

March 18, 1958

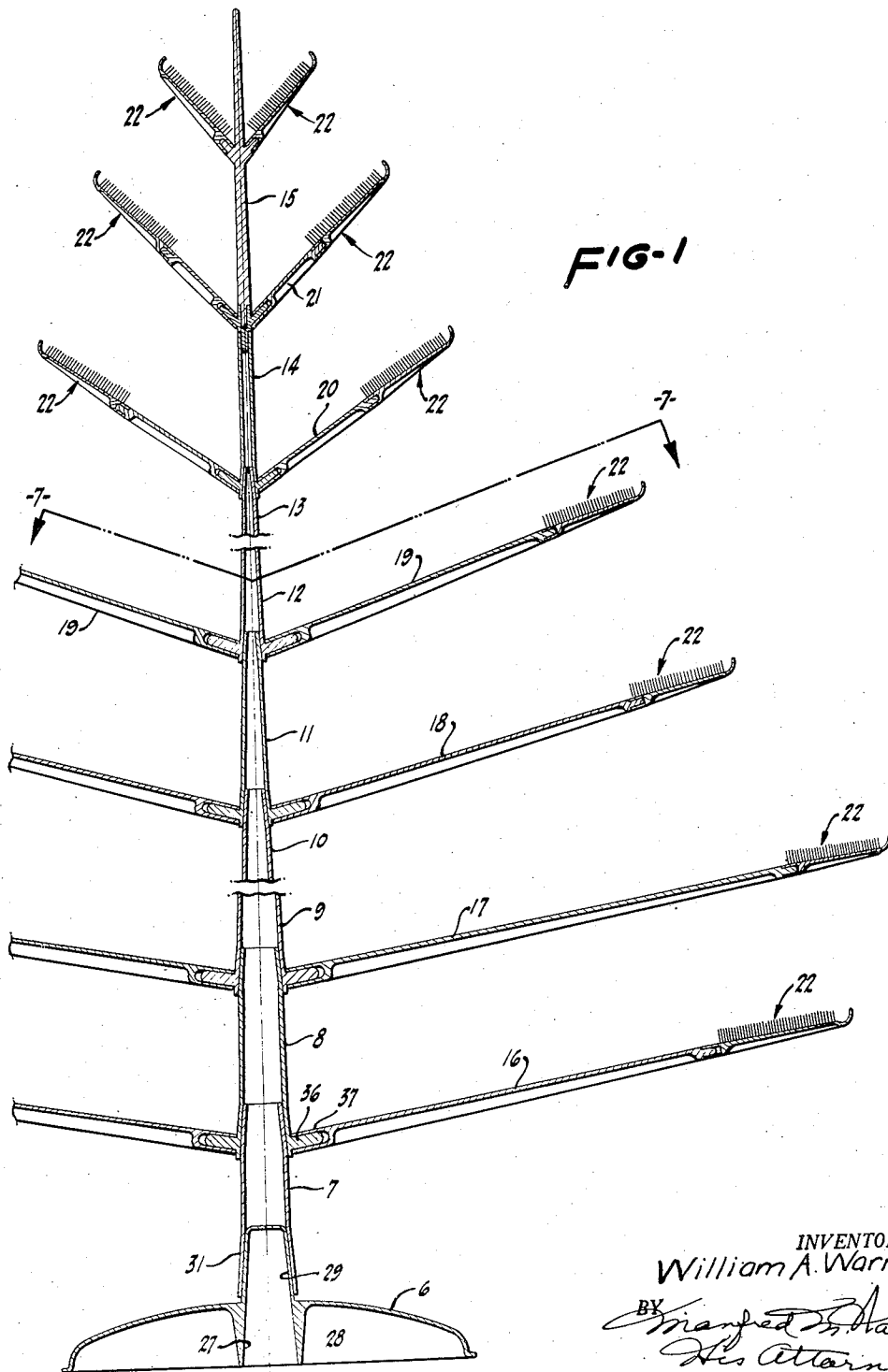
W. A. WARREN

2,326,846

ARTIFICIAL TREE

Filed April 23, 1956

5 Sheets-Sheet 1



INVENTOR.
William A. Warren.
BY *Manfred H. Warren*
His Attorney

March 18, 1958

W. A. WARREN
ARTIFICIAL TREE

2,826,846

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FIG-3

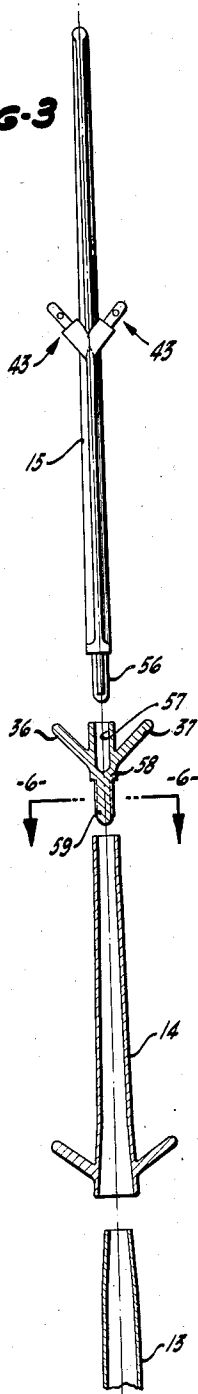
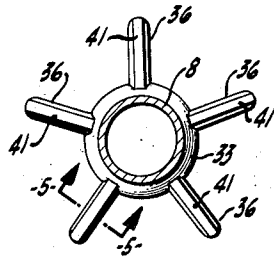


