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(54) **RECEPTACLE FOR ENCLOSING LOW-VOLTAGE ELECTRONIC DEVICES IN A WALL**

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H01H 9/02 (2006.01)

(52) **U.S. Cl.** **174/58**; 174/53; 220/3.3

(58) **Field of Classification Search** 174/58, 174/53, 57; 220/3.2, 3.3; 439/535; 248/906
See application file for complete search history.

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(57) **ABSTRACT**

A receptacle for enclosing low-voltage electronic devices and maintaining the integrity of a vapor barrier. The receptacle includes a base, and four side walls. Each side wall is joined to two adjacent side walls to form a perimeter wall. The perimeter wall is joined to the base and extends from it in a generally perpendicular fashion. The perimeter wall and base delineate a generally rectangular enclosure with five closed sides and one open side. A mounting flange is joined to the four side walls and extends from them in a generally perpendicular fashion. The receptacle is positioned within a wall of a building so as to allow at least one flange direct contact with a structural member. The structural members of the wall and the receptacle are both covered with a barrier film. The barrier film is sealingly attached to the flange. A hole is created through the barrier film within the confines of the receptacle so that a low voltage electronic device can be mounted in the wall without compromising the vapor barrier of the building.

28 Claims, 7 Drawing Sheets

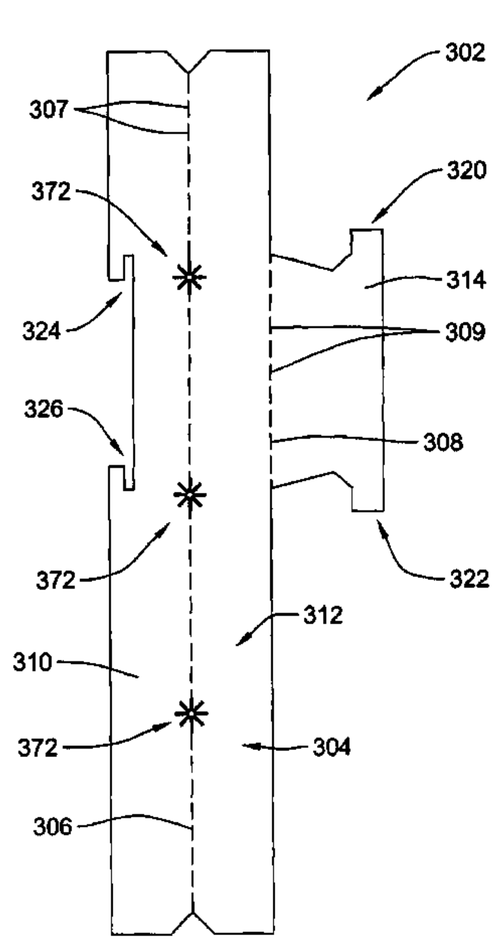


Fig. 1

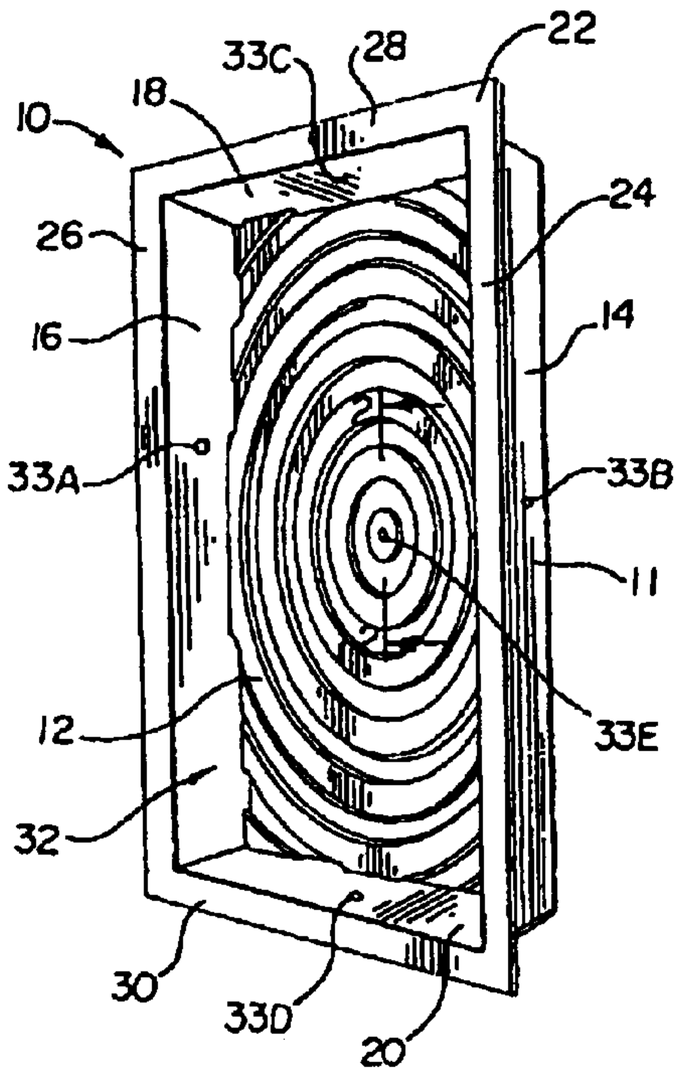


Fig.2

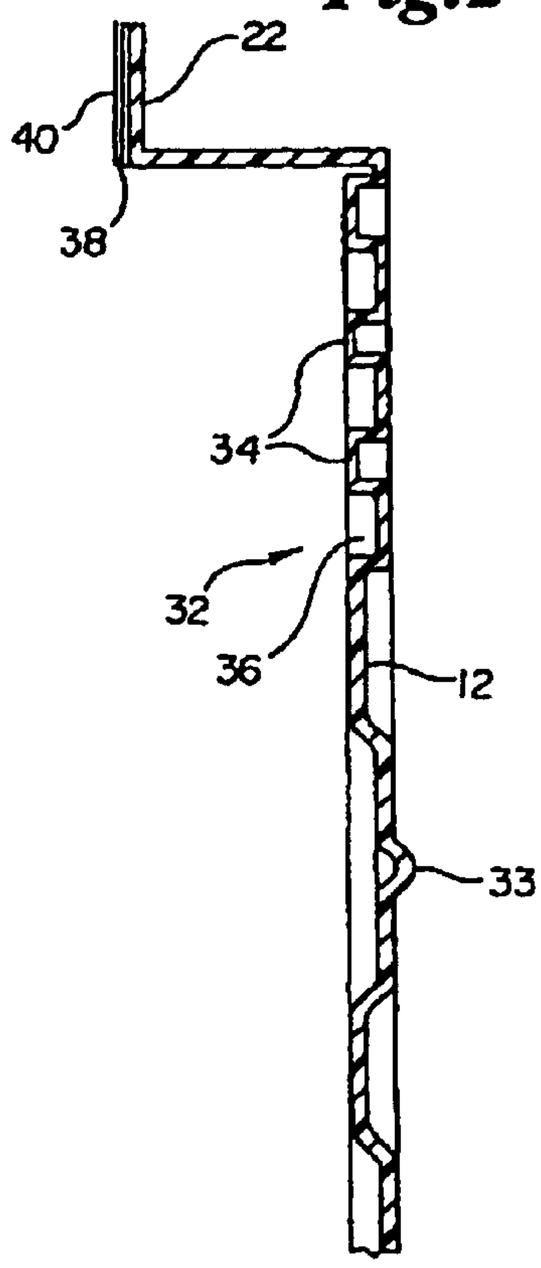


Fig. 3

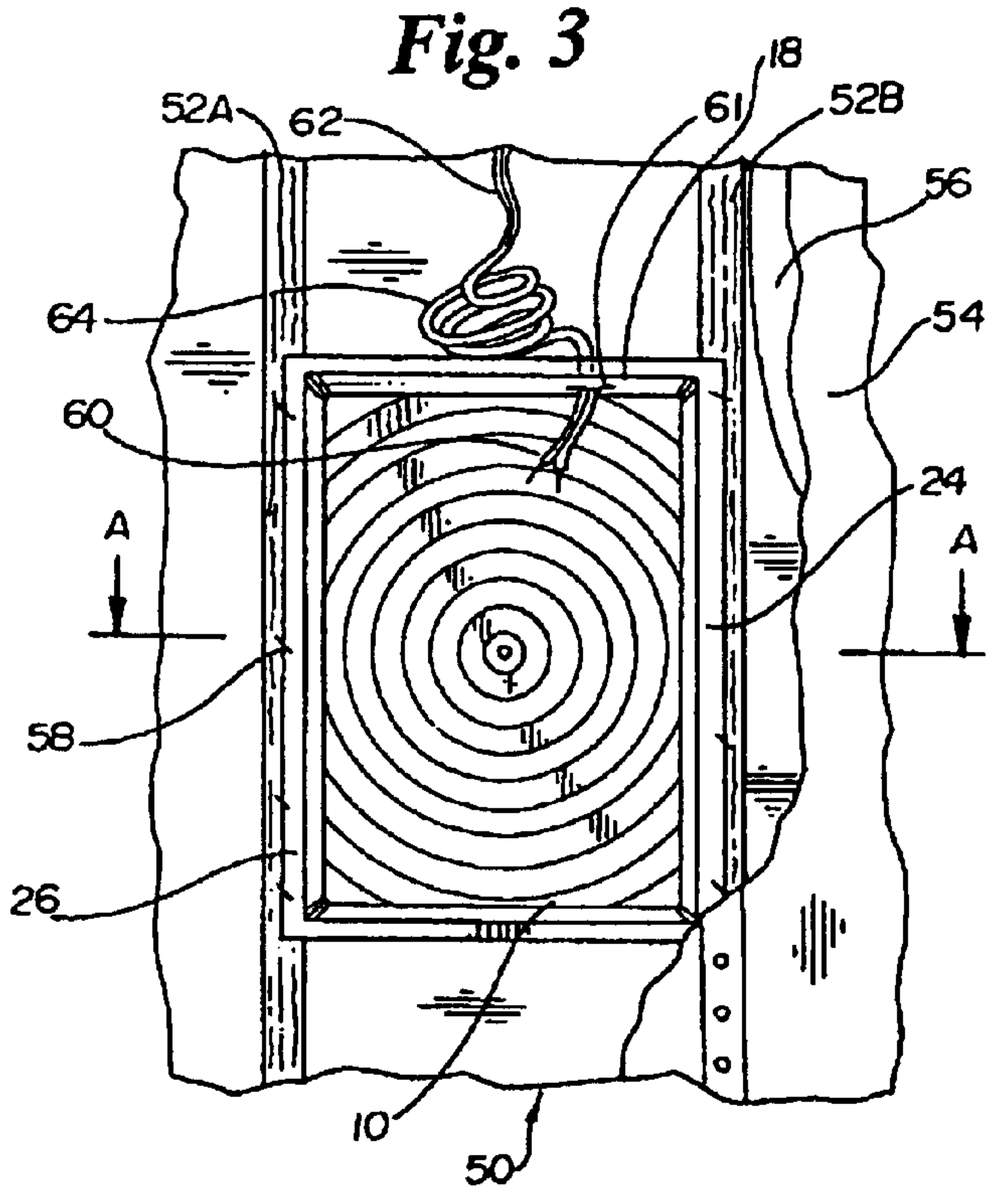
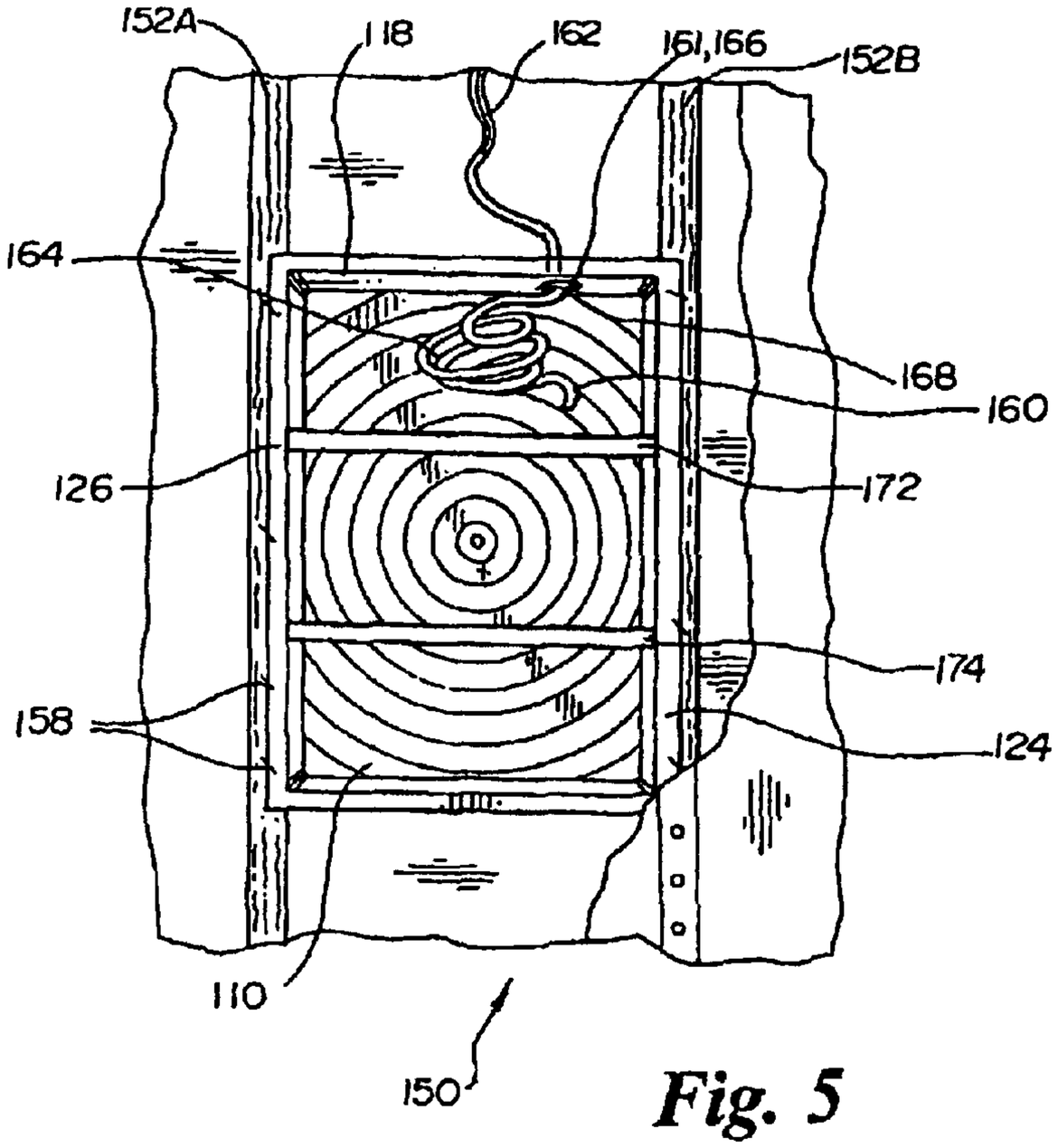


Fig. 4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161,166
152B
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172
174
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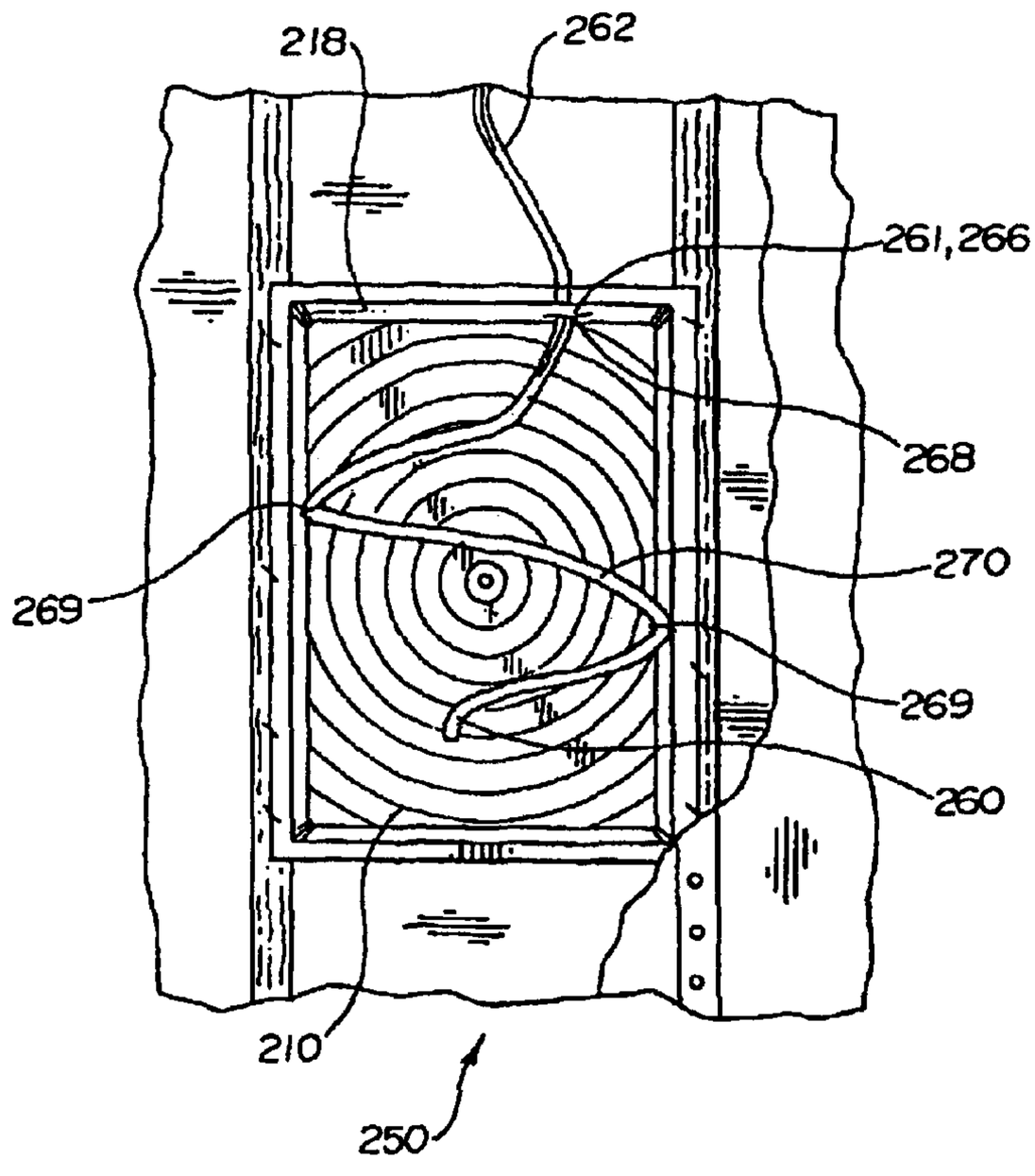
110
150

