United States Patent [19]

Ray et al.

[11] **3,913,186**

[45] **Oct. 21, 1975**

[54] **PLASTIC TIE DOWN CLIP**

[75] Inventors: **Clarence R. Ray**, Porter; **Jack A. La Brie**, Houston, both of Tex.

[73] Assignee: **Van Leer Plastics (U.S.A.) Inc.**, Houston, Tex.

[22] Filed: **Mar. 4, 1974**

[21] Appl. No.: **447,647**

[52] **U.S. Cl.** ..... **24/245 R**; 24/245 A; 24/247; 24/263 HE

[51] **Int. Cl.²** **A44B 21/00**

[58] **Field of Search** ..... 24/245 R, 245 A, 263 HE, 24/243 HE, 245 B, 245 FF, 247

[56] **References Cited**

UNITED STATES PATENTS

1,828,041	10/1931	Hamacher	24/245 R
2,235,703	3/1941	Epworth	24/245 R
2,472,235	6/1949	Sullivan	24/245 R
2,939,195	6/1960	Carlson	24/245 R
3,345,714	10/1967	Finkel	24/246
3,400,435	9/1968	Rydin	24/247
3,408,708	11/1968	Hawie	24/245 R
3,422,504	1/1969	Brown	24/245 A
3,556,104	1/1971	Janklow	24/245 FF

FOREIGN PATENTS OR APPLICATIONS

1,062,191	7/1959	Germany	24/245 FF
121,569	12/1918	United Kingdom	24/245 R
909,322	4/1954	Germany	24/245 R
753,431	7/1956	United Kingdom	24/245 A

Primary Examiner—Bernard A. Gelak

Attorney, Agent, or Firm—Fulbright & Jaworski

[57] **ABSTRACT**

A plastic tie down clip including a body and a disc for fastening to a sheet of material. The body includes large internal opening at one end and a smaller internal opening at the second end with a tapered slot interconnecting the openings. The slot decreases in size from the large opening toward the smaller opening. The intersection of the slot and the smaller opening is provided with locking shoulders facing the smaller opening. The disc has an irregularly shaped periphery. The body is placed over the material and the disc is placed under the material and shoved through the large opening carrying the material through the large opening and is moved along the tapered slot to carry the material into the smaller opening and to be locked therein by the shoulders. The irregularly shape of the disc prevents slippage between the material and the disc and acts as a locking device in the small opening of the body.

