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[54] **SOAKER HOSE SUPPORT CLAMP**
18 Claims, 2 Drawing Figs.

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[51] **Int. CL.**..... **B05f 13/02**

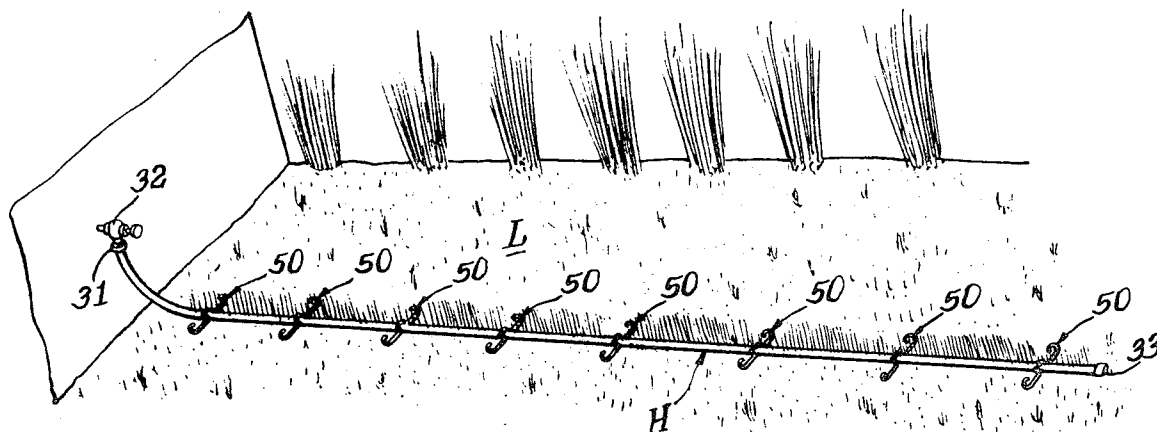
[50] **Field of Search**..... 248/76, 80,
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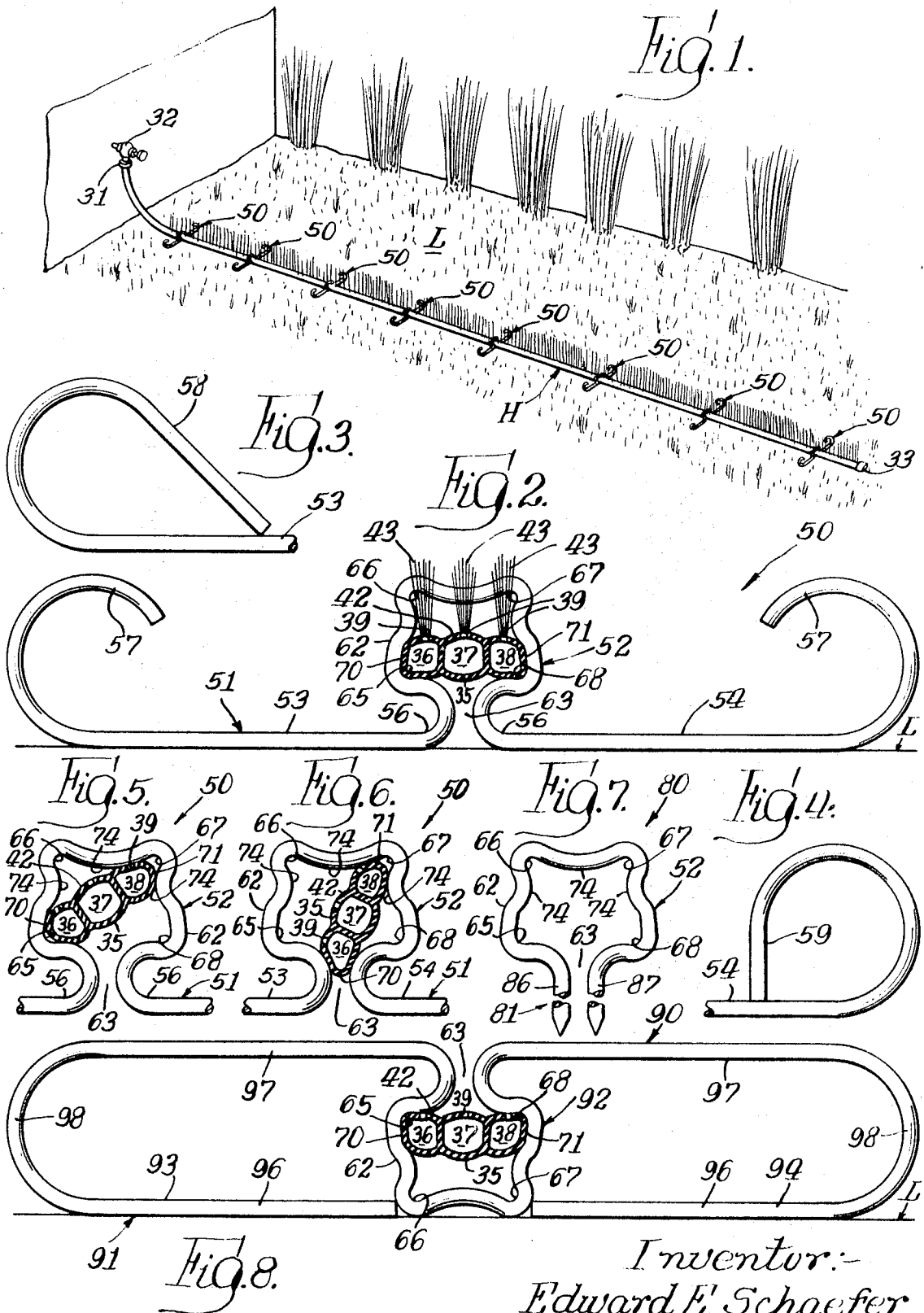
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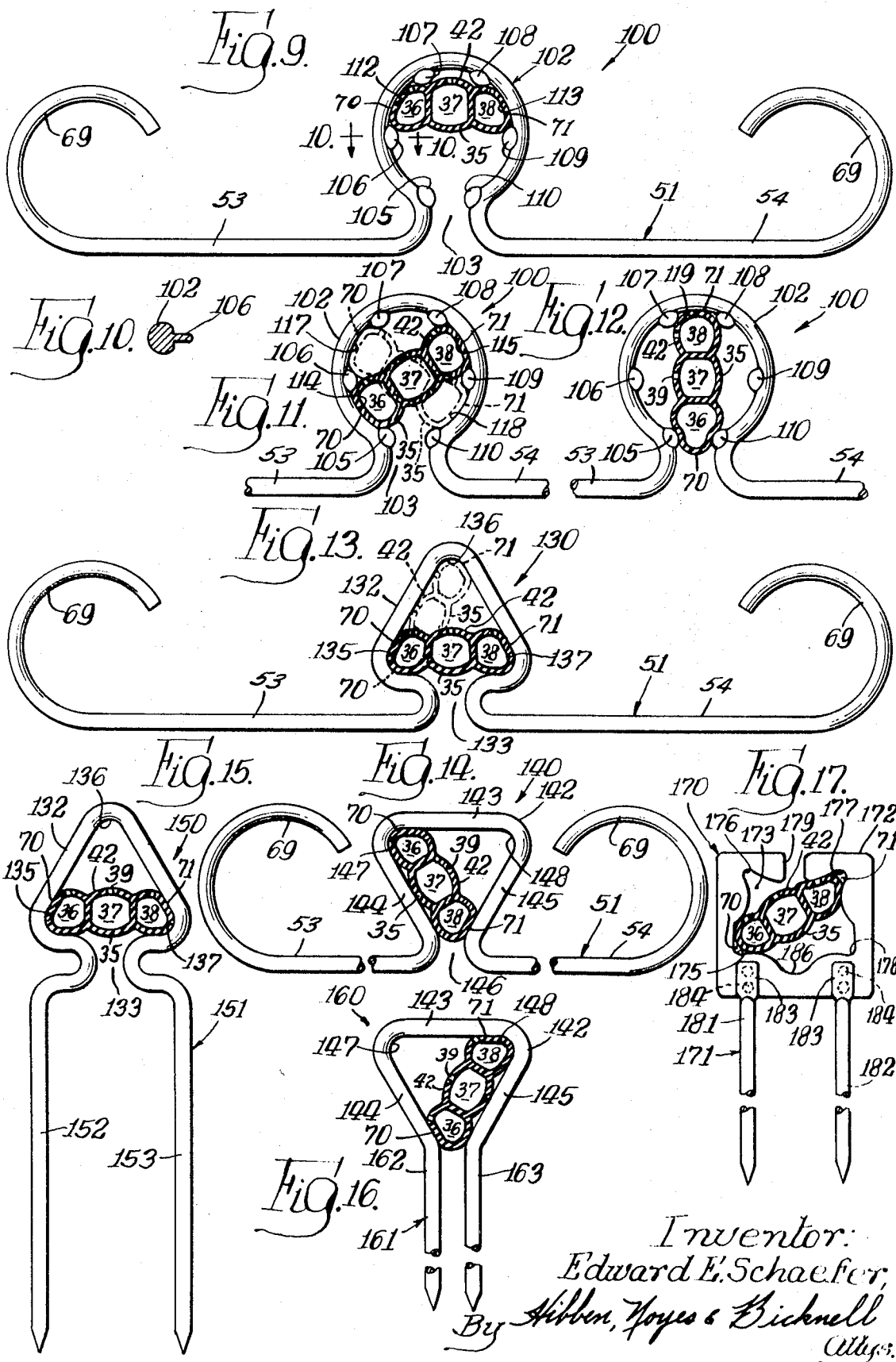
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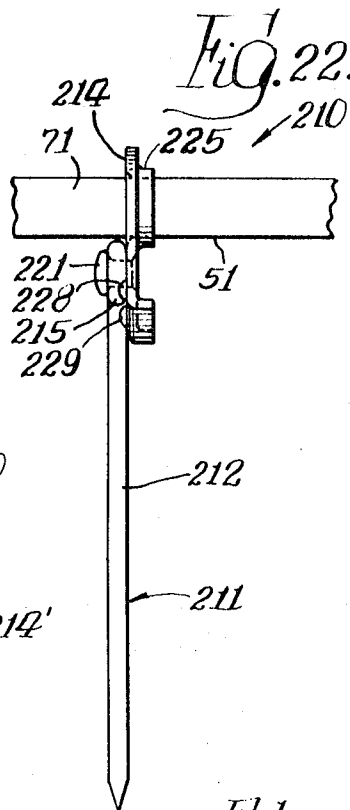
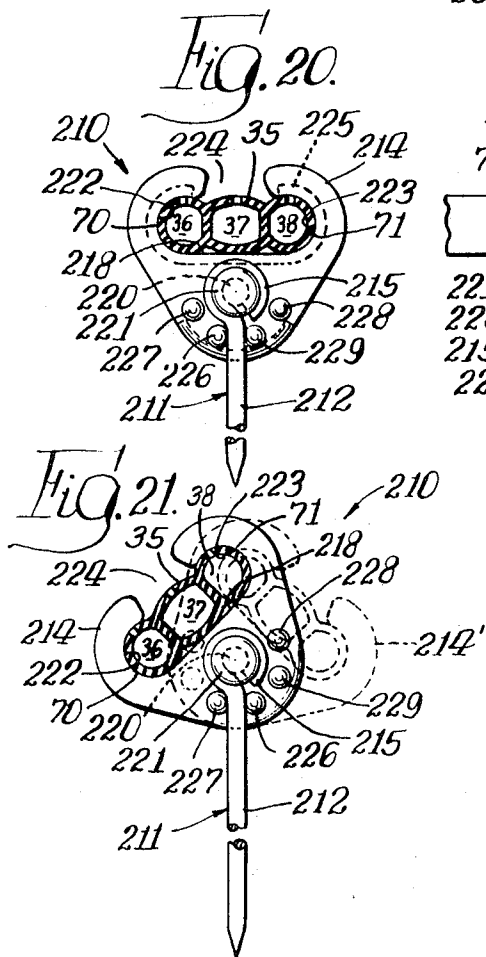
