

[54] **SNAP LOCK PLASTIC FENCING**
[76] Inventor: **Leo P. Niemic**, 5627 Emerson,
Morton Grove, Ill. 60053
[22] Filed: **Aug. 6, 1971**
[21] Appl. No.: **169,625**
[52] U.S. Cl. **256/19, 256/24**
[51] Int. Cl. **E04h 17/14**
[58] Field of Search.....256/19, 24, 25, 26, 12.5, 73

2,895,717 7/1959 DeFalco.....256/25
3,093,363 6/1963 Bohon.....256/26

FOREIGN PATENTS OR APPLICATIONS

393,399 10/1965 Switzerland.....256/24

Primary Examiner—Dennis L. Taylor
Attorney—Max Dressler et al.

[57] **ABSTRACT**

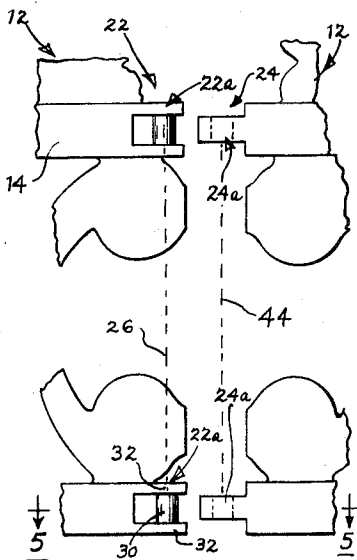
An integral plastic fence section having an expansive main body with a plurality of stake members projecting downwardly from a lower edge and adapted to be driven into the ground. The opposite side edges of the section have hinge members that releasably snap together and that cooperate with each other to provide for rotational movement of adjacent interconnected fence sections about the hinge axis to provide for a variety of alignments of multiple connected sections.

