

Aug. 2, 1966

M. C. TOURTELLOTTE

3,263,382

VERTICAL CANTILEVER FLAGPOLE

Filed April 15, 1963

3 Sheets--Sheet 1

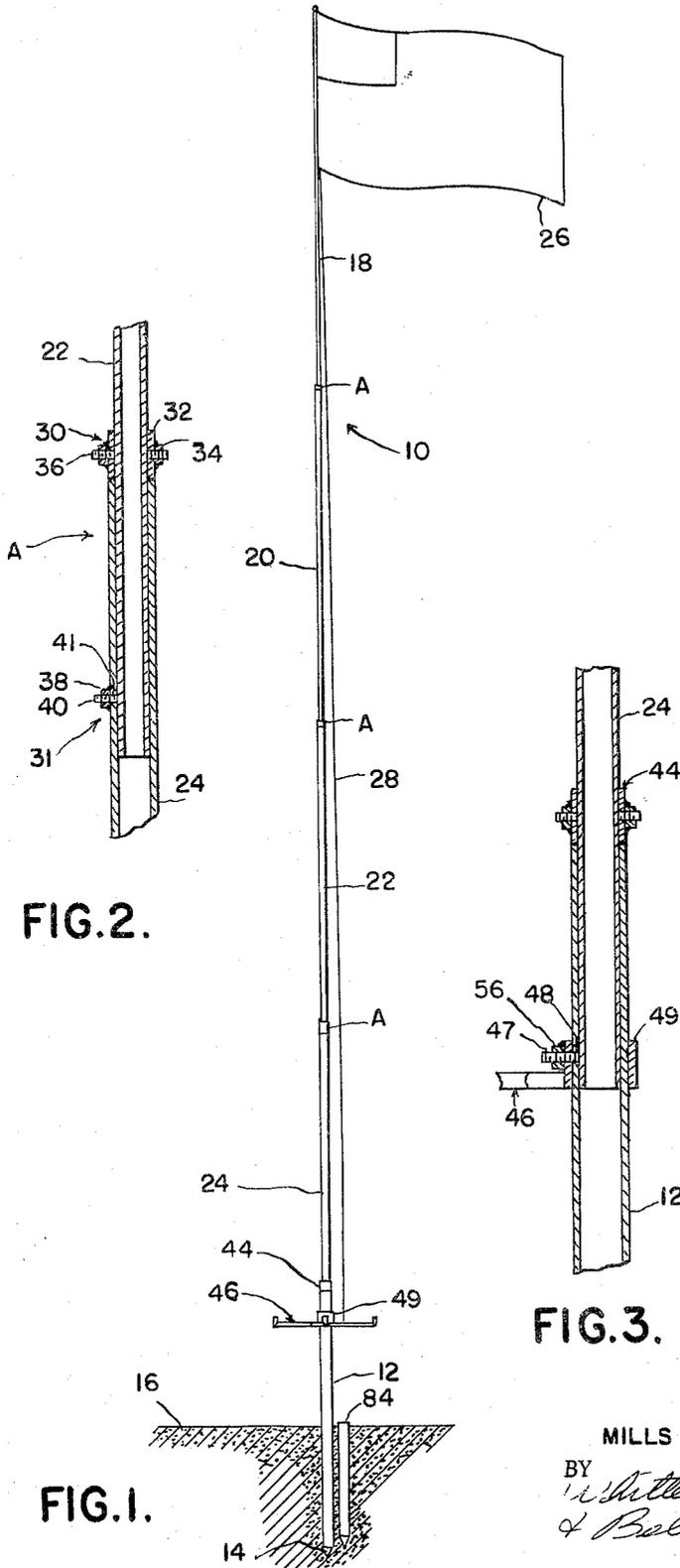


FIG. 2.

FIG. 3.

FIG. 1.

INVENTOR.

MILLS C. TOURTELLOTTE

BY *W. Attmore, Hulbert & Belknap*  
ATTORNEYS

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M. C. TOURTELLOTTÉ

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5 Sheets-Sheet 2

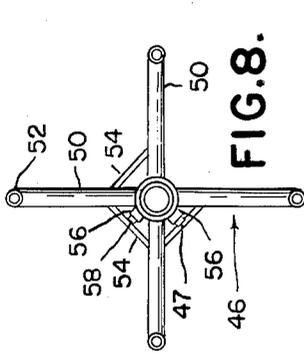


FIG. 8.

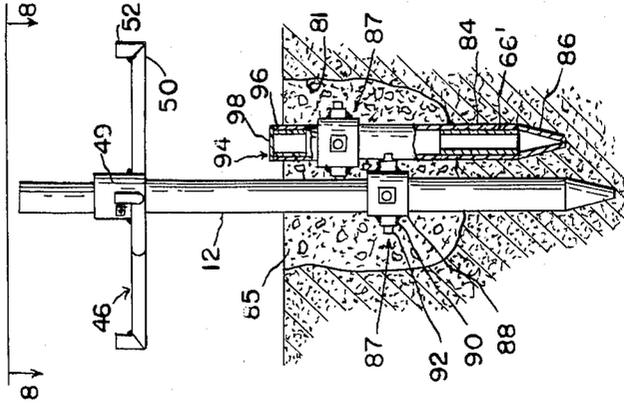


FIG. 7.