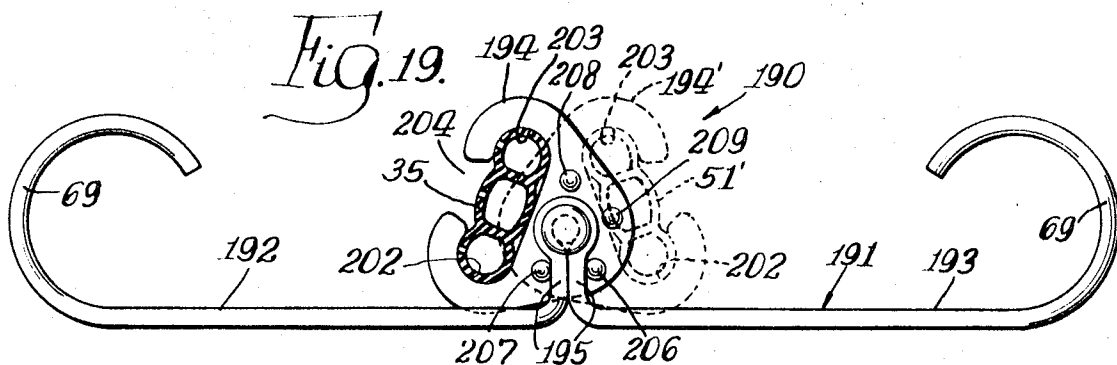
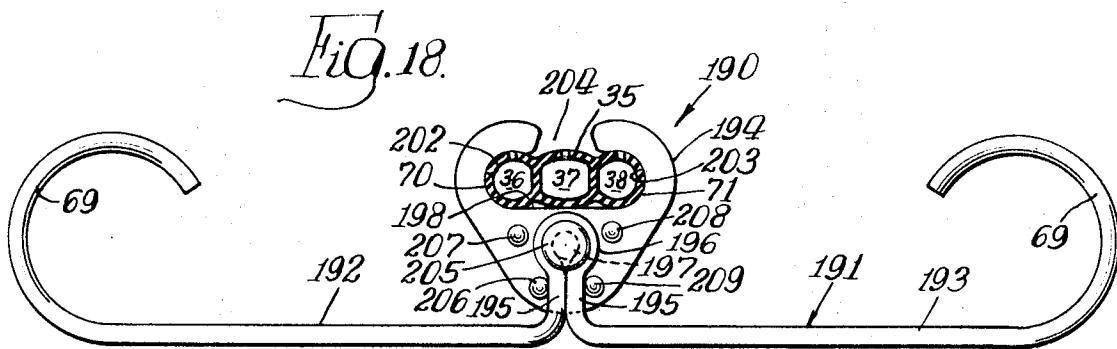
ABSTRACT: A soaker hose support clamp for supporting and retaining at least a portion of a length of soaker hose in a desired location on and at a predetermined angular position with respect to an area to be irrigated. The clamp includes a support portion adapted to engage the area to be irrigated, and a mounting portion carried by the support portion and adapted to retain a portion of an associated soaker hose in a plurality of positions with respect to the support portion including a horizontal position and at least one inclined position.





