United States Patent [19]

Broderson

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[54] **METHOD FOR CONSTRUCTING AN AWNING**

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[52] **U.S. Cl.** **228/182;** 161/60; 228/185

[51] **Int. Cl.** **B23k 31/02**

[58] **Field of Search** 29/471.1, 471.3; 256/34

[56] **References Cited**

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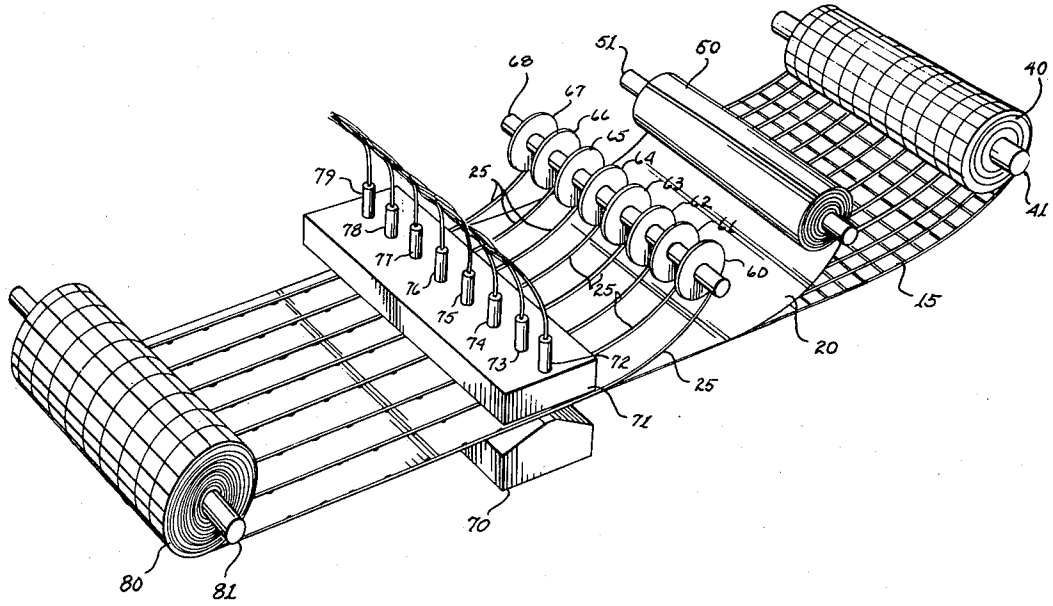
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Primary Examiner—Al Lawrence Smith
Assistant Examiner—James G. Smith
Attorney, Agent, or Firm—Cahill, Sutton & Thomas

[57] **ABSTRACT**

A method for constructing an awning including the steps of welding lengths of wire together to form a wire mesh, laying a sheet material on the wire mesh, placing retaining wires on the sheet material in parallel relationship to the longitudinally oriented wires of the wire mesh, forming holes in the sheet material, and welding the retaining wires to the wire mesh through the holes.