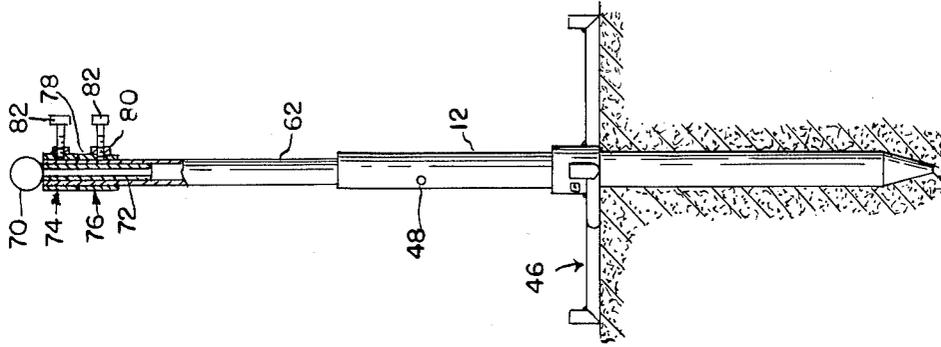


FIG. 6.

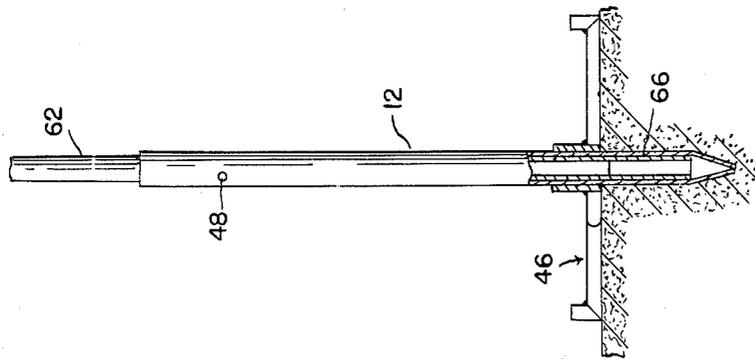


FIG. 5.

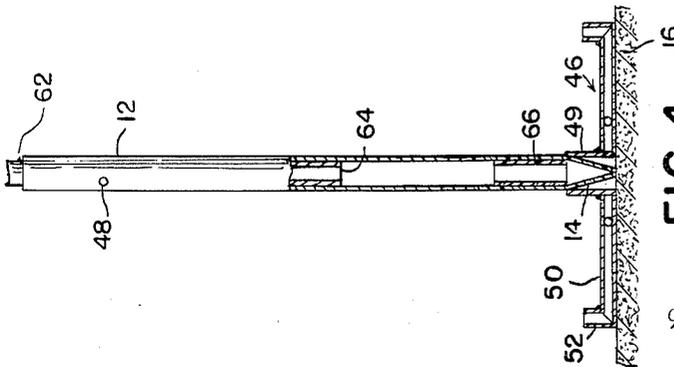


FIG. 4.

INVENTOR.

MILLS C. TOURTELLOTTÉ

BY *W. Hittmore, Sullivan & Belknap*  
ATTORNEYS

Aug. 2, 1966

M. C. TOURTELLOTTE

3,263,382

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3 Sheets-Sheet 3

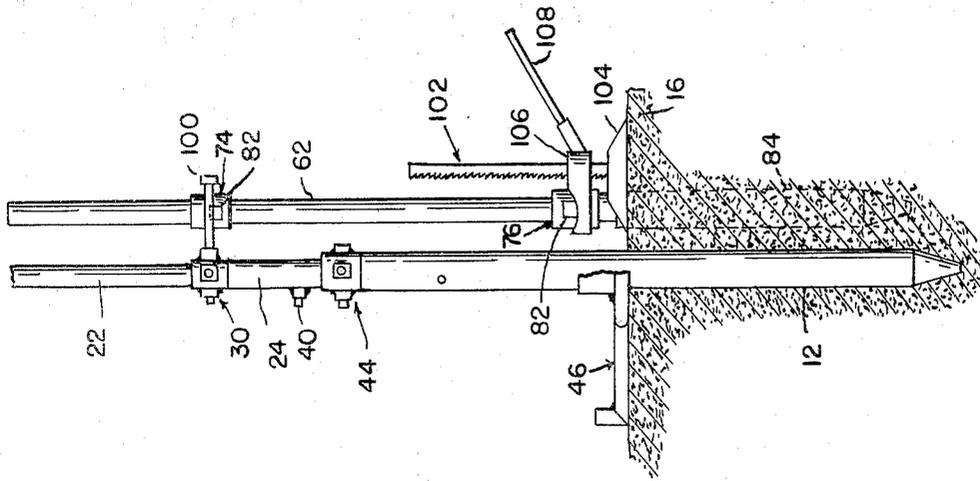


FIG. 11.