Fig. 5


218
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261,266
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210
250

Fig.6

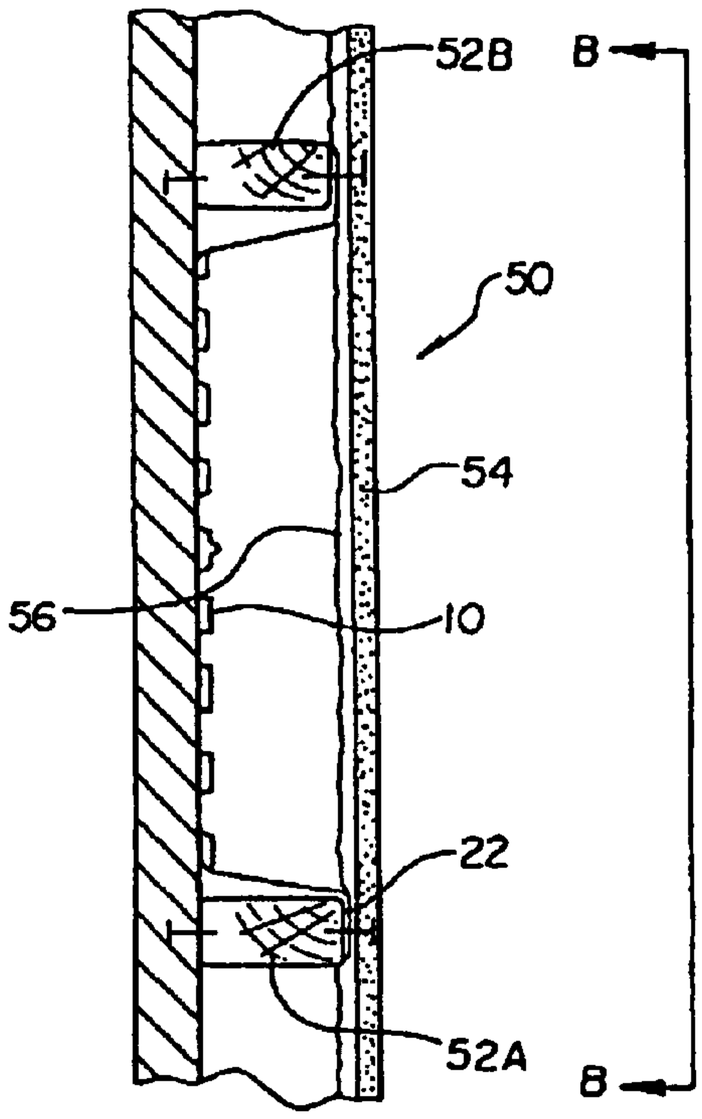

Fig.7