3 Claims, 4 Drawing Figures



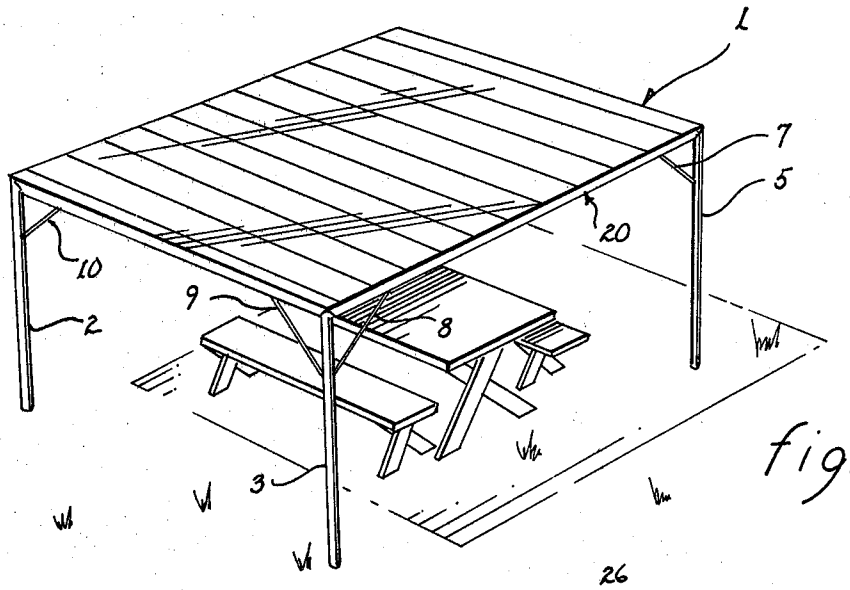


fig. 1

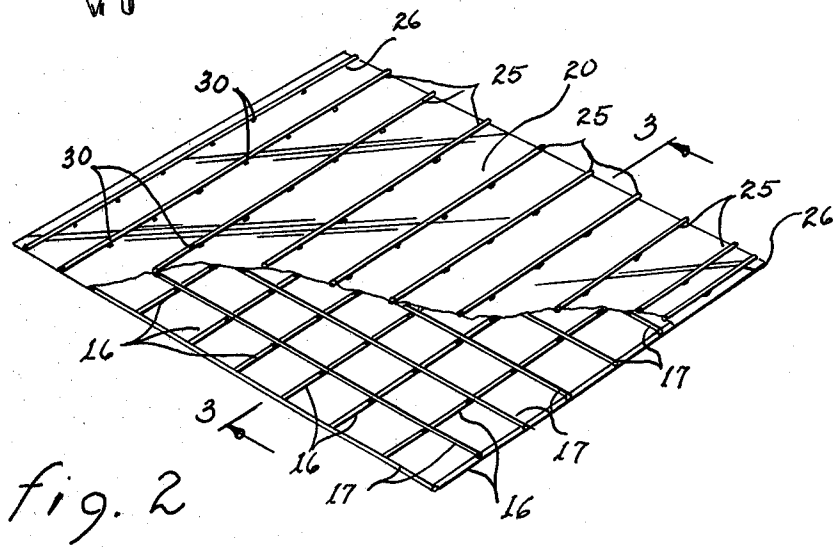


fig. 2

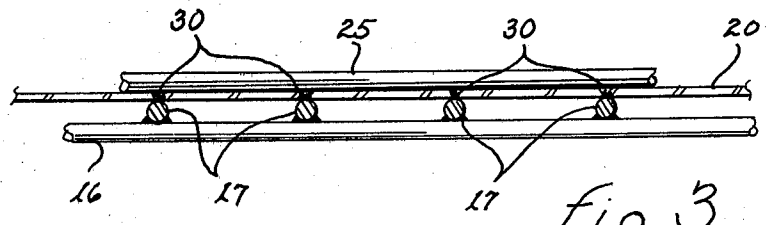


fig. 3

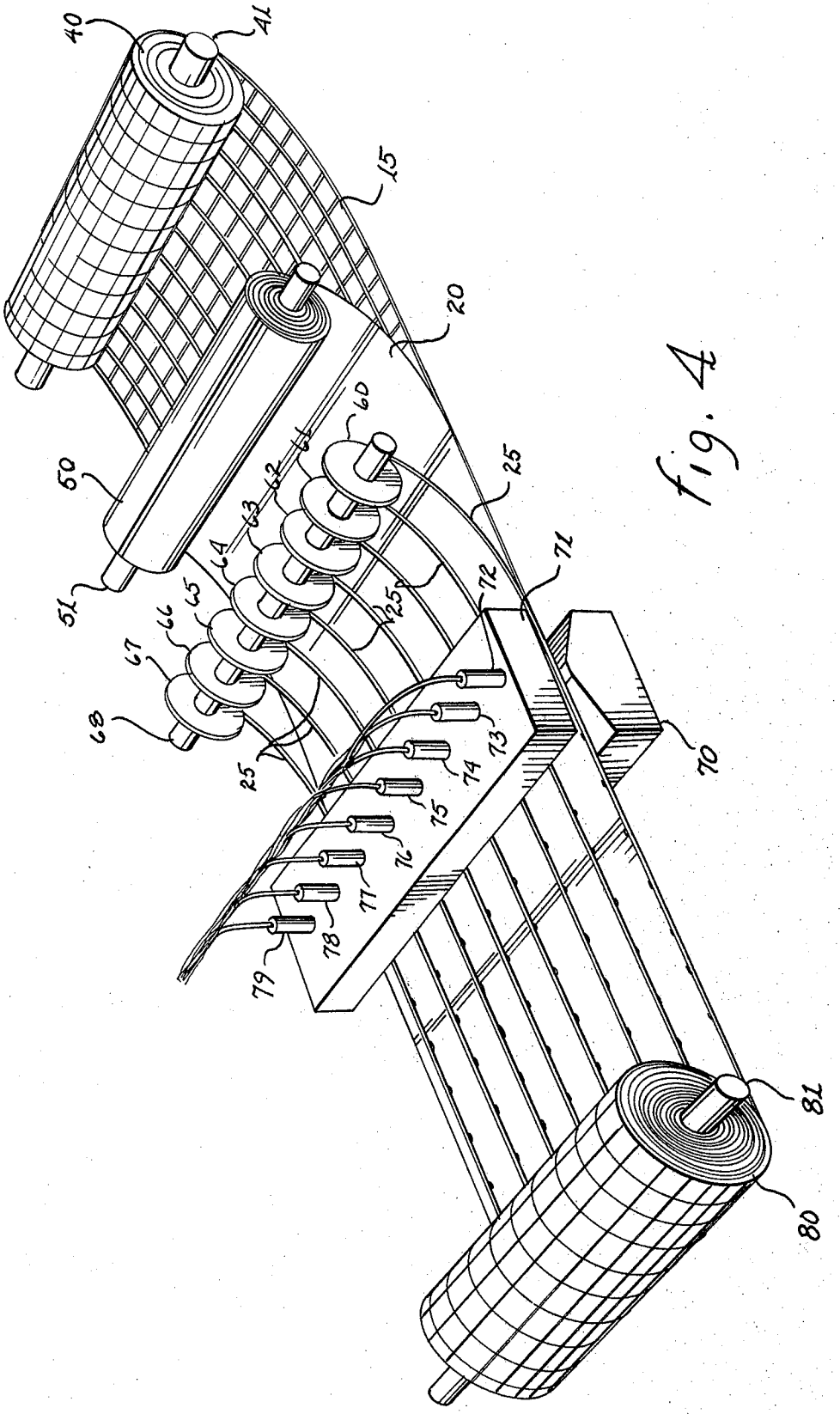

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fig. 4

METHOD FOR CONSTRUCTING AN AWNING

The present invention relates to open air over head shelters and, more particularly, to awnings for protecting persons and various articles against the sun and the rain.

Presently, awnings or similar shade and rain protective structures are constructed of relatively heavy guage essentially rigid metallic elements. These elements may be in the form of interlocking strips or overlapping sheets. Less expensive awnings utilize strips or sheets of plastic or cloth.

Where metallic awnings are used, the installation is essentially always of a permanent nature because of the high installation costs and storage difficulties. The cloth or plastic sheets are used essentially only when temporary or low cost protection is desired. Further, the latter type deteriorates rapidly when exposed to the sun and are often damaged in more than moderate winds.

To satisfy the need for an item falling somewhere intermediate the above enumerated extremes, various devices have been developed. U.S. Pat. No. 3,572,640, teaches the insertion of a plurality of slats within a chain link fence. These slats provide shade and serve as a wind break. However, the use of this device is generally limited to fencing as it offers little protection from rain and is too heavy to use overhead without robust supports. Variations of this device are shown in U.S. Pats. Nos. 2,911,038, 3,069,142, 3,285,577, 3,513,532, 3,712,590 and 3,774,884.

