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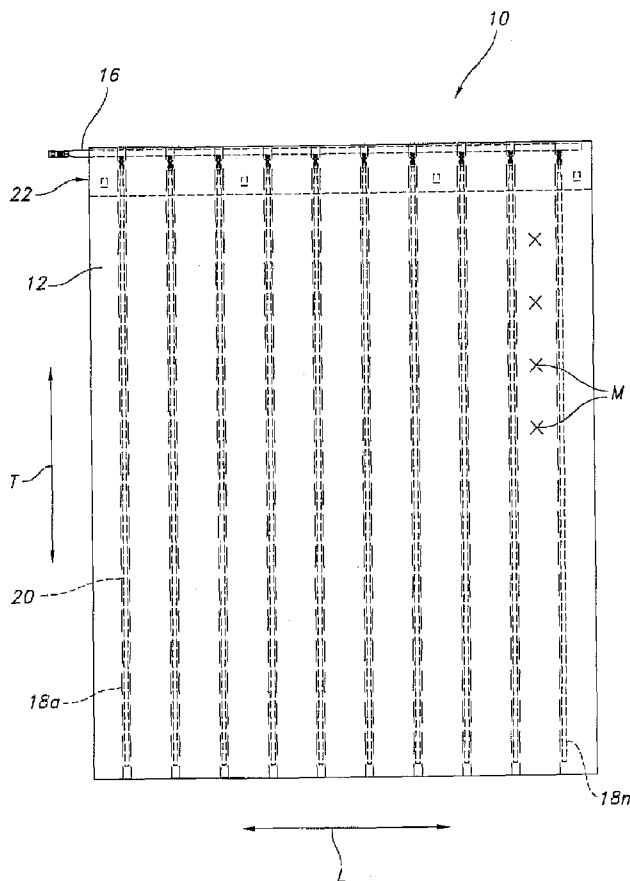
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(54) Title: GARDENING BLANKET WITH INTEGRAL WATERING SYSTEM



(57) Abstract: A blanket with an integral watering system covers the ground associated with a garden and assists in delivering water thereto. The blanket is provided by first and second sheets of material, at least one of said sheets of material being porous. The sheets are interconnected together and form an intermediate space for receiving at least a first conduit for conveying the water to the ground through the porous sheet of material. The first conduit may comprise layflat hose. Preferably, a plurality of channels are formed in the space, each for receiving a second conduit, such as a drip tape or like perforated hose, connected to the first conduit. The first conduit may extend in a first or longitudinal direction of the blanket, and the second conduits may extend in a second, transverse direction.

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## GARDENING BLANKET WITH INTEGRAL WATERING SYSTEM

This application claims the benefit of U.S. Provisional Patent Application Ser. No. 60/791,946, filed April 14, 2006, and U.S. Provisional Patent Application Ser. No. 60/857,225, filed November 6, 2006, the disclosures of which are both incorporated herein by reference.

### **Technical Field**

This invention relates generally to the gardening arts and, more particularly, to a gardening blanket incorporating a watering system.

### 5 **Background of the Invention**

Gardening as a hobby is ever-increasing in popularity, especially in light of the present ability to obtain easily and inexpensively seeds for a large variety of fruits, vegetables, and flowers. Of course, gardening can be tedious in terms of the need to ensure the plants get the proper amount of light and food to grow in the desired efficient manner. In this regard, the control of noxious weeds is a crucial aspect of successful gardening. Such weeds not only  
10 deplete the soil of precious nutrients, hindering growth and development of the desired plants, but also compete for precious space and sunlight. Gardeners also take pride in maintaining a tidy, organized garden, free of the disorganization and clutter caused by the presence of uncontrolled weed growth.

15 In the past, weed control has been done largely in two ways. The first involves the judicious use of chemical herbicides to treat areas surrounding the plants, but this is potentially deleterious to both the plants and the environment as a whole. While organic and environmentally friendly herbicides are available, they are generally expensive and complicated

to apply in the proper fashion. Regardless of form, the regular application of herbicides is time consuming and even with vigilance does not always keep the weeds at bay.

A second approach to weed control involves covering the ground surrounding the desired plants with an opaque plastic or cloth material. This ground covering advantageously prevents the weeds from obtaining the sunlight necessary to grow. While such a cover does a reasonably good job of foreclosing or at least controlling weed growth, it creates the significant problem that the underlying soil is generally prevented from absorbing water and nutrients as readily as might have otherwise occurred in the absence of the barrier created. This is because any water deposited on the cover must pass through it to reach the soil, which even in porous coverings can be a slow process and result in evaporation of the water before it has time to penetrate (which can then promote wasteful over-watering). Placing serpentine soaker-type hoses or drip tapes above or below the cover helps to solve this problem to a degree, but this is complicated and time consuming. Also, this approach typically creates a somewhat unsightly, disorganized arrangement, and one that does not necessarily ensure that water is evenly distributed to all areas of the garden.

