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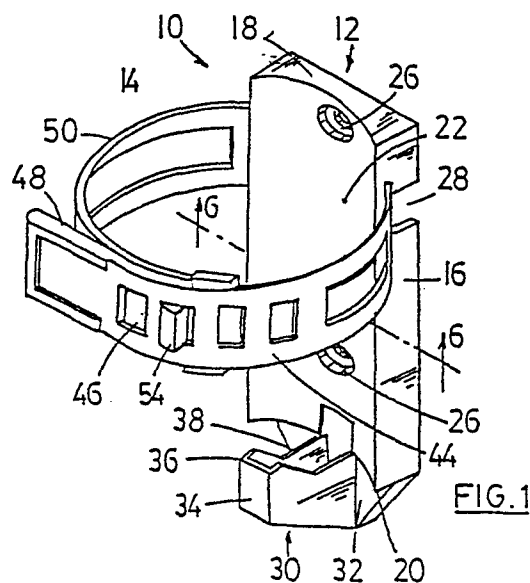
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54 **Multi-purpose canister wall bracket.**

57 A bracket assembly for supporting a cylindrical canister, such as a fire extinguisher, includes a base unit (12) having a longitudinally extending, transversely concave, front surface (22) for cradling the canister therein and a separate flexible strap member (14) which can be wrapped around the canister to hold it against the base unit. The base unit (12) includes opposing cutouts (28, 28) in the sides thereof into which a central section of the strap can be pressed before mounting on the wall so as to interlock the strap member with the base unit. One end of the strap (14) has a hook member (54) thereon for engaging the other end of the strap by way of a selected one of a plurality of mating apertures (46) therethrough. The back surface of the base unit is transversely concave and the strap member (14) has rearwardly projecting wedge members (42) which engage the wall during mounting and preset the strap to conform generally to the shape of the back surface. The bracket assembly is inexpensive to produce, provides support for a canister, is universal in nature in that it will accommodate different canister sizes and configurations, and it is capable of quick release if necessary.



MULTI-PURPOSE CANISTER WALL BRACKET

The present invention relates to brackets in general and in particular to wall-mountable brackets capable of holding cylindrical objects such as aerosol canisters, including fire extinguishers.

BACKGROUND OF THE INVENTION

There are several cylindrical objects in general use which, desirably, can be mounted on a wall for convenient or immediate access. One such object is the common fire extinguisher. Fire extinguishers are available in many sizes and in different ratings. Many fire extinguishers are purchased with accompanying wall brackets, intended to hold the extinguisher at a location selected by the user to be most advantageous in the event of a fire. Prior art brackets, however, have not enjoyed extensive engineering to optimize effectiveness and cost and there has not yet been available a universal bracket which can be used with almost any size of fire extinguisher from any manufacturer. Most prior art brackets have been especially designed to work only with specific designs of fire extinguisher canisters and cannot be used with other canister designs. Fabricated metal brackets tend to be quite expensive and prior art plastic brackets have not been of adequate strength to carry heavy fire extinguishers.

One such style of prior art bracket is in the shape of an outwardly opening vertically extending rectangular box with a pair of concave cylinder-receiving surfaces or saddles extending across the open box between the sides thereof. A suspension mechanism, in the form of an outwardly opening retaining hook is at the top of the box for engagement with the neck of a fire extinguisher. A flexible strap, having an asymmetrical necked-in area at the centre thereof, is connected to the box thereacross at the back thereof. The box has a curved surface at the back against which the strap will lie in use, and at the free ends thereof the strap is provided with an over-centre latch adapted for quick release. The bracket is adapted for utilization with but a single diameter of canister since otherwise the strap would not operate to hold a canister in place. With a larger diameter canister the strap would not stretch therearound, and with a smaller diameter canister the strap would be too loose and there would be a danger of the canister falling from its suspension hook. Furthermore such brackets are not aesthetically pleasing and they are not cost-effective to manufacture.