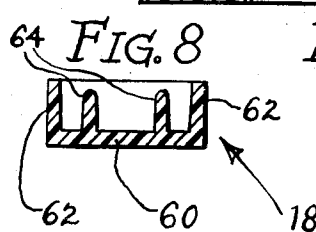
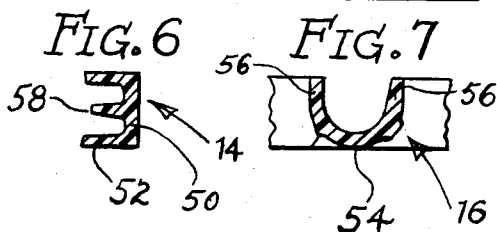
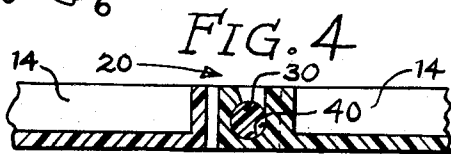
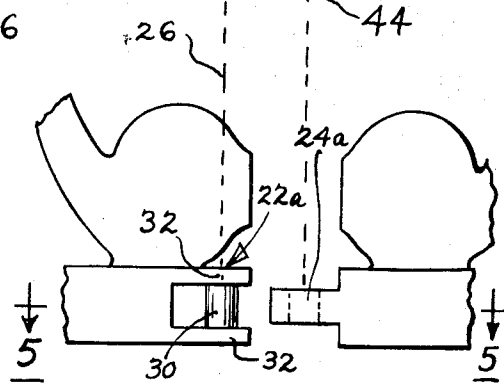
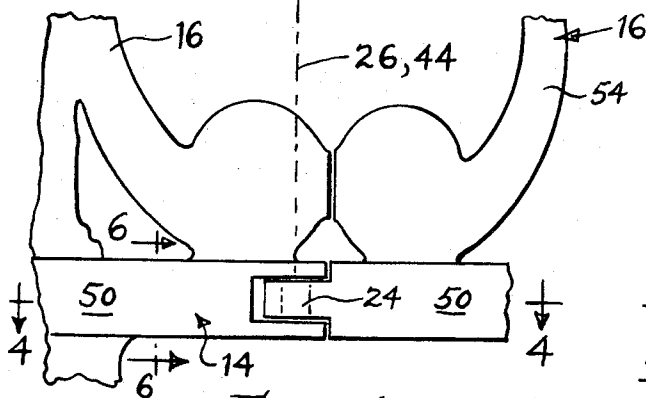
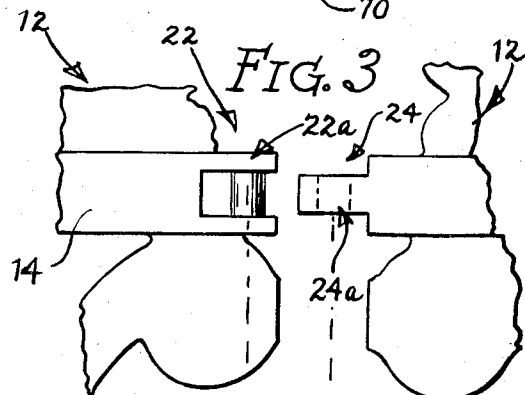
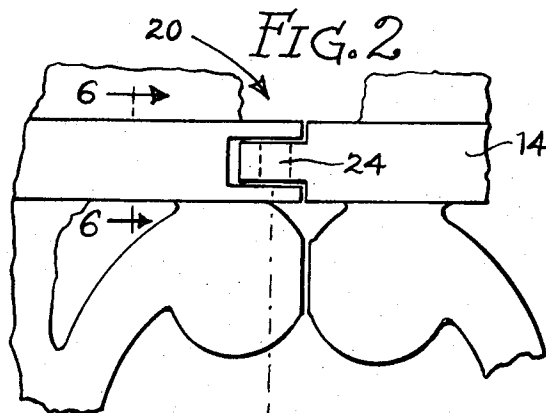
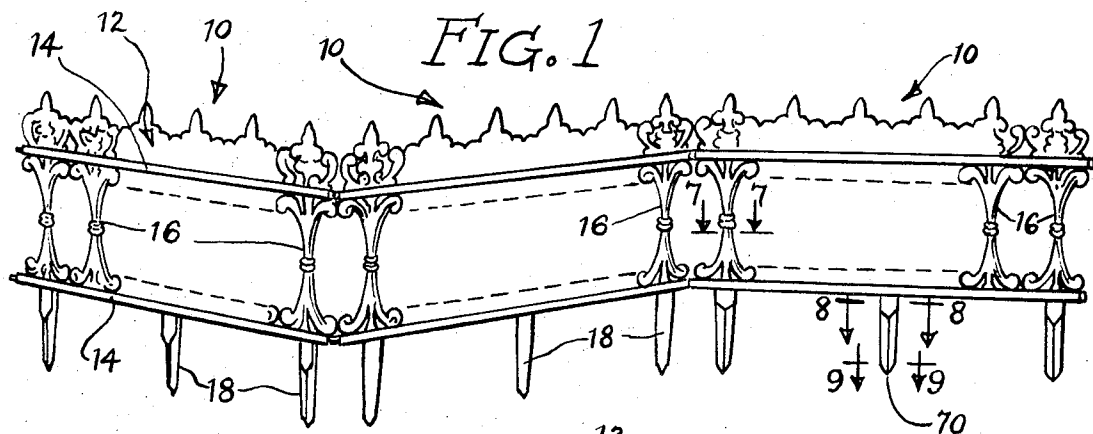
2 Claims, 9 Drawing Figures

References Cited

UNITED STATES PATENTS

2,628,823 2/1953 Rhome et al. 256/26
916,228 3/1909 Trebilcock 256/24
514,250 2/1894 Windus 256/26
550,178 11/1895 Jolliff 256/26
1,130,287 3/1915 Horvath 256/24
1,446,930 2/1923 Romaszkiwicz 256/26
2,295,271 9/1942 Schuck.....256/24





SNAP LOCK PLASTIC FENCING

BACKGROUND OF THE INVENTION

The present invention relates generally to improved fence sections which may be integrally formed or molded from plastic, and which may be snap locked together.