2 Claims, 5 Drawing Figures

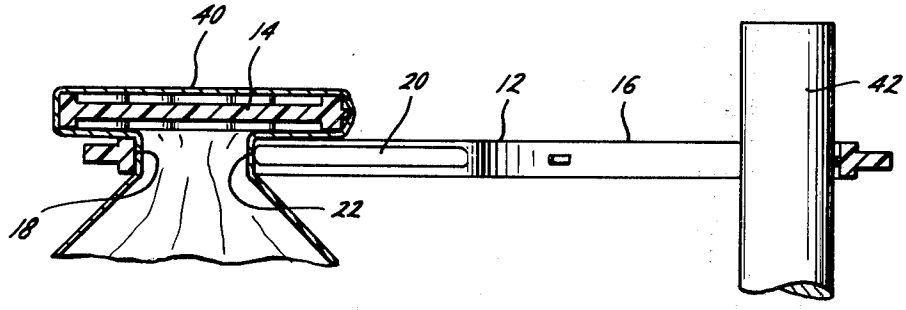


Fig. 1

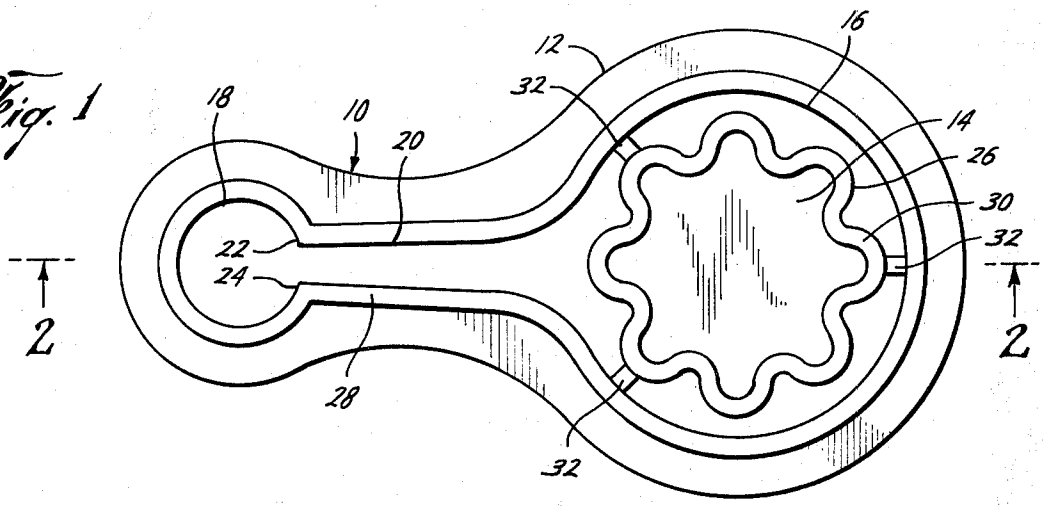


Fig. 2

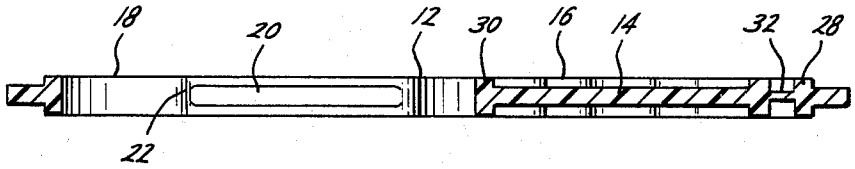


Fig. 3

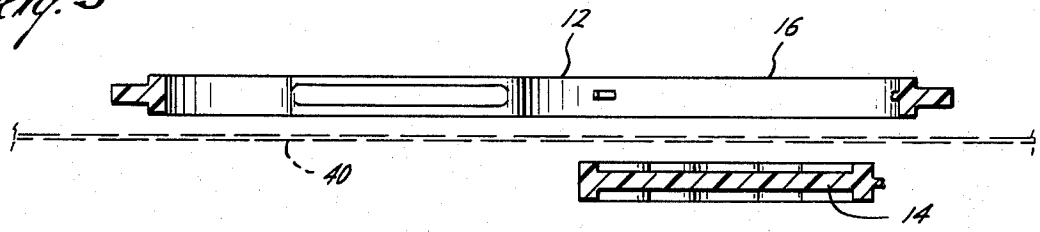


Fig. 4

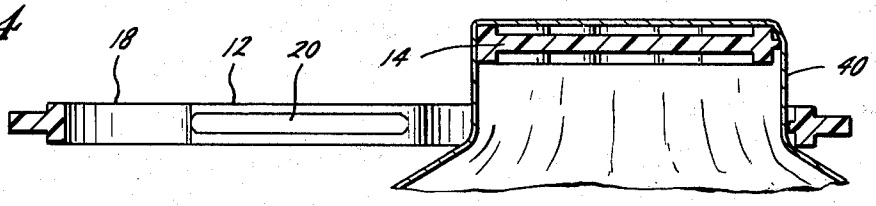
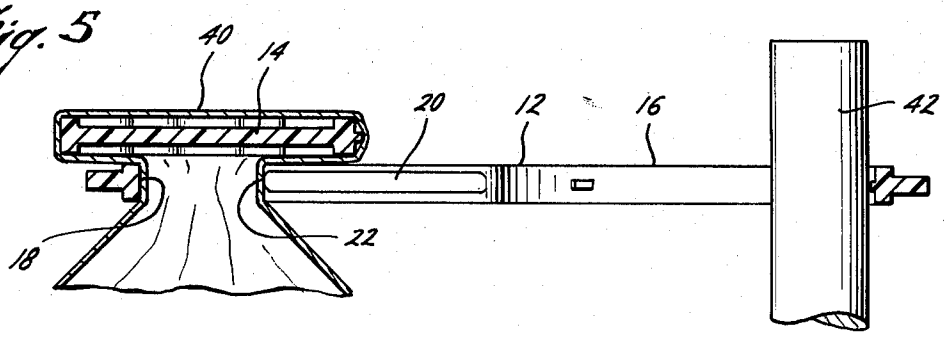