FIG-4

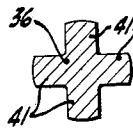


FIG-5

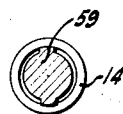


FIG-6

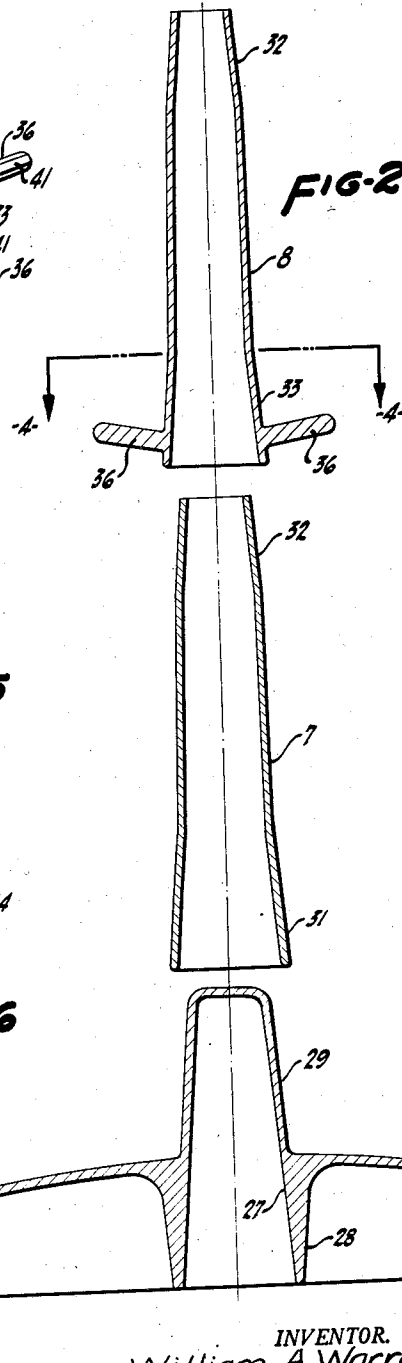


FIG-2

INVENTOR.
William A. Warren
BY *Manfred H. Warren*
His Attorney

March 18, 1958

W. A. WARREN
ARTIFICIAL TREE

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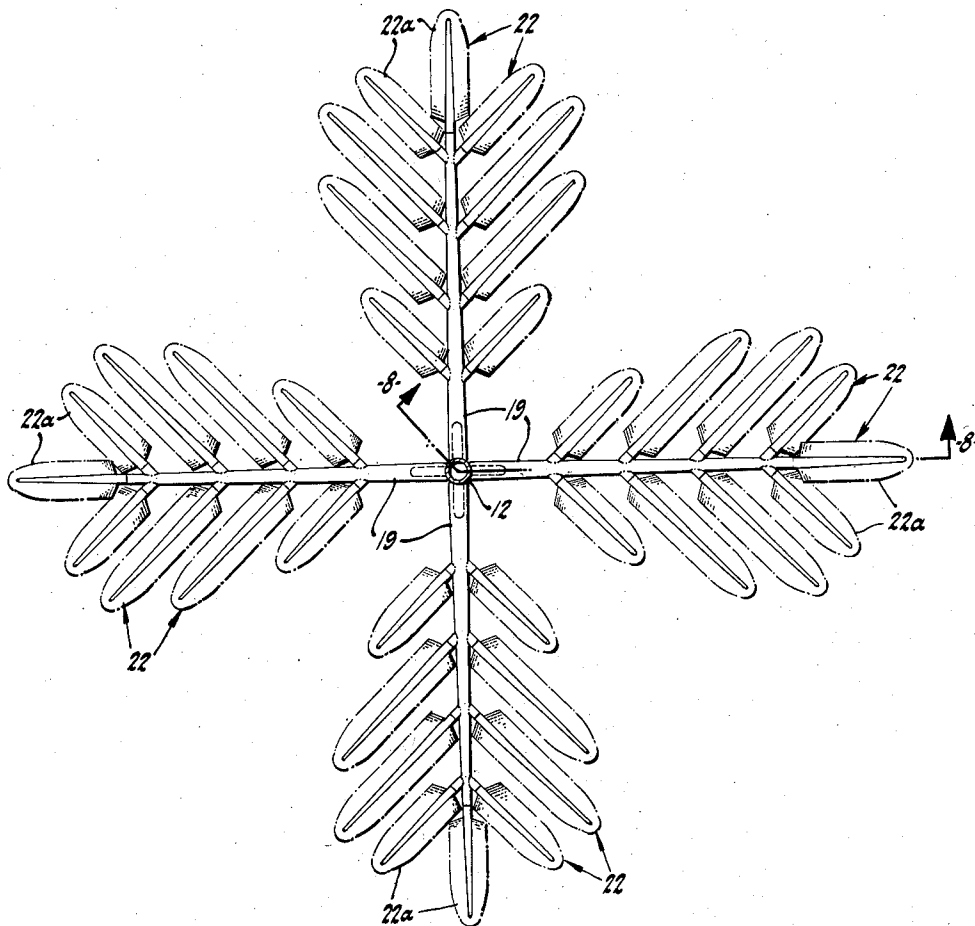