There are numerous types of fencing which are used to produce decorative and protective borders for lawns, gardens, flower beds and the like. One type of fencing for this purpose is from 12 to 18 inches in height and consists of vertical and horizontal wires that are permanently interconnected at their junctures. Such fencing is adapted to be mounted on stakes that extend through openings defined by the overlapping wires. This type of fencing has enjoyed limited commercial success because it is difficult for the homeowner to arrange it in a straight line or other predetermined pattern, and because it requires the use of separate wire mesh and stakes.

Another common type of fence for similar purposes incorporates a plurality of metal wire sections which are 1 to 2 feet in length, each section being connected to an adjacent section by looping ends of longitudinal or horizontal wires around the vertical wires of the adjacent sections. Such fencing requires considerable assembly time during its manufacture, and the decorative possibilities inherent in the use of such wire sections are very limited.

Other types of fence sections for the purposes referred to above are wooden sections which have vertical and horizontal members or slats that are secured to each other by staples or nails. These wooden sections also require excessive amounts of assembly time, cannot easily be connected to each other and, again, the decorative possibilities permitted by the materials of manufacture are quite limited.

Although molded plastic fencing has been suggested for use previously, a practical and easily interconnected plastic fencing section has not been available. Thus, there remains a need for a simple and inexpensive plastic fencing section that can be utilized and installed by a homeowner in any desired length without the need for tools or special installation equipment.

SUMMARY OF THE INVENTION

The present invention contemplates a decorative plastic fence section that can be integrally molded in a single step molding process. Each section has hinge means on opposite ends thereof for easy interconnection, so that by simple manipulation of the two fence sections they may be disposed in any desired angular relationship. The hinge structure for securing adjacent sections is constructed such that a decorative elongated fence of a plurality of sections may extend in a straight line path, or in a zig-zag array or in right angle corner arrangements, all with the same hinge structure, and without the necessity of separating the fence sections from each other after they have once been connected to each other. As such, desired and accurate alignment may be maintained.

More specifically, a fence section of the present invention comprises an expansive main body that has upper and lower edges and opposite side edges. Integral stakes depend from the main body. One side edge of the fence section provides an integral first hinge

member while the opposite side edge provides a second cooperating integral hinge member, with the two hinge members being adapted to be interconnected by a snap action, thereby to connect two adjacent fence sections for rotational movement about a vertical pivot or hinge axis defined by the hinge members.

In the illustrated embodiment of the invention, the first and second hinge members each comprises upper and lower vertically spaced hinge elements, with the hinge elements of the first hinge member consisting of hinge pins that are circular in cross-section and that are located adjacent the upper and lower edges of the fence section. The two hinge pins are located on a common vertical axis at one side edge of the fence section. Each of the hinge elements of the second hinge member includes a socket member that defines a circular opening or sockets having a cross-sectional dimension substantially the same as the diameter of the pin, with the centers of the two openings being located on a common vertical axis.

Reduced area entry slots extend to one side of each of the sockets for receiving the pins so that a snap lock results when the pins are pushed through the entry slots into the openings. The hinge means defined by the pairs of pins and sockets defines a vertical hinge axis about which adjacent fence sections can be rotated to produce the desired elongated fence of any of the plan configurations referred to above.

The expansive main body preferably includes spaced horizontal elements interconnected by spaced vertical elements, with each of those elements being generally U-shaped in cross-section to produce a light weight fence section that has substantial transverse depth and substantial strength. The use of an integral molded fence section also allows a manufacturer to produce plastic fence sections having any desired decorative characteristics, limited only by the number of molds the manufacturer may wish to utilize.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF DRAWINGS

FIG. 1 is a front perspective view of a plurality of plastic fence sections of this invention interconnected and disposed in a manner to provide a generally zig-zag array;

FIG. 2 is an enlarged fragmentary view of two interconnected sections of fence sections of FIG. 1;

FIG. 3 is a view similar to FIG. 2 showing two fence sections prior to interconnection;

FIG. 4 is a horizontal section taken generally along line 4—4 of FIG. 2;

FIG. 5 is a horizontal section taken generally along line 5—5 of FIG. 3;

FIG. 6 is a vertical section taken generally along line 6—6 of FIG. 2;

FIG. 7 is a horizontal section taken generally along line 7—7 of FIG. 1;

FIG. 8 is a horizontal section taken generally along line 8—8 of FIG. 1; and

FIG. 9 is a horizontal section taken generally along line 9—9 of FIG. 1.