SUMMARY OF THE INVENTION

The present invention overcomes the problems of the prior art by providing a moulded plastic bracket base which is lightweight, yet strong, and has a transversely concave elongated front surface adapted to cradle the body of a cylindrical object, such as a fire extinguisher, to be carried thereby. Appropriate means, such as screws, are provided to mount the base unit to a wall. The base unit is open to the back and the inner wall of the unit appears as a convex surface, parallel to the concave outer surface. Matching cutouts are provided in the longitudinal side walls of the unit to accept therein an elongated flexible strap, which strap has a central portion adapted to interlock with the cutouts such that one end portion of the strap will extend laterally outwardly from one side of the base unit and the other end portion of the strap will extend outwardly from the other side of the base unit. The strap end portions are provided with first and second locking means for interlocking engagement when the end portions are wrapped around a cylindrical object. The interlocking means are designed so that very little effort is required to release the object, particularly important with fire extinguishers.

If desired, especially for heavy objects, the base unit can be provided with an outwardly projecting member which accepts the bottom of a cylindrical object and thereby supports the weight of the object to prevent it falling from the bracket. Also, an upper member can be provided for engagement with, for example, the upper valve casing of a fire extinguisher so as to even more securely hold the extinguisher in place. If desired, such upper member could be designed so that it could telescope into or out of the base unit and thus make the bracket more universal in its utility with different sizes and models of fire extinguishers. A simple ratchet mechanism could be used to keep the movable upper portion at its desired position relative to the base unit or the upper portion could be provided with its own means for securing it to a wall.

Should there be concern that a single strap might not be adequate to hold a large cylindrical object the base unit could be provided with longitudinally spaced pairs of cutouts, each pair adapted to receive a strap therein. If more than two straps are used, however, the speed with which a fire extinguisher could be released from the bracket during an emergency might be less than desirable.

The strap of this invention may be provided with rearwardly extending projections in the area

contained within the base unit for engagement with the wall when the base unit is attached to the wall. The projections would tend to push the strap towards the inner convex wall of the base unit, causing the strap end portions to angle outwardly from the wall and thereby making it easier to wrap them around a cylindrical object.

Other variations on the concept of the present invention involve the utilization of a flexible strap that has a tunnel on one portion thereof through which the other portion can pass so that the strap can be loosened to permit removal of the canister without the strap portions actually separating; the utilization of a solid circular ring instead of a flexible strap, especially for canisters that will be removed regularly from the bracket; and the utilization of a plurality of brackets joined together side-by-side to accommodate a plurality of canisters.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a perspective view of the bracket of this invention as it might be mounted on a wall;

Figure 2 shows a plan view of a strap as used with this invention;

Figure 3 shows the strap of Figure 2 in elevation;

Figure 4 shows a perspective view of a simplified base unit for the present invention;

Figure 5 shows a perspective view of a base unit for another embodiment of the present invention;

Figure 6 is a cross-section taken on the line 6-6 of Figure 1;

Figure 7 shows a perspective view of another form of base unit;

Figure 8 shows a perspective view of another embodiment of the present invention, utilizing a different strap;

Figure 9 shows a plan view of the strap utilized in the embodiment of Figure 8;

Figure 10 shows the strap of Figure 9 in elevation;

Figure 11 shows a perspective view of a multi-unit bracket assembly of this invention;

Figure 12 shows a perspective view of another multi-unit bracket assembly of this invention;

Figures 13 and 14 show top and bottom views respectively of a ring-like retainer useful with the brackets shown in Figures 1, 4, 5, 7, 8 and 12; and

Figure 15 shows a side view of the retainer of Figures 13 and 14.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment of the canister wall-bracket 10 of this invention is shown in Figure 1. The bracket includes two main components, namely a base unit 12 and a flexible strap 14, the latter being seen in more detail in Figures 2 and 3.

The base unit 12 is elongated and generally rectangular in elevation, having flat side walls 16,16 and flat upper and lower end walls 18,20. The front surface 22 of the base unit is transversely concave to receive therealong the cylindrical outer wall of a canister, such as a fire extinguisher. Since it is contemplated that the bracket of this invention will be universal in nature the radius of curvature of the surface 22 should be selected to accommodate the largest diameter of canister expected to be carried thereby. If different sizes of base units are to be manufactured then the radius of curvature of surface 22 can be more closely matched to the size or sizes of canisters to be carried thereby.