Accordingly, a need is identified for an improved ground cover or blanket for use in gardening that overcomes the above-mentioned problems and limitations.

### **Summary of the Invention**

One aspect of the invention is a blanket for covering the ground associated with a garden and assisting in delivering water thereto. The blanket comprises first and second sheets of material, at least one of which is porous to water or otherwise water permeable. The sheets are interconnected together and form an intermediate space between the sheets of material. At least a first conduit is provided in the space for conveying the water to the ground through the porous sheet of material.

The first sheet of material may comprise a nonwoven fabric, and preferably is substantially opaque. The second sheet of material may also comprise a nonwoven fabric. Preferably, a plurality of channels are provided in the space. The channels are preferably spaced

apart a distance corresponding to a row of plants in the garden, with a source of water thus being provided between each row.

When present, each channel may be occupied by a second conduit in fluid communication with and orthogonal to the first conduit. Most preferably, the first conduit comprises layflat hose, each second conduit comprises drip tape, and a connector is provided for connecting each  
5 second conduit to the first conduit. A pressure reducer may also be associated with the first conduit and adapted for coupling with a source of water.

Another aspect of the invention is a method of using the blanket. In this aspect, the blanket may be in roll form. In such case, the method comprises the step of unrolling the blanket  
10 to a predetermined length corresponding to the portion of the ground to be covered. Both the blanket and the first conduit are then cut.

In accordance with another aspect of the invention, a blanket is provided for covering the ground associated with a garden and assisting in delivering water thereto. The blanket comprises first and second interconnected sheets of material, at least one of which is porous or water  
15 permeable. A plurality of spaced channels are formed between these sheets of material, and at least one first conduit is positioned in each channel. A second conduit connects with and extends transverse to the at least one first conduit.

Preferably, the second conduit comprises layflat hose and each first conduit comprises drip tape. The blanket may further comprise an adaptor for connecting each first conduit to the  
20 second conduit, as well as pressure reducer associated with a first end of the second conduit and adapted for coupling with a source of water. As noted above, the channels may be spaced apart a distance corresponding to a row of plants in the garden.

Yet another aspect of the invention is a method of manufacturing a blanket for covering the ground associated with a garden and assisting in delivering water thereto. The method  
25 comprises providing first and second interconnected sheets of material together so as to form an intermediate space therebetween, at least one of said sheets comprising a porous material. The method further comprises providing at least a first conduit in the space between the sheets of material for conveying the water to the ground through the porous material.

Preferably, the method further includes the steps of forming a plurality of channels in the space, and inserting a hose in each channel. The method may further include the step of interconnecting each hose to the first conduit. Likewise, the step of placing a hose for carrying water in the first conduit may be performed.

5

### **Brief Description of the Drawings**

Figure 1 is a top plan view of the garden blanket forming one aspect of the invention;

Figure 2 is a bottom plan view of the garden blanket of Figure 1;

Figure 3 is a partially cutaway view of one corner of the garden blanket of Figure 1;

10 Figure 4 is a partially cutaway exploded view of the watering system incorporated into the blanket of Figures 1-3; and

Figure 5 is a plan view of one embodiment of the watering system apart from the blanket.

### **Detailed Description of the Invention**

15 Reference is now made to Figures 1 and 2, which are top and bottom plan views, respectively, of a gardening blanket 10 incorporating a watering system forming one aspect of the invention. This blanket 10 includes first and second sheets of interconnected material 12, 14. The first or upper sheet of material 12 preferably comprises a nonwoven, UV resistant spunbonded porous fabric and, most preferably, one having a weight per unit area of  
20 approximately 55 grams per square meter. Although permeable to water and air to a certain extent, the fabric is substantially opaque (such as by providing it with black coloring), which means it is impervious to light that would otherwise promote weed growth from the underlying soil. The second or bottom sheet of material 14, which is adjacent to the soil when the blanket 10 is used in the intended manner, is also a nonwoven fabric that is also water permeable or  
25 porous. Preferably, this material 14 has a weight per unit area of approximately 0.75 ounces per square yard (about 25 grams per square meter), and is thus significantly (more than 50%) lighter than the first fabric per unit of area.

Preferably, the sheets of material 12, 14 generally match in shape, and are interconnected to form a space between them. Within this space is positioned at least one conduit and, preferably, a plurality of conduits that together form the integral watering system in accordance with one aspect of the invention. In the most preferred embodiment as illustrated, a first or “header” conduit 16 extends in a first or longitudinal direction L of the blanket 10 (in the case where it is rectangular) along one side in the space formed between the material sheets 12, 14. Each second conduit 18a . . . 18n extends in a second or transverse direction T orthogonal to the first direction L, and is connected to the first conduit 16 at one end. The opposite end of each second conduit 18a . . . 18n is preferably sealed, as is one end of the first conduit 16 (which as is known in the art may be accomplished by “doubling” the conduit over on itself and placing a band, tape, or like retention device on the folded conduit).

