Claims

1. A cable trough system comprising:

a first plurality of cuboid members, each cuboid member comprising a top casing and a bottom casing joined to form an elongate body encompassing a hollow cavity that is accessible from a front opening and a back opening respectively located at a front end and a back end of the cuboid member, each of the first plurality of cuboid members connected in tandem or series with each other such that the back opening of one cuboid member resides adjacent to the front opening of a next cuboid member at an interface or joint where two adjacent cuboid members are coupled;

a plurality of top bracket and bottom bracket pairs, wherein for each top bracket and bottom bracket pair the top bracket and bottom bracket is respectively secured or fastened to a joint where edges of the top casing and edges of the bottom casing of two adjacent cuboid members meet; and

a plurality of belts and corresponding buckles, each belt slidably engageable with its corresponding buckle, each belt comprising a fabric and/or an explosive force absorbent / resilient / resistant polymer fiber band having one end engaged to its corresponding buckle and another end insertable to the buckle, each buckle including an outer frame carrying one or more crossbars to catch against the band for strapping and securing the belt around the elongate body of a cuboid member and securing the top casing to the bottom casing thereof, wherein each buckle is configured to allow its corresponding belt to slide out of the buckle a limited distance permitting at least some upward lifting of the top casing of a cuboid member away from the bottom casing thereby creating a gap for discharging increased air pressure within the hollow cavity in the occurrence of a fire or explosive incident within the hollow cavity when the increased air pressure reaches or exceeds a predetermined level, threshold, or value.

2. The cable trough system of claim 1, wherein the crossbar and/or the outer frame of each buckle includes knurling, knurled structures, and/or protrusions to control an amount of friction imposed by the buckle against the belt corresponding thereto, and react or progressively react against the belt sliding out of the buckle in response to increased air pressure.

3. The cable trough system of claim 1, further comprising for each belt strapped around the cuboid member a cushioning component, element, or structure disposed between the top casing and part of the belt strapped around the cuboid member, for partially absorbing an impact caused by the increased air pressure.

4. The cable trough system of claim 1, wherein each of the top casing and the bottom casing of each cuboid member is substantially U-shaped and provides a planar panel coupled to a first and a second elongate side respectively folded into a first and a second vertically extending sidewall, wherein the

first sidewall has a greater spatial extent along a vertical axis than the second sidewall, wherein each sidewall is coupled to or terminates at an elongated edge running lengthwise along the cuboid member, wherein the elongated edge of each of the first sidewall and the second sidewall of the top casing is fashioned to respectively couple to the elongated edge of the second sidewall and first sidewall of the bottom casing to form the cuboid member.

5. The cable trough system of claim 4, further comprising a pair of panel edge clips or H-clips for coupling the elongate edges of the top casing to the elongate edges of the bottom casing.

6. The cable trough system of claim 5, wherein each H-clip comprises a strip running lengthwise corresponding to the elongate edge of the top casing and/or bottom casing defining a top groove and a bottom groove for separately accommodating the elongate edge of the coupled top and bottom casings.

7. The cable trough system of claim 6, further comprising multiple guiding elements spaced along and arranged in pairs disposed on opposing sidewalls of the bottom casing, each of the guiding elements comprising a pair of opposing arms stretching upward away from the sidewalls of the bottom casing with one of the arms mounted on external surface of the sidewall and another arm mounted on internal surface of the sidewall, each pair of opposing arms creating a slot in which one of the sidewalls of the top casing is insertable, such that the pair of opposing arms is configured to guide the top casing to recouple with the bottom casing after lifting of the top casing away from the bottom casing in response to increased air pressure.

8. The cable trough system of claim 7, wherein the opposing arms of the guiding elements outstretch the H-clip along the vertical axis.

9. The cable trough system of claim 7, wherein each pair of guiding elements is wrapped towards the cuboid member by one of the belts.

10. The cable trough system of claim 1, wherein for two adjacent cuboid members, the pair of top and bottom brackets fastened to the joint stretches over the edges of the two adjacent cuboid members, concealing or overlaying a planar gap between the two adjacent cuboid members.

