Oct. 9, 1951 C. H. SPECK ET AL 2,570,282

ADJUSTABLE FLOOR LEVELING DEVICE

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FIG. 1.

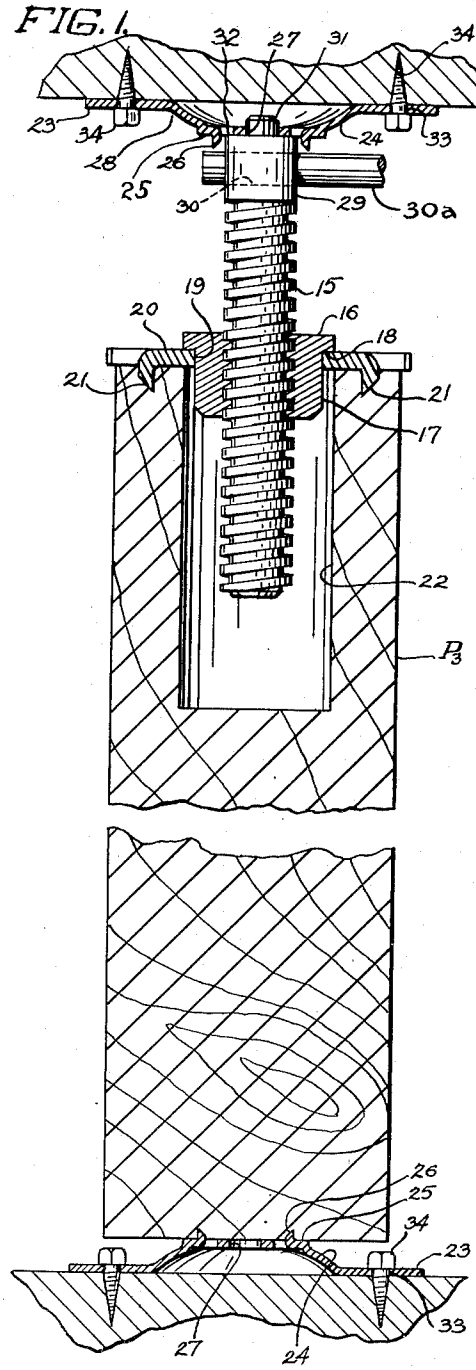
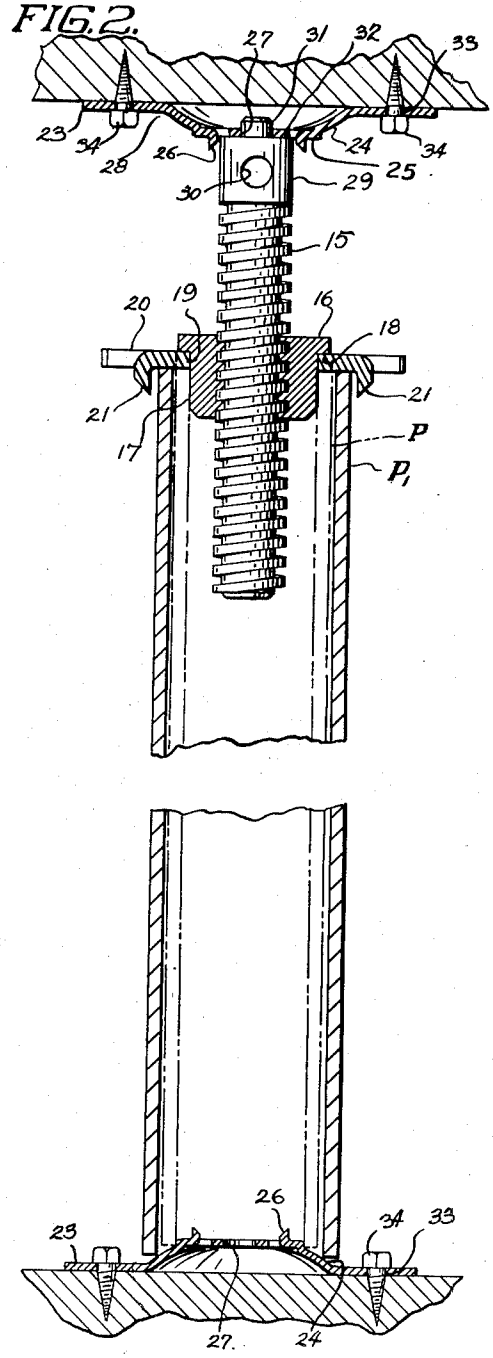


FIG. 2.