FIG. 7

INVENTOR.
William A Warren

BY *Manfred M. Warren*
His Attorney

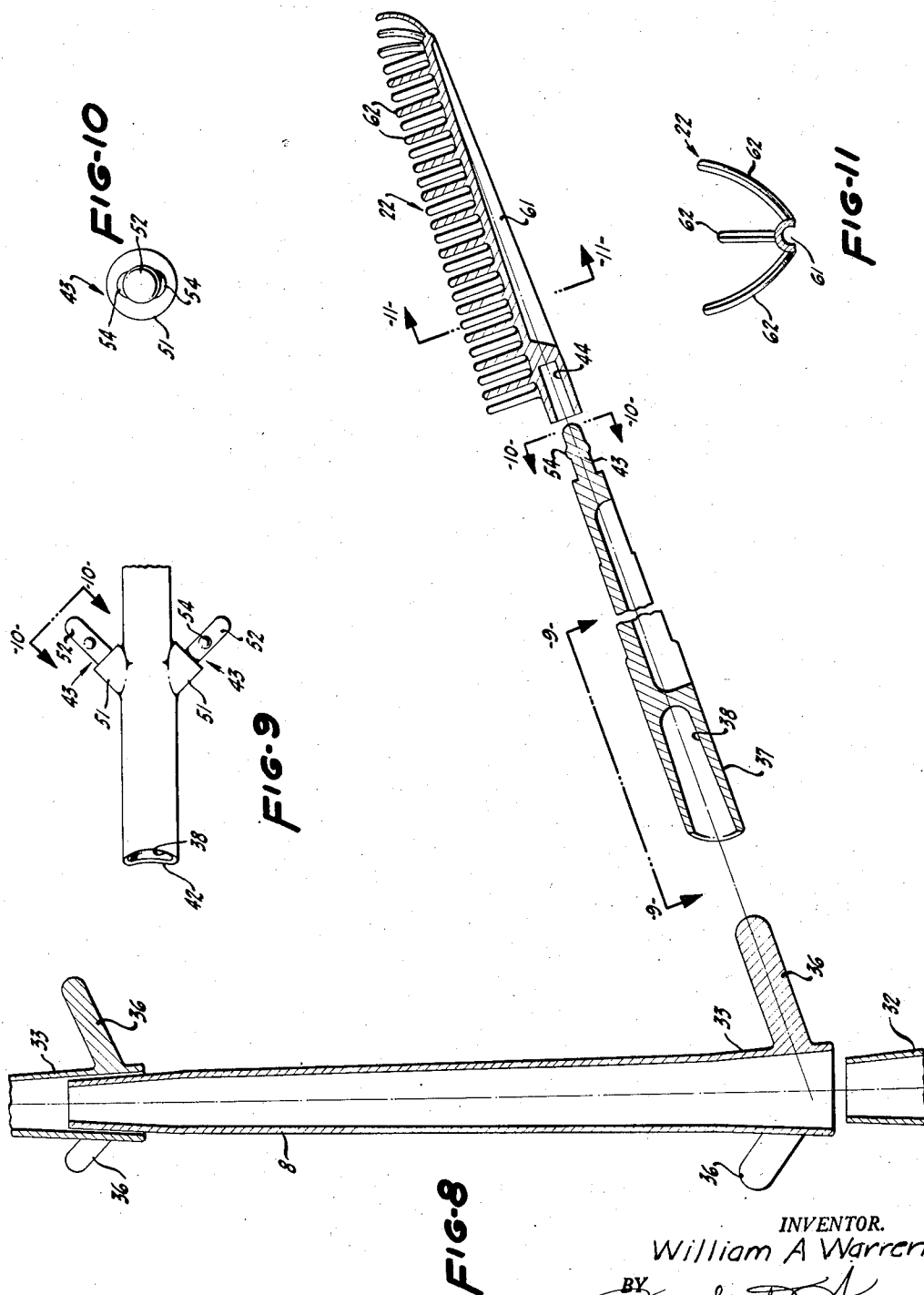
March 18, 1958

W. A. WARREN
ARTIFICIAL TREE

2,826,846

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5 Sheets-Sheet 4



INVENTOR.
William A Warren
BY *Manfred A. Warren*
His Attorney

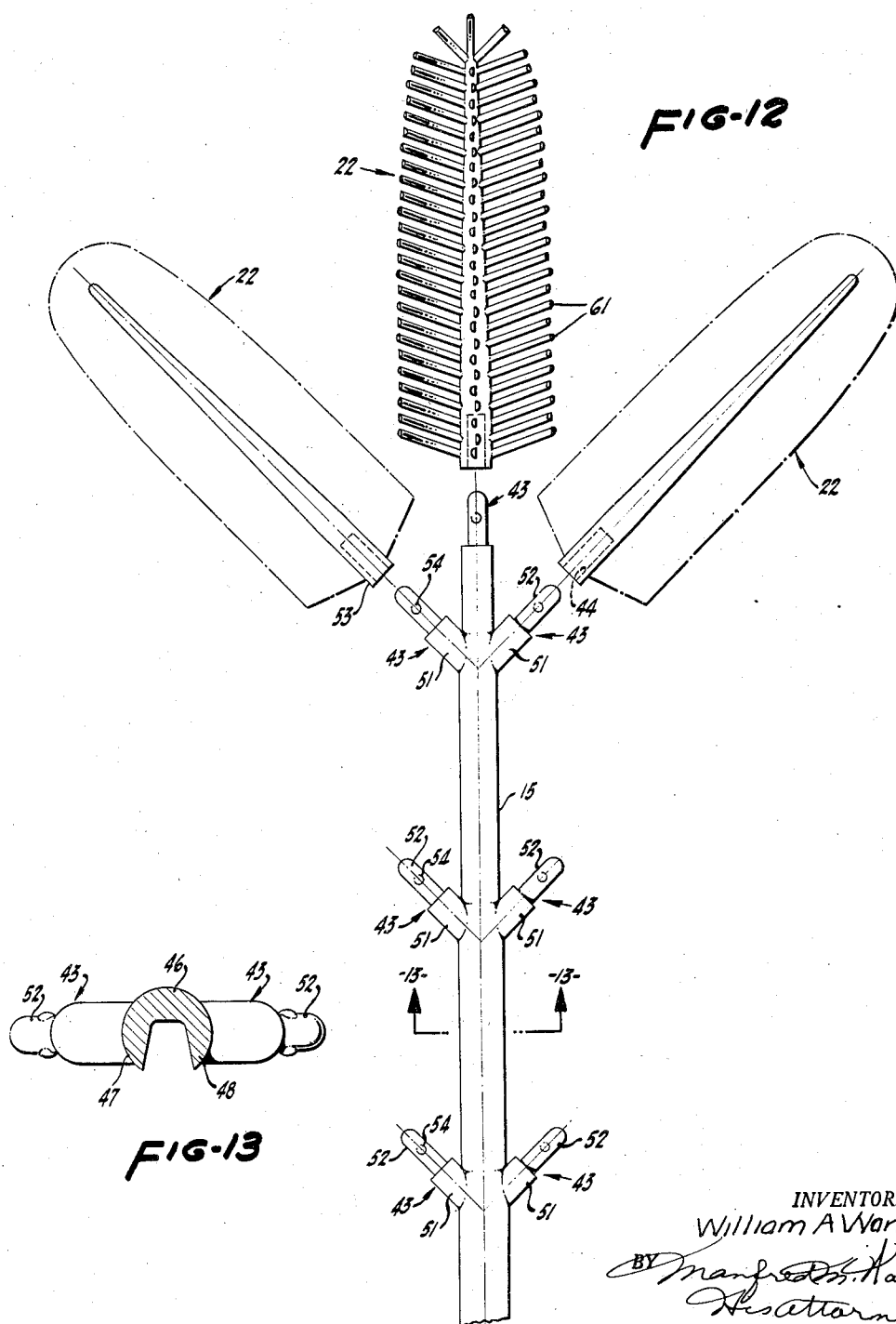
March 18, 1958

W. A. WARREN
ARTIFICIAL TREE

2,826,846

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2,826,846

ARTIFICIAL TREE

William A. Warren, San Bernardino, Calif., assignor to Warren Christmas Trees, Inc., a corporation of Nevada

Application April 23, 1956, Serial No. 579,979

13 Claims. (Cl. 41—15)

The invention relates to sectionalized artificial trees of the type described in my copending application Serial No. 497,927, filed March 30, 1955, for Artificial Christmas Tree, in respect to which application the present application is a continuation in part.

An object of the present invention is to provide a sectionalized tree structure of the character described in which all of the several parts may be mass-produced by relatively high-speed, low-cost molding techniques from thermoplastic material affording the several combined and inherent qualities of strength, permanence, toughness, durability and fire resistance of the parts, as well as a most precise forming of the parts and the provision of a texture, softness, resiliency and color, combining, when assembled, to closely simulate the appearance of a natural Christmas tree.