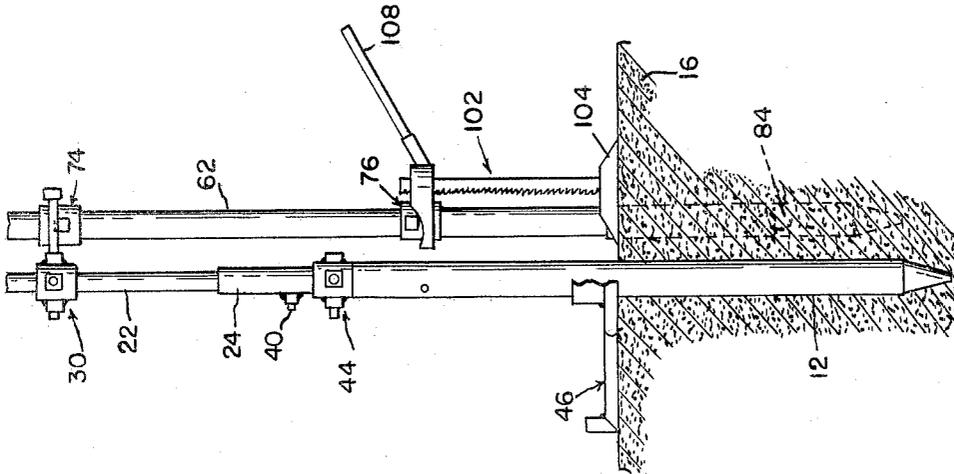


FIG. 10.

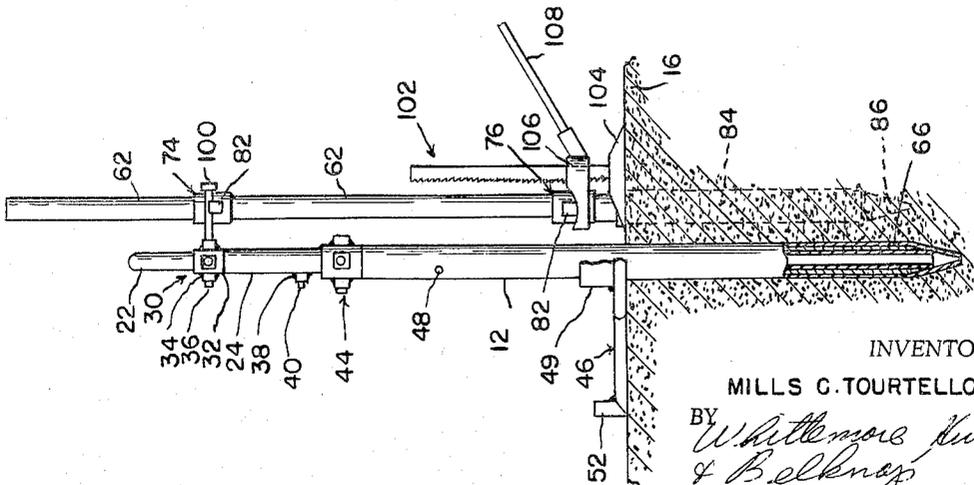


FIG. 9.

INVENTOR.  
MILLS C. TOURTELLOTTE  
BY *Whittemore, Kullbert & Belknap*  
ATTORNEYS

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3,263,382

**VERTICAL CANTILEVER FLAGPOLE**

Mills C. Tourtelotte, 1114 Inwood Drive, Richmond, Tex.

Filed Apr. 15, 1963, Ser. No. 272,889

9 Claims. (Cl. 52—111)

This invention relates to a vertical cantilever beam or extensible pole and to the method of erecting same.

The prior art illustrates vertical cantilever poles or beams formed in sections which are generally assembled in the field requiring a relatively large crew, scaffold structures, and in certain cases complicated hoist mechanisms. The construction techniques utilized require a considerable amount of time, labor, tools and equipment.

The present invention utilizes common steel tubes or tubing telescoped inside of each other plus some prefabrication so that a sectional pole may be fabricated economically in the shop, arranged and sold in a do-it-yourself package, and erected in the field with a minimum of effort, labor, tools, and time to most any practical height. The prefabricated package consists of the pole sections forming the extensible pole and certain of the tools and equipment for erecting same. The remaining tools required are available to almost anyone and are of the type readily available in one's work shop.

The present invention is primarily designed to permit a person to display the United States flag at his home and at small industrial plants. However, it should be understood that the extensible pole has other uses other than for displaying a flag, namely in the field of sending and receiving radio signals, flood and spot lighting, construction, etc.

The present invention is particularly designed so that it may be manufactured by companies presently making steel tubing whereby the scrap tubing resulting from other operations may be utilized to make the extensible pole. Since there are no standard sizes of poles and no need for any particular standardization of sizes, the present invention lends itself to economy in material and prefabrication by using odd-size lengths and diameters of tubing as well as regular production lengths and diameters. The primary requirement for the tubes or tubing utilized is that it be straight and fit inside each other with a minimum amount of clearance therebetween. It will of course be appreciated, that a company having cold drawing facilities can easily meet this requirement by reducing odd-size diameters to diameters that are needed. Drawing the tube to the correct diameter increases the tube length. Therefore, tubes which were previously considered scrap by the manufacturer may be utilized in making the present invention.

The base member or tube of the extensible pole is provided with a tapered end or point so as to facilitate its being driven into the ground and in addition to prevent the earth from entering the tube. Normally, in order to reduce the diameter of a tube by cold drawing, the tube must be pointed to allow the drawing mechanism to pull the tube through the cold draw die. After the tube is reduced by cold drawing, the point or tapered end of the base is usually cut off and scrapped. In the case of the base member of the extensible pole, the cutting off of the tapered end is not required, thereby providing an additional economy in the manufacture of the extensible pole. When the manufacturer employs the method of extrusion for making tubing, the slug from the extrusion is normally considered scrap material. However, with the present invention, the slug is utilized as a weight to drive the base member or tube into the ground as will be subsequently described and thus results in another economical advantage.