Fig. 5



PLASTIC TIE DOWN CLIP

BACKGROUND OF THE INVENTION

Generally, it is old to provide a tie down clip which can be connected to a sheet of material such as tarps, covers and plastic sheeting which can be connected to the material and tied down such as shown in U.S. Pat. No. **2,939,195.** The present invention is directed to an improved tie down clip, which is plastic and can be inexpensively produced in mass quantities, which is strong, and which can be easily and quickly attached to a sheet of material and securely fastened thereto and locked in place.

SUMMARY

The present invention is directed to a plastic tie down clip having a plastic body and a disc. The plastic body includes a large internal disc insertion opening at one end and a smaller internal disc locking opening at the second end with a tapered slot interconnecting the openings. The slot decreases in size from the large opening toward the smaller opening. At the intersection of the slot and the smaller opening locking shoulders are provided facing the smaller opening.

The disc includes an irregularly shaped outer periphery and is sized to be inserted through the large opening, but sized larger than the smaller opening. The clip is secured to a sheet of material by placing the body on one side of the material and the disc on the second side of the material and the disc is pushed towards the body carrying the material through the large opening. The disc is then moved laterally carrying the material along the tapered slot and into the smaller opening thereby locking the material in the smaller opening and against the locking shoulders. The clip is then secured to the material, and a line may be run through the larger opening for anchoring or securing the material.

A still further object of the present invention is the provision of an enlarged rib on the body extending along the outer edges of the large opening, the small opening, and the tapered slot for increasing the strength of the body.

Still a further object of the present invention is the provision of an enlarged rib extending about the outer periphery of the disc for increasing contact between the disc and the material for minimizing slippage therebetween.

A still further object of the present invention is the provision of a plastic tie down clip in which the body and disc are initially joined together by molding breakable connections therebetween which prevents one portion from being lost from the second portion, but allowing the disc to be separated easily when it is desired to use the clip.

Other and further objects, features and advantages will be apparent from the following description of the presently preferred embodiment of the invention, given for the purpose of disclosure and taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a plan elevation view of the plastic tie down clip of the present invention as manufactured,

FIG. 2 is a cross-sectional view taken along the line 2—2 of FIG. 1,

FIG. 3 is a cross-sectional view showing the disc separated from the body with a sheet of material therebetween preparatory to connecting the clip to the sheet of material.

FIG. 4 is a cross-sectional view showing the disc being moved through the large opening of the body and carrying the material through the large opening, and

FIG. 5 is a cross-sectional view showing the position of the parts after the disc has been moved laterally towards the small opening carrying the material into the smaller opening and locking the material and disc therein, and in which the larger opening may be secured to a suitable anchoring line.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, and particularly to FIGS. **1** and **2**, the reference numeral **10** generally indicates the plastic tie down clip of the present invention and generally includes a body **12** and a disc **14.**

The body **12** includes a first large internal disc receiving opening **16** at one end and a second smaller internal disc locking opening **18** at a second end. A tapered slot **20** interconnects the openings **16** and **18,** the slot **20** decreasing in size from the large opening **16** towards the smaller opening **18.** The intersection of the slots **20** and the small opening **18** is provided with locking shoulders **22** and **24** facing the smaller opening **18** for retaining and locking the sheet material therein, as will be more fully described hereinafter.