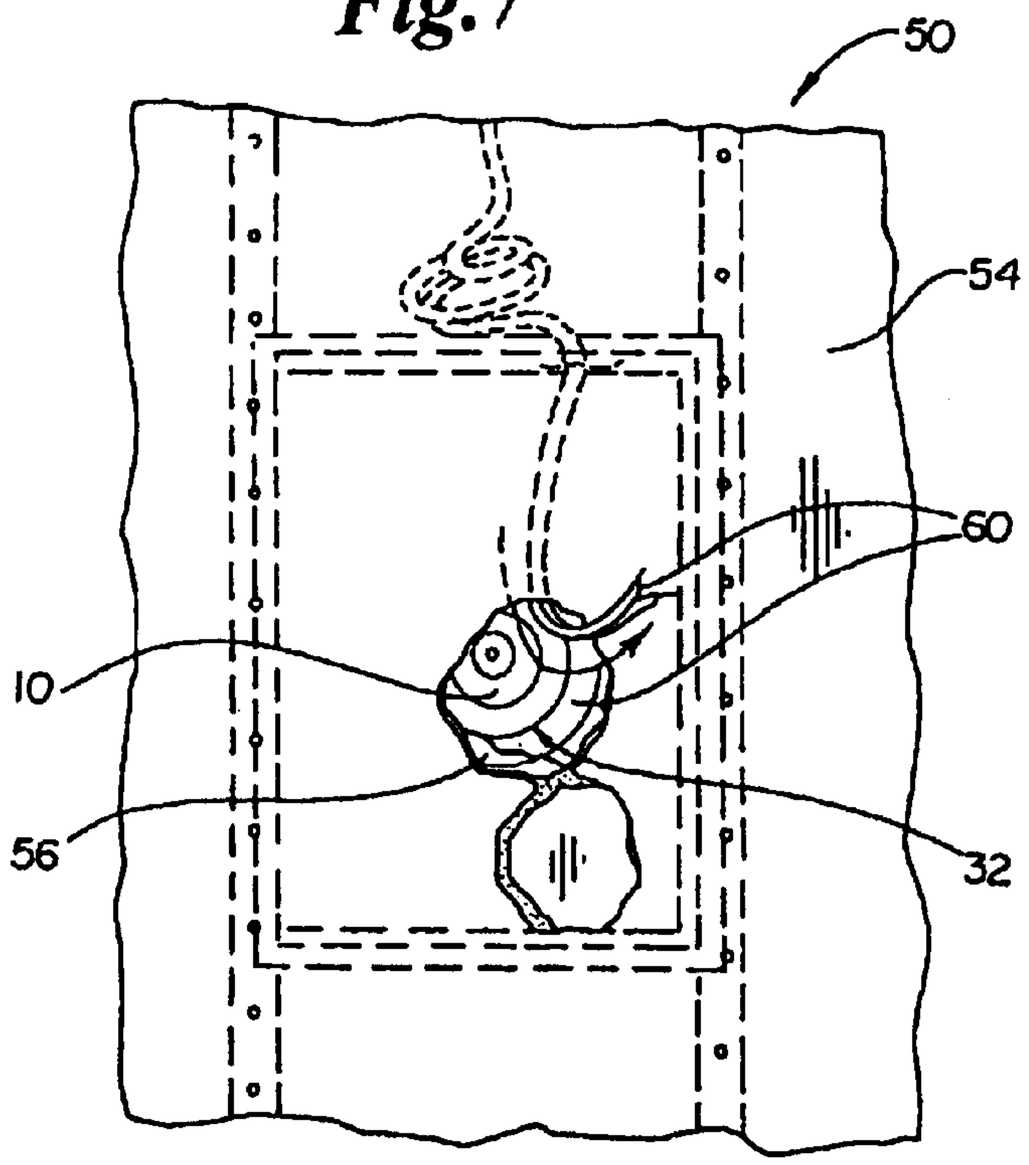

Fig. 8

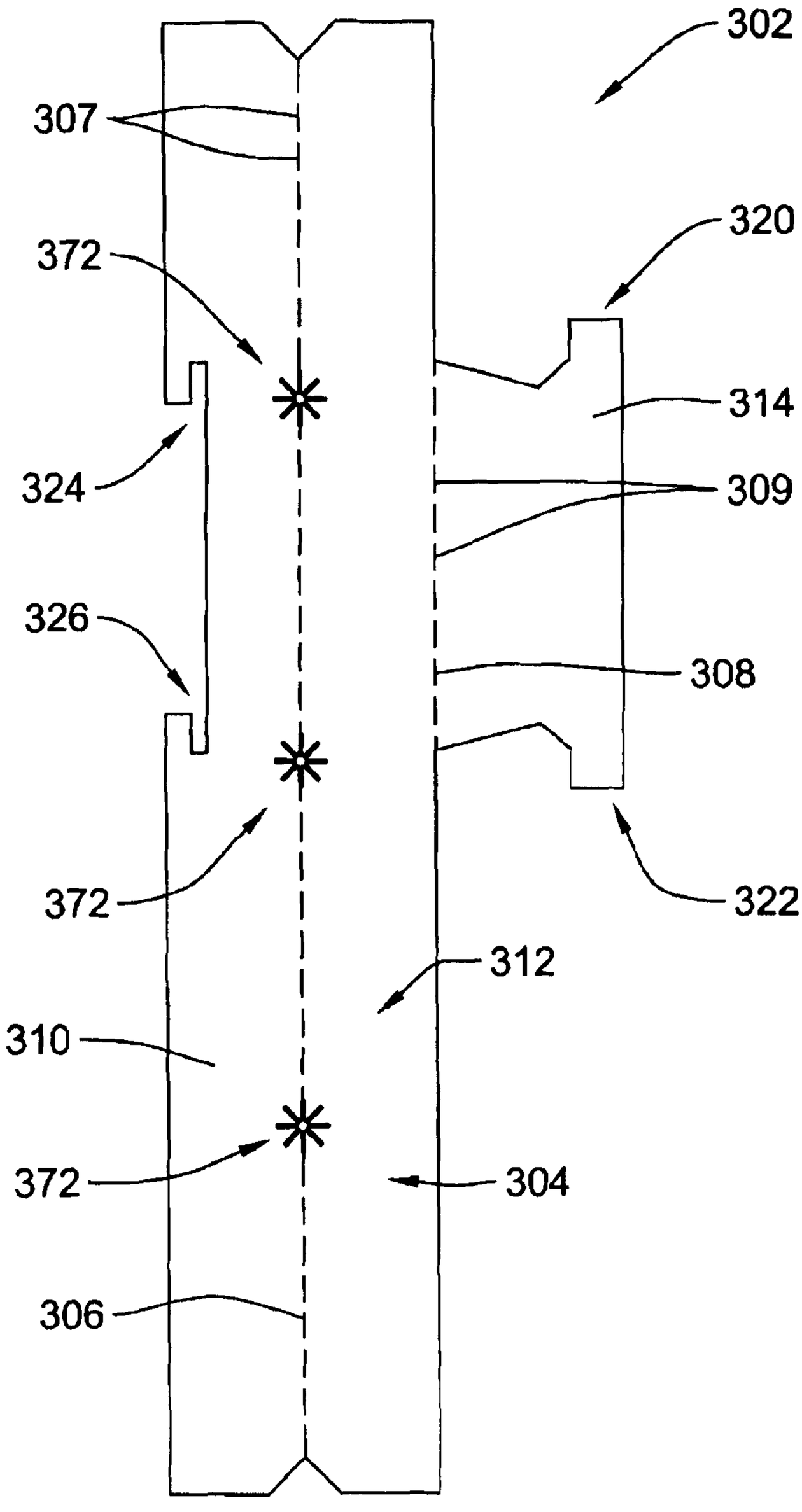

Fig. 9

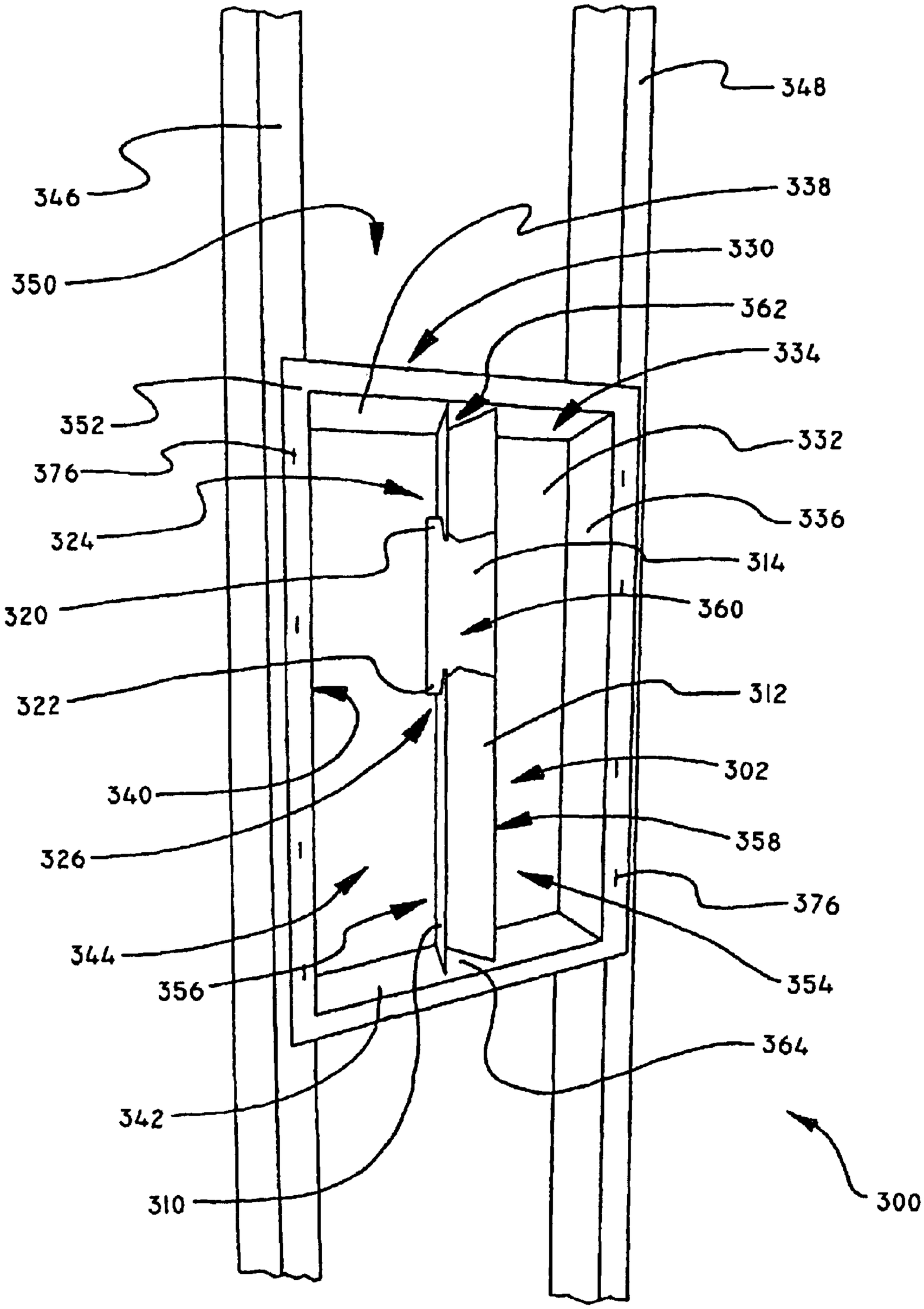
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Fig. 10