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SOAKER HOSE SUPPORT CLAMP

This invention relates to soaker hose support clamps, and more particularly relates to a soaker hose support clamp to be used in a set for supporting and retaining a soaker hose in a desired location on and at a desired angular position with respect to an area to be irrigated.

Due to the versatility and irrigation advantages obtained from soaker hoses, increasing use is being made of such hoses for irrigating lawns, gardens and the like. While such hoses are made in various shapes and forms, the type most commonly used and the one with which the clamp of the present invention is adapted for use comprises a flat or ribbonlike plastic tube having a series of small holes on one side thereof along the length of the hose. One end of the hose is closed and the other end is usually provided with an appropriate fitting to facilitate attachment to a water outlet. Thus, when the hose is connected to a water outlet and the water is turned on, a multitude of fine sprays issue from the hose along the length thereof to gently spray the area adjacent to the hose.

Unfortunately, however, soaker hoses of the aforementioned type have a tendency to twist and kink. Thus, if a portion of the hose should become twisted while in use, the sprays of water issuing from the openings in the twisted portion may be directed in a different direction than desired or directly against the ground, which is undesirable. Likewise, if a portion of the soaker hose should become kinked while the hose is in use, the flow of water to the portion of the hose downstream from the kink may be reduced or completely shut off, which is also undesirable.

In order to overcome the foregoing disadvantages or characteristics of soaker hoses, various types of clamping devices or supports have been advanced for supporting the hose in a desired location on a lawn or other area to be irrigated while resisting twisting or kinking of the hose. However, many of such support devices have not proved entirely satisfactory for various reasons, either because they are difficult to engage or disengage from the hose or do not provide the desired degree of flexibility of control of the angle of the streams emitted from the hose.

Accordingly, it is the general object of the present invention to provide a novel and improved soaker hose support clamp which overcomes the aforementioned disadvantages.

Another object is to provide an improved soaker hose support clamp which, when used in a set with an associated soaker hose, permits portions of or the entire length of the hose to be positioned and retained in a desired location on and at a desired angular position with respect to an area to be irrigated.

Another object is to provide an improved soaker hose support clamp of the foregoing character that is adapted to retain portions or the entire length of a soaker hose in a selected one of a plurality of angularly inclined positions with respect to an area to be irrigated.

A further object is to provide a novel and improved soaker hose clamp, which, when used in a set with an associated soaker hose, permits movement of the hose to different locations on an area to be irrigated merely by sliding the hose and its supporting clamps over the surface of the area to be irrigated.

Still another object is to provide a novel soaker hose support clamp that is simple in construction, economical to manufacture, and reliable in operation.

Other objects and advantages of the invention will become apparent from the following detailed description and accompanying sheets of drawings, in which:

FIG. 1 is a pictorial illustration of a portion of an area to be irrigated, such as a lawn, and showing a soaker hose having a series of supporting clamps embodying the features of the present invention engaged with and supporting the hose at spaced intervals along the length thereof;

FIG. 2 is a front elevational view of a soaker hose support clamp embodying the features of the present invention and showing a portion of an associated soaker hose in cross section as it would appear when supported by the clamp;

FIG. 3 is a fragmentary front elevational view of an alternate configuration of one of the two identical end portions of the clamp illustrated in FIG. 2;

FIG. 4 is a fragmentary front elevational view of another alternate configuration of one of the two identical end portions of the clamp illustrated in FIG. 2;

FIGS. 5 and 6 are fragmentary front elevational views of the central portion of the clamp illustrated in FIG. 2 and showing two other positions that a portion of a soaker hose may occupy when supported by the clamp;

FIG. 7 is a broken front elevational view showing a modified construction of the clamp illustrated in FIG. 2;

FIG. 8 is a front elevational view of another soaker hose support clamp embodying the features of the present invention;

FIG. 9 is a front elevational view of another soaker hose support clamp embodying the features of the present invention and showing a portion of an associated soaker hose in cross section as it would appear when supported by the clamp in one of a plurality of operating positions;

FIG. 10 is a cross-sectional view taken along the line 10—10 of FIG. 9;

FIGS. 11 and 12 are fragmentary front elevational views of the central portion of the soaker hose support clamp illustrated in FIG. 9 and showing, in full and broken lines, three additional operating positions that a portion of an associated soaker hose may occupy when supported by the clamp;

FIG. 13 is a front elevational view of another soaker hose support clamp embodying the features of the present invention and showing a portion of an associated soaker hose in cross section as it would appear when supported by the clamp in two of a plurality of its operating positions;

FIG. 14 is a broken front elevational view, with portions thereof removed, of a modified form of the soaker hose support clamp illustrated in FIG. 13;

FIG. 15 is a front elevational view of another modified form of the soaker hose support clamp illustrated in FIG. 13;

FIG. 16 is a broken front elevational view, with portions thereof removed, of a modified form of the soaker hose support clamp illustrated in FIG. 14;

FIG. 17 is a broken, front elevational view, with portions thereof removed, of another soaker hose support clamp embodying the features of the present invention;

FIG. 18 is a front elevational view of another soaker hose support clamp embodying the features of the present invention and showing a portion of an associated soaker hose in cross section as it would appear when supported by a movable part of the clamp when the movable part is positioned in one of a plurality of operating positions thereof;

FIG. 19 is a front elevational view of the soaker hose support clamp illustrated in FIG. 18, and showing, in full and broken lines, two other operating positions of the movable part of the clamp and the portion of an associated soaker hose engaged therewith;

FIG. 20 is a broken, front elevational view of a modified form of the soaker hose support clamp illustrated in FIGS. 18 and 19;

FIG. 21 is a front elevational view of the soaker hose support clamp illustrated in FIG. 20 and showing in full and broken lines, two other operating positions of the movable part of the clamp and the portion of an associated soaker hose engaged therewith; and

FIG. 22 is a side elevational view of the soaker hose support clamp illustrated in FIG. 20.