With reference to Figure 3, the interconnection of the material sheets 12, 14 is preferably by way of seams S extending at least partially along the perimeter of the blanket 10. Seams S are also preferably provided such that a plurality of elongated, transverse channels 20 (shown in dashed line) are formed in the space between the sheets of material 12, 14. Together, these seams S enhance the structural integrity of the blanket 10.

Preferably, each channel 20 formed by an adjacent pair of transverse seams S is sized and shaped for receiving one of the second conduits 18a . . . 18n. The spacing of the channels 20 from one another may be such that the portion of the blanket 10 therebetween is sized to approximate the width of a normal row in a garden (e.g., approximately 8-12 inches minimum, and most preferably about 9 inches). This also ensures that at least one channel 20 is provided on each side of the planting row. The seams may be provided in any conventional manner, such as sewing, welding (e.g., ultrasonic or heat), adhesives, hook and loop fasteners, grommets, buttons, or like means of permanent or semi-permanent attachment. The seams need not create fluid impervious barriers, but are preferably done in a manner that prevents water once introduced to the blanket 10 from readily migrating among the channels 20 and otherwise escaping other than through the porous sheet of material 14 adjacent the ground.

To hold the first conduit 16 in place, it is possible to form a separate header channel 22 extending along the corresponding side adjacent the lateral edge of the blanket 10. Preferably, this channel 22 is formed by doubling over the first sheet of material 12 so as to form a flap 24. The flap 24 can be held in place by a temporary or releasable fastener, such as a hook and loop type fastener (note dashed line representation of fastener 26, which may for example take the form of a hook portion attached to material 14 and a loop portion attached to the flap 24, or vice-versa), button, or the like. In any case, the important point is that easy access to the first conduit 16 can be had if desired or necessary.

Turning now to Figures 4 and 5, an example of one manner of connecting the first conduit 16 and one of the second conduits 18a is shown in detail. In the most preferred embodiment, the first conduit 16 comprises layflat hose or hose formed of a relatively thin flexible material, such as polyethylene. A connector 28, preferably one such as a Queen Gil A8 model or other similar type of adjustable/removable connector, may be used to connect the first conduit 16 to the second conduit 18a, which preferably comprises drip tape or like perforated hose designed to emit the water conveyed at a relatively low flow rate (e.g., 0.5 gpm). Most, preferably, a substantially watertight connection is formed at each end of the connector 28 such that water introduced to the first conduit 16 enters and flows along the second conduit 18a and any other conduits 18b . . . 18n that follow in parallel.

Each second conduit 18a . . . 18n may also be provided with a one way valve or the like adjacent the end connected to the common header, or conduit 16. This valve may in its most simplistic form may comprise a flap 30 normally biased towards a position blocking flow through the conduit 18a . . . 18n. Fluid pressure from the water introduced causes the flap 30 to move and allow water to flow along the corresponding second conduit 18a . . . 18n. In the event that the flow ceases, however, the flap 30 returns to the normally closed position and prevents any backflow.

An adaptor 32 for coupling with a water source may also be associated with the open end of the first conduit 16. In some applications, the high pressure of water from a source, such as a conventional municipal water supply, may create stress on the connections and otherwise

impede the free flow of water through the conduits 16, 18 as the result of backpressure or turbulence. To accommodate this, the end of the first conduit 16 for coupling to the water source may be connected to a pressure reducer 34, and preferably one also including an adaptor 36 to connect to a conventional water source, such as the male end of a garden hose. The reducer 34  
5 brings the water pressure down from a higher input pressure (usually, 60-80 psi) to a more acceptable level, such as 10 psi. A structure similar to flap 30 may also be provided at this location to prevent water once introduced from escaping the blanket 10, other than through the channels 20, 22 from the side adjacent the ground and defined by the porous sheet material 14 (except as perhaps may occur by wicking action).

10 In use, the blanket 10 may be manufactured according to the above-described specifications at a length and width corresponding to the garden plot at issue (e.g., a 12' by 12' square, 10' by 12' rectangle, or any other desired dimensions). The blanket 10 is then placed on the ground over the plot, with the porous sheet of material 14 touching the ground, the areas between the channels 20 overlying the planting rows, and the conduits 18a . . . 18n extending  
15 parallel to and between the designated planting rows. Stakes, pins or like retention means (not shown) may be used as necessary to connect the blanket 10 to the ground.

Planting may then proceed, preferably by cutting an "X" or like opening at appropriate locations in the areas between the channels 20 and passing the seed or seedling through the blanket 10 and into the underlying soil. Alternatively, the blanket 10 may be provided with pre-  
20 cut holes (not shown) or markings M (see Figure 1) to facilitate planting with the proper minimum spacing (e.g., 6-12 inches apart in the transverse direction). This feature may be of substantial benefit to the novice gardener unfamiliar with the notion that plant spacing can be crucial to health and, in the case of fruit or vegetable bearing plants, achieving higher yields.