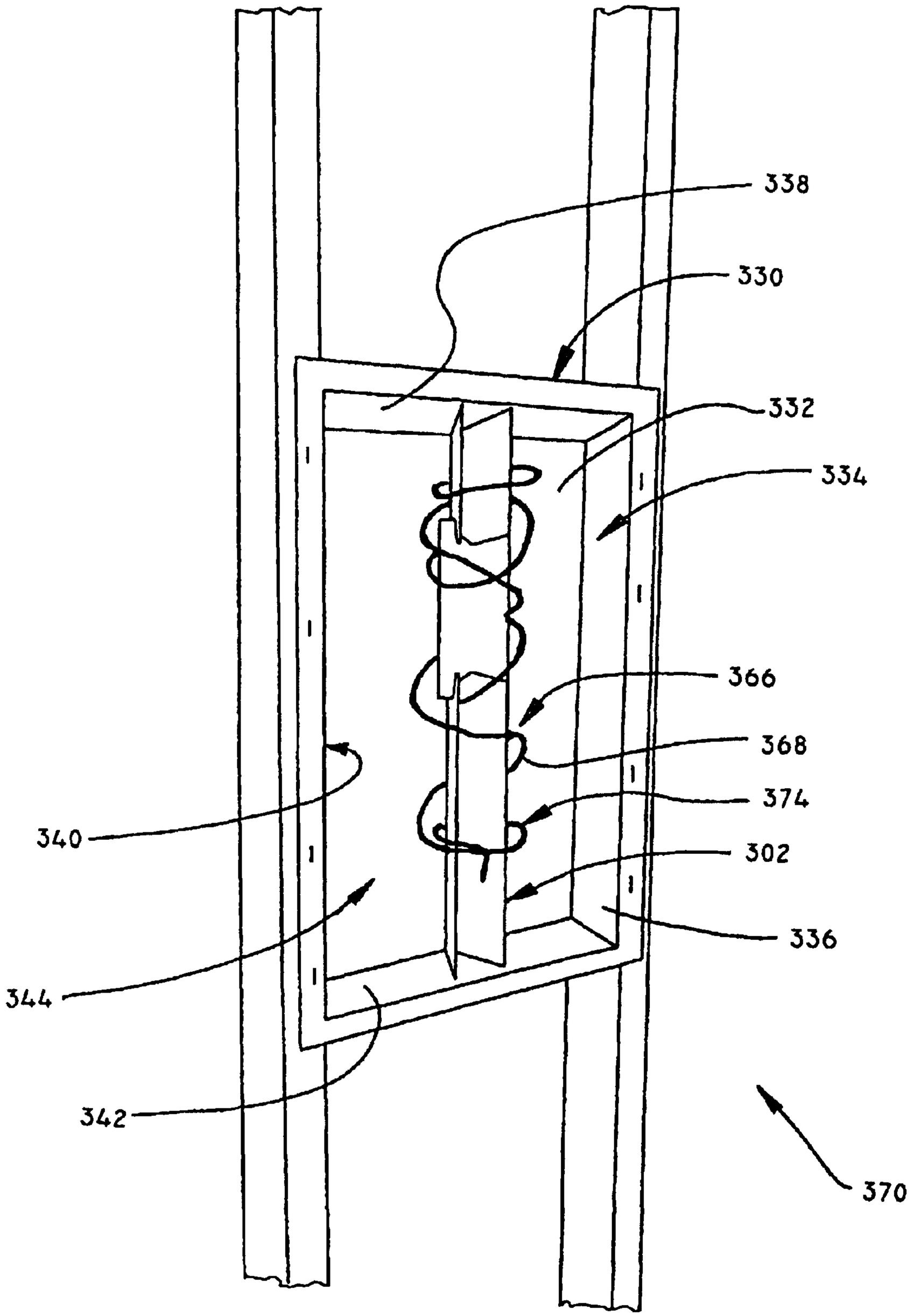
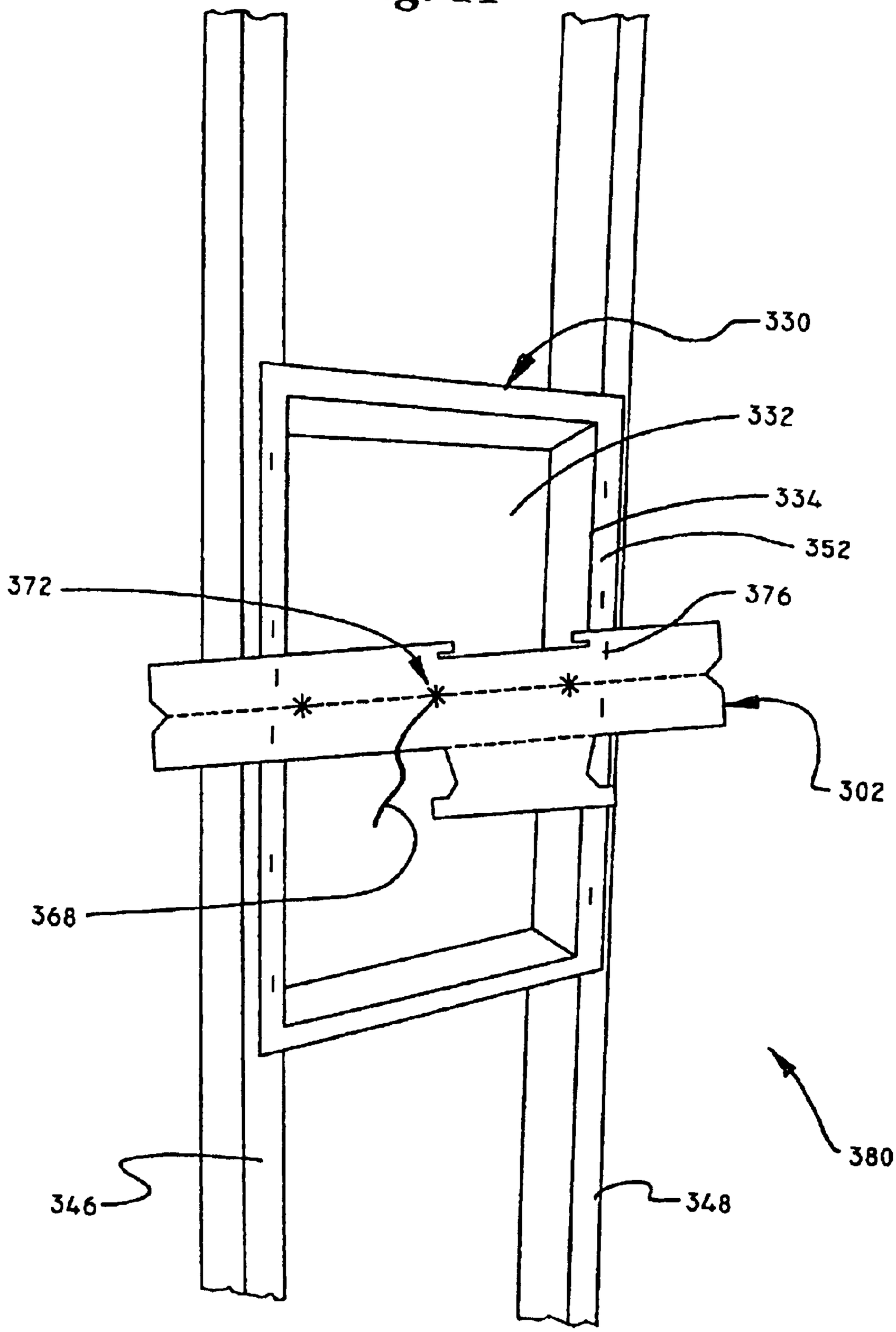


Fig. 11



RECEPTACLE FOR ENCLOSING LOW-VOLTAGE ELECTRONIC DEVICES IN A WALL

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

FIELD OF THE INVENTION

The present invention relates generally to components for building construction. More particularly, the present invention relates to receptacles for enclosing low voltage electronic devices.

BACKGROUND OF THE INVENTION

With the rising cost of energy, efforts have been made to provides homes and other buildings with insulation which will more efficiently prevent the loss of heat to the outside. Modem building techniques include the installation of a vapor barrier in the walls of homes or other buildings.

The vapor barrier contains warm, moist air inside the building. If warm air from inside the building penetrates the vapor barrier, moisture from this air may condense inside the walls and ceilings of the building. This condensed moisture can promote mold growth and cause building materials to degrade. The loss of warm air from the inside of the building to the outside of the building also increases the cost of heating the structure.

When mounting speakers, keypads and other low voltage electronic devices in the wall or ceiling of a house or other building it is desirable to protect the low voltage devices from exposure to dirt, debris from building materials and other substances which may cause these devices to deteriorate. Installers who place low-voltage electronic devices in the walls of structures often use standard building materials to fabricate a "custom-built" enclosure at the installation site. To comply with modem building requirements, these custom-built enclosures must be substantially impervious to warm, moist air, and they must be sealingly connected to the existing vapor barrier of the structure. A great deal of skill is required to assemble an enclosure at a work site which will accomplish these goals. Even when an installer is highly skilled, this task is very time consuming.

SUMMARY OF THE INVENTION

A receptacle enclosing low voltage electronic devices and maintaining the integrity of a vapor barrier. The receptacle includes a base and four side walls. Each side wall is joined to two adjacent side walls to form a perimeter wall. The perimeter wall is joined to the base and extends from it in a generally perpendicular fashion. The perimeter wall and base delineate a generally rectangular enclosure with five closed sides and one open side.

The base of the receptacle includes a pattern of concentric geometric shapes. When a portion of the base is seen through a hole cut in a wall, this pattern provides the installer with visual indicators which allow the installer to determine the location of the hidden portions of the receptacle.