DETAILED DESCRIPTION

While this invention is susceptible of embodiment in many different forms, the drawings show and the

detailed specification describes one specific embodiment. It is to be understood that the present disclosure of the specific embodiment is an exemplification of the principles of the invention only, and that it is not intended to limit the invention.

FIG. 1 of the drawings discloses a plurality of fence sections 10 constructed in accordance with the present invention as they would appear in interconnected fashion ready for insertion into the ground. Each fence section is a one-piece integral member that is molded from a suitable plastic material, such as high impact polystyrene, and has an expansive main body 12 that includes a plurality of horizontal hollow ribs 14 and a plurality of vertical hollow ribs 16 which will be described in more detail hereafter. At least two horizontally spaced stake members 18 project downwardly from the lower edge of the expansive main body 12 and are of a length so as to be simultaneously driven into the ground stably to support the fence section in the ground.

The adjacent ends of two fence sections 10 are interconnected by a suitable snap lock hinge means 20 that is illustrated in detail in FIGS. 2 through 5. Hinge means 20 consists of first and second hinge members that are respectively located at opposite side edges of a single fence section. The hinge members of adjacent pairs of fence sections 10 are adapted to be interconnected in a snap fit, so that two adjacent sections may be rotated relative to each other about a vertical axis without their separation. As is more clearly shown in FIG. 3, the hinge means 20 consists of a first hinge member 22 at one side edge of the expansive main body 12 and a second hinge member 24 at the opposite side edge of the expansive main body 12.

The first hinge member 22 consists of upper and lower hinge elements 22a that cooperate to define pin means having a common vertical axis 26. Each hinge element 22a consists of a suitable male member such as an elongate, circular vertical pin 30 bordered by and formed integrally with shoulders or lugs 32 that extend from the respective horizontal ribs 14. The upper and lower pins 30 are located on vertical axis 26.

The second hinge member 24 consists of upper and lower female hinge elements 24a that are identical in cross-section. Each hinge element 24 defines a circular opening 40 that has a circular cross-sectional internal dimension or width substantially equal to the width or diameter of a pin 30, and a reduced area entry slot 42 extending from one side of the opening 40. The width of the entry slot is less than the width of pin 30. The respective openings 40 of the upper and lower hinge elements 24a have their centers located on a common vertical axis 44 while the entry slots 42 extend to the same side of the respective openings.

With this arrangement, the hinge means may be interconnected by aligning the pins 30 with the entry slots 42 and forcing the pins 30 through entry slots 42 into the openings 40. During such forced movement, the inherent resiliency of the plastic material of which the fence section has been molded allows the inner or throat portion of the slot 42 to spread sufficiently to allow a pin 30 to be releasably, snap received in the opening 40. Since the throat portion of the entry slot 42 has a transverse dimension that is less than the diameter of the pin 30, the pin will be releasably snap

retained in the opening. It is desirable that each slot 42 be formed with a flat surface 42a and with an inclined camming surface 42b. The inclined camming surface 42b will assist in guiding a pin 30 into the opening 40, to simplify the interconnection of the hinge means 20.

In their assembled condition, the respective vertical axes 26 and 44 of the two hinge members of an adjacent pair of fence sections 10 coincide with each other to define a hinge axis for those fence sections, so that the fence sections can be positioned at any design angle of rotation relative to each other, and so that the alignment of the sections may be maintained as desired. Desirably the fence sections may rotate approximately 210° with respect to each other.

As was indicated above, a fence section 10 is preferably constructed so as to be formed of a plastic material in a single step molding process. In addition, it is highly desirable to provide a three-dimensional design characteristic for the fence so that the entire fence section appears to have substantial depth, at least when viewed from one side of the fence section. While this could readily be accomplished by utilizing longitudinal and vertical ribs of substantial thickness, the amount of plastic material that would be required for forming such fencing would make the cost prohibitive, and would also result in a very heavy fence section.