When desired, water is delivered from the selected source to the corresponding open end  
25 of the first conduit 16, which may include the pressure reducer 34. The water flows through this first conduit 16 and by way of connectors 28 to each of the second conduits 18a . . . 18n extending in parallel. From these conduits 18a . . . 18n, which again comprise perforated hoses or drip tape, the water exits onto the adjacent porous layer of material 14. As a result of wicking

action, the water tends to spread out in all directions and simultaneously or eventually passes through this material 14 to the underlying soil once saturation occurs.

Numerous advantages are realized as a result of this invention. The blanket 10 is simple to deploy and ensures that water is regularly, reliably, and evenly delivered along each of the planting rows covered. During the initial planting, the presence of the blanket 10 helps to warm the soil and promote seed germination. During this phase and later when the seedlings and adult plants are most in need, the water delivered to the space between the interconnected sheets of material 12, 14 is less susceptible to evaporation or runoff. Indeed, employing blanket 10 potentially allows for the effective use of less water (as much as an estimated 50%) than would otherwise be required in conventional gardening. The conduits 16, 18a . . . 18n when positioned in the space formed between the interconnected sheets of material 12, 14 are also encapsulated and thus protected from the environment. In the case of the perforated second conduits 18a . . . 18n, such as those comprised of drip tape, this encapsulation helps to guard against clogging the pores and like flow disruptions. The conduits also remain out of sight, thus giving a tidier appearance, and remain in place without any effort on the part of the gardener.

From a manufacturing efficiency standpoint, a further advantage is that the blanket 10 of this embodiment may be constructed in relatively long sections (e.g., 100 yards or more) and stored in a continuous fashion as a roll (not shown). The blanket 10 may then be unrolled and cut to a selected length for use, such as in a particular section of the garden. Preferably, the cutting is in the transverse direction T through the first conduit 16 and along the seam forming one side of the channel 20, such that the sheets of material 12, 14 remain interconnected along the edge thus created. One end of the conduit 16 may be sealed while the opposite end is coupled to the water source (possibly with the pressure reducer 34).

In accordance with another aspect of the invention, the one or more first or second conduits 16, 18a . . . 18n may also be formed integrally in the sheets of material 12, 14 (such as by taking the form of the channels 20, 22), and need not comprise separate hoses or tubes inserted therein. Even without such hoses or tubes, the water may be introduced at one end of the channel 22 serving as a first conduit (preferably, with an adaptor or other connector for

connecting with the water source and having a one-way valve, such as flap 30) for distribution to channels 20 serving as the second conduits. This reduces the manufacturing expense considerably, but the absence of hoses makes it more difficult to regulate the water flow across the blanket 10.

5           The foregoing description of various embodiments of the present invention have been presented for purposes of illustration and description. This description is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Obvious modifications or variations are possible in light of the above teachings. For example, instead of using connectors 22, the first conduit 16 may be welded or otherwise formed as an integral or unitary structure  
10 with each second conduit 18a . . . 18n. Also, the conduits of first and second blankets may be interconnected so as to create a system of interconnected blankets 10. The embodiments described provide the best illustration of the principles of the invention and its practical applications to thereby enable one of ordinary skill in the art to utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. All such modifications and variations are within the scope of the invention.

**In the Claims**

- 5 1. A blanket for covering the ground associated with a garden and assisting in delivering water thereto, said blanket comprising first and second sheets of material, at least one of said sheets of material being porous, interconnected together and forming an intermediate space between the sheets of material, and at least a first conduit provided in the space for conveying the water to the ground through the porous sheet of material.
2. The blanket of claim 1, wherein the first sheet of material comprises a nonwoven fabric.
3. The blanket of claim 1, wherein the first sheet of material is substantially opaque.
4. The blanket of claim 1, wherein the second sheet of material comprises a nonwoven fabric.
5. The blanket of claim 1, further including a plurality of channels in the space, each occupied by a second conduit in fluid communication with the first conduit.
6. The blanket of claim 1, wherein the sheets of material have a first and second orthogonal directions, the first conduit extending in the first direction and each second conduit extending in the second direction.
7. The blanket of claim 6, wherein the first conduit comprises layflat hose and each second conduit comprises drip tape.
8. The blanket of claim 6, further including a connector for connecting each second conduit to the first conduit.

9. The blanket of claim 6, wherein the channels are spaced apart a distance corresponding to a row of plants in the garden.

10. The blanket of claim 1, further including a pressure reducer associated with the first conduit and adapted for coupling with a source of water.

11. A method of using a roll of the blanket of claim 1, comprising unrolling the blanket to a predetermined length and cutting both the blanket and the first conduit.

12. A blanket for covering the ground associated with a garden and assisting in delivering water thereto, said blanket comprising:

first and second interconnected sheets of material having a plurality of spaced channels formed therebetween, at least one of said sheets of material being porous;

5 at least one first conduit positioned in each said channel; and  
a second conduit connected and extending transverse to the at least one first conduit.

13. The blanket of claim 12, wherein the second conduit comprises layflat hose and each first conduit comprises drip tape.