Briefly described, the present invention contemplates a novel soaker hose support clamp for supporting at least a portion of an associated soaker hose in a particular location on and at a desired angular position with respect to an area to be irrigated. When a plurality of the clamps are engaged with the hose at spaced intervals along the length thereof, the hose may be retained in a desired location on an area to be irrigated without twisting or kinking, and particular portions or the entire length of the hose may be retained at a desired angular position with respect to such area.

The various forms of the clamp, to be hereinafter described in detail, include a support portion adapted to engage the area to be irrigated, and a mounting portion carried by the support portion and adapted to retain a portion of the soaker hose engaged therewith in a desired angular position with respect to the support portion and hence the area to be irrigated.

Two different support portions are utilized in the various forms of the clamp disclosed herein. One of the two support portions permits free movement of the clamp and thus the portion of an associated soaker hose engaged with the mounting portion of the clamp, over the area to be irrigated. The other of the two support portions is adapted to extend into the area to be irrigated to thus fixedly secure the clamp, and hence the portion of an associated soaker hose engaged with the mounting portion, in a desired location on the area to be irrigated.

In addition, different configurations are utilized in the mounting portions of the various forms of the clamp to permit the portion of an associated soaker hose that engages the mounting portion to be retained in different angular positions with respect to the support portion and hence the area to be irrigated.

In FIG. 1, a soaker hose, indicated generally at H and of the type with which the clamp of the present invention is adapted for use, is illustrated as it might appear when operably positioned upon the area to be irrigated, such as a lawn L. As shown, the soaker hose H has a fitting 31 at one end thereof permitting attachment of the hose to a water outlet or faucet 32 and the other end of the hose is provided with a fitting 33 of the type which functions either as a closure or a connector. In FIG. 1 the fitting 33 is functioning as a closure. While the various forms of a soaker hose support clamp to be hereinafter described in detail will accept and are usable with soaker hoses having different cross-sectional configurations, they are best suited for use with soaker hoses of the flat or ribbon type. The hose H is exemplary of a soaker hose of the latter type and a portion 35 thereof is shown in cross section in FIG. 2. The hose H thus includes three separate fluid conducting passages 36, 37 and 38 (FIG. 2) extending throughout the length thereof. A series of longitudinally spaced apertures 39 are provided in one of the lateral surfaces, indicated at 42, of the hose H for emitting sprays or jets of water, indicated at 43, from the separate passages 36-38, which extend in a direction generally perpendicular to the surface 42.

For retaining the hose H in a desired location on and in a desired angular position with respect to an area to be irrigated, a plurality of soaker hose support clamps, each indicated generally at 50, are shown engaged with the hose H at spaced intervals along the length thereof. It will be understood that the number and spacing of the clamps 50 illustrated in FIG. 1 is merely exemplary.

Referring now to FIG. 2 in connection with FIG. 1, each clamp 50 comprises a support portion, indicated generally at 51, and a mounting portion, indicated generally at 52. The support portion 51 of the clamp 50, comprises at least one and preferably a pair of horizontally extending, aligned support members 53 and 54, having their adjacent ends 56 connected to the mounting portion 52 and their outer ends 57 shaped to facilitate free movement of the support portion over an area to be irrigated, such as the lawn L. Preferably, the support portion 51 is integral with the mounting portion 52 so that the mounting portion 52 is a continuation of the inner ends 56 of the support members 53 and 54.

While the outer ends 57 of the support members 53 and 54 may have any desired configuration as will permit free movement of the clamp over a surface to be irrigated, including irregular and foliated surfaces, such as the lawn L, they are preferably curved upwardly in the manner of the front end of a toboggan, as illustrated in FIG. 2. Examples of two other configurations for the outer ends of the support members 53 and 54 are illustrated in FIGS. 3 and 4 and indicated at 58 and 59, respectively.

The mounting portion 52 is preferably in the form of a substantially rectangularly shaped loop 62 having an opening or gap 63 at the bottom thereof to permit a portion 35 of the associated soaker hose H to be inserted into or removed from the interior of the loop. The corners of the loop define a plurality of recesses 65, 66, 67 and 68 for receiving and retaining the laterally spaced side portions, indicated at 70 and 71, of the portion 35 of the soaker hose engaged therewith. Thus, the recesses 65 and 68 defined by the two lower corners of the loop serve to support the portion 35 of the soaker hose in a substantially horizontal position with respect to the support portion 51 of the clamp, when the latter is engaged with an area to be irrigated having a substantially horizontal surface, such as the lawn L.

In FIG. 5, the side portions 70 and 71 of the portion 35 of the soaker hose H are shown engaged with the recesses 65 and 67 of the loop 62 so that the portion 35, and portions (not shown) adjacent thereto, of the soaker hose are retained in an inclined position with respect to the support portion 51 and consequently with the area to be irrigated.

The laterally spaced side portions 70 and 71 of the portion 35 of the soaker hose 30 may also engage the recesses 66 and 68 so that the portion 35 is oppositely inclined from the position thereof illustrated in FIG. 5. The lengths of the sides of the loop 62 are such that when the side portions 70 and 71 of the portion 35 of the soaker hose engage the recesses 65, 67, or 66, 68, the portion 35 will be inclined at an angle of about 30° with respect to the support portion 51 and hence the area to be irrigated. The recesses 65, 67 and 66, 68 thus comprise two diagonally arranged pairs of recesses in the mounting portion 52 for receiving and retaining the portion 35 of the soaker hose H in at least two oppositely inclined angular positions with respect to the support portion 51.

In FIG. 6, one side portion 70 of the hose portion 35 is shown engaged with a recess defined by the gap 63 in the loop 62 and the other side portion 71 of the portion 35 is shown engaged with the recess 67. Thus, the recess defined by the gap 63 and the recess 67 provide another pair of oppositely arranged recesses in the mounting portion 52 for retaining the portion 35 of the soaker hose in another inclined angular position with respect to the support portion 51. Conversely, the recess defined by the gap 63 and the recess 66 provide another pair of oppositely arranged recesses for receiving the side portions 71 and 70, respectively, of the hose portion 35 and for retaining the portion in an oppositely inclined position from the position thereof illustrated in FIG. 6.

The loop 62 and the recesses 65-68 therein, including the recess defined by the gap 63, permit the portion 35 of the soaker hose engaged with the mounting portion 52 to be mounted in a plurality of inclined angular positions with respect to the support portion 51, depending upon which set of recesses are utilized. Thus, only a selected portion or portions of the soaker hose H, or the entire length thereof, may be mounted in a desired angular position with respect to the support portion 51 of the clamp 50 or a set thereof, depending upon which pair of recesses in the mounting portion are utilized to receive and retain the side portions 70 and 71 of the portion 35 of the soaker hose.

In order to deepen the recesses 65, 66, 67 and 68, portions 74 of the sides of the loop 62 are bent or otherwise formed to project into the interior of the loop. The deepened recesses provide better retention of the side portions 70 and 71 of the portion 35 of the hose H engaged therewith.