INVENTOR
Harry L. Carr
Ray A. Yoder
& C. Harold Speck
BY
William Cleland
ATTORNEY

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FIG. 3.

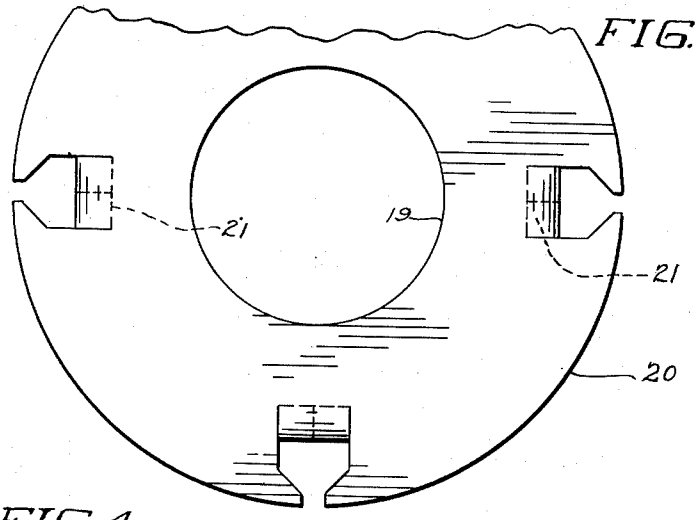


FIG. 4.

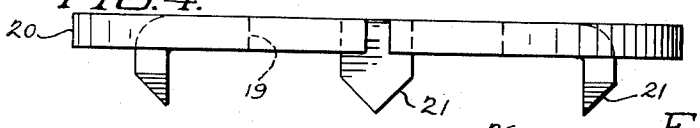


FIG. 5.

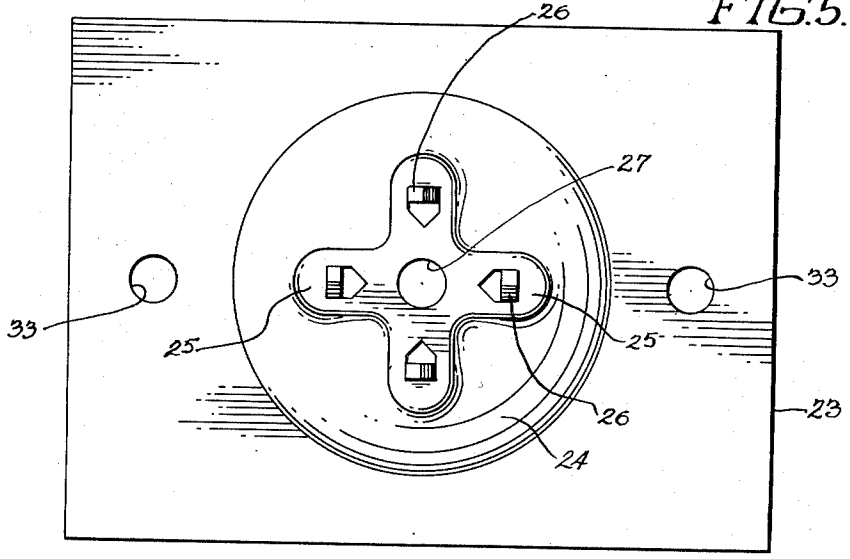
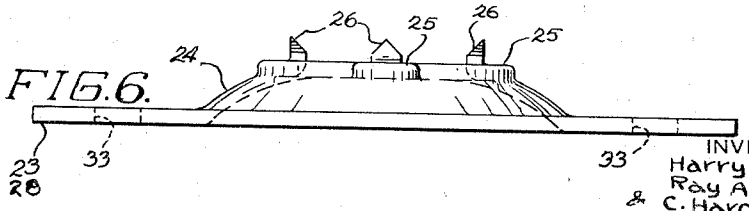


FIG. 6.



INVENTORS
Harry L. Carr
Ray A. Yoder
& C. Harold Speck
BY
William Cleland
ATTORNEY

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FIG. 7.