14. The blanket of claim 12, further including a connector for connecting the first and second conduits.

15. The blanket of claim 12, further including a pressure reducer associated with a first end of the second conduit and adapted for coupling with a source of water.

16. The blanket of claim 12, wherein the channels are spaced apart a distance corresponding to a row of plants in the garden.

17. A method of manufacturing a blanket for covering the ground associated with a garden and assisting in delivering water thereto, comprising:

providing first and second interconnected sheets of material together so as to form an intermediate space therebetween, at least one of said sheets of material being porous; and

5 providing at least a first conduit in the space between the sheets of material for conveying the water to the ground through the porous material.

18. The method of claim 17, further including the steps of:  
forming a plurality of channels in the space; and  
inserting a hose in each channel.

19. The method of claim 18, further including the step of interconnecting each hose to the first conduit.

20. The method of claim 17, further including the step of placing a hose for carrying water in the first conduit.

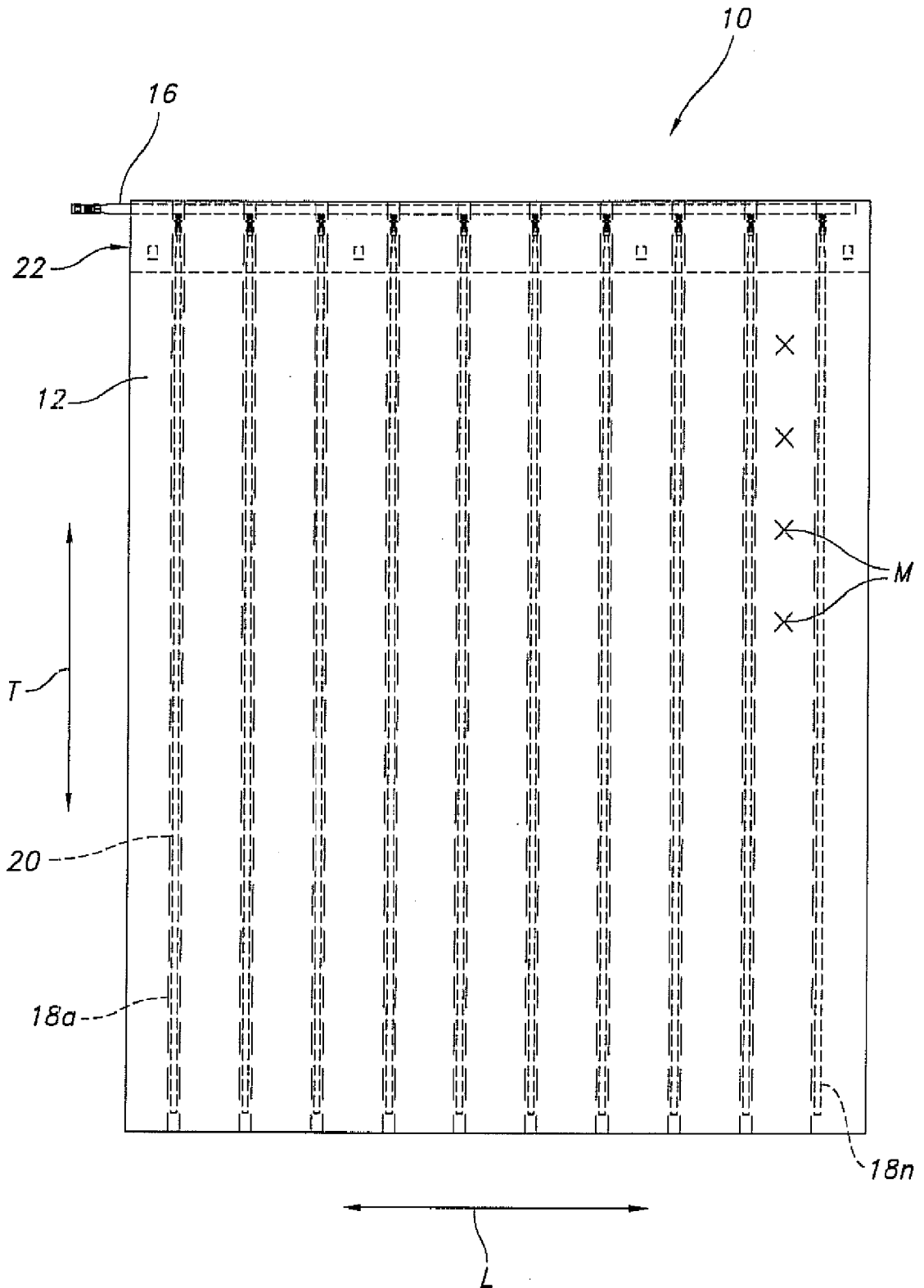


FIG. 1

SUBSTITUTE SHEET (RULE 26)