In addition, a number of short sections of tubing is

utilized in the formation of the package pole so as to form tubular clamping elements or collars and a sight gage or level. Thus tubes which have been rejected at the factory for other uses because of not being straight can be used for the required short sections of the package pole. This reduces the cost of the scrap or the cost of restraughtening the tubing.

It is an object of the present invention to provide a knock-down prefabricated sectional pole package consisting of the tubular pole members and certain of the tools and equipment for erecting the pole in the field.

Another object of the present invention is to provide an extensible pole comprising an elongated tubular base member, a plurality of elongated tubular section members coaxially and telescopically arranged with respect to the base member, said members gradually decreasing in cross section and of gradually increasing length from the base member to the inner one of the section members, said base member supporting the section members during both extension and retraction of the pole.

Still another object of the present invention is to provide an extensible pole of the aforementioned type wherein the lower end of the base member is tapered to facilitate the mounting thereof in the ground.

A further object of the present invention is to provide lift means for the extensible pole wherein the lift means is designed to successively engage each section member and raise it to an elevated position for connection to the immediately following section member when extending the pole and conversely to engage and lower each raised section member in turn when retracting the pole.

A still further object of the present invention is to provide a structure of the aforementioned type wherein the lift means includes a vertically movable elongated erection member having means thereon selectively engageable with the section members of the pole, one by one, and a manually operable jack for vertically moving the erection member to extend or retract the section member in engagement therewith.

Another object of the present invention is to provide a structure of the aforementioned type wherein a sight gage or level is carried by the base member of the pole to facilitate the erection thereof in a vertical plane.

Still another object of the present invention is to provide a novel method of erecting a sectional pole in a step-by-step sequence.

It is thus another object of this invention to provide a simplified low-cost structure of the aforementioned type having certain advantages contributing to efficiency, reliability and long life as well as ease of maintenance.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred form of the present invention is clearly shown.

FIGURE 1 is an elevational view, partly in section of the erected extensible pole mounted in undisturbed earth.

FIGURE 2 is a fragmentary enlarged view, in section, illustrating a typical connection between a pair of adjacent tubular section members or elements of the extensible pole.

FIGURE 3 is a view similar to FIGURE 2 illustrating the way in which the liquid level or gage is used to provide the connection between the two lowest section members of the pole.

FIGURE 4 is an elevational view, partly in section, illustrating the base member and liquid level of the pole in a position immediately prior to the base member being driven into the ground by the weighted tube.

FIGURE 5 is a view similar to FIGURE 4 but illustrating the position of the base member after the first

blow of the weighted tube has been delivered thereto.

FIGURE 6 is a view similar to FIGURE 5, illustrating the position of the base member after many blows have been delivered thereto, and further illustrating the weight on the upper end of the weighted tube.

FIGURE 7 is an elevational view, partly in section, illustrating the manner in which the base member of the extensible pole and the erection tube are encased and supported in concrete.

FIGURE 8 is a plan view of the liquid level or gage looking in the direction of arrows 8—8 of FIGURE 7.

FIGURE 9 is an elevational view, partly in section, of the extensible pole in a retracted position and the erection apparatus therefor, with the pole consisting of only three tubular section members for purposes of clarity.

FIGURE 10 is a view similar to FIGURE 9, illustrating the jack and erection member raised one step so as to raise the innermost section member of the pole one step.

FIGURE 11 is similar to FIGURE 9, illustrating the innermost section element raised one step and the erection member and jack in a position ready to raise the innermost section member another step.

Referring now to the drawings, the erected flag pole is designated by the numeral 10 and comprises a plurality of telescopically arranged tubular sections as best illustrated in FIGURE 1. The flag pole 10 is designed as a vertical cantilever beam so as to withstand the concentrated load at the top of the pole and the wind load distributed uniformly over the length of the pole. The various sections of the pole, including the connections therebetween, are usually made from steel tubing. The lengths and diameters of the component parts of the pole 10 are designed in the shop according to accepted practice so as to withstand the anticipated bending stresses.

The flag pole 10 is provided with a base member 12, the lower end of which is pointed as is indicated by the numeral 14 to facilitate the erection of the base member 12 in the ground 16. The pointed end 14 of the base member 12 is closed to prevent dirt from entering the interior thereof. In the shop, a rotary swaging machine could be used to point the base member 12. Telescopically arranged within the base member 10 are a plurality of section members or elements of gradually increasing height and of gradually decreasing diameter from bottom to top as will be explained in more detail later on.

Four such section members are illustrated in FIGURE 1 and are designated from top to bottom by the numerals 18, 20, 22, and 24. The top of the section member 18 is provided with appropriate fastening devices for carrying the flag 26. Appropriate means, including the rope 28, is provided for raising and lowering the flag as is well known in the art. It should be understood that any number of section members may be utilized to attain any practical pole height.