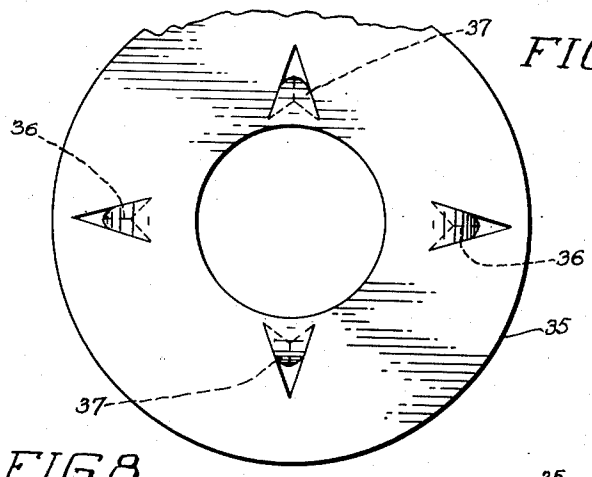


FIG. 8.

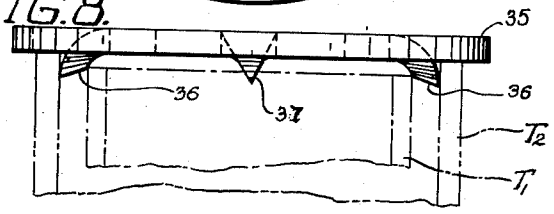


FIG. 9.

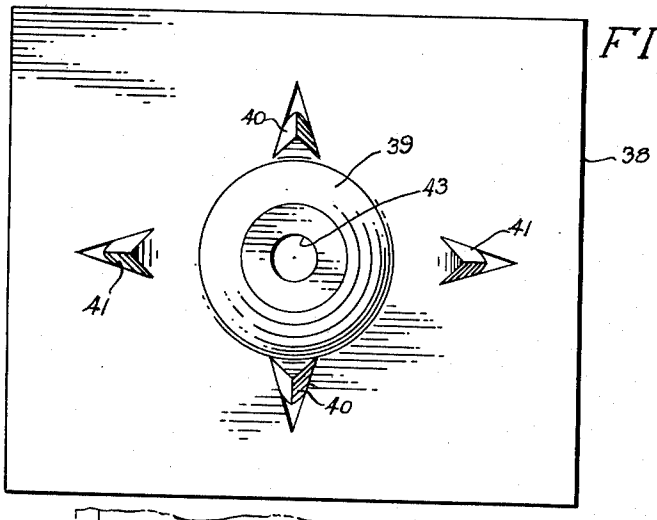
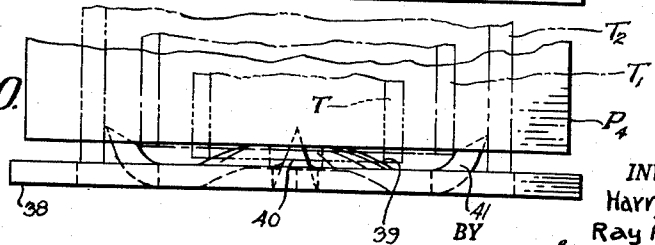


FIG. 10.



INVENTORS
Harry L. Carr
Ray A. Yoder
& C. Harold Speck
BY
William Cleland
Attorney

Patented Oct. 9, 1951

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UNITED STATES PATENT OFFICE

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ADJUSTABLE FLOOR LEVELING DEVICE

C. Harold Speck, Massilon, Harry L. Carr, Canton, and Ray A. Yoder, Orville, Ohio

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11 Claims. (Cl. 248—354)

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This invention relates to an adjustable supporting device of the type used for supporting and leveling floors of buildings.

An object of the invention is to provide adjustable supporting equipment adapted to be utilized with readily available supporting posts such as piping or other tubular material of varying diameters, or with solid posts such as wooden beams, whereby may be obviated the usual expense and inconvenience of packaging, shipping or storing such posts.

Other objects of the invention will be manifest from the following brief description and the accompanying drawings.

Of the accompanying drawings:

Figure 1 is a vertical cross-section through adjustable supporting equipment embodying the features of the invention, the same being illustrated in conjunction with a wooden post.

Figure 2 is a view similar to Figure 1, but illustrating the equipment utilized in conjunction with tubular supporting posts.

Figure 3 is a top plan view on an enlarged scale and partly broken away, of an adaptor plate utilized in the equipment of Figures 1 and 2.

Figure 4 is a front edge view of Figure 3.

Figure 5 is a top plan view, on an enlarged scale, of the top and bottom base plates or caps illustrated in Figures 1 and 2.

Figure 6 is a front edge view of Figure 5.

Figure 7 is a top plan view, similar to Figure 3, illustrating a modified form of adaptor plate.

Figure 8 is a front edge view of Figure 7.

