



US009528271B2

(12) **United States Patent**  
**Rook et al.**

(10) **Patent No.:** **US 9,528,271 B2**  
(45) **Date of Patent:** **Dec. 27, 2016**

(54) **ROOFTOP SUPPORT BASE**

(56) **References Cited**

(71) Applicant: **PHD Manufacturing, Inc.**,  
Columbiana, OH (US)

U.S. PATENT DOCUMENTS

(72) Inventors: **Benjamin J Rook**, Canfield, OH (US);  
**Robert J Burnside**, Struthers, OH (US)

5,102,073 A \* 4/1992 Lestenkof, Jr. .... F16L 3/227  
138/106

(73) Assignee: **PHD Manufacturing, Inc.**,  
Columbiana, OH (US)

D367,329 S 2/1996 Nelson et al.  
6,364,256 B1 \* 4/2002 Neider ..... F16L 3/18  
248/55

(\* ) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

6,502,791 B2 \* 1/2003 Parker ..... F16L 3/18  
248/405  
6,592,093 B2 \* 7/2003 Valentz ..... F16L 3/00  
248/346.01

(21) Appl. No.: **14/694,246**

6,679,461 B1 1/2004 Hawkins  
D521,851 S 5/2006 Smart  
7,607,619 B2 10/2009 Smart et al.  
7,661,240 B2 \* 2/2010 Sargent ..... F16L 3/137  
248/146

(22) Filed: **Apr. 23, 2015**

7,731,131 B2 \* 6/2010 Trueb ..... E04D 13/00  
248/49

(65) **Prior Publication Data**

US 2016/0312472 A1 Oct. 27, 2016

D625,677 S 10/2010 Robbins, Sr. et al.

(51) **Int. Cl.**  
**E04H 12/12** (2006.01)  
**E04D 13/00** (2006.01)

8,312,692 B2 11/2012 Krovats

(52) **U.S. Cl.**  
CPC ..... **E04D 13/00** (2013.01); **E04H 12/12**  
(2013.01)

8,356,778 B2 1/2013 Birli et al.

(58) **Field of Classification Search**  
USPC ..... 52/292, 293.2, 294, 298; 248/346.01,  
248/346.4, 346.03

\* cited by examiner

*Primary Examiner* — Alfred J Wujciak

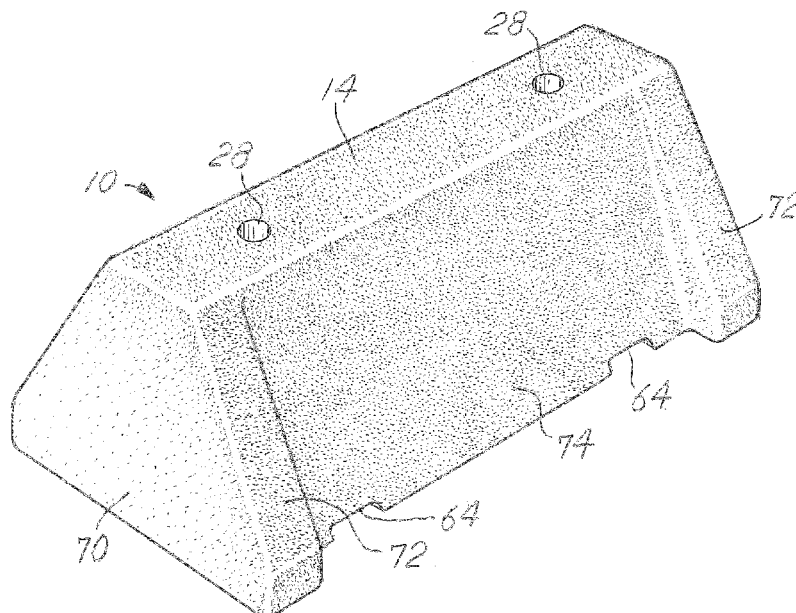
(74) *Attorney, Agent, or Firm* — Botkin & Hall, LLP