Another object of the present invention is to provide an artificial tree structure of the character above in which the several parts are formed with attachable joints designed for simple, easy and rapid assembly and disassembly and in which the form, size and arrangement of the parts provide a visual aid in assembly, thus enabling quick, easy and essentially foolproof assembly by anyone, including small children, without special knowledge or skill and without the use of any auxiliary tools.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawings:

Figure 1 is a vertical cross-section of an artificial tree constructed in accordance with the present invention.

Figure 2 is an enlarged exploded longitudinal cross-sectional view of the base and a part of the trunk assembly of the tree.

Figure 3 is a longitudinal exploded cross-sectional view, partly in elevation, of the upper portion of the trunk assembly.

Figure 4 is a cross-sectional view of one of the trunk sections and is taken substantially on the plane of line 4—4 of Figure 2.

Figure 5 is a cross-sectional view of one of the branch supporting pins and is taken substantially on the plane of line 5—5 of Figure 4.

Figure 6 is a cross-sectional view of part of the upper trunk assembly taken substantially on the plane of line 6—6 of Figure 3.

Figure 7 is a cross-sectional view of the tree assembly taken substantially on the plane of line 7—7 of Figure 1.

Figure 8 is an enlarged cross-sectional view of one of the trunk and branch and twig sections assembly.

Figure 9 is a fragmentary side elevation of a portion of the branch as indicated by line 9—9 of Figure 8.

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Figure 10 is an end elevation on an enlarged scale of one of the branch pins as viewed at the planes of lines 10—10 on either Figure 8 or Figure 9.

Figure 11 is a cross-sectional view of one of the twig sections and is taken on the plane of line 11—11 of Figure 8.