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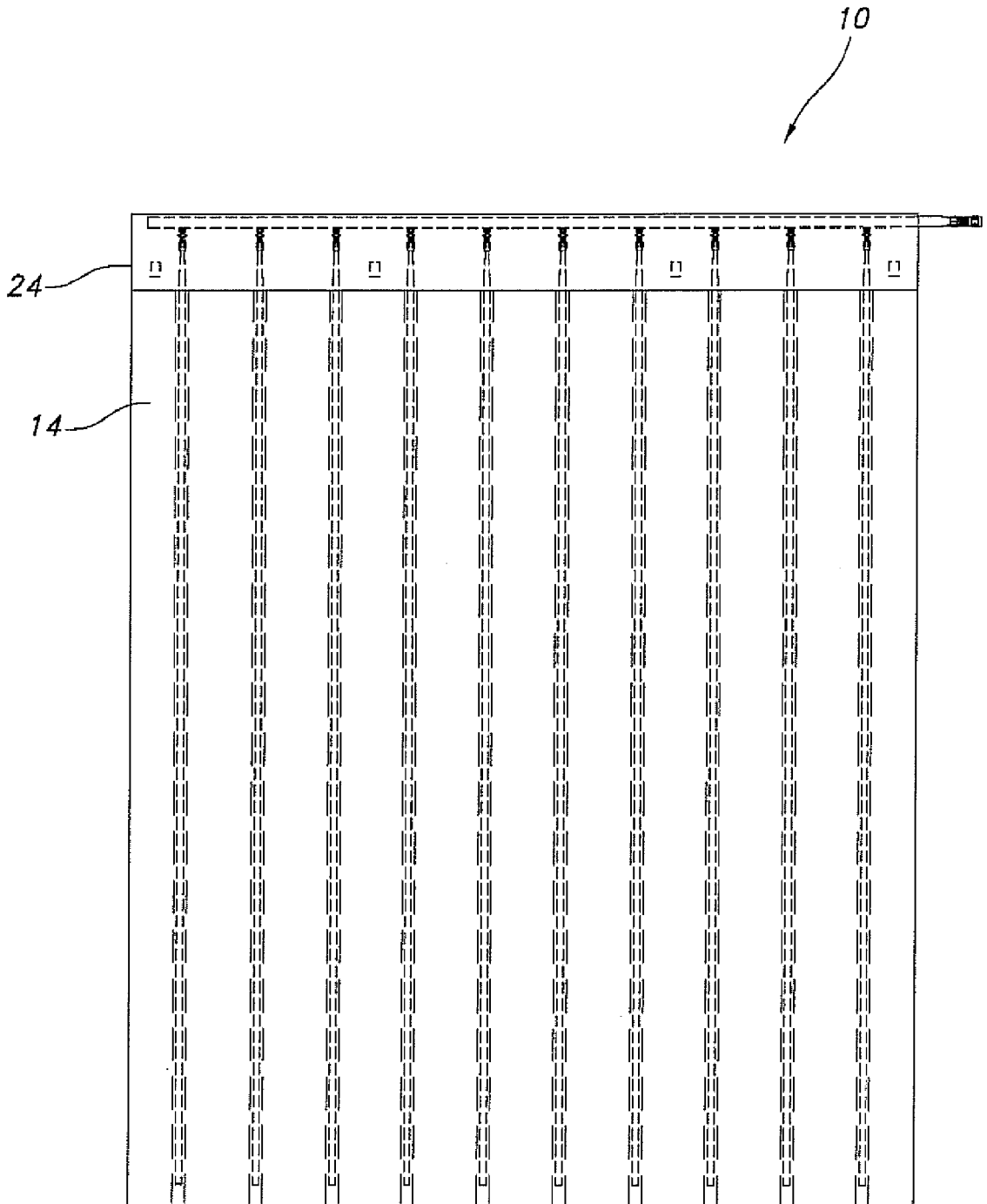


FIG. 2

SUBSTITUTE SHEET (RULE 26)

