwardly in an enlarged circumferential washer-like clamping flange 33.

Still further, each of the driving rollers 26 terminates outwardly of the clamping flange 33 in a reduced diameter preferably hexagonal-shaped wrench portion 34, with the nuts 35 being received over the outer ends of the lower stud shafts 24 outwardly of these wrench portions 34 for retaining the driving rollers 26 on the lower stud shafts. Finally, a pair of sleeve bearings 36 may be received within each of the driving rollers 26 and surrounding each of the lower stud shafts 24 to insure proper rotation of the driving rollers 26 on the stud shafts 24. Also, for convenience, in maintaining the driving rollers 26 and nuts 35 properly assembled on the lower stud shafts 24 even though the nuts 35 are loosened, the cotter keys 37 may be provided outwardly of the nuts 35.

The arm member 11 is preferably elongated and tubular in configuration and preferably has a generally square cross section, as shown, forming the upper horizontal surface 38, lower horizontal surface 39, back vertical surface 40, and front vertical surface 41. Further, arm member 11 may be provided at one end with a generally vertically extending antenna mount 42 and at the other end with an enlarged cap member 43.

Of importance to the present invention is the fact that the vertical distance between each of the guide roller surfaces 27 and its particular underlying driving roller knurled surface 28 is slightly larger than the vertical distance between the arm member upper horizontal surface

38 and lower horizontal surface 39, so that the arm member 11 may move horizontally between the guide and driving rollers 25 and 26, while these rollers rotate around the upper and lower stud shafts 23 and 24. Further, of importance is that the horizontal distance between the supporting bracket front surface 22 and the back surface of the clamping plates 29 may be selectively made slightly less than the horizontal distance between the arm member back vertical surface 40 and front vertical surface 41 to selectively clamp the arm member 11 between the supporting bracket 12 and clamping plates 29.

This clamping action of the arm member 11 between the supporting bracket 12 and clamping plates 29 is permitted by the axial length of the guide rollers 25 being slightly less than the horizontal distance between the arm member vertical surfaces 40 and 41. Also, the horizontal distance between the driving roller clamping flange 33 and the back extremity of the driving roller 26, made up by the axial length of the knurled surface 28 and axial length of the bearing surface 32, may be less than the horizontal distance between the front surface of the supporting straps 20 and the supporting bracket front surface 22.

Thus, with the arm member 11 received vertically between the guide and driving rollers 25 and 26 and horizontally between the supporting bracket front surface 22 and the back surfaces of the clamping plates 29, and with the upper and lower stud shaft nuts 31 and 35 released slightly so as not to clamp the arm member 11 between the supporting bracket 12 and clamping plates 29, a wrench may be engaged with the wrench portion 34 of either of the driving rollers 26 to rotate this particular driving roller and cause the knurled surface 28 thereof to move the arm member 11 horizontally either toward a retracted or extended position, as desired. Furthermore, after the particular horizontal position of the arm member 11 has been established, these nuts 31 and 35 may be threaded inwardly on the upper and lower stud shafts 23 and 24 to move the clamping plates 29 horizontally inwardly and securely clamp the arm member 11 between these clamping plates and the supporting bracket 12, to thereby securely retain the arm member in its selectively adjusted position.

Finally, the arm member 11 is held stationary even more securely by the fact that, obviously, when the lower stud shaft nuts 35 are threaded inwardly to clamp the clamping plates 29, these nuts 35 at the same time clamp the driving rollers 26 immovable. This retains the knurled surfaces 28 of the driving rollers 26 immovable and binding against the lower horizontal surface 39 of arm member 11, to further aid in retaining the arm member stationary.

The second embodiment of the retractable arm construction comprising the present invention is shown in Figs. 5, 6 and 7 and preferably includes the same form of supporting bracket 112, with the exception that a reinforcing plate 114 is preferably positioned within the supporting bracket between the flanges 113 and against the connecting leg 116 for receiving the back ends of the upper stud shafts 123 and lower stud shafts 124. Further, diagonally opposite upper and lower stud shafts 123 and 124 merely extend spaced vertically from the arm member 111 and are not provided with any rollers, while the remaining upper stud shaft 123 is provided with a guide roller 125, and the remaining lower stud shaft 124 is provided with a driving roller 126.