As seen in Figure 6 the base unit is hollow, opening to the back. The inner wall 24 of the unit presents a convex face to the back of the unit, generally parallel to the outer surface 22.

The base unit 10 may be integrally molded from a strong plastic such as polypropylene using standard molding techniques. During such molding recessed circular screw-receiving wells 26 may be provided in the front surface 22 to facilitate mounting the bracket to a wall. Screws (not shown) may be received in the wells 26 and driven into the wall, or anchors therein, to secure the base unit 12 to the wall. After mounting, the screw heads will be below the front surface 22 and will not interfere with a canister resting against that surface.

During molding the side walls 16,16 will each be provided with a rectangular cutout 28, which cutout extends inwardly to adjacent the inner wall 24. In the embodiment of Figure 1 the cutouts 28,28 are close to the upper end wall 18 of the base unit. For a secure mounting of the base unit to a wall the cutouts 28 should be located between the screw-receiving wells 26.

The embodiment of Figure 1 illustrates a bottom support member 30 which projects outwardly and will support the bottom wall of a canister carried by the bracket. The illustrated member 30 is integrally molded with the base unit and includes a thin plate section 32 which will abut the wall to which the base unit 12 is mounted and a generally U-shaped foot 34 projecting outwardly from the plate 32. The foot 34 has an upwardly projecting portion 36 which is adapted to enter into the upwardly cupped bottom of a pressurized canister to engage the bottom wall thereof and thereby support the canister. Clearance is provided by the dropped or cut-away portion 38 of the foot 34.

Turning now to Figures 2 and 3 the strap 14 of this invention will be described. The strap 14 is

preferably integrally molded from a plastics material to achieve a flexible yet durable member, the preferred material being EVA (ethylvinylacetate). The strap 14 is thin and narrow and is provided centrally with a narrower section 40 that has a length slightly greater than the width of base unit 12. The width of the central section 40 is the same as the width of cutout 28 so that the central section 40 can be received in the cutouts 28 and thereby lock the strap 14 to the base unit 12. Projecting upwardly from the central section 40 in Figure 3 is a pair of spaced apart transverse wedge members 42, the purpose of which will become apparent hereinafter.

One end portion 44 of the strap has a plurality of adjacent rectangular openings 46 extending therethrough, the number of openings 46 depending on the length of the strap and the degree of adjustability required. The free end of strap portion 44 has a thicker, generally U-shaped, enlargement 48 thereon to protect the strap and to provide a section easily gripped by someone wanting to release a canister from the bracket.

The other end portion 50 of the strap 14 has a long rectangular opening 52 therethrough and an inverted L-shaped hook member 54 projecting in the same direction as the wedges 42. At the free end thereof the portion 50 includes a pair of integral guide strips 56 of a thickness greater than that of the strap itself.

Reference is now made to Figures 1 and 6 to show the bracket in its "as used" condition. Figure 1, for example, shows the strap 14 engaged with the base unit 12. The central section 40 is locked to the base unit via the interengagement at the cutouts 28. The strap end portions are flexed towards each other as if wrapped around a cylindrical canister and the hook member 54 is pushed through one of the openings 46 so that the edge of the opening is engaged with the hook member 54 under the upper flange 58 thereof. Such engagement prevents the one end portion 44 from disengaging inadvertently from the hook member 54, it being understood that the natural tendency of the strap end portions is to unwrap from the canister and this tendency keeps the hook member 54 in engagement with the end portion 44 through the appropriate opening 46. Engagement is enhanced by the guide straps 56 which engage the side edges of the strap end portion 44 and prevent relative twisting between the end portions 44 and 50.

When mounting the bracket 10 to a wall the strap 14 is first of all assembled to the base unit via the cutouts 28. Before mounting to a wall the strap end portions 44,50 extend straight out from the sides 16,16 of the base unit. However, when the screws are tightened to secure the base unit 12

to the wall the wedges 42 will first contact the wall and, due to their shape, they will tend to spread apart thereby causing the strap end portions 44,50 to angle outwardly from the wall and thus causing the central strap section 40 to conform generally to the convex inner wall 24 of the base unit as seen in Figure 6. This makes it easier to grasp the free ends of the strap to wrap the end portions 44,50 about the canister to be supported thereby.