The receptacle also includes a plurality of wire located dimples. The material thickness of the wire locator dimples is generally thinner than the thickness of the perimeter wall and the base. The wire locator dimples are useful for creating a hole which will allow a wire to enter the receptacle. Removing the wire locator dimple from the receptacle using a knife or other cutting tool creates a small circular hole in the receptacle. When the desired length of wire is pulled through the hole, the hole may be sealed using any commercially available sealant.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a receptacle for enclosing low voltage electronic devices in a wall;

FIG. **2** is a cross sectional view of a receptacle for enclosing low voltage electronic devices in a wall;

FIG. **3** is a plan view of a receptacle positioned inside a wall;

FIG. **4** is a plan view of an alternate embodiment of a receptacle positioned in a wall;

FIG. **5** is a third embodiment of receptacle positioned in a wall;

FIG. **6** is a cross sectional view of a wall with a receptacle for enclosing low voltage electronic devices positioned inside of it; and

FIG. **7** is a plan view of a wall with a hole cut through the wall for fastening a low voltage electronic device;

FIG. **8** is a plan view of a wire support in accordance with an exemplary embodiment of the present invention;

FIG. **9** is a perspective view of an assembly in accordance with an exemplary embodiment of the present invention;

FIG. **10** is a perspective view of an assembly in accordance with an exemplary embodiment of the present invention; and

FIG. **11** is a perspective view of an assembly in accordance with an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The following detailed description should be read with reference to the drawings, in which like elements in different drawings are numbered in like fashion. The drawings which are not necessarily to scale, depict selected embodiments and are not intended to limit the scope of the invention. In some cases, the drawings may be highly diagrammatic in nature. Examples of constructions, materials, dimensions, and manufacturing processes are provided for various elements. Those skilled in the art will recognize that many of the examples provided have suitable alternatives which may be utilized.

FIG. **1** is a perspective view of a receptacle shown generally by element number **10**. Receptacle **10** includes a base **12**, and four side walls **14**, **16**, **18**, and **20**. Each side wall is joined to two adjacent side walls to form a perimeter wall **11**. Perimeter wall **11** is joined to base **12** and extends from base **12** in a generally perpendicular fashion. Perimeter wall **11** and base **12** delineate a generally rectangular enclosure with five closed sides and one open side.

A mounting flange **22** is joined to side walls **14**, **16**, **18**, and **20**. Mounting flange **22** is comprised of side flanges **24** and **26**, top flange **28** and bottom flange **30**. Flanges **24**, **26**, **28**, and **30** extend in a generally perpendicular fashion from side walls **14**, **16**, **18**, and **20** respectively.

Base **12** includes a pattern of concentric geometrical shapes shown generally at **32**. As shown in FIG. **1**, the center of pattern **32** is generally aligned with the center of base **12**. Pattern **32** in FIG. **1** is a pattern of concentric circles. It is to be understood that another geometric shape could be chosen for pattern **32** without deviating from the spirit or scope of this invention. For example, pattern **32** could be a pattern of polygons, such as triangles, or squares.

Pattern **32** may also be created on base **12** using a variety of techniques. For example, pattern **32** could be injection molded with a series of raised lines which constitute pattern **32**. Alternatively, pattern **32** could be printed on a label and the label could be adhered to base **12**. Pattern **32** could also be printed directly onto base **12** using conventional printing methods such as pad printing or screen printing.

In a preferred embodiment, pattern **32** is formed by alternating ridges **34** and grooves **36** in base **12** (best shown in FIG. **2**). Ridges **34** and grooves **36** serve to stiffen base **12** in addition to creating pattern **32**. Stiffening of base **12** is particularly valuable when receptacle **10** is used to house audio speakers. If base **12** was substantially flexible, an audio speaker may cause it to vibrate and create undesirable noise.

Receptacle **10** includes a plurality of wire locator dimples **33**A, **33**B, **33**C, **33**D, and **33**E. As best shown in FIG. **2**, wire locator dimples **33**A, **33**B, **33**C, **33**D, and **33**E each are comprised of a localized projection formed from the same material as the wall but extending away from the wall. The material thickness of wire locator dimples **33**A, **33**B, **33**C, **33**D, and **33**E is generally thinner that the material thickness of side walls **14**, **16**, **18**, and **20**, and base **12**.

Wire locator dimples **33**A, **33**B, **33**C, **33**D, and **33**E are useful for creating a hole allowing a wire **62** to pass through one wall of receptacle **10**. For example, if an installer intends to pass wire **62** through wall **20**, a knife or other cutting tool may be used to cut off wire locator dimple **33**D. Cutting off wire locator dimple **33**D creates a smaller circular hole in wall **20**. When installing a low-voltage electronic device in receptacle **10** wire **62** will be pulled through this hole. When the desired length of wire **62** is pulled through the hole, the hole will be sealed using any commercially available sealant such as silicone caulk or acrylic caulk. Sealing the hole which allows wire **62** to enter receptacle **10** is necessary in order to maintain a continuous vapor barrier within wall **50**. Wire locator dimples **33**A, **33**B, **33**C, **33**D, and **33**E allow an installer to quickly create a small round hole of uniform size and shape. Only a small amount of sealing material is require to seal this small uniformlly shaped hole after wire **62** has been positioned. This saves time for the installer and improves the integrity of the vapor barrier.

In one embodiment of receptacle **10**, a layer of pressure sensitive adhesive **38** is applied to flange **22** as shown in FIG. **2**. Pressure sensitive adhesive **38** may be covered with a release liner **40** to prevent pressure sensitive adhesive **38** from adhering to any objects while receptacle **10** is transported and stored prior to use. Release liner **40** may be comprised of a layer of paper or plastic film treated with a release agent. Release liner materials of this type are well known in the art and may use silicone or fluoropolymer based release agents.

Receptacle **10** may be made from any substantially rigid material. The preferred material for receptacle **10** is a thermoplastic material such as ABS (acrylonitrile-butadiene-styene) or PVC (polyvinyl chloride). Thermoplastic materials are low in cost and they can be easily fabricated using conventional injection molding, or thermo-forming processes. In many applications a flame-retardant thermoplastic material will be preferred.

A portion of a building wall **50** is illustrated in FIG. **3** with the inventive receptacle **10** installed. Wall **50** includes structural members **52**A, **52**B, and outer layer **54**. Structural members **52**A, **52**B may be comprised of a number of commonly used building materials including steel, aluminum, and wood. A number of materials may also be used to fabricate outer layer **54** including plaster, wood, acoustic tiles, gypsum board, or a wood fiber composite material. In the art gypsum board is sometimes referred to as drywall, or by the trademarked brand name SHEETROCK. A barrier film **56** is positioned directly behind outer layer **54** in wall **50**. Barrier film **56** may be any low cost, thin material which is substantially impervious to air and water vapor. Barrier film **56** is positioned in wall **50** to prevent the passage of warm moist air from the inside of the building to the outside of the building. To accomplishing this goal completely, any holes made in barrier film **56** is preferably completely sealed. In the art the walls of a building are assembled to include a continuous sealed layer which is comprised of multiple sheets of barrier film **56** sealingly attached along their edges. In the art, this continuous sealed layer is referred to as the vapor barrier. An objective of the present invention is to provide method of installing low-voltage electronic devices in a wall maintaining the integrity of the vapor layer.

Receptacle **10** is positioned in wall **50** so that side flanges **24** and **26** overlap structural members **52**B and **52**A respectively. A plurality of fasteners **58** have been used to attach side flanges **24** and **26** to structural members **52**B and **52**A. In the embodiment shown in FIG. **3** fasteners **58** are depicted as staples, however it should be understood that other fasteners could be used without departing from the spirit and scope of this invention. For example, fasteners **58** could be screws, nails, or rivets.

In an alternate embodiment receptacle **10** may be positioned in wall **50** so that top flange **28** and bottom flange **30** overlap structural members **52**A, **52**B. In a preferred embodiment the length of side walls **14**, **16**, **18**, and **20** are selected so that receptacle **10** will fit between structural members **52**A, **52**B which have be placed a distance part which is commonly used in the art. For example, the length of side walls **18** and **20** may be selected so that receptacle **10** will fit between structural members which have been placed on 16 inch centers and the length of side walls **14** and **16** may be selected so that receptacle **10** will fit between structural members which have been placed on 24 inch centers.

An end **60** of wire **62** is disposed inside receptacle **10**. Wire **62** passes through a wire entry hole **61** in side wall **18** of receptacle **10**. A wire coil or bundle **64** is formed of wire **62** and is disposed immediately outside one wall of receptacle **10**. Although FIG. **3** illustrates wire **62** passing through side wall **18**, it should be noted that wire **62** may pass through any side wall **14**, **16**, **18**, **20**, or base **12** without departing from the scope or spirit of this invention.

It should also be noted that although the specific embodiment illustrated in FIG. **3** depicts receptacle **10** installed in a wall, receptacle **10** may be installed in other portions of a building without departing from the spirit or scope of this invention. For example, receptacle **10** may be mounted in a ceiling to house an audio speaker.