With the foregoing construction, it will be apparent that since the side portions 70 and 71 of the portion 35 of the soaker hose are frictionally retained in whichever pair of recesses they are engaged with when the portion 35 is mounted in the loop 62, such angular position of the hose portion 35 will be maintained even though the clamp 50 is shifted to a new location on the surface to be irrigated, such as the lawn L. The angular position of a particular portion or portions 35 of the hose H may, of course, be easily changed merely by twisting the portion in the loop 62 to cause the side por-

tions 70 and 71 thereof to seat in another pair of recesses having a different inclination.

In FIG. 7, a modified form, indicated generally at 80, of the clamp 50, is illustrated. Like reference numerals have been used to identify parts identical with those heretofore described.

The clamp 80 is similar to the clamp 50 in that it includes a mounting portion 52 having the same shape and mode of operation as the mounting portion 52 of the clamp 50. Accordingly, reference should be made herein to the description of the mounting portion 52 of the clamp 50 for a detailed explanation of the shape and mode of operation of the mounting portion 52 of the clamp 80.

The support portion 81 of the clamp 80 differs from that of the clamp 50 in that the former includes at least one and preferably a pair of elongated vertically extending, horizontally spaced support members 86 and 87 which are adapted to extend into the area to be irrigated, such as the lawn L. The support portion 81 thus fixedly anchors the mounting portion 52 and a portion 35 of an associated soaker hose engaged therewith, at a particular location on the area to be irrigated. However, the clamp 80 can be readily shifted to another location without disturbing the angular position of the portion 35 in the loop 52, if necessary, merely by withdrawing the support members 86 and 87 and reinserting into the area to be irrigated at a new location thereon.

In FIG. 8, another soaker hose support clamp 90 embodying the features of the present invention is illustrated. Like reference numerals have been used to identify parts of the clamp 90 identical with those previously described.

The clamp 90 thus includes a support portion 91, to be hereinafter described in detail, and a generally rectangularly shaped mounting portion 92 having the same shape and mode of operation as the mounting portion 52 of the clamp 50, except that the mounting portion 92 of the clamp 90 is inverted with respect to the mounting portion 52 of the clamp 50. Thus, the gap or opening 63 is positioned at the upper end or top of the loop 62, rather than at the bottom thereof. The mounting portion 92, is, in all other respects, the same as the mounting portion 52 of the clamp 50.

The support portion 91 of the clamp 90 comprises at least one and preferably a pair of U-shaped support members 93 and 94, each having a pair of horizontally extending, vertically spaced legs 96 and 97 and a connecting bight portion 93. The bight portions 93 are curved and comprise arcuate ends for the support members 93 and 94.

It will be understood that the clamp 90 could be inverted from the position thereof illustrated in FIG. 8 so that the legs 97 of the support members 93 and 94 are positioned at the bottom of the clamp for engagement with the surface to be irrigated. Regardless of whether the legs 96 or 97 of support members 93 and 94 are positioned at the bottom of the clamp for engagement with the surface to be irrigated, the clamp 90 and the portion 35 of a soaker hose retained in the mounting portion 92 will be freely shiftable over the surface to be irrigated. Such free shiftable is due to the horizontal disposition of the legs 96 and 97, and the arcuate shape of the connecting bight portions or ends 98.

In FIGS. 9-12, another soaker hose support clamp 100 embodying the features of the present invention, is illustrated. Like reference numerals have been used to identify parts of the clamp 100 identical with those previously described.

The clamp 100 is similar to the clamp 50 in that it includes a support portion 51 of the same shape and having the same mode of operation as the support portion 51 of the clamp 50. Accordingly, reference should be made herein to the description of the support portion 51 of the clamp 50 for an explanation of the support portion 51 of the clamp 100.

The clamp 100 also includes a mounting portion 102 in the form of a circular loop having an opening or gap 103 at the bottom thereof through which a portion 35 of an associated soaker hose may be inserted into or removed from the interior of the loop.

In order to define a plurality of the recesses in the interior of the mounting portion 102 for receiving and retaining the portion 35 of the soaker hose, means in the form of a plurality of radially inwardly extending projections 105-110, inclusive, are provided around the inner periphery of the loop to define such recesses therebetween. The projections 105-110 may be provided on the inner periphery of the loop in any desired manner, but are preferably formed by flattening the portion of the material of the loop to cause the latter to project radially inwardly into the interior of the loop in the manner illustrated in FIG. 10.

The projections 105-110 are arranged around the inner periphery of the mounting portion 102 to provide a plurality of oppositely arranged pairs of recesses, each recess being defined between an adjacent pair of projections. Thus, as illustrated in FIG. 9, the projections 106, 107 and 108, 109 define a pair of oppositely arranged, horizontally spaced recesses 112 and 113 for receiving and frictionally engaging the side portions 70 and 71 of the portion 35 of the soaker hose. The recesses 112 and 113 are thus operable to retain the portion 35 of the soaker hose engaged therewith in a substantially horizontal position with respect to the support portion 51.

In FIG. 11, the full and broken line positions of the hose portion 35 illustrate two oppositely inclined positions that the portion 35 may occupy with respect to the support portion 51 when the side portions 70 and 71 of the hose portion 35 are received in two other pairs of oppositely arranged recesses in the mounting portion 102. The recesses of one of such pairs are indicated at 114 and 115, and are respectively defined by the projections 105, 106 and 108, 109. The recesses of the other of such pairs are indicated at 117 and 118, and are respectively defined by the projections 106, 107 and 109, 110. When the side portions 70 and 71 of the hose portion 35 are engaged in the recesses 114, 115 or 117, 118, the hose portion 35 will be retained at an angle of approximately 30° with respect to the support portion 51.

In FIG. 12, a portion 35 of the associated soaker hose is shown with the side portion 71 thereof received in a recess 119 defined between the projections 107 and 108 at the top of the mounting portion 102 and the side portion 70 received in a recess defined between the projections 105 and 110 at the bottom of the mounting portion. When so positioned, sprays or jets of water will issue from the openings 39 in the perforated lateral surface 42 of the hose portion 35 in a substantially horizontal direction toward one side of the clamp. The portion 35 may, of course, be reversed side-for-side from the position thereof shown in FIG. 12 so that the jets or sprays of water issue in a substantially horizontal direction toward the opposite side of the clamp.

In FIG. 13, another soaker hose support clamp 130 embodying the features of the present invention, is illustrated. Like reference numerals have been used to identify parts of the clamp 130 identical with those previously described. The clamp 130 is similar to the clamps 50 and 100 in that it includes a support portion 51 identical in shape and function with the support portion 51 of the clamps 50 and 100. Accordingly, reference should be made herein to the description of the support portion 51 of the clamp 50 for an explanation of the support portion 51 of the clamp 130.

The clamp 130 also includes a mounting portion 132 in the form of a generally triangularly shaped loop having an opening or gap 133 at the bottom thereof to permit a portion 35 of an associated soaker hose to be inserted into or removed from the interior of the loop. The corners of the loop define a plurality of recesses 135, 136 and 137 for receiving and retaining the side portions 70 and 71 of the portion 35 of the soaker hose.