The ends of each of the pairs of adjacent tubular section members are interconnected by a typical connection designated by the letter A in FIGURE 1. Three connections A are required for the pole illustrated in FIGURE 1 and a typical connection is illustrated in FIGURE 2. Connection A includes an upper adjustable clamping device 30 and a lower locking device 31. Clamp 30 comprises a relatively short tubular collar 32 which is telescoped around the upper and inner member 22 of the adjacent members adjacent to the top of the lower one of the adjacent members, four circumferentially spaced nuts 34 which are welded to the outer periphery of the collar 32, and four adjustable threaded locking elements or set screws 36 which are threadedly received in the nuts 34 and are adapted to be moved through corresponding openings provided in the collar 32 so as to engage the opposite wall of the upper and inner tubular section member 22. With such a construction the collar 32 is secured to the upper section member 22 and the bottom surface thereof rests on the top end surface of the lower section member

24 to prevent downward movement of section member 22 with respect to the lower section member 24.

The locking device 31 includes a nut 38 which is welded to the outer periphery of the tube 24 and carries the threaded locking element or set screw 40. The set screw 40 is aligned with an opening 41 provided in the outer section member 24 so that the set screw may be moved into locking engagement with the inner section member 22.

The section member 24 is located with respect to the base member 12 by an adjustable clamp 44, identical to the clamp 30 illustrated in FIGURE 2, which prevents section member 24 from moving downwardly with respect to the base member 12. A liquid level or gage 46 is provided around the base member 12 to assist in erecting the base member 12 in a vertical plane. After the base member 12 has been driven in the ground and the liquid level 46 has served its primary purpose, the level 46 is moved to a position illustrated in FIGURES 1 and 3 where a pair of set screws 47 provided thereon extend through corresponding openings 48 provided in the base member 12 so as to engage the lower end of the section member 24.

The liquid level or gage 46, as best illustrated in FIGURES 4—7, is made primarily from relatively short pieces of tubes and comprises a tubular collar 49 having welded thereto four radially extending arms 50 spaced 90° apart. The inner ends of the tubular arms 50 are welded to the collar 49. The outer ends of the tubular arms 50 are provided with relatively short, upwardly opening tubes 52 which are welded to the long arms 50. Three tubular struts 54 are provided for interconnecting the interiors of the arms 50 as best illustrated in FIGURE 8. All of the various tubular elements are welded together to form one water-tight unit. The tubular collar 49 is provided with a pair of circumferentially spaced nuts 56 which are welded thereto. The nuts 56 carry the threaded locking elements or set screws 47 which are adapted to engage the outer periphery of the base member 12 when the level is used during the erection of the flag pole 10. The threaded set screws 47 are also adapted to extend through the openings 48 provided near the upper end of the base member 12 to interlock the section member 24 with the base member 12 as previously described. Thus the liquid level 46 becomes a part of the erected pole 10 to aid in the support of the section members, to lend aesthetic appeal, and to serve as a support for the rope 28 as illustrated in FIGURE 1.

One of the features of the present invention is the manner in which the flag pole 10 is erected in the field. Initially, the base member 12, as best illustrated in FIGURE 4, is mounted in a vertical plane with the lower and pointed end 14 thereof being received within the collar 49 of the liquid level or gage 46. An elongated and removable tubular erection member 62 is provided with a bottom abutment surface 64 which engages a relatively short tubular element or anvil 66 housed within the interior of the base member 12 adjacent the closed end 14 thereof as best illustrated in FIGURE 4. The tubular element 66 is of the same diameter as the tubular erection member 62 and is required so that the erection member 62 will have a solid and even surface to strike. If the tubular element 66 was not utilized, the erection member 62 could possibly become stuck within the pointed end 14 of the base member 12 while the base member 12 is being driven into the ground by the erection member 62.

The upper end of the erection member 62 is provided with a relatively heavy weight 70 which is welded to a relatively short tubular element 72. The element 72 is located in the interior of the erection member 62 as best illustrated in FIGURE 6 and is separable therefrom. An upper clamp 74 and a lower clamp 76 are carried by the upper end of the erection member 62 for purposes to be hereafter explained. The clamps 74 and 76 are of identical construction and each consists of a relatively

short tubular collar 78 provided with a nut 80 which is welded to the outer surface thereof. Nut 80 carries a threaded mating bolt 82. A hole is provided in the upper end of the erection member 62 opposite the bolt 82 provided in the lower clamp 76 so that the bolt 82 may be moved to a position to engage and hold the tubular element 72.

The weight 70 may be made from a scrap slug of metal which results from making an extruded tube as mentioned previously. While weight 70 could be welded directly to the erection member 62, it has been found that by welding it to the relatively short element 72, that the element 72 and the weight 70 can be conveniently utilized as a hammer for purposes not specifically connected with this invention. In addition, erection member 62 will be utilized in connection with the step-by-step erection of the section members of the pole 10. At such a time it is not desirable to have the weight 70 carried directly by the erection member 62, since the person erecting the flag pole 10 would have to not only lift the erection member 62, but also the weight 70 and element 72.

In order to drive the base member 12 plumb, the level 46, as previously described, is utilized. The level 46 is telescoped over the outside of the base member 12 with a minimum amount of clearance therebetween. When the level 46 is placed on a level surface and the base member or tube 12 is perpendicular to the level surface, the water level in the relatively short tubes 52 will be the same. When using the level 46, water is poured into one of the tubes 52 and enters the other tubes. This procedure is recommended so that when the water flows to the other four tubes 52, air will not become trapped in tubes 50 and 54. Enough water should be poured into the level 46 so that its height from the top of all tubes 52 can be clearly seen when the base member 12 is plumb. At such time, the four liquid surfaces in tubes 52 will be the same distance from the top of the tubes 52.