Figure 9 is a top plan view, similar to Figure 5, of a modified form of base plate or cap.

Figure 10 is a front edge view of Figure 9.

Referring particularly to Figures 1 to 6, the numeral 15 designates a screw having threaded thereon a cylindrical nut 16, which is reduced diametrically at 17 to provide an annular seating shoulder 18. This reduced portion of the nut is adapted to be slidably received either in the end of a relatively small pipe P, indicated in chain-dotted lines in Figure 2, with the end of the pipe in abutment with the shoulder 18 of the nut, or similarly received in a central aperture 19 of an adaptor plate 20.

Adaptor plate 20 is suitably stamped to provide circumferentially spaced, inwardly projecting tangs or elements 21, as best illustrated in Figures 3 and 4. The inner end of the screw 15 is adapted, for example, to be received in a suitable inwardly extending aperture 22 from one end of a wooden post P_3, with the adaptor plate 20 abutting the end of the post and the projections

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21 thereof embedded into the material of the post. These elements 21 also may be utilized to maintain the adaptor plate in centered position when piping or other tubular material is utilized as indicated at P_1, the elements 21 projecting either outwardly of the wall of such tubular post (see full lines in Figure 2) or projecting inwardly of the wall of a larger pipe (not shown).

For retaining and supporting the lower ends of the selectively available posts a base plate 23 is provided, the same being formed from sheet material with a convex central protuberance 24 which is flattened as indicated at 25 to abut the lower end of a wooden post P_3. The flattened portion 25 may have formed therein circumferentially spaced projecting elements or tangs 26, adapted to become embedded in said wooden post to retain the same in desired centered relation as shown in Figure 1. The convex portion of the protuberance 24 also may be utilized for supporting in self-centering relation selectively available tubular posts of varying diameters, as indicated in full and chain-dotted lines at P_1 and P, respectively, in Figure 2. The protuberance 24 is provided with a central aperture 27 for a purpose to be described later.

The outer end of the screw 15 is provided with a head 29 apertured at 30 to receive a bar (not shown) for turning the screw relatively of the nut 16, and is supported and centered by means of a cap or upper base plate 28, which is similar in all respects to the base plate 23, like parts therefore being given like numerals. Accordingly the head 29 is reduced to define a pin 31 for reception in the central aperture of the top base plate or cap 28, and to provide an outwardly presented annular shoulder 32 for abutment with the flat portion 25 of the base plate or cap. Thus, the base plate 23 and cap 28 are completely interchangeable, and each may be provided with apertures at 33, 33 for receiving screws 34 to secure the same to vertically spaced members of building structures, as shown in Figures 1 and 2.

For practical application of the apparatus described, as for leveling and supporting a floor or the like, the user may be supplied with a suitable package or kit containing only a screw 15 and nut 16 thereon, two base plates 23 or 28, and an adaptor plate 20. The user then finds any suitable post which is readily available at a hardware store, plumbing shop, or in or around the place where the work is to be done. On a farm as an example, a wooden beam P_3 of suitable cross-section and length may be most readily acquired, and after boring or otherwise making a recess

22 in one end thereof the parts of the kit may be utilized as previously described in connection with Figure 1.

Should tubular posts or pipes be more readily available the same parts of the aforementioned package or kit may be assembled therewith, as previously described in connection with Figure 2. The diameter of the reduced portion 17 of nut 16 preferably is such that a pipe of unsuitably small diameter may not readily be used, and the shoulders on the plates 23 and 28 defined by the juncture of flat portions 25 and convex portions 24 thereof, may be similarly utilized. Where a pipe of minimum diameter is used the adaptor plate 20 may be eliminated from the supporting or leveling equipment.

Referring to the modified form of adaptor plate illustrated in Figures 7 and 8, it will be seen that the plate 35 is formed or stamped to provide a plurality of pointed tangs or elements 36 to extend from a face thereof as before. These elements, however, are shown arranged in diametrically oppositely disposed pairs which are different distances apart (see Figure 7). The varied spacing of the elements 36 serves to retain tubular posts of correspondingly varied diameters, as indicated in various chain-dotted lines at T and T_1 in Figure 8. Elements 36 may be inclined radially outwardly of the center of the plate so that when a solid post of non-yielding material is used they will be flattened into the plane of the plate, or in other words, into the recesses of the plate from which the elements are punched. The use of this adaptor plate otherwise is as previously described.