FIG. **4** is a plan view illustrating a receptacle **110**. Receptacle **110** is positioned in wall **150** so that side flanges **124** and **126** overlap structural members **152**B and **152**A respectively. A plurality of fasteners **158** have been used to attach side flanges **124** and **126** to structural members **152**B and **152**A.

A wire **162** extends through a wire entry hole **161** in side wall **118** of receptacle **110**. A wire bundle **164** and a wire end **160** are both disposed inside receptacle **110**. Wire entry hole **161** was created by cutting off a wire locator dimple (not shown). Wire entry hole **161** is covered by seal **166** which is adhesively bonded to both wire **162** and wall **118** of receptacle **110**. Seal **166** is created by dispensing a sealant **168** onto both wire **162** and wall **118** in the vicinity of wire entry

hole **161**, then allowing sealant **168** to cure. Sealant **168** may be any one of a number of commercially available materials including silicone caulk and acrylic caulk. Seal **166** ensures the integrity of the vapor barrier by closing wire entry hole **161** which was made in wall **118** to accommodate wire **162**.

A plurality of mounting brackets **172**, **174** are disposed in receptacle **110**. Mounting brackets **172**, **174** may be attached to receptacle **110** with mechanical fasteners (not shown) such as rivets or screws. Mounting brackets **172**, **174** may also be adhered to receptacle **110** with an adhesive (not shown). Mounting brackets **172**, **174** provide a convenient place to attach low-voltage electronic devices which are being housed in receptacle **110**.

FIG. **5** is a plan view of a receptacle **210** positioned in a wall **250**. A wire **262** extends through seal **268** and through a wire entry hole **261** in a side wall **218** of receptacle **210**. Seal **266** is adhesively bonded to both wire **262** and wall **218**. Seal **266** is created by dispensing a sealant **268** onto both wire **262** and wall **218** in the vicinity of wire entry hole **261**, then allowing sealant **268** to cure. Sealant **268** may be any one of a number of commercially available materials including silicone caulk and acrylic caulk.

A zig/zag or serpentine wire pattern **270** is disposed inside of receptacle **210**. Serpentine wire pattern **270** is comprised of a length of wire **262** which has been bent into the shape shown in the FIG. **5**. Fasteners **269**, such as staples preferably loosely hold wire pattern **270** in place until the electronic device is installed.

FIG. **6** is a section of wall **50** taken along section line A-A in FIG. **3**. Receptacle **10** is illustrated in FIG. **6** in a position between structural members **52**A and **52**B. Barrier film **56** is shown covering receptacle **10**. Flange **22** of receptacle **10** is sealingly connected to barrier film **56**. A number of methods may be used to accomplish this seal. In one embodiment pressure sensitive adhesive layer **38** is pre-applied to flange **22** and covered with release liner **40**. Release liner **40** is removed prior to covering receptacle **10** with barrier film **56**. When barrier film **56** is positioned over receptacle **10** it will readily adhere to pressure sensitive adhesive layer **38** and form a sealed connection with flange **22**.

An alternate method for sealing barrier film **56** to flange **22** is to apply an adhesive to flange **22** just prior to covering receptacle **10** with barrier film **56**. Spray on adhesives suitable for this purpose are commercially available from 3M Company (St. Paul, Minn.). Finally, sealing tape may also be use to seal barrier film **56** to flange **22**.

FIG. **7** is a plan view of wall **50** taken from the point of view of line B-B shown in FIG. **6**. A hole **80** has been cut through outer layer **54** and barrier film **56**. Geometric pattern **32** of receptacle **10** is visible through hole **80**. Geometric pattern **32** provides the installer of a low voltage electronic device with a visual reference point. After looking at geometric pattern **32**, the installer knows which direction he or she must reach to find wire end **60**.

Referring to FIG. **7** and FIG. **3**, the preferred steps used to enclose a low-voltage electronic device and maintain the integrity of a vapor barrier are as follows:

1. Choose which of the wire locator dimples is the most convenient place for wire **62** to enter receptacle **10**.
2. Cut off the wire locator dimple to create wire entry hole **61**.
3. Position receptacle **10** within wall **50** so that at least one flange is in direct contact with a structural member.
4. Secure the flange to the structural member.
5. Thread wire.**62** through wire entry hole **61** in receptacle **10**.
6. Place barrier film **56** over structural members **52**A, **52**B and receptacle **10**.
7. Seal barrier film **56** to flange **22** of receptacle **10**.
8. Complete the assembly of the wall by positioning outer layer **54** over barrier film **56**.
9. Connect a radio frequency transmitter to wire **62**.
10. Use a radio frequency receiver to determine the approximate location of wire end **60**; in this approximate location, create hole **80** through barrier film **56** and outer layer **54**.
11. Visually examine pattern **32** to determine the location of wire end **60** relative to hole **80**.
12. Reach inside hole **80** with one hand and retrieve wire **62** by grasping wire end **60**.
13. Pull out the desired length of wire **62** and attach wire end **60** to the low-voltage electronic device which is being installed.
14. Seal wire entry hole **61** in enclosure **10** using a sealant such as silicon caulk or acrylic caulk.
15. Complete the installation by fastening the low-voltage electronic device to outer layer **54**.

FIG. **8** is a plan view of a wire support **302** in accordance with an exemplary embodiment of the present invention. Wire support **302** comprises a body **304** defining a first perf-cut **306** and a second perf-cut **308**. Each perf-cut is comprised of a plurality of perforations *307,309*. First perf-cut **306** is disposed between a first panel **310** and a second panel **312** of body **304**. Second perf-cut **308** is disposed between second panel **312** and a third panel **314**. Third panel **314** includes a first tab **320** and a second tab **322**. In the embodiment of FIG. **8**, first panel **310** defines a first slot **324** and a second slot **326**.

In the embodiment of FIG. **8**, body **304** is generally flat. In a preferred embodiment, body **304** is adapted to be folded along first perf-cut **306** and second perf-cut **308** so that body **304** assumes a generally polygonal shape. Also in a preferred embodiment, first tab **320** and second tab **322** of third panel **314** are adapted to interlock with first panel **310** to hold body **304** in a generally polygonal shape. In a particularly preferred embodiment, first tab **320** is adapted to seat against first panel **310** proximate first slot **324** and second tab **322** is adapted to seat against first panel **310** proximate second slot **326**.

Body **304** defines a plurality of apertures **372**. In the embodiment of FIG. **8**, each aperture comprises a plurality of slits. In a preferred embodiment, each aperture **372** is adapted to allow a wire to pass through body **304**.

FIG. **9** is a perspective view of an assembly **300** in accordance with an exemplary embodiment of the present invention. Assembly **300** includes wire support **302** of FIG. **8** and a receptacle **330** having a base wall **332** and a perimeter wall **334**. Perimeter wall **334** comprises a first side wall **336**, a second side wall **338**, a third side wall **340**, and a fourth side wall **342**. Base wall **332** and perimeter wall **334** define a chamber **344**.

A first structural member **346** and a second structural member **348** are also illustrated in FIG. **9**. First structural member **346** and second structural member **348** may form a portion of a wall, a ceiling, etc. of a building. First structural member **346** and second structural member **348** define a cavity **350**.

As shown in FIG. **9**, a portion of receptacle **330** is disposed within cavity **350**. Receptacle **330** includes a flange wall **352** attached generally perpendicularly to perimeter wall **334**. In a preferred embodiment, flange wall **352** allows the attachment of receptacle **330** to a structural member of a

building. In the embodiment of FIG. **9**, flange wall **352** is fixed to first structural member **346** and second structural member **348** with a plurality of staples **376**.

Wire support **302** is disposed within chamber **344** of receptacle **330**. In the embodiment of FIG. **9**, first tab **320** is disposed proximate first slot **324** and second tab **322** is disposed proximate second slot **326**. As shown in FIG. **9**, wire support **302** has been folded so that first panel **310**, second panel **312**, and third panel **314** define a polyhedron **354**. Polyhedron **354** includes a first surface **356** defined by first panel **310**, a second surface **358** defined by second panel **312**, and a third surface **360** defined by third panel **314**. The ends of first panel **310** and second panel **312** define a first end surface **362** and a second end surface **364**. Polyhedron **354** is preferably a pentahedron.

FIG. **10** is a perspective view of an additional assembly **370** in accordance with the present invention. Assembly **370** of FIG. **10** includes a wire coil **366** comprising a wire **368**. As in the previous embodiment, assembly **370** includes wire support **302** and a receptacle **330** having a base wall **332** and a perimeter wall **334**. Perimeter wall **334** comprises a first side wall **336**, a second side wall **338**, a third side wall **340**, and a fourth side wall **342**. Base wall **332** and perimeter wall **334** define a chamber **344**. In the embodiment of FIG. **10**, wire **368** passes through a receptacle aperture defined by base wall **332** of receptacle **330**. Wire **368** also passes through one of the apertures **372** (best shown in FIG. **8**) defined by wire support **302**. Wire **368** forms a wire coil **366** comprising a number of turns **374**.