Still further, rather than the bearing surface of the driving roller having the same or larger diameter than the knurled surface thereof so that the driving roller can be inserted through the particular clamping plate, in this second embodiment, the bearing surface 132 is smaller in diameter than the knurled surface 128 of the driving roller 126, and the clamping plate 129 at this driving roller is provided with an open-ended slot 145 to permit assembly of the construction. Finally, the axial length of the driving roller knurled surface 128 is slightly less than the horizontal width of the arm member 111 between the back and front vertical surfaces 140 and 141, so that the clamping, as previously described in the first embodiment of the arm member 111, can take place.

Thus, with this second embodiment construction, the same use may take place, that is, the arm member 111 may be selectively retracted or extended by loosening the nuts 131 and 135 and rotating the driving roller 126 by means of a wrench, and in view of the diagonal support provided by the driving roller 126 and guide roller 125, the arm member 111 will be properly supported when the maximum weight or downward force is at the right-hand end of the arm member 111, as viewed in Fig. 5. For this reason, the second embodiment construction provides a somewhat more economical form of retractable arm construction and is satisfactory under the proper conditions.

The third embodiment of the retractable arm construction comprising the present invention is shown in Figs. 8 and 9 and includes a supporting bracket 212 similar to that in the second embodiment, that is, with the reinforcing plate member 244 and with the upper and lower stud shafts 223 and 224 received through this plate member, as shown in Fig. 9. In this third embodiment, however, the clamping plates, as previously described, are completely eliminated and replaced by large clamping washers 246 on the upper stud shafts 223 and merely the washer-like clamping flanges 233 preferably formed integrally on the driving rollers 226.

Also, in this third embodiment, the guide rollers 225 are slightly reduced in diameter and are preferably provided with the sleeve bearings 247. The guide rollers 225 and driving rollers 226, however, are positioned in the same relationship as in the first embodiment, that is, with the guide rollers 225 on the upper stud shafts 223 and the driving rollers 226 on the lower stud shafts 224, and these rollers serve the same purpose as previously described.

In view of the elimination of the previously described clamping plates in this third embodiment and replacement by the clamping washers 246 on the upper stud shafts 223 and merely using the clamping flanges 233 for clamping against the arm member 211 on the lower stud shafts 224, the axial lengths of the smooth surfaces 227 on the guide rollers 225 must again be less than the horizontal distance between the supporting bracket front surface 222 and the arm member front vertical surface 241, and the axial length of the knurled surfaces 228 on the driving rollers 226 also must be less than this horizontal distance if complete clamping is to take place. Thus, with the clamping washers 246 positioned outwardly of the guide rollers 225 engaging over a portion of the arm member front vertical surface 241 and with the clamping flanges 233 of the driving rollers 226 also engaging over a portion of this arm member front vertical surface, by tightening the nuts 231 and 235 on the upper and lower stud shafts 223 and 224, the arm member 211 will be securely clamped in a given position against the supporting bracket front surface 222.

Further, by releasing the nuts 231 and 235 to thereby release the clamping washers 246 and driving roller clamping flanges 233 from the arm member front vertical surface 241, the arm member 211 may be selectively moved to any desired extended or retracted position. This, of course, is accomplished merely by rotating one of the driving rollers 226 by a wrench engaged with the wrench portion 234 thereof.

Thus, in all of the three embodiments of the present invention herein described and shown in the drawings, a supporting bracket member is provided which may be

properly engaged with a supportng member, such as a pole, to position the particular retractable arm construction at the desired vertical height. Furthermore, a longitudinally extending opening or slot is provided in each supporting bracket for receiving a longitudinally extending arm member preferably in a position to extend generally horizontally from the side of the vertical support pole.