Figure 4 illustrates a basic or simplified base unit 60 that is usable with a strap 14 as previously described. The base unit 60 is the same as base unit 12 except that it does not have a support member 30 and it may be shorter overall. Thus the same reference numbers have been shown in Figure 4 for the base unit 60. Such a base unit could be used with a lightweight canister that does not require additional support or it could be used to support canisters in a generally horizontal attitude rather than in a vertical attitude.

Figure 5 shows another base unit 70 which is essentially the same as base unit 12 except that it has an upper support section 72 integrally molded therewith, which section is designed to mate with the upper end of a canister to be held thereby. In the illustrated embodiment the section 72 is shown as being not unlike the section 30 in general configuration but the actual configuration selected will depend on the design of the canister to be supported.

The chain dotted line 74 in Figure 5 is intended to illustrate that the base unit 70 could be made in two parts, 76,78 with the part 78 including an internal downwardly projecting female extension (not shown) for mating with the lower part 76 such that the part 78 can telescope relative to the part 76 and thereby accommodate canisters of different lengths. The telescoping function could involve a simple ratchet mechanism so that the part 78 would be movable only with some effort against the ratchet mechanism or alternatively the part 78 could have its own recessed well for receiving a screw such that the part 78 itself could be independently secured to a wall.

Figures 7 to 15 illustrate variations on the concept according to Figures 1 to 6. Although the invention has been described with particular reference to fire extinguishers it is clear that the bracket of this invention could be used to hold any type of cylindrical object. For example, but not by way of limitation, the brackets of this invention could be used to hold aerosol, spray-type or any other containers of solvent, cleaner, paint, lubricant, water, vegetable oil, etcetera in the kitchen, pantry, bathroom, garage, greenhouse, garden shed, workshop, recreation vehicle, boat, truck, automobile or factory. Different brackets can be used to hold different types of containers.

Turning now to Figure 7 there is shown a base unit 112 having side walls 116, 116, a flat upper end wall 118 and a concave front surface 122. The flat bottom end wall 120 extends forwardly as a thin flat foot or support 124 having a rounded edge 126. Adjacent the curved front surface 122 at the bottom thereof there is a recessed notch 130. Also, in the upper end wall 118 there is a pair of U-shaped openings 132 for reception therein of a small diameter tube such as might be used as a nozzle extension for an aerosol can of lubricant (eg. WD-40®). A canister will sit on the foot 124 and its cylindrical body will be cradled against the concave surface 122. The rounded rim at the bottom of the canister will be received in the notch 130 to avoid any misalignment of the canister in the bracket. To hold the canister in place a strap, such as the flexible straps shown in Figures 2, 3, 9 and 10, or a ring such as that shown in Figures 13 to 15, is engageable with the cutouts 128 provided in the sides 116, 116.

Figure 8 shows another base unit 12' which is the same as the base unit 12 shown in Figure 1 except that it includes circular openings 132' having the same purpose as the U-shaped openings 132 shown in Figure 7. The bracket assembly of Figure 8 is also shown using the modified strap 114 of Figures 9 and 10.

The strap 114 of Figures 9 and 10 is very similar to the strap 14 of Figures 2 and 3 with the elements or features 140, 142, 144, 146, 150, 152, and 154 being essentially identical or at least equivalent to the elements or features 40, 42, 44, 46, 50, 52 and 54 of the strap 14. In the strap 114 the free end 144 has a pair of short, narrow, transversely rounded protrusions thereon 148 along each edge thereof. The other free end has a rectangular enclosed tunnel portion 156 moulded thereon, the tunnel portion including a through tunnel 158 of a height "h" slightly less than the combined thickness of the strap 114 and the height thereabove of the protrusions 148, i.e. dimension H.