It is therefore a primary object of the present invention to provide an inexpensive method for manufacturing an awning.

Still another object of the present invention is to provide a method for manufacturing an awning of any given length.

A further object of the present invention is to provide a method for manfacturing an awning from existing commercially available components.

These and other objects of the present invention will become evident to those skilled in the art as the description thereof proceeds.

The present invention may be described with greater specificity and clarity with reference to the following drawings, in which:

FIG. **1** illustrates the present invention erected over a picnic table and benches.

FIG. **2** illustrates a cut-away view of the components of the present invention.

FIG. **3** is a cross-section of the present invention taken along lines **3—3** as shown in FIG. **2.**

FIG. **4** is a representative illustration of a method for manufacturing the present invention.

An awning **1** constructed in accordance with the teachings of the present invention may be used in the open in conjunction with a support structure to protect picnic areas and the like, as shown in FIG. **1.** Other uses may include cattle feed lots, outdoor manufacturing complexes, patio covers, car lots, shopping malls and swimming pools. In this configuration, awning **1** may be secured within a framework **20,** which framework is supported by a plurality of posts **3, 4** and **5.** Additional braces **7, 8, 9** and **10** may be employed intermediate the framework and the posts to ensure rigidity of the supporting structure. In the alternative, it may be laid upon an existing open framework structure to provide

protection against the sun and rain. It is to be understood that the structural features of the present invention also permit is to be hung between vertical supports to provide overhead protection.

The elements forming awning **1** will be described in detail with joint reference to FIGS. **2** and **3.** The primary supporting element for awning **1** is a readily available wire mesh **15.** Such commercially available meshes are generally formed by longitudinally oriented wires **16** intersected by and welded to a plurality of laterally oriented wires **17.** The lateral and longitudinal wires define squares of almost any size but is has been found that a four inch mesh is well adapted for use in the present invention. An impervious sheet **20** is laid upon wire mesh **15** and serves as a barrier against the sun and rain. In the preferred embodiment, sheet **20** is of aluminum having sufficient thickness and temper to resist tearing. Those skilled in metallurgy and the related arts can readily determine various commercially available grades of sheet aluminum which are useable in conjunction with the present invention. The use of aluminum also provides the capability for reflecting sunlight and thus serves as a heat shield for the covered activities. With the rapid advances in plastic technology, it may also be feasible to employ plastic sheets, or the like, provided that they do not tear easily and that they are essentially unaffected by the sun's rays.

The sheet **20,** whether of aluminum or plastic, is secured to mesh **15** by a plurality of retaining wires **25.** Retaining wires **25** are positioned atop sheet **20** parallel to longitudinal wires **16** and positioned essentially intermediate adjacent longitudinal wires. Depending upon the nature of the use for which awning **1** is to be employed, retaining wires **25** may be positioned intermediate each set of adjacent longitudinal wires **16,** or spaced apart from one another a distance equivalent to two or more squares of the mesh. It has been found to be expeditious to employ a retaining wire **26** essentially adjacent each edge of sheet **20** regardless of the spacing of the number of retaining wires **25** to prevent the edges of the sheet from flapping or buckling under high wind conditions.

The manner of receiving retaining wires **25** and **26** to mesh **15** may be accomplished by spot welding techniques provided that penetration of sheet **20** can be effected. Both the formation of the weld and an accommodating hole in the sheet **20** can be accomplished by using an arc welder. On energization of the arc welder in proximity to the intersection between the retaining wires **25** and **26** and lateral wires **17,** the electrical discharge burns a hole through the sheet **20.** Thereafter, a weld **30** is formable through the hole in the conventional manner. The formed weld **30** secures retaining wires **25** and **26** to mesh **15** and locks sheet **20** therebetween such that one surface of the sheet is adjacent the mesh and another surface of the sheet is adjacent the retaining wires.

The number of welds employed may vary depending upon the expected requirements at the point of installation of awning **1.** For the greatest strength possible, a weld should be formed at each point of intersection between retaining wires **25** and **26** and lateral wires **17.** However, for most applications a lesser number of welds may be adequate.