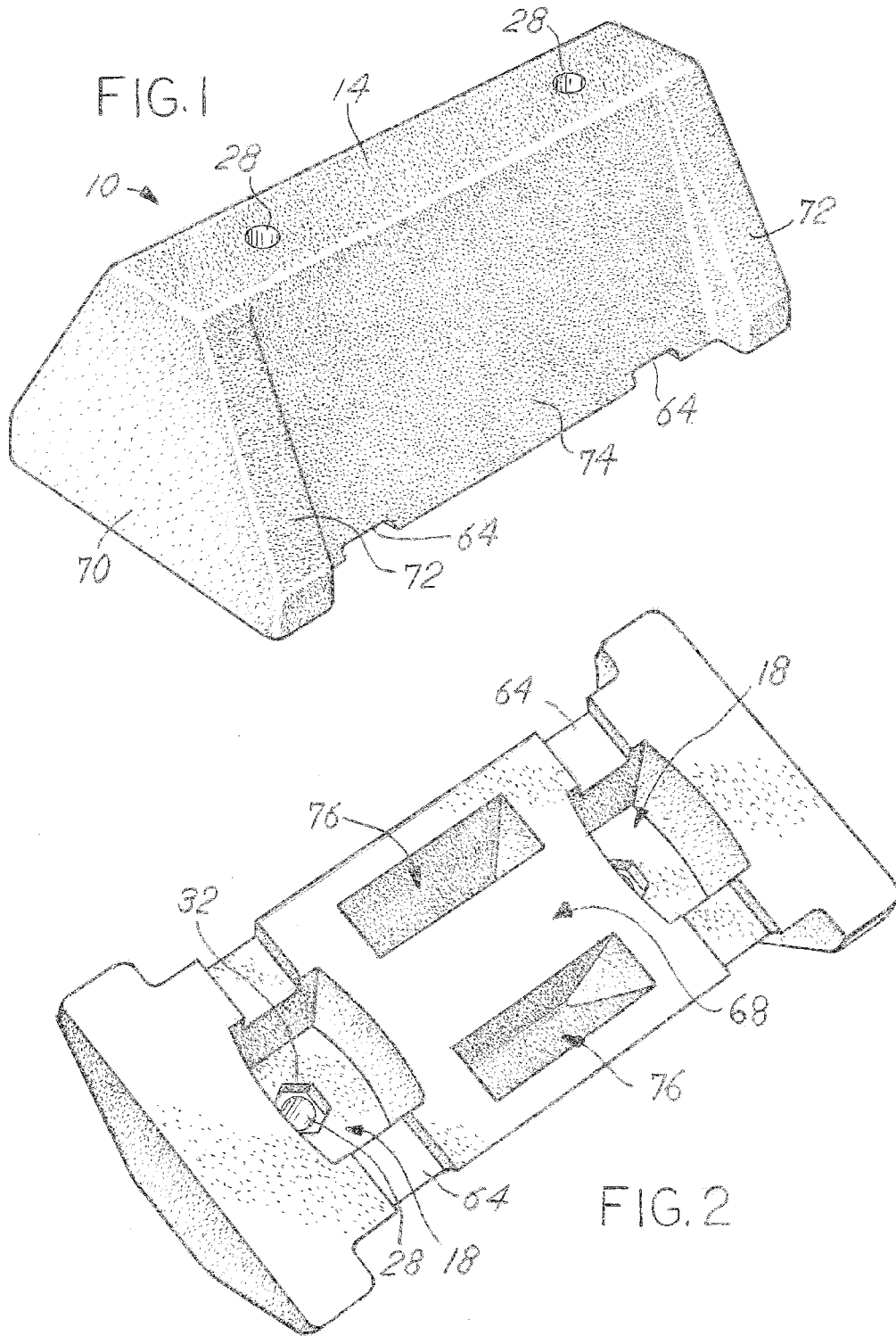
(57) **ABSTRACT**

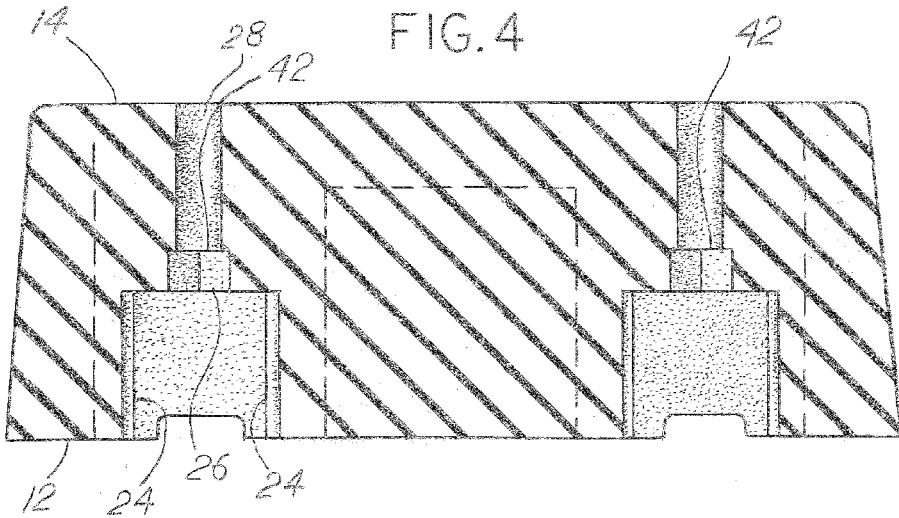
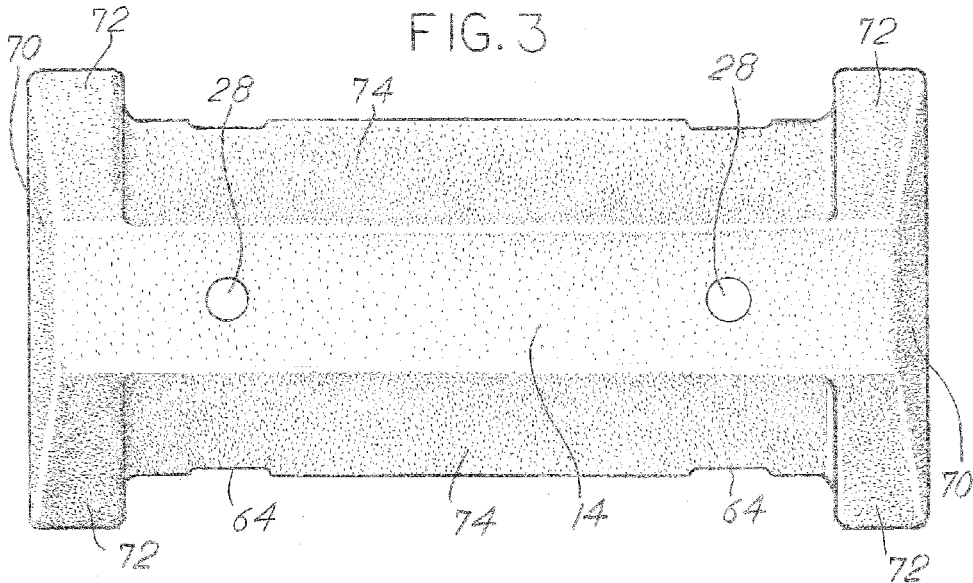
A rooftop support block is provided having tapered outside surfaces that terminate at a top surface. The top surface will carry another item that will be secured to the support block. The bottom of the block has a larger surface than the top to provide stability. The block further contains a hole that will allow a bolt or other fastener to secure the item to the support block.

See application file for complete search history.