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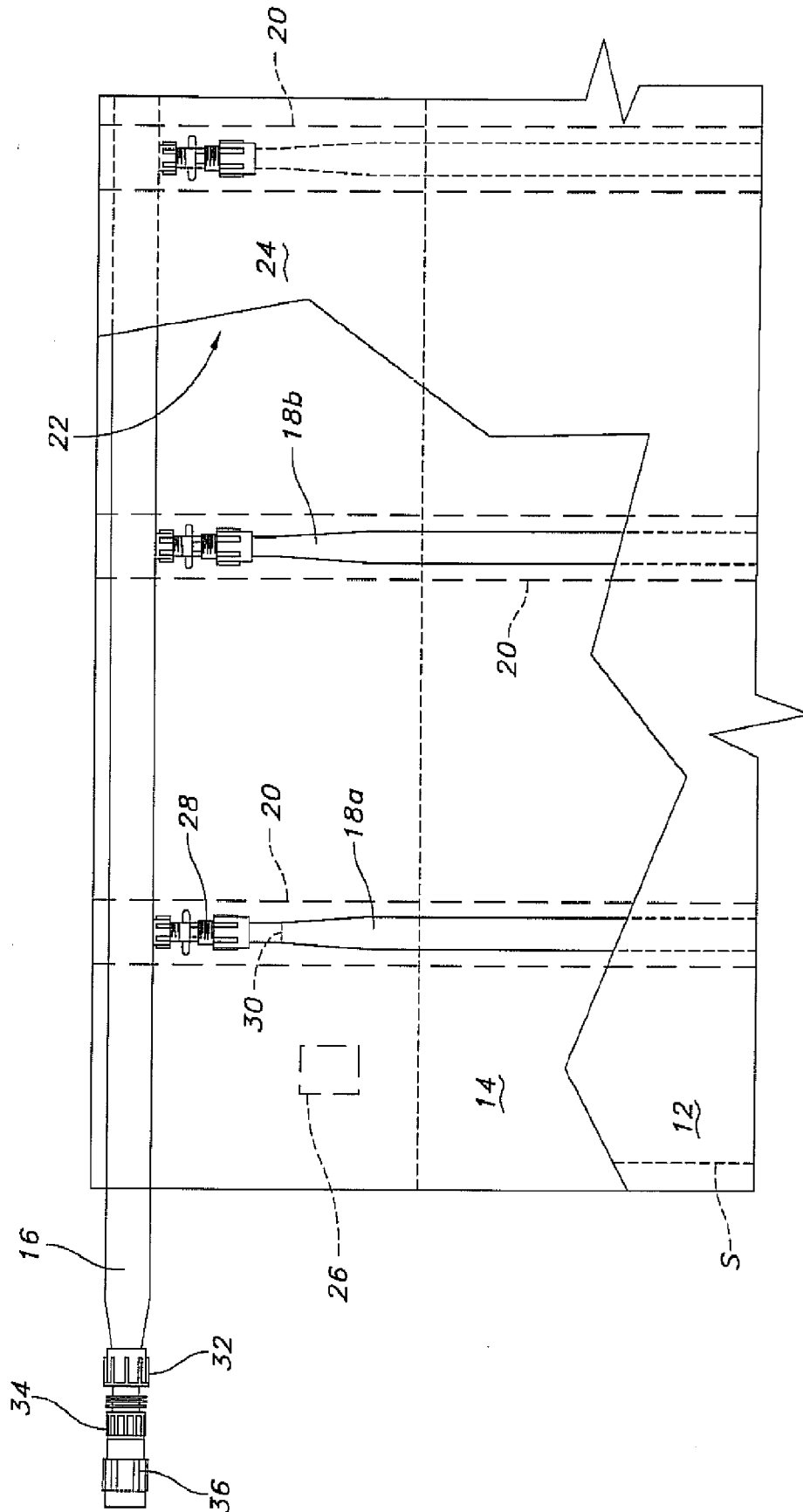
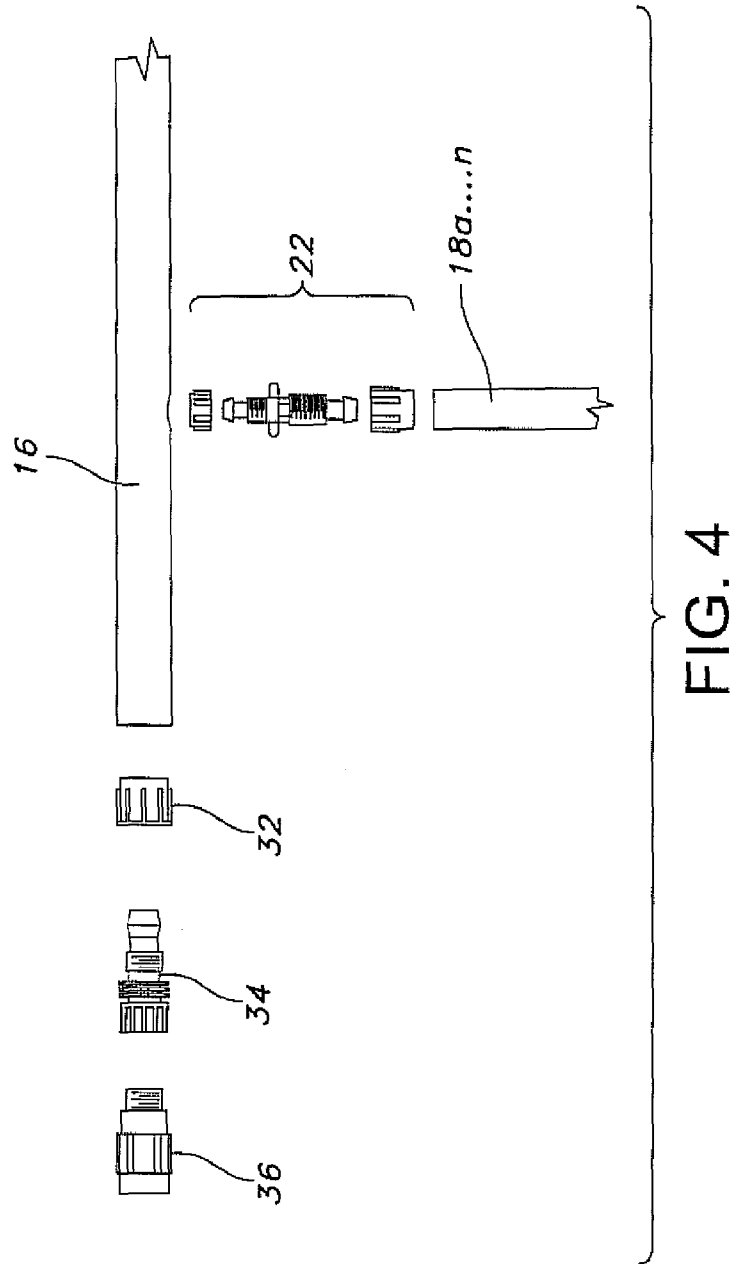