11. The cable trough system of claim 6, further comprising at least one support positioned within the hollow cavity of each cuboid member, each support comprising a substantially rigid slat extending from one sidewall toward or to another sidewall of the bottom casing, and shaped for carrying a set of cooling pipes running within the cavity along the connected cuboid members, and separating the

cooling pipes from one or more cables running underneath the support.

12. The cable trough system of claim 11, wherein each support comprises an n-shaped structure having its slat extending across the cavity and two downwardly reaching legs.

13. The cable trough system of claim 12, wherein each support carries one or more indentations on the slat for guiding, holding, or securing the cooling pipe on the support.

14. The cable trough system of claim 12, wherein each leg terminates in or into two parallel prongs with a more outwardly located prong being insertable into a top groove for anchoring the support onto an H-clip.

15. The cable trough system of claim 1 further comprising a protective sheet placed within the cavity overlaying the joint of two adjacent cuboid members at each bottom casing, wherein the protective sheet is configured for at least partially absorbing a force or impact directed toward the joint due to the increased air pressure.

16. The cable trough system of claim 15, wherein the protective sheet comprises two L-shaped frames, wherein each frame has a vertical segment and a horizontal segment respectively overlaying onto a sidewall and a planar panel of a bottom casing, and wherein the two L-shaped frames mate at the edge of the horizontal segment to form the protective sheet.

17. The cable trough system of claim 1, wherein each of the plurality of belts is spaced equidistant along each cuboid member.

18. The cable trough system of claim 1, wherein each cuboid member has one of the plurality of belts strapped proximate to the joint.

19. The cable trough system of claim 1, wherein the top casing of each cuboid member is detachable from the bottom casing permitting access to the cavity upon removal of the top bracket and belts.

20. The cable trough system of claim 1, wherein the belt comprises an explosive force absorbent / resilient / resistant polymer fiber band.

21. The cable trough system of claim 1, further comprising a thermal-resistant sheet wrapped around at least one of the cuboid members or the joint of two adjacent cuboid members.

22 The cable trough system of claim 1, further comprising a water resistant and flame resistant material or fabric wrapped around at least one of the cuboid members or the joint of two adjacent cuboid members.

23. The cable trough system of claim 1, wherein the first plurality of cuboid members includes a first terminal cuboid member, and wherein the cable trough system further comprises one of:

(a) a second cuboid member structure coupled to the first terminal cuboid member of the first plurality of cuboid members, wherein the second cuboid member structure has a larger opening end, a smaller opening end, and a length therebetween along which a perpendicular cross-sectional area changes between the larger opening end and the smaller opening end, and wherein one of the larger opening end and the smaller opening end is coupled to the front opening of the first terminal cuboid member of the first plurality of cuboid members; and

(b) a third cuboid member structure comprising a plurality of cuboid member segments configured for curving or bending in one of a leftward, a rightward, an upward, and a downward direction, wherein a terminal cuboid member segment of the third cuboid member structure is coupled to the first terminal cuboid member of the first plurality of cuboid members.

24. The cable trough system of claim 1, wherein each of the first plurality of cuboid members has a first cross-sectional area perpendicular to a length of each of the first plurality of cuboid members, wherein the first plurality of cuboid members includes a first terminal cuboid member, and wherein the cable trough system further comprises:

(a) a second cuboid member structure coupled to the first terminal cuboid member of the first plurality of cuboid members, wherein the second cuboid member structure has a larger opening end, a smaller opening end, and a length therebetween along which a perpendicular cross-sectional area changes between the larger opening end and the smaller opening end, and wherein one of the larger opening end and the smaller opening end is coupled to the front opening of the first terminal cuboid member of the first plurality of cuboid members; and

(b) a third plurality of cuboid members, wherein each of the third plurality of cuboid members has a third cross-sectional area different than the first cross sectional area, and wherein a terminal cuboid member of the third plurality of cuboid members is coupled to the other of the larger opening and the smaller opening end of the second cuboid member structure.