The included angle between any two adjacent sides of the loop is about 60°, and the loop is arranged so that the corner thereof which defines the recess 136 is positioned at the top of the loop as an apex. The base leg of the loop is thus positioned at the bottom thereof and the gap 133 is centrally positioned in the base leg. With the foregoing construction it will be ap-

parent that when a portion 35 of an associated soaker hose is engaged with the mounting portion 132 and the side portions 70 and 71 of the hose portion 35 are received in the recesses 135 and 137 at the bottom or lower corners of the loop, the portion 35 will be maintained in a substantially horizontal position with respect to the support portion 51. In addition, when the side portion 70 is received in the recess 135 and the side portion 71 is received in the recess 136, as illustrated by the broken-line position of the hose portion 35 in FIG. 13, the portion 35 of the hose will be retained in an inclined position with respect to the support portion 51. When thus positioned, the portion 35 of the soaker hose, and portions adjacent thereto, will be inclined at an angle of about 60° with respect to the support portion 51 so that the jets or sprays will issue from the perforated surface 42 of the portion 35 at a complementary angle of inclination of about 30° to the horizontal.

The side portions 70 and 71 of the hose portion 35, may, if desired, be positioned in the recesses 136 and 137, respectively, in order to incline the portion 35 in the opposite direction from the broken-line position thereof illustrated in FIG. 13.

In FIG. 14, a modified form, indicated generally at 140, of the clamp 130, is illustrated. The clamp 140 is similar to the clamp 130 in that it includes a support portion 51 having the same shape and mode of operation as the support portion 51 of the clamp 50. Accordingly, reference should be made herein to the description of the support portion 51 of the clamp 50 for an explanation of the shape and description of the mode of operation of the support portion 51 of the clamp 140.

The clamp 140 also includes a mounting portion 142 in the form of a triangularly shaped loop having the same size and proportions of the triangularly shaped mounting portion 132 of the clamp 130. However, the mounting portion 142 differs from the mounting portion 132 in that one of the sides, indicated at 143, of the mounting portion 142 is disposed at the top of the loop and extends horizontally. The other sides of the loop, indicated at 144 and 145, converge downwardly toward the support portion 51 to define a gap 146 therebetween at the juncture of the mounting and support portions 142 and 51. The triangularly shaped mounting portion 142 is also preferably equiangular so that a portion 35 of an associated soaker hose can be mounted in two oppositely inclined angular positions with respect to the support portion 51, and also in a horizontal position.

Thus, when a portion of an associated soaker hose is engaged with the mounting portion 142 of the clamp 140, one side portion 70 of the hose portion 35 may be positioned in a recess 147 defined by the sides 143 and 144 of the mounting portion 142, and the other side portion 71 may be positioned in a recess defined by the gap 146. Alternately, the portion 35 of the associated soaker hose could be engaged with the mounting portion 142 with the side portion 71 thereof positioned in a recess 148 defined by the sides 143 and 145 of the mounting portion 142, and the side portion 70 positioned in the recess defined by the gap 146. When the portion 35 is mounted in either of the aforementioned positions, the portion 35 of the soaker hose will be inclined at an angle of about 60° with respect to the support portion 51 and the area to be irrigated. Consequently, the jets or sprays will issue from the perforated surface 42 thereof at a complementary angle, or an angle of about 30° with respect to the support portion 51.

If it is desired to mount the portion 35 of the soaker hose in a horizontal position in the mounting portion 142, the side portions 70 and 71 thereof are positioned in the recesses 147 and 148, respectively.

In FIG. 15 another modified form, indicated generally at 150, of the clamp 130, is illustrated. Like reference numerals have been used to identify parts identical with those heretofore described.

The clamp 150 is similar to the clamp 130 in that it includes a mounting portion 132 having the same shape and mode of operation as the mounting portion 132 of the clamp 130. Accordingly, reference should be made herein to the description

of the mounting portion 132 of the clamp 132 for an explanation of the shape and mode of operation of the mounting portion 132 of the clamp 150.

The clamp 150 also includes a support portion 151 which differs from the support portion 51 of the clamp 150 in that the support portion 151 comprises a pair of elongated, vertically extending, horizontally spaced support members 152 and 153 that are adapted to engage an area to be irrigated by extension or impalement into the area. The support portion 151 of the clamp 150 when engaged with an area to be irrigated, fixedly secures the clamp at the desired location.

However, the clamp 150 and the portion 35 of an associated soaker hose engaged with the the mounting portion 132 thereof, may be easily shifted to another position on the area to be irrigated without disturbing the angular position of the portion 35 therein, merely by withdrawing the support members 152 and 153 from the area being irrigated and reinserting them in a new location.

In FIG. 16, a modified form, indicated at 160, of the clamp 140, is illustrated. Like reference numerals have been used to identify parts identical with those heretofore described. The clamp 160 is similar to the clamp 140 in that it includes a mounting portion 142 having the same shape and mode of operation as the mounting portion 142 of the clamp 140. Accordingly, reference should be made herein to the description of the mounting portion 142 of the clamp 140 for an explanation of the mounting portion 142 of the clamp 160.

The clamp 160 also includes a support portion 161 which differs from the support portion 51 of the clamp 140 in that the support portion 161 comprises a pair of elongated, vertically extending support members 162 and 163 that are adapted to engage an area to be irrigated by insertion or impalement thereof into the area. Thus, when it is desired to locate and retain a portion 35 of an associated soaker hose in a particular location on an area to be irrigated, the portion 35 of the hose is initially engaged with the mounting portion 142 of the clamp 160 and the clamp with the portion 35 of the hose engaged with the mounting portion 142, is engaged with the area to be irrigated by inserting or impaling the support members 162 and 163 into the area. The clamp 160, as well as the portion 35 of the soaker hose supported thereby, may, of course, be readily shifted to another location on the area to be irrigated, merely by withdrawing the support members 162 and 163 from the area and reinserting them in a new location.

In FIG. 17, another soaker hose support clamp, indicated generally at 170 and embodying the features of the present invention, is illustrated. The clamp 170 is similar to the previous embodiments in that it includes a support portion, indicated generally at 171, and a mounting portion, indicated generally at 172. However, the mounting and support portions 172 and 171 differ somewhat from the previous embodiments as will be apparent from the following description.

The mounting portion 172 of the clamp 170 thus comprises a generally rectangularly shaped plate that is preferably formed from sheet stock and having a generally rectangularly shaped opening 173 therein. The corners of the opening 173 define a plurality of recesses 175, 176, 177 and 178 around the periphery thereof for receiving and retaining the side portions, indicated at 70 and 71, of a portion 35 of an associated soaker hose. The recesses 175-178 are arranged so as to permit the side portions 70 and 71, and hence the portion 35 of the soaker hose, to be mounted in a plurality of positions with respect to the support portion 171. In addition, a gap 179 is provided at the top of the mounting portion 172 to permit the portion 35 of the associated soaker hose to be inserted into or removed from the interior of the opening 173.