FIG. 3



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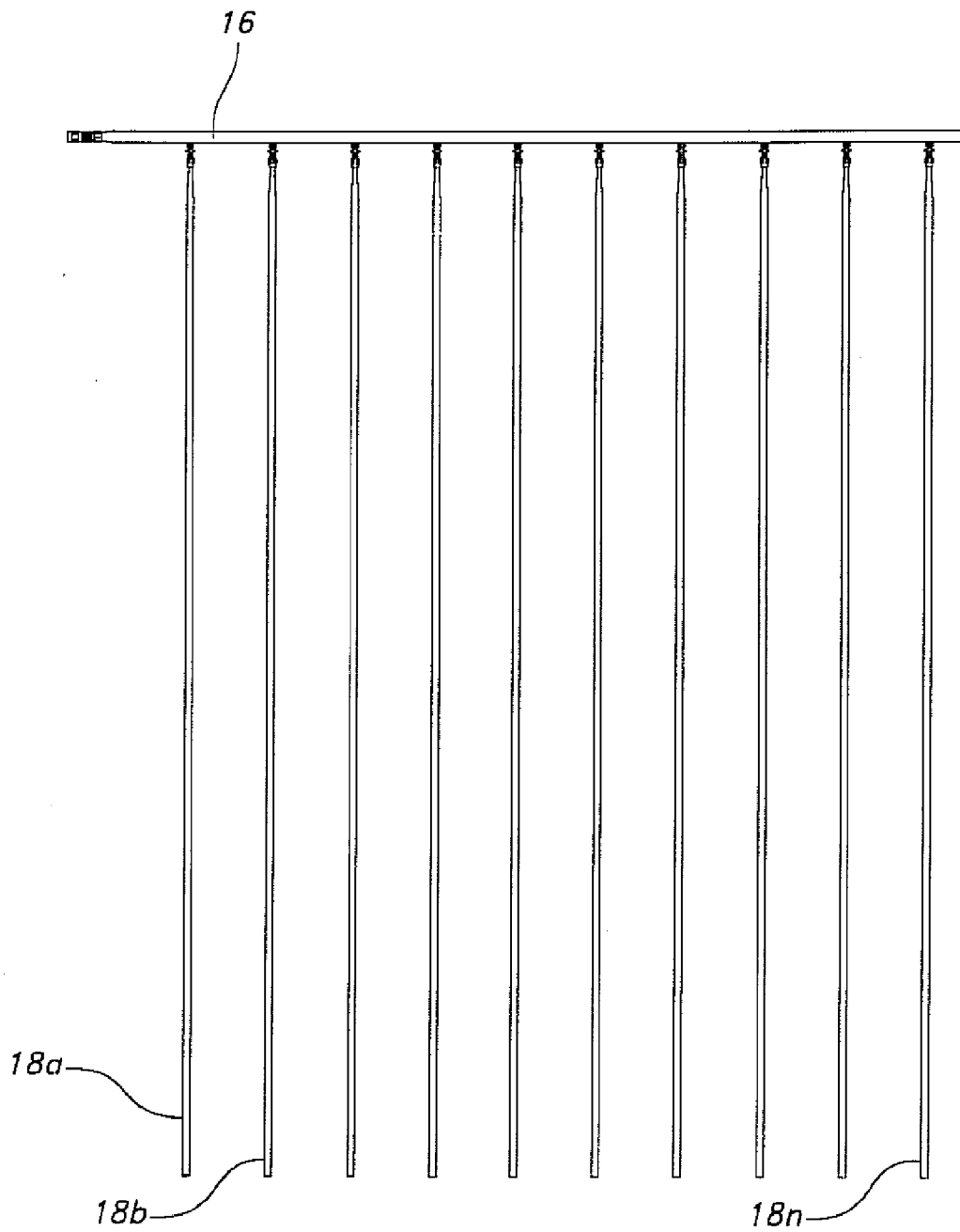


FIG. 5