Figure 12 is an enlarged side elevation of an end portion of one of the branches and of the attachable twig sections.

Figure 13 is a cross-sectional view of the branch as taken on the plane of line 13—13 of Figure 12.

The artificial tree of the present invention consists, briefly (see Figure 1), of a plurality of attachable sections including a base support 6, trunk sections 7, 8, 9, 10, 11, 12, 13, 14 and 15, superimposed tiers of branch sections 16, 17, 18, 19, 20 and 21, and leafed twig sections 22. With reference to Figures 1 and 2, it will be seen that the base support 6 is composed of an inverted dish-shaped concavo-convex member having a bottom peripheral supporting rim 26 and a central core 27 formed for receipt and vertical support of the tree trunk sections 7—15. The core 27 is formed with a portion 28 projecting downwardly from the concave side of the member 6 to adjacent the plane of the rim 26 so as to bottom on the floor, table-top or other surface on which the tree is supported, to provide a rigid, vertical support for the tree. Preferably the core portion 28 is manufactured just short of the plane of the rim 26 so that it will always move to a supporting position as the member 6 deflects downwardly under load in the assembled position of the tree. Also in accordance with the present construction the core 27 is formed with another portion 29 which projects upwardly from the upper convex side of the member in a frusto-conical form so as to receive and support an appropriately tapered tubular end 31 on the lowermost trunk section 7. Desirably the member 6 and its integral core 27 is molded of one-piece construction from thermoplastic material such as high-impact styrene or polyethylene, affording a semi-rigid form.