Thus, the portion 35 of the soaker hose will be retained in a horizontal position when the side portions 70 and 71 thereof are received in the recesses 175, 178 or 176, 177. The portion 35 may also be mounted in a selected one of a pair of oppositely inclined angular positions when the side portions 70 and 71 are received in the recesses 175, 177 or 176, 178. The portion 35 may also be mounted in a vertical position when

the side portions 70 and 71 thereof are received in a recess defined by the gap 179, and a vertically arranged recess 186 in the opening 173 below the gap 179. The relative positions of the side portions 70 and 71 could also be reversed from that described above if it is desired to have the jets or sprays extend in the opposite horizontal direction.

The support portion 171 of the clamp 170 comprises a pair of vertically extending, horizontally spaced support members 181 and 182 having their upper ends 183 flattened and secured to the lower portion of the mounting portion 172 as by spot welding, indicated at 184. In FIGS. 18 and 19, another soaker hose support clamp 190 embodying the features of the present invention, is illustrated. The clamp 190 comprises a support portion 191 in the form of a pair of horizontally extending, aligned support members 192 and 193, and a mounting portion 194. The support members 192 and 193 are similar in most respects to the support members 66 and 67 of the previous embodiments in that they include upwardly curved or arcuate outer end portions 69. However, the support members 192 and 193 differ from the previous embodiments in that the inner ends thereof, indicated at 195, are integral and extend vertically upwardly to define a loop 196. The loop 196 serves as a convenient attachment point for the mounting portion 194 as will be described more fully hereinafter.

The mounting portion 194 of the clamp 190 is generally triangularly shaped and is provided with a generally oval-shaped opening 198 therein. The lateral side portions of the opening 198 define a pair of oppositely arranged recesses 202 and 203 for receiving the side portions 70 and 71 of a portion 35 of an associated soaker hose. Insertion of the portion 35 of the soaker hose into a removal thereof from the opening 198 is provided for by a gap 204 in the mounting portion 194 at the top thereof.

In order to permit the portion 35 of the soaker hose to be retained in different angular positions with respect to a support portion 191 and consequently the area to be irrigated, the mounting portion 194 is pivotally connected to the support portion 191 as by means of a rivet 197. The rivet 197 preferably has its head 205 engaged with one side of the loop 196, and its shank extending through the opening in the loop and secured to the mounting portion 194 by upsetting. Thus, after the portion 35 of the soaker hose has been inserted into the recess 198 of the mounting portion 194, with the side portions 70 and 71 thereof frictionally seated in the recesses 202 and 203 in the manner illustrated in FIG. 18, the portion 35 can be pivoted to different angular positions with respect to the support portion 191 and hence the area to be irrigated by pivoting the mounting portion 194 about the rivet 197.

In FIG. 19, the full and broken-line positions of the mounting portion 194 illustrate at least two oppositely inclined angular positions to which the mounting portion 194, and consequently the portion 35 of the associated soaker hose, may be pivoted. Such positions are indicated at 194 and 194', respectively.

In order to retain the mounting portion 194, and hence the portion 35 of the associated soaker hose in a desired angular position with respect to the support portion 191 and the area to be irrigated, lock means is provided. Such lock means preferably comprises a plurality of projections 206—209, inclusive, which extend outwardly from one side face of the mounting portion 194 for coaction with the vertically extending inner end portions 195 of the support members 192 and 193. Thus, the projections 206—209, inclusive, are arranged so that when the end portions 195 are positioned between the projections 206 and 209, as illustrated in FIG. 18, the mounting portion 194 will be retained in a position such that the recesses 202 and 203 therein are substantially horizontally oppositely disposed. However, when the mounting portion 194 is pivoted about the rivet 197 to a position where the inner end portions 195 of the support members 192 and 193 are positioned between the projections 206 and 207, the mounting portion 194 will be retained in an inclined angular position

with respect to the support portion 191, as illustrated by the full line position of the mounting portion 194 in FIG. 19. Likewise, when the mounting portion 194 is pivoted about the rivet 197 to a position where the inner end portions 195 are positioned between the projections 208 and 209, the mounting portion 194 will be retained in an oppositely inclined angular position with respect to the support portion 191, as illustrated by the broken-line position of the mounting portion 194 in FIG. 19. Thus, the soaker hose support clamp 190 permits adjustment of the angular position of the portion 35 of the soaker hose engaged therewith without relative movement between the portion 35 and mounting portion 194 of the clamp.

It will be understood that the number and positions of the projections 206—209 on the mounting portion 194 could be varied to provide additional positions of adjustment of the mounting portion 194 with respect to the support portion 191, if desired. In addition, the projections 206—209 could be omitted and frictional engagement between the parts could be relied upon to maintain a desired position of adjustment.

In FIGS. 20, 21, and 22, a modified form, indicated generally at 210, of the clamp 190, is illustrated. The clamp 210 is similar to the previous embodiment in that it includes a mounting portion 214 that is substantially of the same shape and operates in substantially the same manner as the mounting portion 194 of the clamp 190, but differs therefrom in certain respects. Like reference numerals have been used to identify parts of the clamp 210 identical with those previously described.

The clamp 210 thus comprises a support portion 211 in the form of an elongated, vertically extending support member 212, and the mounting portion 214 carried by the support portion 211. The upper end, indicated at 215, of the support member 212 is formed into a loop to facilitate attachment of the mounting portion 212, thereto.

The mounting portion 214 is generally triangularly shaped and includes a generally oval-shaped opening 218 therein. The lateral side portions of the opening 218 define a pair of oppositely arranged recesses 222 and 223 for receiving and frictionally retaining the side portions 70 and 71 of a portion 35 of an associated soaker hose. A portion of the mounting portion 214, at the upper end thereof, is removed to define a gap 224 through which the hose portion 35 may be shifted into or out of the opening 218.

In order to prevent damage to the portion 35 of the soaker hose when the former is positioned in the opening 218, the bottom and side portions of the opening 218 are circumscribed by a flange 225 (FIGS. 20 and 22) which extends outwardly from a side face of the mounting portion 214. The flange 225 thus provides an enlarged bearing area for distributing the relative compressive force exerted on the sides 70 and 71 of the hose portion 35 by the recesses 222 and 223. The flange 225 is preferably formed from the material of the mounting portion 214 when the opening 218 is provided therein, but could be provided by a separate piece of material.

In order to permit the portion 35 of the soaker hose that is engaged with the mounting portion 214 to be retained in different angular positions with respect to the support portion 211 and consequently the area to be irrigated, the mounting portion 214 is pivotally connected to the support portion 214 as by means of a rivet 220. The rivet 220 preferably has its head 221 engaged with one side of the loop 215 and its shank extending through the opening therein and secured to the mounting portion 214.