**10 Claims, 5 Drawing Sheets**







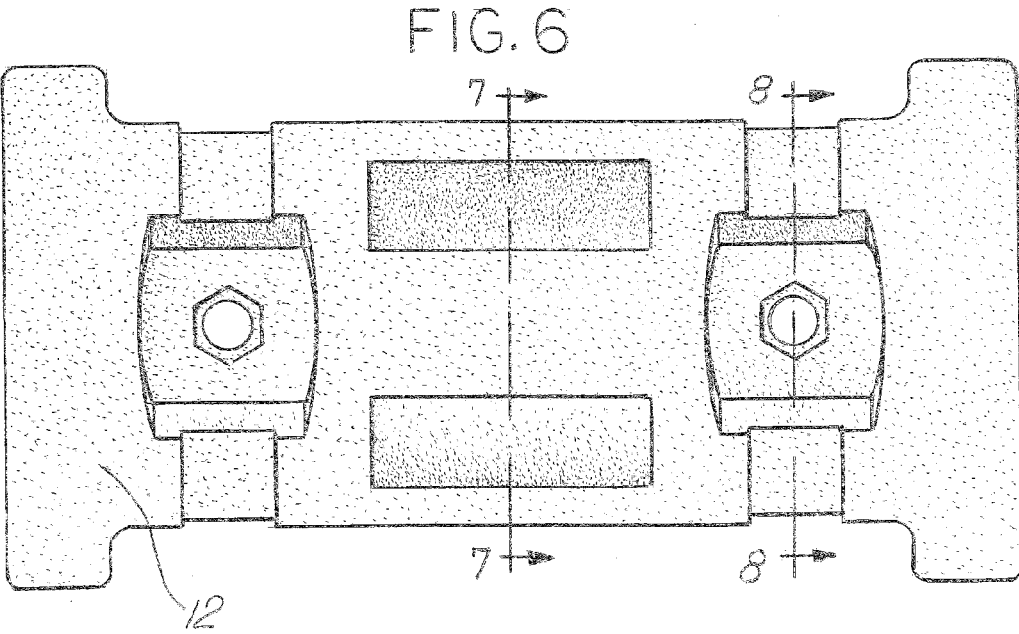
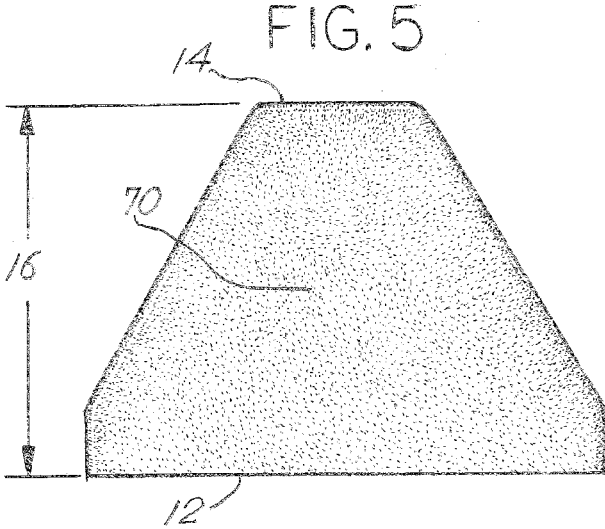
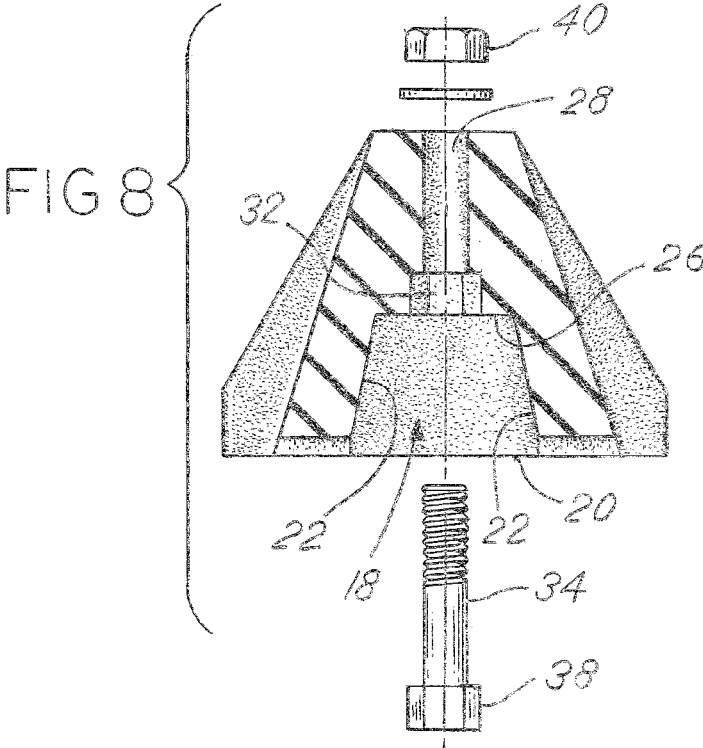