Still further, in each embodiment, means is provided for engaging the arm member to selectively move the same between extended and retracted positions, as desired, and this is preferably in the form of at least one friction driving roller which engages one of the surfaces of the arm member. Also, guide means preferably in the form of at least one guide roller is provided for guiding and reducing the frictional resistance encountered in moving the arm member between its extended and retracted positions.

Finally, in each case, clamping means may be provided for securing the arm member in a selected extended or retracted position. This clamping means may be horizontally extending clamping plates, as shown in the first and second embodiments, or clamping washers and flanges, as shown in the third embodiment, and in each case, this clamping means not only serves to provide the desired clamping, but also when released for permitting movement of the arm member between its extended and retracted positions, this clamping means also serves as guide means and retains the arm member from becoming completely disengaged from the remainder of the construction.

Although in the first embodiment of the retractable arm construction comprising the present invention the driving roller bearing surfaces **32** and clamping flanges **33** are shown formed intergrally with the driving rollers **26**, it is obvious that either of these could be separate members or the bearing surface **32** could be substantially eliminated, as long as a driving connection is maintained between wrench portions **34** and the knurled surfaces **28**. Furthermore, these same considerations apply to the bearing surface **132** and clamping flange **133** of the second embodiment and the clamping flange **233** of the third embodiment. Such changes are contemplated within the scope of the present invention.

Still further, although the retractable arm construction comprising the present invention has been shown herein as supporting a device such as the antenna mount **42** on a vertically extending support pole **20**, the principles of the present invention can be easily adapted for use in many varied instances where retractable arms are required and desired. It is not, therefore, intended to limit the scope of the present invention to the exact supported device such as the antenna or support means such as the vertical pole shown.

In the foregoing description, certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom, because such words are used for descriptive purposes herein and are intended to be broadly construed.

Moreover, the embodiments of the improved construction illustrated and described herein are by way of example, and the scope of the present invention is not limited to the exact details of construction shown.

Having now described the invention, the construction, operation and use of preferred embodiments thereof, and the advantageous new and useful results obtained thereby; the new and useful construction and reasonable mechanical equivalents thereof obvious to those skilled in the art are set forth in the appended claims.

We claim:

1. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending surface, longitudinally spaced upper studs mounted on the frame member, longitudinally spaced lower studs mounted on the frame member spaced laterally from said upper studs, there being one lower stud generally laterally aligned with each upper stud, said upper and lower studs forming a slot therebetween on the frame member, the arm member being longitudinally slidably mounted in the frame member slot, a guide roller rotatably mounted on each of the upper studs and having a substantially smooth outer cylindrical guide surface abutting the arm outer surface, a friction roller rotatably mounted on each of the lower studs and having a substantially rough outer cylindrical friction surface abutting the arm outer surface, rotating means operably connected with each of the friction rollers for selectively rotating said friction rollers to move the arm member longitudinally with respect to the frame member, a clamping plate received over each set of generally laterally aligned upper and lower studs outward of the guide and friction rollers on said studs, the clamping plates laterally and longitudinally overlying the arm outer surface and being movable on the studs between a position clamping against the arm outer surface to clamp the arm member against the frame member and a position free of clamping the arm outer surface to permit the selected longitudinal movement of the arm member with respect to the frame member, and means on the studs for moving the clamping plates into their clamping position.

2. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending surface, at least two longitudinally spaced upper studs mounted on the frame member, at least two longitudinally spaced lower studs mounted on the frame member spaced laterally from said upper studs, each of the upper studs being generally laterally aligned with one of the lower studs, said upper and lower studs forming a slot therebetween on the frame member, the arm member being longitudinally slidably mounted in the frame member slot, a guide roller rotatably mounted on one of the upper studs and having a substantially smooth outer cylindrical guide surface abutting the arm outer surface, a friction roller mounted on the lower stud diagonally spaced from said one upper stud and having a substantially rough outer cylindrical friction surface abutting the arm outer surface, rotating means operably connected with the friction roller for selectively rotating said friction roller to move the arm member longitudinally with respect to the frame member, a clamping plate received over each set of generally laterally aligned upper and lower studs outward of any guide and friction rollers on said studs, the clamping plates laterally and longitudinally overlying the arm outer surface and being movable on the studs between a position clamping against the arm outer surface to clamp the arm member against the frame member and a position free of clamping the arm outer surface to permit the selected longitudinal movement of the arm member with respect to the frame member, and means on the studs for moving the clamping plates into their clamping position.

3. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending side, guide means on the frame member mounting the arm member for longitudinal movement relative to the frame member, the guide means including laterally spaced stud means extending outwardly of the frame member above and below the arm member, a rotatable friction roller mounted with one of the stud means operably engaged with the arm member for moving the arm member longitudinally relative to the frame member upon selective rotation of said friction roller, means for selectively rotating the friction roller, and clamping means on each of the stud means extending laterally and longitudinally over a portion of said arm member outer side selectively movable between a posi-

tion releasing the arm member for selective longitudinal movement and a position clamping the arm member against longitudinal movement.

4. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending side, guide means on the frame member mounting the arm member for longitudinal movement relative to the frame member, the guide means including longitudinally spaced stud means extending outwardly of the frame member adjacent the arm member, a rotatable friction roller mounted with one of the stud means operably engaged with the arm member for moving the arm member longitudinally relative to the frame member upon selective rotation of said friction roller, means for selectively rotating the friction roller, and clamping means on each of the stud means extending laterally and longitudinally over a portion of said arm member outer side selectively movable between a position releasing the arm member for selective longitudinal movement and a position clamping the arm member against longitudinal movement.

5. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending side, guide means on the frame member mounting the arm member for longitudinal movement relative to the frame member, the guide means including laterally spaced sets of longitudinally spaced stud means extending outward of the frame member with a set above and a set below the arm member, a rotatable friction roller mounted with one of the stud means operably engaged with the arm member for moving the arm member longitudinally relative to the frame member upon selective rotation of said friction roller, and clamping means on each of the stud means extending laterally and longitudinally over a portion of said arm member outer side selectively movable between a position releasing the arm member for selective longitudinal movement and a position clamping the arm member against longitudinal movement.

6. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending side, guide means on the frame member mounting the arm member for longitudinal movement relative to the frame member, the guide means including a rotatable friction roller operably connected to the frame member and operably engaged with the arm member for moving the arm member longitudinally relative to the frame member upon selective rotation of said friction roller, means for selectively rotating the friction roller, clamping means operably connected to the friction roller and extending laterally and longitudinally over a portion of the arm member outer side selectively movable between a position releasing the arm member for selective longitudinal movement and a position clamping the arm member against longitudinal movement, and means operably connecting the clamping means to the friction roller for clamping the friction roller against rotation upon movement of the clamping means to said clamping position.

7. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending side, guide means on the frame member mounting the arm member for longitudinal movement relative to the frame member, the guide means including laterally spaced stud means extending outwardly of the frame member above and below the arm member, a rotatable friction roller mounted with one of the stud means operably engaged with the arm member for moving the arm member longitudinally relative to the frame member upon selective rotation of said friction roller, means for selectively rotating the friction roller, clamping means on each of the stud means extending laterally and longitudinally over a portion of said arm member outer side selectively movable between a position releasing the arm member for selective longitudinal movement and a position clamping the arm member against longitudinal movement, and means operably connecting the clamping means to the friction roller for clamping the friction roller against rotation upon movement of the clamping means to said clamping position.

8. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending side, guide means on the frame member mounting the arm member for longitudinal movement relative to the frame member, the guide means including longitudinally spaced stud means extending outwardly of the frame member adjacent the arm member, a rotatable friction roller mounted with one of the stud means operably engaged with the arm member for moving the arm member longitudinally relative to the frame member upon selective rotation of said friction roller, means for selectively rotating the friction roller, clamping means on each of the stud means extending laterally and longitudinally over a portion of said arm member outer side selectively movable between a position releasing the arm member for selective longitudinal movement and a position clamping the arm member against longitudinal movement, and means operably connecting the clamping means to the friction roller for clamping the friction roller against rotation upon movement of the clamping means to said clamping position.

9. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending side, guide means on the frame member mounting the arm member for longitudinal movement relative to the frame member, the guide means including laterally spaced sets of longitudinally spaced stud means extending outward of the frame member with a set above and a set below the arm member, a rotatable friction roller mounted with one of the stud means operably engaged with the arm member for moving the arm member longitudinally relative to the frame member upon selective rotation of said friction roller, clamping means on each of the stud means extending laterally and longitudinally over a portion of said arm member outer side selectively movable between a position releasing the arm member for selective longitudinal movement and a position clamping the arm member against longitudinal movement, and means operably connecting the clamping means to the friction roller for clamping the friction roller against rotation upon movement of the clamping means to said clamping position.

10. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending surface, laterally spaced rollers rotatably mounted on the frame member and having outer cylindrical roller surfaces, at least one of said rollers being a friction roller spaced below certain of the other rollers and having an outer cylindrical friction surface, the arm member being positioned longitudinally movable on the frame member between the rollers and above at least the friction roller with the roller and friction surfaces abutting the arm outer surface, rotating means operably connected with the friction roller and selectively rotating the friction roller to selectively move the arm member longitudinally with respect to the frame member, clamping members mounted outwardly of and with at least two of said rollers including said friction roller, the clamping members extending laterally and longitudinally over a portion of the arm outer surface, and means mounting the clamping members selectively movable between a position against the arm outer surface for clamping the arm member in a selected longitudinal position with respect to the frame member and a position free of clamping the arm member to permit the selected longitudinal movement of the arm member with respect to the frame member.

11. Retractable arm construction including a frame member, an elongated arm member having an outer

longitudinally extending surface, laterally spaced rollers rotatably mounted on the frame member and having outer cylindrical roller surfaces, at least one of said rollers being a friction roller spaced below certain of the other rollers and having an outer cylindrical friction surface, the arm member being positioned longitudinally movable on the frame member between the rollers and above at least the friction roller with the roller and friction surfaces abutting the arm outer surface, rotating means operably connected with the friction roller and selectively rotating the friction roller to selectively move the arm member longitudinally with respect to the frame member, clamping members mounted outwardly of and with at least two of said rollers including said friction roller, the clamping members extending laterally and longitudinally over a portion of the arm outer surface, means mounting the clamping members selectively movable between a position against the arm outer surface for clamping the arm member in a selected longitudinal position with respect to the frame member and a position free of clamping the arm member to permit the selected longitudinal movement of the arm member with respect to the frame member, and means operably connecting the friction roller clamping member to the friction roller for clamping the friction roller against rotation upon movement of said clamping member to said arm clamping position.

12. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending surface, longitudinally spaced upper studs mounted on the frame member, longitudinally spaced lower studs mounted on the frame member spaced laterally from said upper studs, there being one lower stud generally laterally aligned with each upper stud, said upper and lower studs forming a slot therebetween on the frame member, the arm member being longitudinally slidably mounted in the frame member slot, a guide roller rotatably mounted on each of the upper studs and having a substantially smooth outer cylindrical guide surface abutting the arm outer surface, a friction roller rotatably mounted on each of the lower studs and having a substantially rough outer cylindrical friction surface abutting the arm outer surface, rotating means operably connected with each of the friction rollers for selectively rotating said friction rollers to move the arm member longitudinally with respect to the frame member, a clamping plate received over each set of generally laterally aligned upper and lower studs outward of the guide and friction rollers on said studs, the clamping plates laterally and longitudinally overlying the arm outer surface and being movable on the studs between a position clamping against the arm outer surface to clamp the arm member against the frame member and a position free of clamping the arm outer surface to permit the selected longitudinal movement of the arm member with respect to the frame member, means on the studs for moving the clamping plates into their clamping position, and means operably connecting the clamping plate moving means to the friction rollers for clamping the friction rollers against rotation upon movement of the clamping plates to said arm clamping positions.

13. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending surface, at least two longitudinally spaced upper studs mounted on the frame member, at least two longitudinally spaced lower studs mounted on the frame member spaced laterally from said upper studs, each of the upper studs being generally laterally aligned with one of the lower studs, said upper and lower studs forming a slot therebetween on the frame member, the arm member being longitudinally slidably mounted in the frame member slot, a guide roller rotatably mounted on one of the upper studs and having a substantially smooth outer cylindrical guide surface abutting the arm outer surface, a friction roller mounted on the lower stud diagonally spaced from said one upper stud and having a substantially rough outer cylindrical friction surface abutting the arm outer surface, rotating means operably connected with the friction roller for selectively rotating said friction roller to move the arm member longitudinally with respect to the frame member, a clamping plate received over each set of generally laterally aligned upper and lower studs outward of any guide and friction rollers on said studs, the clamping plates laterally and longitudinally overlying the arm outer surface and being movable on the studs between a position clamping against the arm outer surface to clamp the arm member against the frame member and a position free of clamping the arm outer surface to permit the selected longitudinal movement of the arm member with respect to the frame member, means on the studs for moving the clamping plates into their clamping position, and means operably connecting the clamping plate moving means at the friction roller to said friction roller for clamping said friction roller against rotation upon movement of the clamping plate to said arm clamping position.

14. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending surface, longitudinally spaced upper studs mounted on the frame member, longitudinally spaced lower studs mounted on the frame member spaced laterally from said upper studs, said upper and lower studs forming a slot therebetween on the frame member, the arm member being longitudinally slidably mounted in the frame member slot, a guide roller rotatably mounted on at least one of the upper and lower studs and having a substantially smooth outer cylindrical guide surface abutting the arm outer surface, a friction roller rotatably mounted on at least one of the upper and lower studs spaced laterally from said guide roller and having a substantially rough outer cylindrical friction surface abutting the arm outer surface, rotating means operably connected with the friction roller for selectively rotating said friction roller to move the arm member longitudinally with respect to the frame member, a washer-like clamping member mounted on each of the studs mounting said guide and friction rollers, the washer-like clamping members extending laterally and longitudinally over a portion of the arm outer surface and being movable between a position clamping against the arm outer surface to clamp the arm against the frame member and a position free of clamping against the arm outer surface to permit the longitudinal movement of the arm member with respect to the frame member, and means on the studs outward of the clamping members for selectively moving the clamping members to clamping position.

15. Retractable arm construction including a frame member, an elongated arm member having an outer longitudinally extending surface, longitudinally spaced upper studs mounted on the frame member, longitudinally spaced lower studs mounted on the frame member spaced laterally from said upper studs, said upper and lower studs forming a slot therebetween on the frame member, the arm member being longitudinally slidably mounted in the frame member slot, a guide roller rotatably mounted on at least one of the upper and lower studs and having a substantially smooth outer cylindrical guide surface abutting the arm outer surface, a friction roller rotatably mounted on at least one of the upper and lower studs spaced laterally from said guide roller and having a substantially rough outer cylindrical friction surface abutting the arm outer surface, rotating means operably connected with the friction roller for selectively rotating said friction roller to move the arm member longitudinally with respect to the frame member, a washer-like clamping member mounted on each of the studs mounting said guide and friction rollers, the washer-like clamping members extending laterally and longitudinally over a portion of the arm outer surface and being movable between

a position clamping against the arm outer surface to clamp the arm against the frame member and a position free of clamping against the arm outer surface to permit the longitudinal movement of the arm member with respect to the frame member, means on the studs outward of the clamping members for selectively moving the clamping members to clamping position, and means operably connecting said clamping member moving means with the friction roller for clamping the friction roller against rotation upon movement of the clamping member to said clamping position.

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