In Figures 9 and 19 is shown a modified form of base plate or cap 38, the same being formed with a center convex protuberance 39 for self-centering reception in the ends of tubular posts of varying diameters as indicated at T in Figure 10, and substantially as previously described. Pairs of spaced tangs or elements 40, 40 and 41, 41 are punched from the flat portion of the base plate outwardly of the protuberance 39, the ends of the elements in that case projecting outwardly of the plate to be embedded in the end of a wooden post P_4 abutting the outermost portion of the protuberance 39, when such a post is utilized in place of tubular material. The pairs of pointed elements 40 and 41 are arranged at different distances apart for retaining the tubular posts within relatively wide range of diameters, as indicated at T_1 and T_2 in Figure 10. A central aperture 43 is provided in the protuberance for receiving the end pin 31 of screw 15 in the manner previously described. The use of the modified form of base plate similarly is otherwise as before.

Other modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics, comprising an adjustable screw and nut assembly, means for mounting said screw and nut assembly at one end of a selected supporting post to have the screw projecting freely in a recess provided therein from said end, a base for cooperation with the other end of the selected post, said base having a convex protrusion the central portion of which is flattened, said base being adapted to be mounted either with said flattened central portion in abutment with said other end of one

type of said selected post or with said convex protrusion in self-centering engagement in a recess provided in said other end of another type of said selected post, said base having one or more projecting elements adapted to embed in the end of the first-mentioned type of post, said screw having a head at the outer end thereof, a cap, and interengageable retaining portions on said screw head and centrally of said cap, said cap and said base being substantially similarly constructed to be interchangeable one with the other to perform the respective functions thereof.

2. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics, comprising an adjustable screw and nut assembly, means for mounting said screw and nut assembly at one end of a selected supporting post to have the screw projecting freely in a recess provided therein from said end, and a base for cooperation with the other end of the selected post, said base having a convex protrusion the central portion of which is flattened, said base being adapted to be mounted either with said flattened central portion in abutment with said other end of one type of said selected post or with said convex protrusion in self-centering engagement in a recess provided in said other end of another type of said selected post, said base having one or more projecting elements adapted to embed in the end of the first-mentioned type of post, said mounting means including an adaptor plate for abutment with said one end of the selected post, said adaptor plate having a central aperture, said nut having a reduced portion for reception in said central aperture of the adaptor plate and providing a shoulder for abutment therewith.

3. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics, comprising an adjustable screw and nut assembly, means for mounting said screw and nut assembly at one end of a selected supporting post to have the screw projecting freely in a recess provided therein from said end, and a base for cooperation with the other end of the selected post, said base having a convex protrusion the central portion of which is flattened, said base being adapted to be mounted either with said flattened central portion in abutment with said other end of one type of said selected post or with said convex protrusion in self-centering engagement in a recess provided in said other end of another type of said selected post, said base having one or more projecting elements adapted to embed in the end of the first-mentioned type of post, said mounting means including an adaptor plate for abutment with said one end of the selected post, said adaptor plate having a central aperture, said nut having reduced portion for reception in said central aperture of the adaptor plate and providing a shoulder for abutment therewith, said adaptor plate having one or more pointed elements adapted to embed in the material of said one end of the selected post.

4. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics, comprising an adjustable screw and nut assembly, means for mounting said screw and nut assembly at one end of a selected supporting post to have the screw projecting freely in a recess provided therein from said end, and a base for cooperation with the other end of the selected post,

said base having a convex protrusion the central portion of which is flattened, said base being adapted to be mounted either with said flattened central portion in abutment with said other end of one type of said selected post or with said convex protrusion in self-centering engagement in a recess provided in said other end of another type of said selected post, said base having one or more projecting elements adapted to embed in the end of the first-mentioned type of post, said mounting means including an adaptor plate for abutment with said one end of the selected post, said adaptor plate having a central aperture, said nut having reduced portion for reception in said central aperture of the adaptor plate and providing a shoulder for abutment therewith, said adaptor plate having a plurality of diametrically spaced projections adapted either to embed in said recessed end of the selected post or to serve as retaining means for the abutting end of other types of selected posts.

5. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics, comprising an adjustable screw and nut assembly, means for mounting said screw and nut assembly at one end of a selected supporting post to have the screw projecting freely in a recess provided therein from said end, and a base for cooperation with the other end of the selected post, said base having a central flattened protuberance for abutment with said other end of the selected post, said base having one or more projecting elements adapted to embed in said other end of the post, said mounting means including an adaptor plate for abutment with said one end of the selected post, said adaptor plate having a central aperture, said nut having reduced portion for reception in said central aperture of the adaptor plate and providing a shoulder for abutment therewith.

6. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics, comprising an adjustable screw and nut assembly, means for mounting said screw and nut assembly at one end of a selected supporting post to have the screw projecting freely in a recess provided therein from said end, and a base for cooperation with the other end of the selected post, said base having a central flattened protuberance for abutment with said other end of the selected post, said base having one or more projecting elements adapted to embed in said other end of the post, said mounting means including an adaptor plate for abutment with said one end of the selected post, said adaptor plate having a central aperture, said nut having reduced portion for reception in said central aperture of the adaptor plate and providing a shoulder for abutment, said adaptor plate having one or more pointed elements adapted to embed in the material of said one end of the selected post.

7. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics, comprising an adjustable screw and nut assembly, means for mounting said screw and nut assembly at one end of a selected supporting post to have the screw projecting freely in a recess provided therein from said end, and a base for cooperation with the other end of the selected post, said base having a central flattened protuberance for abutment with said other end of the selected post, said base having one or more projecting elements adapted to embed in said other end of the

post, said mounting means including an adaptor plate for abutment with said one end of the selected post, said adaptor plate having a central aperture, said nut having reduced portion for reception in said central aperture of the adaptor plate and providing a shoulder for abutment therewith, said adaptor plate having a plurality of diametrically spaced projections adapted either to embed in said one end of the selected post or to serve as retaining means for the abutting end of a selected post.

8. An adjustable supporting device of the character described comprising a screw, a nut threaded on said screw and having a reduced portion defining a seating shoulder, means for turning said screw relatively of said nut, and an adaptor plate centrally apertured to receive said reduced portion of the nut with the plate seated against said shoulder thereof, said adaptor plate having a plurality of diametrically spaced projections so spaced either to embed in the material of the end of a selected post in abutment with the adaptor plate or to serve as retaining means engageable with opposed edge portions of the abutting end of a selected post of tubular construction.

9. An adjustable supporting device of the character described comprising a screw, a nut threaded on said screw and having a reduced portion defining a seating shoulder, means for turning said screw relatively of said nut, and an adaptor plate centrally apertured to receive said reduced portion of the nut with the plate seated against said shoulder thereof, said adaptor plate having a plurality of diametrically spaced projections adapted either to embed in the material of the end of a selected post in abutment with the adaptor plate or to serve as retaining means for the abutting end of a selected post of tubular construction, said projections of said adaptor plate being at varying distances from the central aperture thereof.

10. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics but which are provided with an inwardly extending recess from at least one end, comprising a screw adapted to have an inner end extend within the recess in said one end of a selected post and having a head provided with a reduced portion defining a seating shoulder, a cap having a central aperture for receiving said reduced head portion with said base seating on said shoulder thereof, a nut threaded on said screw and having a reduced portion defining a seating shoulder, means for turning said screw relatively of said nut, an adaptor plate for abutment with said recessed one end of the selected supporting post, said adaptor having a central opening for reception of said reduced portion of said nut with the adaptor seated on said shoulder of the nut, said adaptor plate having one or more inwardly projecting pointed elements adapted to embed in the edge portions of said one end of the selected supporting post, and a base having an inwardly presented part for engagement by the other end of the selected supporting post, said base having one or more inwardly projecting pointed elements adapted to embed in said other end of the supporting post.

11. Supporting equipment of the character described for use selectively with available supporting posts of different structural characteristics but which are provided with an inwardly extending recess from at least one end, comprising a

screw adapted to have an inner end extend within the recess in said one end of a selected post and having a head provided with a reduced portion defining a seating shoulder, a cap having a central aperture for receiving said reduced head portion with said base seating on said shoulder thereof, a nut threaded on said screw and having a reduced portion defining a seating shoulder, means for turning said screw relatively of said nut, an adaptor plate for abutment with said recessed one end of the selected supporting post, said adaptor having a central opening for reception of said reduced portion of said nut with the adaptor seated on said shoulder of the nut, said adaptor plate having one or more inwardly projecting pointed elements adapted to embed in the edge portions of said one end of the selected supporting post, and a base having an inwardly presented part for engagement by the other end

of the selected supporting post, said base having one or more inwardly projecting pointed elements adapted to embed in said other end of the supporting post, said base and cap being substantially similar and interchangeable with each other.

C. HAROLD SPECK.
HARRY L. CARR.
RAY A. YODER.

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