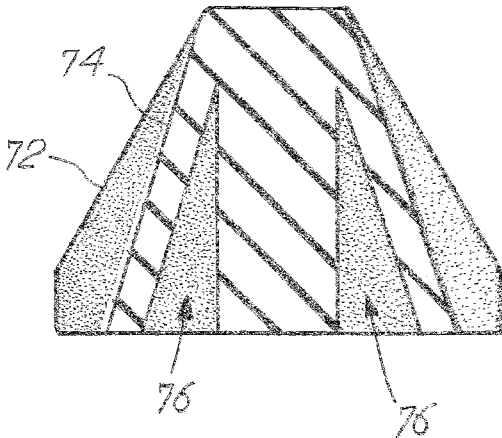
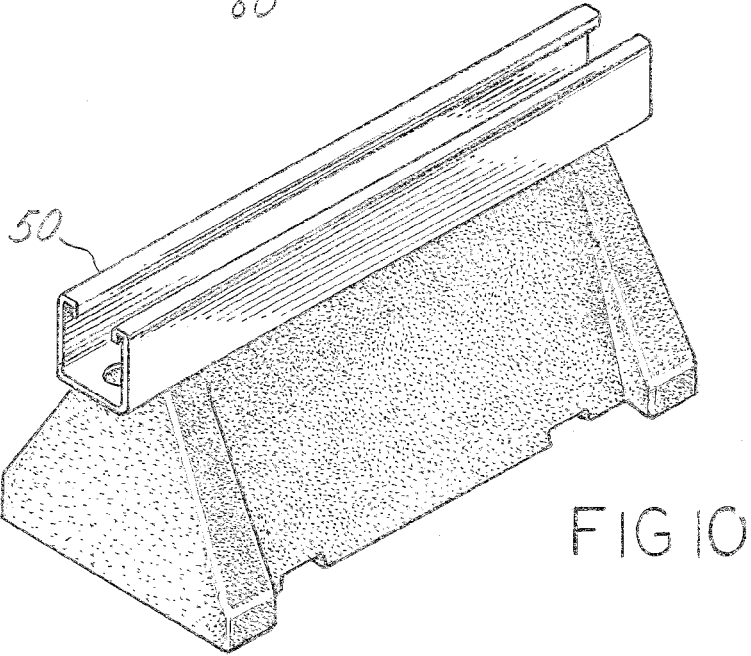
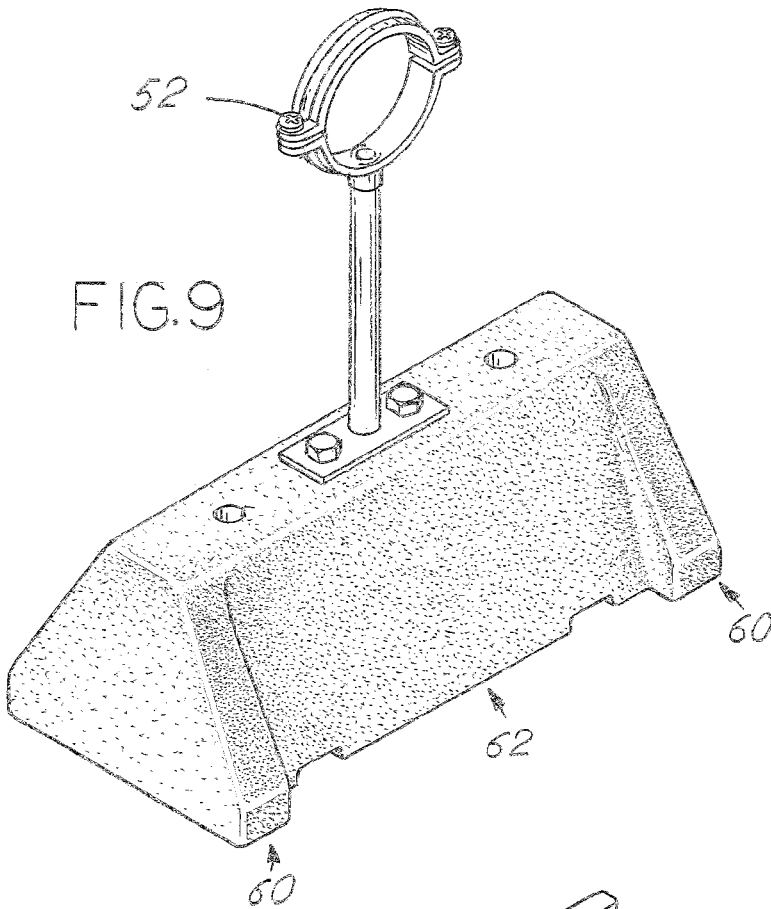