In accordance with the present invention and as will be observed from Figures 1, 2 and 3, the trunk assembly is made up, in the main and except for the top piece 15, of longitudinally tapered tubular sections which may be fitted end-to-end to provide a simulated tree trunk of upwardly tapered form, it being noted that the diameter of the sections decreases from the bottom to the top of the assembly. Also to aid in attaching and detaching the sections, and to prevent their sticking or jamming, the normally upper end portion 32 of each of the sections (see sections 7 and 8 in Figure 2) is formed with an exterior bearing wall of increased upward convergence, and the normally lower end portion 33 of each of the sections is formed with an interior bearing wall of increased downward divergence dimensioned to receive, and to seat centrally upon, the upper end portion of the contiguous lower section. A similar angle of convergence and divergence is used in the case of the joint portions 31 and 29 of the lowermost section 7 and the base member 6. In this manner the taper of the trunk joint portions 32 and 33 and 29 and 31 is increased, so to speak, with respect to the taper of the remainder of the length of the trunk sections so that sticking or binding of the joints will be avoided, while simple, easily assembled, and firmly centrally held joints are provided.

Securing of the several tiers of branches 16—21 to the several trunk sections 7—15 is here accomplished (see Figures 1 and 8) by the provision on each of the lower end portions 33 of the trunk sections 8—15, of a plurality of circumferentially spaced and outwardly radiating pins 36, and the provision in the innermost ends 37 of the branches of an axially extending open-ended socket 38 dimensioned to slidably embrace the pins 36. The ar-

range of the pins 36 at the lower enlarged ends of the trunk sections positions them at the strongest part of the section and also where they are reinforced by the inserted upper end of the adjacent lower section, thereby providing a double wall thickness at the pins. Also as will be observed from Figure 1, and to provide a more realistic form of tree, the angle of divergence of the pins increases from the upper to the lower of the sections so as to flatten out the branches towards horizontal from the upper to the lower tier of branches. Another feature of the pin and socket joint is the provision on each of the pins, as will be best observed from Figures 4 and 5, of a plurality of circumferentially spaced, longitudinally extending ribs 41 which insure tight fitting of the socket wall against the ribbed periphery of the pins. As a further feature, the open ends 42 of the sockets 38 are contoured with diametrically opposed concave portions, as seen in Figure 9, dimensioned to nest with the trunk sections and thereby hold the branches against rotation on the pins when the sockets 38 are properly oriented and pressed home on the pins. The trunk sections 7-15 are preferably molded of thermoplastic material such as high-impact styrene or the like, affording a semi-rigid form, and in so molding these sections, the pins 36 may be formed as an integral part of each of the sections. The pins are set in even circumferentially spaced relation around the periphery of the trunk sections. In most instances four pins are used, set at 90 degrees from each other, as seen in Figure 7 of the drawing, although an improved tree appearance is obtained by using one or more tiers of five pins and branches at one or more of the lower portions on the tree, such as illustrated in Figure 4; and relative to the matter of appearance, it will be noted that the branches of one tier may be rotated with their trunk section so as to lie between the branches of adjacent tiers. The several tiers of branches 16-21 are also directly graduated in length, as seen in Figure 1, to further simulate a natural Christmas tree.

The several twig sections 22 are connected to the branches 16-21 and also to the uppermost trunk section 15 by means of a plurality of longitudinally spaced, laterally extending pins 43 formed as an integral part of the branches and the trunk section 15. To fit these pins, each of the twig section 22 is formed with open-end sockets 44 (see Figure 8) dimensioned to slidably embrace the pins 43. In the case of each of the branches, the pins are set in pairs, as seen in Figure 12, on the opposite sides of and extending laterally from the branches, with the pins in each pair diverging towards the outer end of the branch. The branches are also preferably molded of thermoplastic material such as high-impact styrene or the like, to provide a semi-rigid form, and strength and rigidity of the branches is further accomplished with economy of use of material by forming the branches of inverted U-shaped cross-section, as seen in Figure 13, so as to define a rounded upper surface 46 and spaced depending sides for supporting the pairs of pins 43 formed integrally with the sides 47 and 48. Strength and appearance of the branches are also enhanced by tapering the branches over their length towards their outer ends. One of the pins 43 is provided at the outer end of each of the branches for receiving one of the leafed twig sections to complete the assembly.