The erection member 62 provided with the removable weight 70 is manually raised from the position shown in FIGURE 4 to a sufficient height so that the lower end thereof provided with the bottom abutment surface 64 will strike the tubular element 66 and in turn drive the base member 12 into the ground 16 from the position illustrated in FIGURE 4 to the position illustrated in FIGURE 5. This operation is repeated a sufficient number of times until the base member 12 has been driven into the ground 16 to the position illustrated in FIGURE 6.

In order to facilitate the erection and assembly of the section members in the field, the invention further contemplates a novel method for erecting the section members in a step-by-step relationship. Initially, a tubular support or tube 84 having a pointed end 86 is driven into the ground 16 in parallel spaced relationship with the base member 12. The weighted erection member 62, which is removed manually from the base member 12 upon erection thereof, is utilized to drive the tubular support 84 into the ground 16 in the manner described for the base member 12. The tubular support 84 is provided with a tapered and closed end 85 which serves the same purposes as the closed end 14 of the base member 12. The tubular support or tube 84 has the same inside and outside diameters as the base member 12 due to the fact that the liquid level or gage 46 may be used not only in erecting the base member 12 but also in erecting the tubular support 84. The interior of the support 84 is provided with a tubular element or anvil 66' which is used for the same reason as was explained in connection with tubular element 66 located in the base member 12.

In certain applications it is desirable to utilize concrete at the base of the base member 12 and the tubular support 84. A hole 81 of suitable diameter and depth is dug as illustrated in FIGURE 7. The base member 12 and the tubular support 84 are driven into the ground as previously described to a depth sufficient to hold them

in place so that the concrete 85 may be vibrated as required. However, before erecting either of the members 12 and 84 and prior to the insertion of the liquid level 46 over either of them, a tube clamp 87 is inserted over each of the members 12 and 84 as illustrated in FIGURE 7. Each clamp 87 comprises a tubular collar 88 having welded to the outer periphery thereof four equally spaced threaded nuts 90 and four threaded mating set screws 92. Corresponding holes are provided in the collar 88 so that the set screws 92 may be moved inwardly to a position to grip the base member 12 or the tubular support 84, as the case may be. The only purpose of the clamps 87 is to increase the bond of the concrete 85 to the base member 12 and support 84.

In order to keep the concrete 85 from entering the tubular support 84, a closure 94 is placed over the tubular support 84. The closure 94 comprises a relatively short tubular element 96 and a cover 98 which are welded together and utilized as a unit to close the tubular support 84. Tubular element 96 has the same diameter as element 66 and the erection member 62.

At this point it may be seen that it might be more convenient to drive the tubular support 84 into the ground before the base member 12 because the liquid level 46 might be more easily maneuvered therebetween. However, if only three struts 54 are utilized in the liquid level 46, the level 46 can be conveniently maneuvered between the base member 12 and the support 84 even if the base member 12 is driven into the ground before the support 84.

After the tubular clamps 87 have been fixed on their respective tubular members, the liquid level 46 is raised off the ground 16 to permit working room in order to pour the concrete 85. Prior to pouring the concrete 85, it is desirable to check to see that the base member 12 and tubular support 84 are plumb. This procedure should also be followed before the concrete 85 sets.

The present invention also contemplates the novel manner in which the section members are movable relative to the stationary base member 12 to almost any practical height in a step-by-step manner. The steps required will be described in discussing FIGURES 9-11. The procedure for raising the section members of the pole 10 is the same regardless of whether the tubular base member 12 is located in undisturbed earth or surrounded by a concrete base.

For purposes of illustration, the extensible flag pole 10 illustrated in FIGURES 9-11 is provided with only two movable section members, namely section members 22 and 24, rather than the four section members illustrated in FIGURE 1. It should be understood, however, that any number of movable section members may be employed and erected in the field according to the method of erection to be subsequently described for section members 22 and 24.

It should be observed when referring to FIGURE 9 that the section members 22 and 24 are coaxially and telescopically arranged with respect to the base member 12. The section members 22 and 24 have extended and retracted positions with respect to the base member 12. FIGURE 9 illustrates the section members 22 and 24 in a retracted position, while FIGURE 11 shows the section members in an extended position. It should be noted that the base member 12 has an overall length which is less than the length of any of the section members. The outermost section member 24 and the tubular element 66 have a combined length greater than the length of the base member 12 but less than the length of the inner section member 22 as is clearly illustrated in FIGURE 9. This relationship is important so as to insure that the upper end portions of all the members will be exposed when the pole 10 is in the retracted position.

After the base member 12 has been erected as described in connection with FIGURES 4-7, the erection member 62 is removed from the base member 12, if it

has not already been done so. The weight 70 and the tubular element 72 are removed from the erection member 62, after which time the erection member 62 is vertically mounted in the tubular support 84 as illustrated in FIGURE 9. The lower tubular clamp 44 is inserted around the outer section member 24 which is in turn inserted into the base member 12. The upper tubular clamp 30 is inserted around the movable inner section member 22 which is in turn inserted into the outer section member 24. One of the four set screws 36 is removed from the upper tubular clamp 30 and an elongated threaded bolt 100 is inserted therein as illustrated in FIGURE 9. The upper tubular clamp 74 is provided on the erection member 62 which is moved upwardly to a position where the threaded locking bolt 82 abuts the bolt 100 provided on the upper tubular clamp 30.