Referring now to FIG. **4,** a simple method of forming awning **1** will be described. A roll **40** of wire mesh **15** is mounted upon a shaft **41,** which shaft is appropri-

ately journalled. The end of wire mesh **15** is transported and drawn across anvil **70.** A roll **50** of sheet **20** is mounted upon a shaft **51,** which shaft is appropriately journalled. The end of sheet **20** is transported on top of and adjacent mesh **15** to anvil **70.** A plurality of spools of wire **60, 61, 62, 63, 64, 65,** and **67** are mounted upon a shaft **68,** which shaft is appropriately journalled. The ends of each of retaining wires **25** and **26** are drawn across the top of sheet **20** and laterally positioned intermediate longitudinal wires **16** of mesh **15.** It is to be understood that the number of retaining wires **25** and **26** which are employed is determined by the strength requirements of the finished product.

A head **71** is positioned above anvil **70** at a spacing sufficient to permit the combination of mesh **15,** sheet **20** and retaining wires **25** and **26** to pass therebetween. A plurality of arc welders, or the like, **72, 73, 74, 75,** 76, 77, 78 and **79** are mounted within head **71** such that they come into operational contact with respective retaining wires **25** and **26.** The number, spacing and energization of the welders is determined by the number of retaining wires to be welded to mesh **15.**

In operation, the mesh **15,** sheet **20** and retaining wires **25** and **26** are drawn intermediate anvil **70** and head **71** at a predetermined rate. As the combined juxtaposed elements pass beneath the welders, the welders are energized in correspondence with the passage of the lateral wires **17** therebeneath. On energization of the welders, retaining wires **25** and **26** are automatically welded to the lateral wires **17.** It may be appreciated that this single welding step permanently mates each of the elements of the awning. The completed awning may then be wound upon an appropriately journalled shaft **81** into a roll **80.**

From the above description of a manufacturing process for the present invention, it will be appreciated that the length and width of awning **1** is limited only by the available lengths and widths of the components. Thus, the present invention may be manufactured and marketed as short flat segments, or as rolls of any commercially feasible length.

In many areas, particularly the Southwest, temporary sun shades are mandatory during outdoor activities such as exhibitions, sporting events, or open air sales lots. By using an awning constructed in accordance with the present invention, these shades may be suspended between supports without any intermediate framework. Thus, the expense of erection is minimal and the supporting structure will not intrude upon the activity carried on therebeneath. When the need for the awning ceases, it may be easily demounted and rolled up for storage purposes.

Where a suspended awning is not feasible or where the awning may be required for extended periods of time, a simple framework can be easily erected for support. Again, the awning may be removed intact and the framework dismantled when no longer required. The present invention may, of course, be used for permanent installations.

If the shade needed is of a width greater than that of the manufactured width of the awning, adjacent sections of the awning may be mounted with the edges overlappng one another in the manner of roof tiles. Thus, awnings of any needed width can be assembled from the present invention.

While the principles of the invention have now been made clear in an illustrative embodiment, there will be immediately obvious to those skilled in the art many modifications of structure, arrangement, proportions, elements, materials, and components, used in the practice of the invention which are particularly adapted for specific environments and operating requirements without departing from those principles.

I claim:

1. A method for forming an awning of any given width and length, said method comprising the steps of:

a. transporting a length of wire mesh having laterally and longitudinally oriented wires through a welding machine;

b. laying a length of sheet material of the wire mesh for transportation with the wire mesh;

c. positioning a plurality of retaining wires on the sheet of material in alignment with the longitudinally oriented wires of the wire mesh;

d. forming holes within the sheet of material at selected intersections of the retaining wires and the laterally oriented wires of the mesh; and

e. attaching the retaining wires to the laterally oriented wires of the wire mesh through the holes within the sheet of material.

2. The method as set forth in claim **1** wherein said step of attaching comprises a step of welding.

3. The method as set forth in claim **2** wherein said step of forming and said step of welding are performed essentially simultaneously.

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