As another feature of the present tree, the pins 43 are molded with relatively enlarged base portions 51 (see Figure 12) and with relatively reduced portions 52 extending axially from the base portions 51 for entry into the end sockets 44 of the twig sections. The latter are, in accordance with the present construction, formed with tubular inner end portions 53 of the same outside diameter as the base portions 51 of the pins so as to fit flush with these base portions to provide a smooth exterior appearance in the joint (see, for example, Figure 7). As a further feature of the present construction, the pins 43 and more specifically, the outer reduced end por-

tions 52 thereof, are formed with integral surface nodules 54, and the leafed twig sections are molded of thermoplastic material such as polyethylene or the like, which will provide a flexibly resilient, distendable, tubular socket wall which is dimensioned to slidably embrace the outer end portions 52 of the pins and is flexibly and resiliently distendable over and into interfitting relation with the nodules 54 so as to secure the twig sections in place.

The top of the trunk assembly is completed by a spike section 15. As seen in Figure 3, the thickness of the trunk sections is progressively reduced towards the upper end of the tree, and the top section 15 consists of a relatively thin, solid tip member. It is formed at its base with a pin 56 which is received in a socket 57 formed in a special joint member 58 provided between the trunk sections 14 and 15. As will be observed, trunk section 14 is of tapered tubular form and receives a pin-like bottom end 59 of member 58. Member 58 is preferably formed with a pair of pins 36 for mounting of branches 21. The tip member 15 is preferably formed intermediate its length with a pair of pins 43 for mounting a pair of leafed twig sections 22.

The leafed twig sections 22 are preferably formed in the manner more fully disclosed in my copending application above. Briefly, they are desirably molded from thermoplastic material such as polyethylene to give a soft, pliable, flexible yet self-supporting form to the section. The section is formed with a central stem 61 and integrally formed circumferentially spaced and longitudinally extending rows of elongated leaf-like elements 62. A pair of outside rows (see Figure 11) preferably extend from the diametrically opposed sides of the stem 61 and have their elements 62 curved outwardly and circumferentially of the stem upwardly and substantially symmetrically to a center row of the elements 62. The upwardly curving elements in the outside rows define a cup-like arrangement simulating the natural form of the red fir (*Abies magnifica* A. Murray). The stem 61 is preferably formed of inverted U-shaped cross-section so as to provide opposed sides as seen in Figure 11, from which the outside rows of leaf-like elements may extend. Leafed twig sections 22 are preferably made quite flexible so as to simulate the natural leafed twig of the Christmas tree, but by molding the member from a suitable thermoplastic material as above noted, the section may nevertheless be made so that both the stem 61 and the leafed elements 62 are self-supporting in and self-restoring to the preset normal position in which they are illustrated in the drawings.

I have found it desirable in the interests of appearance to make the twig sections 22 in two sizes. A smaller size 22a is preferably mounted at the inner and outer ends of the branches, as seen in Figure 7, and also on the upper branches and at the top of the tree.

Thermoplastic materials suitable for use in the several tree parts are available in various desirable and permanent colors such as natural forest green, or in white or other decorative colors. Modern high-speed plastic molding techniques may be used to mass-produce all of the parts at a relatively low cost and in most precise form, very closely simulating the parts of a natural Christmas tree. Thermoplastic materials of the type noted also provide a texture, softness and resiliency similar to that of the natural tree. Consequently, artificial Christmas trees constructed and assembled in accordance with the present invention, when viewed at a casual distance of say across an average room, can be distinguished from the finest of natural Christmas trees only by careful and studied inspection.

I claim:

1. An artificial Christmas tree comprising, a base support composed of an inverted dish-shaped concavo-convex member having a bottom peripheral supporting rim adapted to rest on a supporting surface and an integral central core portion, a tree trunk mounted on and sup-

ported by said core portion, said core portion projecting downwardly from the concave side of said member to adjacent the plane of said rim to bottom on said surface to provide a rigid vertical support for the tree.

2. An artificial Christmas tree as characterized in claim 1, wherein said core portion has an integral part projecting upwardly from the upper convex side of said member in a frusto-conical form, and said trunk is formed with a lower tapered tubular section dimensioned for mounting on said upwardly projecting core part.