The clamp 210 also includes lock means for locking the mounting portion 214 in a plurality of positions with respect to the support portion 211 and hence the area to be irrigated. Such lock means preferably comprises a plurality of projections 226—229, inclusive, extending outwardly from one side face of the mounting portion 214 for coaction with the support portion 212. Thus, when the support member 212 is positioned between the projections 226 and 229, as illustrated in FIG. 20, the mounting portion 214 will be retained in a posi-

tion such that the recesses 222 and 223 are substantially horizontally oppositely disposed. However, when the support member 212 is positioned between the projections 226,227 or 228,229, the mounting portion 214 will be retained in either of a pair of oppositely inclined angular positions, illustrated by the full and broken-line positions thereof in FIG. 21 and indicated at 214 and 214', respectively. Thus, the clamp 210 is capable of supporting a portion 35 of a soaker hose in a plurality of positions including at least two angularly inclined positions with respect to the support member 212 and hence the area to be irrigated.

As in the clamp 190, it will be understood that the number and arrangement of the projections 226—229 on the mounting portion 214 could have varied to provide different adjustments, if desired. In addition, the projections 226—229 could be omitted and frictional engagement between the parts could be relied upon to maintain a desired position of adjustment.

In the foregoing description of the present invention, no particular type of material has been mentioned for use in the construction of the soaker hose support clamp disclosed herein. However, because of the environment in which the clamp is used, rust resistant metal or plastic materials are preferred.

It should also be pointed out that in describing the orientation of the portion of the soaker hose that is mounted in the mounting portion of the clamp, with respect to the support portion and the area to be irrigated, it has been assumed that the surface of the area to be irrigated is horizontal. However, if the surface of the area to be irrigated is other than horizontal, the forms of the clamp having support portions that are shiftable over the surface to be irrigated might not be horizontal. Consequently, the mounting portion, and hence the portion of the soaker hose engaged therewith, might be inclined somewhat to the horizontal, although parallel to the surface of the area to be irrigated. Such slight inclination is contemplated by the term "horizontal" as used herein.

In the forms of the clamp having support portions which are engaged with the area to be irrigated by insertion or impalement thereof into the area, compensation can be made for any slight inclination from the horizontal of the surface of the area to be irrigated.

It will further be understood that depending on the type, age and other factors of the associated soaker with which the clamp of the present invention is adapted for use, the spacing between and numbers of clamps required to maintain the hose in a desired location on and at a desired angular position with respect to the area to be irrigated, without twisting or kinking, will vary.

I claim:

1. A soaker hose support clamp comprising a unitary member including a support portion adapted to engage an area to be irrigated, and a mounting portion having a plurality of oppositely arranged pairs of recesses therein, each of said pairs of recesses being adapted to receive a portion of an associated soaker hose and to retain said portion in one of a plurality of positions with respect to said support portion including at least one inclined position, said support portion including at least one elongated support member adapted to extend in a direction generally transverse with respect to said hose portion and to rest upon and support said clamp for freely shiftable movement over said area to be irrigated, whereby engagement of a plurality of said clamps with said soaker hose at spaced intervals along the length thereof permits said soaker hose to be readily shifted to different locations on said area to be irrigated without changing the angular position thereof with respect to said support portion.

2. The soaker hose support clamp of claim 1, further characterized in that said support portion comprises a pair of longitudinally aligned support members.

3. The soaker hose support clamp of claim 1, further characterized in that said support member includes at least one pair of horizontally extending, vertically spaced legs, whereby said clamp may be supported for movement over an

area to be irrigated by one of said legs or inverted and supported by the other of said legs.

4. A soaker hose support clamp comprising a support portion adapted to engage an area to be irrigated, and a mounting portion carried by said support portion, said mounting portion being in the form of a substantially rectangularly shaped loop having pairs of oppositely arranged recesses defined by the opposite corners of said loop, said pairs of recesses being adapted to receive a portion of an associated soaker hose and to retain said portion in a plurality of positions with respect to said support portion including at least one inclined position, whereby engagement of a plurality of said clamps with said soaker hose at spaced intervals along the length thereof permits said hose to be positioned and retained in a desired location on and at a desired angular position with respect to said area to be irrigated.

5. A soaker hose support clamp comprising a support portion adapted to engage an area to be irrigated, and a mounting portion carried by said support portion, said mounting portion being in the form of a substantially circular loop having a plurality of radially inwardly extending projections on the inner periphery thereof defining a plurality of pairs of oppositely arranged recesses in said loop, said pairs of recesses being adapted to receive a portion of an associated soaker hose and to retain said portion in a plurality of positions with respect to said support portion including at least one inclined position, whereby engagement of a plurality of said clamps with said soaker hose at spaced intervals along the length thereof permits said hose to be positioned and retained in a desired location on and at a desired angular position with respect to said area to be irrigated.

6. A soaker hose support clamp comprising a support portion adapted to engage an area to be irrigated, and a mounting portion carried by said support portion, said mounting portion being in the form of a triangularly shaped loop having pairs of oppositely arranged recesses defined by the corners of said loop, said pairs of recesses being adapted to receive a portion of the associated soaker hose and to retain said portion in a plurality of positions with respect to said support portion including at least one inclined position, whereby engagement of a plurality of said clamps with said soaker hose at spaced intervals along the length thereof permits said hose to be positioned and retained in a desired location on and at a desired angular position with respect to said area to be irrigated.

7. The soaker hose support clamp of claim 5, further characterized in that said loop has a narrow gap adapted to accommodate passage of a portion of an associated soaker hose into and out of said loop, and said gap also comprises another recess on the inner periphery of said loop for receiving and retaining said portion of said soaker hose.

8. The soaker hose support clamp of claim 4, further characterized in that portions of the sides of said loop project inwardly so as to deepen said recesses.

9. The soaker hose support clamp of claim 4, further characterized in that said loop has a gap at the bottom thereof adapted to accommodate passage of said portion of said soaker hose therethrough.

10. The soaker hose support clamp of claim 4, further characterized in that two diagonally arranged pairs of recesses are provided by diagonally opposite corners of said loop, whereby said portion of said soaker hose may be retained in at least two oppositely inclined angular positions with respect to said support portion.

11. The soaker hose support clamp of claim 10, further characterized in that said loop has a narrow gap, and said gap and a selected one of the recesses of said diagonally arranged pairs provide two other diagonally arranged pairs of recesses in said loop, whereby said portion of said soaker hose may be retained in at least two other oppositely inclined angular positions with respect to said support portion.

12. The soaker hose support clamp of claim 5, further characterized in that said projections are provided by flattened portions of the material of said loop.

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13. The soaker hose support clamp of claim 12, further characterized in that six substantially symmetrically spaced projections are provided around the inner periphery of said loop.

14. The soaker hose support clamp of claim 6, further characterized in that the length of the sides of said loop are substantially equal to the width of said soaker hose.

15. The soaker hose support clamp of claim 6, further characterized in that the included angle between any two adjacent sides of said loop is about 60°.

16. The soaker hose support clamp of claim 18, further

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characterized in that the apex of said loop is at the top thereof.

17. The soaker hose support clamp of claim 6, further characterized in that said loop has a gap adapted to accommodate passage of said portion of said soaker hose therethrough, and said gap is positioned at the bottom of said loop.

18. The soaker hose support clamp of claim 6 further characterized in that one of the sides of said loop is positioned at the top thereof and extends horizontally.

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