The disc **14** has an irregularly shaped periphery **26,** such as corregated shape, and is sized smaller than the large opening **16** for insertion therethrough, but is sized larger than the smaller opening **18** so that the disc cannot be pulled through the opening **18.** The outer periphery **26** of the disc is irregularly shaped to maximize its contact with the material to which the clip **10** is to be attached and to prevent slippage between the disk and the material.

For increasing the strength of the clip **10,** an enlarged rib **28** extends along the outer edges of the large opening **16,** the slot **20,** and the small opening **18.** In addition, the disc includes an enlarged rib **30** about its outer periphery for strengthening the disc and reducing the possibility of its breakage.

Preferably, the clip **10** is molded out of a high density polyethylene and, as best seen in FIGS. **1** and **2,** the body **12** and the disk **14** are molded simultaneously and secured together by a plurality of breakable connections **32** which securely hold the parts **12** and **14** together until they are to be used. When it is desired to connect the clip **10** to a material, the disc **14** may be quickly and easily pushed out of the large opening **16** breaking the connections **32.**

In use, and as best seen in FIGS. **3, 4** and **5,** the disc **14** is broken out and removed from the body **12.** Referring first to FIG. **3,** the irregularly shaped disc **14** is placed on one side of a sheet of material **40** to which the clip **10** is desired to be secured. The body **12** is placed on the second side of the material **40.** The large opening **16** is placed in alignment with the disc **14** and the disc is pushed towards the opening **16** carrying the material **40** through the large opening **16,** as best seen in FIG. **4.** The disc **14** is then moved laterally, carrying the material **40** along the tapered slot **20** into the smaller opening **18** of the body **12.** The material **40** is then pulled taunt, drawing the material downwardly so that the material is pulled tight around the irregular outer periphery **26** of the disc **14,** creating a locked po-

sition of the material **40** by the disc **14** against the small opening **18** of the body **12.** The large opening **16** may then be fastened to any suitable anchoring means such as an anchoring line **42,** all as best seen in FIG. **5.** The tapering slot **20** reduces the tendency of the disc **14** to twist, and the locking shoulders **22** and **24** lock the material **40** about the disc **14.** The irregular shape of the disc **14** maximizes the surface contact of the material **40** with the disc **14,** which functions as a locking device in the small opening **18,** and minimizes slippage.

The present invention, therefore, is well adapted to carry out the objects and attain the ends and advantages mentioned as well as others therein. While a presently preferred embodiment of the invention is given for the purpose of disclosure. numerous changes in the details of construction and arrangement of parts may be made which will readily suggest themselves to those skilled in the art and which are encompassed within the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. A plastic tie down clip for fastening to a sheet of material comprising,

a plastic body having a large internal opening at one end, and a smaller internal opening at the second end,

a tapered slot interconnecting said openings, the slot decreasing in size from the large opening toward the smaller opening,

the intersection of the slot and the smaller opening providing sharp locking shoulders facing the smaller opening,

a disc having an irregularly shaped periphery for preventing slippage between the material and the disc, said disc sized to be inserted through the large opening, but sized larger than the smaller opening, and

said disc includes an enlarged rib extending about the outer periphery of said disc providing an edge surface wider than the disc for preventing slippage of material placed between the disc and the body.

2. A plastic tie down clip for fastening to a sheet of material comprising,

a plastic body having a large internal opening at one end, and a smaller internal opening at the second end,

a tapered slot interconnecting said openings, the slot decreasing in size from the large opening toward the smaller opening,

the intersection of the slot and the smaller opening providing sharp locking shoulders facing the smaller opening,

a disc having an irregularly shaped periphery for preventing slippage between the material and the disc, said disc sized to be inserted through the large opening, but sized larger than the smaller opening, and

said body and disc are initially joined together by breakable means extending between the large opening and the disc.

* * * * *