FIG. 7





1

**ROOFTOP SUPPORT BASE**

## BACKGROUND OF THE INVENTION

This present disclosure relates to devices used to support pipes or other apparatus on a flat or gradually sloping rooftop. Many buildings, especially in urban areas, are constructed with a flat or shallow pitch roof. Frequently, HVAC or other utility structures are placed on the roof for convenience, ease of service, or other practical reasons. These structures frequently need air, water, cooling, Freon, or gas lines. These lines cannot be placed directly on the roof; they must be supported by a rooftop support base or other device that raises the line off of the roof surface and supports it sufficiently. Other rooftop support bases attempt to solve this problem, but they fall short for several reasons. Wood blocks are used, but these are subject to destruction by insects or decay from moisture. Other devices can be heavy or difficult to use when attaching lines to them. An improved rooftop support block is needed.

## SUMMARY OF THE INVENTION

The present disclosure describes a resilient rooftop support block with a wide bottom and a relatively narrow top that can carry pipes and other devices commonly found on a rooftop. The bottom has cavities that reduce weight and others that can secure a fastener and prevent it from rotating without the user having to hold it. The block also has a center section that is relatively thick and can allow a self-tapping fastener to be driven in for securing.

## BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of this invention has been chosen wherein:

- FIG. 1 is a top isometric view of the device;
- FIG. 2 is a bottom isometric view of the device;
- FIG. 3 is a top view of the device;
- FIG. 4 is a side section view of the device;
- FIG. 5 is an end view of the device;
- FIG. 6 is a bottom view of the device;
- FIG. 7 is section view 7 in FIG. 6;
- FIG. 8 is a section view 8 in FIG. 6;

FIG. 9 is a top isometric view of the device being used with a pipe attachment bracket; and

FIG. 10 is a top isometric view of the device being used with a channel.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

A rooftop block **10** as shown in FIG. **1** is formed from a single piece of dimensionally stable material. It has a lower surface **12** that is flat and is made to rest on a roof or other mostly horizontal surface. It is contemplated that the lower surface **12** has a texture or pattern to improve gripping or traction when resting on a sloped or irregular roof. The block **10** relies on gravity and the weight of any devices attached to it to stay in position. A flat top surface **14** is parallel to the lower surface **12** to define an overall height **16**. The flat surface **14** is mostly rectangular as shown but other shapes are possible.