The lower tubular clamp 76 provided on the erection member 62 is located slightly above the ground 16. A conventional automobile jack 102, including a base 104, lift mechanism 106, and an operating handle 108, is brought into engagement with the locking element or bolt 82 provided on the lower tubular clamp 76. Both bolts 82 and bolt 100 are tightened. The jack 102 is operated by manually moving the operating arm 108 as is required in operating a conventional automobile jack. With such a construction, the operation of the automobile jack 102 is effective to move the erection member 62 vertically upwardly, and as a result of the connection between the upper section member's tubular clamp 30, and the upper clamp 74 provided on the erection member 62, the section member 22 is moved or raised one step from the position illustrated in FIGURE 9 to the position illustrated in FIGURE 10.

After the jack 102 has been raised upwardly so as to advance the inner tubular section member 22 one step equal to the height of one jack to the position illustrated in FIGURE 10, the set screw 40 carried by the outer section member 24 is moved inwardly through the opening 41, as best illustrated in FIGURE 2, the engagement with the outer periphery of the inner section member 22 so as to retain the relative positions between the section members 22 and 24.

After the inner section member 22 has been fixed by means of the set screw 40, the jack 102 is reversed and lowered to return the erection member 62 to the position illustrated in FIGURE 11. Later the upper tubular clamp 30 provided on the tubular member 22 is lowered from the position illustrated in FIGURE 10 to the position illustrated in FIGURE 11, after which time the bolt 100 provided on the upper tubular clamp 30 and the bolt 82 provided on the upper tubular clamp 74 are brought into engagement once again. After the set screw 40 has been released, the jack 102 is again operated so as to raise the erection member 62 and advance the inner tubular section member 22 an additional step, after which time the set screw 40 is moved to a locking position to hold the section member 22. This procedure of raising and lowering the jack 102 is repeated until the section member 22 has been advanced the requisite number of steps. To assure that the section member 22 is not jacked out of the section member 24, a white ring or other identifying mark, not shown, is placed on the outer periphery of the lower end of the section member 22. With such an arrangement the operator can visually notice the white ring or other identifying mark after it has been moved upwardly and outwardly beyond the top end surface of the outer section member 24. After the identifying mark has been exposed, the set screw 40 is again moved inwardly so as to bear tightly against the inner section member 22. The identifying mark is located so that sufficient length of tubing will extend into the section member 24 to give it adequate bearing length for a rigid cantilever, and to allow set screw 40 to be near the end of this bearing length. Set screw 40 should be tightened sufficiently so as to cause the inner section member 22 to expand into

the outer section member 24 but not too tight so as to permanently deform section member 22. If the section member 22 were permanently deformed, it would be difficult to lower at some future time.

After set screw 40 has been located as just described, the upper clamp 30 is moved downwardly to a position where the lower end surface thereof abuts the top end surface of the outer section member 24 as described previously in connection with FIGURE 2. All four set screws 36 are then urged into tight engagement with the outer periphery of the section member 22.

Later, the upper tubular clamp 74 provided on the erection member 62 is moved downwardly to a position beneath the lower clamp 44 provided on the section member 24, after which time the bolt 100 from the upper clamp 30 is inserted into one of the nuts of the lower clamp 44. The upper clamp 74 is moved into engagement with the locking bolt 100 as was described in connection with the erection or extension of section member 22. The jack 102 is operated in the same manner as previously described so as to raise the erection member 62 and advance the outer section member 24 (and the section members connected thereto) one step. Prior to repeating this operation, the liquid level 46 is moved upwardly to the position indicated in FIGURE 3 where the two set screws 47 are brought into engagement with the two drilled holes 48 and the intermediate portion of the outer section member 24 to locate same with respect to the base member 12. The jack 102 is returned to its original lowered position and the lower tubular clamp 44 is lowered and once again interconnected with the clamp 74 provided on the erection member 62. The jack 102 is again operated, after unfastening set screw 47, so as to advance the section member 24 one step. This procedure is repeated step by step until a white ring or other identifying mark provided on the section member 24 is exposed, after which time the liquid level or gage 46 is locked into the position illustrated in FIGURE 3 where both locking elements 47 are moved to a position to engage the lower end portion of the section member 24. The lower clamp 44 is then moved to a position where the bottom end surface abuts the top of the base member 12. Finally all four set screws 36 are tightened. Care must be taken after each lift not to loosen set screws 47 too much, so that the level 46 will not drop to the ground.

After the jack 102 and the erection tube or member 62 have been removed from adjacent the pole 10, the closure 94 is inserted into the tubular support 84. It should be remembered that additional section members and corresponding clamps may be utilized with the structure described in FIGURES 9-11 so as to obtain any practical height. The additional section members are raised in the same manner as just described. As previously mentioned, the relationship of the lengths of the members 12, 24, 22 and 62 is important. In the case of the members forming the portions of the extensible pole 10, the length must protrude one above each other as illustrated in FIGURE 9 so that there is sufficient room for the clamps 30 and 44 to provide adequate bearing length for each tube. In addition, the weighted erection member 62, sometimes called the pole driver, must have a length sufficient to reach the innermost tube 22 when the pole is in a retracted position and in addition to maintain a portion thereof in the support tube 84 when it is raised to the capacity of the jack 102.