As mentioned previously, first structural member **346** and second structural member **348** may form a portion of a wall, a ceiling, etc. of a building. For example, first structural member **346** and second structural member **348** may form a portion of a building wall **50** as shown in FIG. **6** and FIG. **7**. The wall may include a barrier film and an outer layer (e.g., SHEETROCK) overlaying first structural member **346**, second structural member **348**, and receptacle **330**.

Having thus described FIGS. **8** through **10**, a preferred method in accordance with the present invention may be described with reference thereto. The steps used to enclose a low-voltage electronic device and maintain the integrity of a vapor barrier may be as follows:

1. Position a receptacle within a cavity of the wall proximate one or more structural members.
2. Secure a flange of the receptacle to one or more structural member.
3. Position a wire support within a chamber defined by the receptacle.
4. Thread a wire through an aperture in a wall of the receptacle.
5. Thread the wire through an aperture in the wire support.
6. Wrap the wire around the wire support to form a wire coil having a plurality of turns.
7. Place a barrier film over the receptacle and the structural member(s).
8. Seal the barrier film to the flange of the receptacle.
9. Complete the assembly of the wall by positioning an outer layer over the barrier film.
10. Connect a radio frequency transmitter to the wire.
11. Use a radio frequency receiver to determine the approximate location of the wire coil; in this approximate location, create a hole through the barrier film and the outer layer.
12. Reach inside the hole and retrieve the wire.
13. Attach the wire to the low-voltage electronic device that is being installed.
14. Complete the installation by fastening the low-voltage electronic device to a portion of the wall.

FIG. **11** is a perspective view of yet another assembly **380** in accordance with the present invention. As in the previous embodiments, assembly **380** includes a receptacle **330** having a base wall **332** and a perimeter wall **334**. Receptacle **330** also includes a flange wall **352** attached generally perpendicularly to perimeter wall **334**. A wire support **302** is disposed so that it overlays a portion of flange wall **352**. In a preferred embodiment, wire support **302** is fixed to flange wall **352**. In a particularly preferred embodiment, wire support **302** is fixed to flange wall **352** by a plurality of staples **376**. Staples **376** may pass through flange wall **352** into first structural member **346** and/or second structural member **348**. When this is the case, each staple **376** may fix wire support **302** to both flange wall **352** and a structural member. A wire **368** is shown extending through an apertures **372** defined by wire support **302**. In a preferred embodiment, wire **368** also extends through a receptacle aperture defined by base wall **332** of receptacle **330**.

Having thus described FIG. **11**, a method in accordance with the present invention may be described with reference thereto. The steps used to enclose a low-voltage electronic device and maintain the integrity of a vapor barrier may be as follows:

1. Position a receptacle within a cavity of the wall proximate one or more structural members.
2. Secure a flange wall of the receptacle to one or more structural member(s).
3. Thread a wire through an aperture in a wall of the receptacle.
4. Position a wire support so that it overlays a portion of the flange wall.
5. Secure the wire support to the flange wall.
6. Thread the wire through an aperture in the wire support.
7. Place a barrier film over the receptacle and the structural member(s).
8. Seal the barrier film to the flange of the receptacle.
9. Position a sheet of outer layer material over the receptacle.
10. Create a hole in the sheet of the outer layer material proximate the aperture in the wire support.
11. Create a hole in the barrier film proximate the aperture in the wire support.
12. Secure the sheet of outer layer material to one or more structural member(s).
13. Attach the wire to the low-voltage electronic device that is being installed.
14. Complete the installation by fastening the low-voltage electronic device to a portion of the wall.

Numerous advantages of the invention covered by this document have been set forth in the foregoing description. It will be understood, however, that this disclosure is, in many respects, only illustrative. Changes may be made in details, particularly in matters of shape, size, and arrangement of parts without exceeding the scope of the invention. The invention's scope is, of course, defined in the language in which the appended claims are expressed.

What is claimed is:

1. An assembly for enclosing low-voltage electronic devices and maintaining the integrity of a vapor barrier comprising:

a receptacle having a base wall and a perimeter wall, the receptacle being disposed within a cavity comprising an area between structural members of a building;

a flange wall attached generally perpendicularly to the perimeter wall, the flange wall allowing the attachment of the receptacle within the cavity by securing at least a portion of the flange wall to at least one of the structural members of the building;

a wire support resting on at least one of the walls of the receptacle;

the receptacle defining a first aperture, and the wire support defining a second aperture; and

a length of wire passing through the first aperture and the second aperture.

2. The assembly of claim **1**, wherein the wire support is disposed within a chamber defined by the receptacle.

3. The assembly of claim **1**, wherein the wire support is disposed over a portion of the flange wall of the receptacle.

4. The assembly of claim **3**, wherein the wire support is fixed to the flange wall of the receptacle.

5. The assembly of claim **4**, wherein the wire support is fixed to the flange wall of the receptacle with one or more staples.

6. The assembly of claim **3**, wherein the wire support is fixed to the flange wall of the receptacle and the structural members of the building.

7. The assembly of claim **6**, wherein the wire support is fixed to the flange wall of the receptacle and the structural members of the building with one or more staples.

8. The assembly of claim **1**, wherein the wire support comprises corrugated Kraft paper.

9. The assembly of claim **1**, wherein the wire support comprises cardboard.

10. An assembly for enclosing low-voltage electronic devices and maintaining the integrity of a vapor barrier comprising:

a receptacle having a base wall and a perimeter wall, the receptacle being disposed within a cavity comprising an area between structural members of a building;

a flange wall attached generally perpendicularly to the perimeter wall, the flange wall allowing the attachment of the receptacle within the cavity by securing at least a portion of the flange wall to at least one of the structural members of the building;

a wire support disposed within a chamber defined by the receptacle;

the receptacle defining a first aperture, and the wire support defining a second aperture; and

a length of wire passing through the first aperture and the second aperture.

11. A wire support, comprising: a body having a first panel, a second panel, a third panel, and one or more apertures configured to receive a wire therethrough, said first panel including a set of slots configured to interlock with a set of tabs formed on the third panel; a first perf-cut disposed between the first and second panels, said first perf-cut comprising one or more perforations; and a second perf-cut disposed between the second and third panels; said second perf-cut comprising one or more perforations.

12. The wire support of claim 11, wherein said wire support comprises corrugated Kraft paper.

13. The wire support of claim 11, wherein said wire support comprises cardboard.

14. The wire support of claim 11, wherein said elongated member comprises a wire.

15. The wire support of claim 11, wherein said body is adapted to assume a generally polygonal shape when folded along the first and second perf-cuts.

16. The wire support of claim 15, wherein said body is adapted to maintain its generally polygonal shape when said set the slots are interlocked with said set of tabs.

17. The wire support of claim 11, wherein each of said one or more apertures comprises a slit.

18. The wire support of claim 11, wherein said set of slots comprises a first slot and a second slot.

19. The wire support of claim 18, wherein said set of tabs comprises a first tab and a second tab, the first tab adapted to seat against the first panel proximal said first slot, the second tab adapted to seat against the first panel proximal said second slot.

20. A wire support, comprising: a body having a first panel, a second panel, a third panel, and a plurality of apertures configured to receive a wire therethrough, said first panel including a set of slots configured to interlock with a set of tabs formed on the third panel; a first perf-cut disposed between the first and second panels, said first perf-cut comprising a plurality of perforations; and a second perf-cut disposed between the second and third panels; said second perf-cut comprising a plurality of perforations; wherein said body is adapted to assume a generally polygonal shape when folded along the first and second perf-cuts.

21. The wire support of claim 20, wherein said wire support comprises corrugated Kraft paper.

22. The wire support of claim 20, wherein said wire support comprises cardboard.

23. The wire support of claim 20, wherein said elongated member comprises a wire.

24. The wire support of claim 20, wherein said body is adapted to maintain its generally polygonal shape when said set the slots are interlocked with said set of tabs.

25. The wire support of claim 20, wherein each of said plurality of apertures comprises a slit.

26. The wire support of claim 20, wherein said set of slots comprises a first slot and a second slot.

27. The wire support of claim 26, wherein said set of tabs comprises a first tab and a second tab, the first tab adapted to seat against the first panel proximal said first slot, the second tab adapted to seat against the first panel proximal said second slot.

28. A wire support, comprising: a body having a first panel, a second panel, a third panel, and one or more apertures configured to receive a wire therethrough; a first perf-cut disposed between the first and second panels, said first perf-cut comprising a plurality of perforations;

a second perf-cut disposed between the second and third panels; said second perf-cut comprising a plurality of perforations; and means for interlocking said first and third panels.

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