Thus, according to another aspect of the invention, all of the ribs of the main body 12 are substantially U-shaped in cross-section. As more clearly shown in FIG. 6, the horizontal ribs 14, two of which are illustrated in the fence section 10 as defining the upper and lower edges of the expansive main body 12, have a central web 50 that defines the front surface of the horizontal rib and rearwardly extending legs 52 on opposite edges of the central web. Likewise, each vertical rib 16 is substantially U-shaped in cross-section and has a forwardly facing web 54 and a pair of rearwardly extending legs 56. As such, a minimum amount of plastic can be utilized to produce a fence section that appears to have substantial depth and thickness when viewed from at least one side thereof and any decorative appearance may be created, such as that shown in FIG. 1. If additional rigidity is required, one or more of the ribs may have a reinforcing element 58 extending from the web as is shown in connection with the web 50 of horizontal rib 14 in FIG. 6.

It is additionally desirable that the stake members have a substantial cross-sectional dimension to provide easy insertability into the ground, and to retain a fence section in a predetermined position relative to the ground. Again, this should be accomplished with a minimum amount of plastic material. Thus, the depending stakes 18 are channel shaped in cross-section and, as seen in FIG. 8, comprise a web portion 60 with a pair of legs 62 extending from opposite edges of the web portion 60. It is desirable also to provide integral reinforcing flanges 64 extending from the web, at least in the upper regions of the stakes 18. The lower portions of the web 60 and legs 62 merge with each other to define a point 70 at the lower end of a stake. With this arrangement, the stakes 18 can readily be inserted into the ground with a minimum amount of force and will support and maintain the fence section in a fixed position after insertion.

It should be noted that the hinge means illustrated incorporated an elongate pin and socket arrangement. It will be apparent that other pin and socket configurations such as a parti-spherical pin (or ball) and socket hinge connection can be used with equal facility.

The present fence section allows for the formation of a fence of indefinite length merely by juxtaposition of pairs of sections and snap interconnecting the hinge means at opposite side edges. Any desired extended configuration of a plurality of sections may be formed. Furthermore, the use of molded plastic permits the manufacture of fence sections that are attractive, and which may be molded to present any desired decorative appearance, such as of wrought iron or the like.

What is claimed is:

1. A fence assembly comprising a plurality of adjacent pairs of fence sections, each section being formed integrally of plastic and having opposite side edges and upper and lower edges with at least two stake members depending from said lower edge and adapted to be driven simultaneously into the ground; and hinge means for hingedly securing juxtaposed side edges of adjacent pairs of sections, said hinge means including first and second hinge members on each section, one on each side edge of each section, said first hinge member comprising a pair of vertically spaced circular pins providing a vertical axis adjacent one of said side edges, each of said pins being bordered at its upper and lower extremes by shoulders, and said second hinge member comprising a pair of vertically spaced ele-

ments each defining a circular opening of a cross-section corresponding to the cross-sectional shape and size of said pins on the other of said side edges, each of said second elements being of a vertical height substantially equal to the distance between said shoulders, thereby to restrict relative vertical movement of one fence section with respect to the next adjacent fence section when adjacent sections are assembled, said second hinge elements each having an entry throat narrower than its circular opening extending from one side of its opening so that its pin may be forced through the entry slot and into said opening to be releasably snap retained in said opening, said hinge members defining a pivot axis for juxtaposed adjacent sections, and one of said hinge members projecting sidewardly beyond its side edge so that said hinge members may be moved through an arc of as much as 210°, thereby to permit a wide range of configurations for said fence assembly.

2. A fence assembly as defined in claim 1, in which each section includes an expansive main body having spaced horizontally extending hollow elements interconnected by spaced hollow vertical elements with each of said elements being substantially U-shaped in cross-section to provide a three-dimensional appearance when viewed from one side of said fence section; and in which said stake members are hollow and of channel shaped cross-section and terminate in a point at the free end thereof.

* * * * *

35

40

45

50

55

60

65