The set screws should be of the internal hex head type. This type of set screw can be securely tightened and it will also make it convenient to clamp the base supporting clamps 87 before the concrete 85 is poured. If all the set screws are of the same size, only one size wrench will be required. It should also be noticed that the present erection method makes it convenient to paint each section of the pole as it is raised into place. The lift mechanism 102 and erection member 62 may also be utilized in lowering the flag pole to the retracted position. Thus, with the aid of gravity, the extensible pole 10 can be conveniently

lowered in much the same way that it was raised. It may be necessary to lower the pole in order to paint it, to replace parts at the top of the pole, or for other maintenance purposes. Thus the feature of conveniently dismantling and subsequent re-erection becomes an important feature of this invention.

As mentioned previously, the component parts of the flag pole 10, as illustrated in FIGURES 9-11, would be available in a package which would contain the paint and all the tools necessary for the erection thereof, with the exception of the wrench for the bolts, the jack 102, a step ladder, and water for the level or gage 46. The step ladder is essential in order to adjust the clamps, etc. As previously described, if the pole 10 is to be used to display a flag, at least the hardware on top of the pole would be supplied. The flag may also be considered as part of the package. If concrete were used, the erector would furnish the necessary digging tools and the concrete.

The drawings and the foregoing specification constitute a description of the improved vertical cantilever flag pole in such full, clear, concise, and exact terms as to enable any person skilled in the art to practice the invention, the scope of which is indicated by the appended claims.

What I claim as my invention is:

1. The combination of: a plurality of elongated tubular telescopically arranged vertically mounted elements of gradually decreasing diameter and of gradually increasing length from the bottom element to the top element; the lower end of said bottom element being fixedly mounted to form one portion of a vertical cantilever sectional beam; a vertically extending fixedly mounted tubular support laterally spaced from the lower end of said bottom element; a vertically arranged rigid and integral elongated erection member adjustably carried on the lower end thereof by said tubular support for limited vertical movement and extending vertically upwardly therefrom; said erection member being spaced from and substantially parallel to said sectional beam; said erection member having a length greater than each of said elements when in a lowered position and less than the combined length of any two elements thereof; means for successively interconnecting said elements, starting with the top element, with said erection member; actuating means supported adjacent the location where said erection member emerges from said tubular support and engageable with said erection member to move the same vertically relative to said tubular support to respectively extend and retract said beam, element by element; said actuating means being independent of said sectional beam; mechanical means for locking each element when extended to the adjacent element, after its extending movement by said erection member and said actuating means, whereby the latter may be returned to its lowered position along with said erection member to move the next succeeding element to its extended position.

2. The structure defined in claim 1 wherein said actuating means is in the form of a manually operable jack.

3. The structure defined in claim 1 wherein said mechanical means includes a manually adjustable clamp between each pair of adjacent elements.

4. The structure defined in claim 1 wherein a sight gage is carried by said bottom element to facilitate the erection thereof in a vertical plane.

5. The structure defined in claim 1 wherein said erection member is removable from said support when the elements are extended; and a removable cap located on the upper end of the support upon removal of the erection member to prevent foreign matter from entering the interior thereof.

6. The structure defined in claim 1 wherein said interconnecting means includes a collar on the tubular element having an outwardly extending arm which is en-

gageable with an abutment provided on said erection member.

7. The structure defined in claim 1 wherein the lower end of said bottom element and said support are enclosed in a concrete foundation.

8. The structure defined in claim 7 wherein mechanical interconnecting means are provided between the lower end of said bottom element and said support for increasing the bond of the concrete.

9. The combination of: a plurality of tubular telescopically arranged vertically mounted elements of gradually decreasing diameter and of gradually increasing length from the bottom element to the top element; the lower end of said bottom element being fixed to form one portion of a vertical cantilever sectional beam; a vertically mounted tubular support laterally spaced from said bottom element; the lower end of said bottom element and said support being encased in concrete, mechanism interconnecting means between the lower end of said bottom element and said support for increasing the bond of said concrete; a vertically arranged erection member adjustably carried on the lower end thereof by said tubular support for limited vertical movement; said erection member being spaced from and substantially parallel to said beam; said erection member having a length greater than each of said elements when in a lowered position; means for successively interconnecting said elements, starting with the top element, with said erection member; said interconnecting means including a collar on each tubular element, an outwardly extending arm on one collar engageable with an abutment provided on said erection member, a manually operable jack engageable with said erection member to move the same vertically relative to said support and extend and retract said beam, element by element; means for locking said element when extended to the adjacent element, after its extending movement by said erection member and said actuating means, whereby the latter may be returned to its lowered position along with said erection member to move the next succeeding element to its extended position, said locking means including a manually adjustable clamp between each pair of adjacent elements, and a sight gage carried by said bottom element to facilitate the erection thereof in a vertical plane, said erection member being removable from said support when said elements are extended.

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FRANK L. ABBOTT, *Primary Examiner*.

RICHARD W. COOKE, JR., *Examiner*.

R. S. VERMUT, *Assistant Examiner*.