3. An artificial Christmas tree as characterized in claim 2 wherein said concavo-convex member and said upwardly and downwardly projecting core part and portion are molded of one-piece construction from thermoplastic material with said member being dimensioned for deflecting downwardly under load to bottom said downwardly projecting core portion to thereby provide a rigid vertical support for the tree.

4. An artificial Christmas tree comprising a base support, a plurality of longitudinally tapered tubular trunk sections molded of thermoplastic material and fitting end-to-end to provide a simulated tree trunk of upwardly tapered form, the lowermost of said sections being mounted on said base support to hold said trunk erect, the normally upper end portion of each of said sections having an exterior bearing wall of increased upward convergence, the normally lower end portion of each of said sections having an interior bearing wall of increased downward divergence arranged to receive and seat centrally upon the upper end portion of the contiguous lower section, each of said lower end portions being formed with a plurality of circumferentially spaced and outwardly radiating pins, and a plurality of elongated branches demountably secured to and projecting axially from said pins.

5. An artificial Christmas tree as characterized in claim 4, wherein said pins upwardly diverge with respect to the longitudinal axis of said trunk and with respect to each other, and the angle of divergence of said pins increases from the upper to the lower of said sections so as to flatten said branches towards horizontal from the upper to the lower of said branches.

6. An artificial Christmas tree as characterized in claim 4 wherein said pins are each formed with a plurality of circumferentially spaced longitudinally extending ribs and said branches are formed of thermoplastic material with cylindrical end sockets dimensioned to slidably embrace said ribs.

7. An artificial Christmas tree as characterized in claim 6, wherein the open ends of said sockets are contoured with concave portions dimensioned to nest with said trunk sections.

8. An artificial Christmas tree comprising, a base support, a plurality of elongated sections molded of thermoplastic material and fitted end-to-end to provide a simulated tree trunk, the lowermost of said sections being mounted on said base support to hold said trunk erect, each of said sections being formed with a plurality of circumferentially spaced and outwardly radiating pins, a plurality of elongated branches molded of thermoplastic material with open end sockets dimensioned to slidably embrace said pins, each of said branches being formed

with a plurality of longitudinally spaced laterally extending pins, and leafed twig sections molded of thermoplastic material and having open end sockets dimensioned to slidably embrace said branch pins.

9. An artificial Christmas tree as characterized in claim 8 wherein said pins on said branches are set in longitudinally spaced pairs on opposite sides of said branches with the pins in each pair diverging toward the outer end of said branches.

10. An artificial Christmas tree as characterized in claim 9 wherein each of said branches is formed of inverted U-shaped cross section defining a pair of transversely opposed sides and wherein said pairs of pins are formed integrally with said sides and extend laterally therefrom.

11. An artificial Christmas tree as characterized in claim 8 wherein said pins on said branches are molded with relatively enlarged base portions at said branches and relatively reduced portions extending axially from said base portions, and wherein said leafed twig sections are formed with tubular end portions defining said sockets and which are dimensioned to slidably embrace said reduced pin portions with said tubular end portions of said twig sections fitting flush with said pin base portions.

12. An artificial Christmas tree as characterized in claim 8 wherein said pins on said branches are formed with integral surface nodules and said leafed twig sections are formed with tubular end portions defining said sockets, and wherein said tubular end portions are flexibly and resiliently distendable over and into interfitting relation with said nodules so as to secure said twig sections in place.

13. An artificial Christmas tree comprising, a base support composed of an inverted dish-shaped concavo-convex member having a bottom peripheral supporting rim and an integral axially extending core having a first portion projecting upwardly from the upper convex side of said member in a frusto-conical form and a second portion projecting downwardly from the concave side of said member to adjacent the plane of said rim to provide a rigid vertical support for the tree, a plurality of longitudinally tapered tubular trunk sections fitting end-to-end to provide a simulated tree trunk of upwardly tapered form, the lowermost of said trunk sections having a tapered tubular form dimensioned for mounting upon and for support by said first core portion, each of said trunk sections being formed with a plurality of circumferentially spaced outwardly radiating and upwardly diverging pins, a plurality of elongated branches having cylindrical end sockets dimensioned to slidably embrace said trunk pins, each of said branches being formed with a plurality of longitudinally spaced laterally extending pins, and a plurality of simulated leafed twig sections having open end sockets dimensioned to slidably embrace said branch pins.

References Cited in the file of this patent

UNITED STATES PATENTS

206,387	Bowen	July 30, 1878
2,186,351	Stojanek	Jan. 9, 1940

FOREIGN PATENTS

477,172	Italy	Jan. 13, 1953
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