Turning now to the lower surface **12**, a fastener cavity **18** has sidewall surfaces **22**, **24** that intersect the lower surface **12** at an opening **20**. The sidewall surfaces **22**, **24** are tapered such that the surfaces are farther apart nearest the opening

2

The sidewall surfaces **22**, **24** extend toward the top surface **14** and terminate into a fastener surface **26**. As shown in FIGS. **4** and **8**, the fastener surface **26** is near a midpoint between the lower surface **12** and top surface **14**. The fastener cavities **18** are shown near the ends but they can be located at any point along the length of the block **10**.

An aperture **28** is between the top surface **14** and the fastener surface **26**. The aperture **28** is sized to accept a fastener shown in FIG. **8**, such as threaded rod, a bolt **34**, lag screw, or other fastening device. The fastener cavity **18** further includes a fastener recess **32** that can receive and retain the head **38** of a bolt **34** or a nut **40**. The fastener cavity **18** has a second fastener surface **42** where the head **38** or nut **40** can compress against when the fastener is tightened. The second fastener surface **42** prevents the fastener from pulling through the aperture **28**. As shown, the fastener recess **32** is a hex shape. The fastener recess **32**, aperture **28**, or both can be sized to be an interference fit to portions of the fastener. The interference fit allows the user to drive in part of the fastener from the fastener cavity **18** and place the block **10** on the roof without the fastener falling back out. The fastener recess **32** prevents the fastener from rotating while the other part of the fastener is tightened. The fastener recess **32** can be sized to accept commonly used fasteners.

The top surface **14** can receive a variety of external components as is shown in FIGS. **9** and **10**. These external components can include strut channel **50**, split rings **52**, rollers, bridges, or other components that similarly function. The external components are used to attach HVAC, plumbing, or other utility lines to a device raising the line off the roof.

As shown in FIG. **9**, opposite ends of the block **10** are stabilizing portions **60** where the bottom surface is larger. This provides additional stability and reduces the chances of the block **10** to rock or slide on the rooftop. Located between the stabilizing portions **60** is a center section **62**. The center section **62** is narrower to allow the block **10** to be lighter and more transportable.

Located in the center section **62** are two notches **64**, visible in FIG. **2**. Because rainwater or other runoff can become trapped against the center section **62**, the notches **64** provide a path for the runoff to pass underneath the block without becoming trapped and stagnant. As shown in FIGS. **2** and **4**, the notches **64** are in-line with the fastener cavities **18** but they can be located anywhere on the bottom surface **12** where water can become trapped.

As shown in FIGS. **1**, **3**, and **7**, the outside surfaces between the lower surface **12** and the top surface **14** are tapered. The end surfaces **70** intersect the lower surface **12** and the top surface **14** on the terminal ends. Side surfaces **72** on the stabilizing portions intersect the end surfaces **70** and are also tapered toward the top surface **14**. The center section **62** also has tapered outside surfaces **74** that intersect the top surface **14**.

Further located in the center section **62** are some coring cavities **76** that extend upwardly toward the top surface **14** with openings through the bottom surface **12**. The coring cavities **76** serve to provide a more uniform wall thickness in the center section **62** and reduce weight and material consumption of the block **10**. This improved consistent wall thickness is visible in section view FIG. **7**. A consistent wall thickness also improves dimensional stability. Located between coring cavities **76** and apertures **28** is a thick section **68**. It is contemplated that a self-tapping threaded fastener can be driven into the thick section **68** to secure another object, bracket, or apparatus. As shown in FIG. **9**, the split ring **52** is attached to the block using self-tapping screws.

It is understood that while certain aspects of the disclosed subject matter have been shown and described, the disclosed subject matter is not limited thereto and encompasses various other embodiments and aspects. No specific limitation with respect to the specific embodiments disclosed herein is intended or should be inferred. Modifications may be made to the disclosed subject matter as set forth in the following claims.

What is claimed is:

1. A rooftop support block adapted for supporting and affixing to a device and resting on a substantially horizontal surface, said support block comprising:

a monolithic elongate block having a substantially planar lower surface having an opening forming an open mouth to a fastener cavity, said fastener cavity having sidewall surfaces extending upward from said lower surface and terminating in a fastener surface circumscribed by said sidewall surfaces, said fastener surface being substantially parallel to said lower surface;

said block having a stabilizing portion at each end of said block and a center section located therebetween, said stabilizing portion being wider at said lower surface than said center section;

said block having tapered outside surfaces extending upwardly from said lower surface at an acute angle to intersect a substantially planar top surface adapted to receive said device, said top surface being substantially parallel to said lower surface, opposing tapered outside surfaces being separated at a greater distance near said lower surface than said top surface;

a fastener aperture extending through said block between said top surface and said fastener surface, said aperture being substantially perpendicular to said top surface and adapted to receive a fastener, said fastener cavity adapted to receive a portion of said fastener and fix said fastener from rotation with respect to said support block; and

said lower surface interrupted by a notch extending towards said top surface, said notch intersecting said open mouth to said fastener cavity.

2. The support block of claim 1, said fastener cavity having a receiver being a recess in said fastener surface extending towards said top surface and having a second fastener surface between said fastener surface and said top surface, said recess being circumscribed by sidewall surfaces extending between said fastener surface and said second fastener surface.

3. The support block of claim 2, said sidewalls form a hex shaped cross section adapted to receive a hex shaped fastener.

4. The support block of claim 3, said fastener cavity having a portion being an interference fit adapted to retain said fastener axially.

5. The support block of claim 1, said support block formed from a resilient material.

6. The support block of claim 5, said block having a cored area, said cored area having a cored opening defined by an open mouth to a cored cavity, said cored cavity separate from said fastener cavity.

7. The support block of claim 6, said support block having at least two fastener cavities, said cored area located between said fastener cavities.

8. A rooftop support block adapted for supporting and affixing to a device and resting on a substantially horizontal surface, said support block comprising:

an elongate block having a substantially planar lower surface having an opening forming an open mouth to two fastener cavities located at distal ends of said block, said fastener cavities having sidewall surfaces extending upward from said lower surface and terminating in a fastener surface circumscribed by said sidewall surfaces, said fastener surface being substantially parallel to said lower surface, said lower surface interrupted by a notch extending towards said top surface, said notch intersecting said open mouth;

said block having a cored area, said cored area having a cored opening defined by an open mouth to a cored cavity, said cored cavity separate from said fastener cavity;

said block having a stabilizing portion at each end of said block and a center section located therebetween, said stabilizing portion being wider at said lower surface than said center section;

said block having tapered outside surfaces extending upwardly from said lower surface at an oblique angle to intersect a substantially planar top surface, said top surface being substantially parallel to said lower surface, opposing tapered outside surfaces being separated at a greater distance near said lower surface than said top surface;

a fastener aperture extending through said block between said top surface and said fastener surface, said aperture being substantially perpendicular to said top surface and adapted to receive a fastener, said fastener cavity adapted to receive said fastener and fix said fastener from rotation with respect to said support block; and

a receiver being a recess in said fastener surface extending towards said top surface and having a second fastener surface between said fastener surface and said top surface, said recess being circumscribed by sidewall surfaces extending between said fastener surface and said second fastener surface, said sidewalls form a hex shaped cross section adapted to receive a hex shaped fastener.

9. The support block of claim 8, said fastener cavity having a portion being an interference fit adapted to retain said fastener axially.

10. The support block of claim 8, said support block formed from a resilient material.

\* \* \* \* \*