Since the material of the strap 114 is flexible the tunnel portion 156 will flex sufficiently to permit the end with protrusions 148 to pass through the tunnel 158. Then the strap can be locked around a canister with the hook member 154 engaging the edge of one of the openings 146 as shown in Figure 8. To release the canister one merely lifts the free end 144 to disengage the hook member 154, the free end 144 of strap 114 sliding backwards in tunnel 158 as the canister is removed. However, the protrusions 148 will come up against the outer end 160 of the tunnel portion 156 and prevent complete separation of the free ends of the strap. This will make it easier to reset the strap about the canister after use as the end with protru-

sions 148 thereon is already held by tunnel portion 156 and it can be grasped and pulled through tunnel 158 to effect re-engagement of the hook member 154 in the relevant opening 146.

As can be readily seen in Figures 8 and 9 the front face 162 of the tunnel portion 156 presents a fairly large expanse in which a logo, instructions or advertising material can be hot-stamped or moulded, or on which an appropriate label can be secured.

Figure 11 illustrates a multiple bracket assembly 200 comprising a plurality of individual base units 202 joined together by upper and lower webs 204, 206. Each base unit 202 can be similar to any of the previously described base units 12, 60, 70, 112 or 12' or any variation thereof. There is a rectangular gap 208 between the upper and lower webs 204, 206 to permit the insertion of a flexible strap, such as illustrated strap 14. Of course, strap 114 could also be used in the multiple bracket assembly.

A multiple bracket assembly could find great utility in, for example, a laundry room wherein several canisters of different products are used. One of the brackets of the multiple assembly might carry a fire extinguisher, while another might carry a can of powder cleanser, yet another carrying a can of spray starch and yet another carrying a bottle of bleach. By using flexible adjustable straps one is not limited to a bracket assembly that can carry only a single diameter of canister.

If a multiple bracket assembly is required for a plurality of products contained within canisters of the same diameter then one could use the assembly 210 of Figure 12. The base units 202 are the same as in Figure 11 but the units are connected together only by lower webs 206. The absence of upper webs permits the flexible, adjustable, straps to be replaced by solid rings 212 which define an opening therethrough of a fixed diameter, preferably slightly larger than the canister to be held thereby. Such rings 212 engage in the cutouts of each base unit just as do the flexible straps of the previous embodiments. When the bracket assembly 210 is attached to a wall the rings 212 will be held solidly in place by being clamped between the wall and the curved surface, such as surface 24, at the back.

Figures 13, 14 and 15 illustrate a solid ring type of retainer 214 that can be used in the multiple assembly 210 of Figure 12 or with any of the previously described base units for that matter. This ring 214 has a cylindrical side wall 216 with a strengthening cylindrical rib 218 projecting radially outwardly at the top. A raised wedge portion 220 on the outer surface of wall 216 has a generally flat outer surface 222 for abutment against a wall when the ring 214 is in place in the cutouts of a base

unit. Thus the raised portion 220 serves essentially the same purpose as the wedges 42,142 provided on the flexible straps previously described.

As with the tunnel portion 156 the rings 212,214 can have appropriate identification, advertising or instructional material hot-stamped, moulded or adhered in or to the outer surface thereof.

The bracket of the present invention is simple and economical to produce and it is sufficiently attractive that it will not be out of place in high traffic areas such as a kitchen. It is readily adjusted to suit canisters of different sizes and may be considered as a universal bracket for cylindrical articles. While the foregoing has described the desirable features of the invention in terms of preferred embodiments it is clear that a skilled person in the art could effect changes to the design without departing from the spirit of the invention and hence the protection to be afforded the invention is to be determined from the claims appended hereto.

Claims

1. A bracket assembly for supporting a cylindrical object thereon comprising: a rearwardly opening base unit including a longitudinally extending transversely concave front surface for cradling the object therein, a transversely convex inner wall, longitudinal side wall members extending rearwardly from said front surface, a cutout in each of said side wall members, and means for mounting said base unit to a wall or the like; and a flexible strap member including central locking means engageable with said cutouts, a plurality of first locking means on one end portion of said strap member, and second locking means on the other end portion of said strap member engageable with a selected one of said first locking means; whereby with said central locking means of said strap member engaging said cutouts, said base unit may be mounted to a wall or the like with each of the end portions of said strap member extending away from the adjacent base unit side wall member, a cylindrical object may be placed against the front surface of said base unit, and said strap end portions may be wrapped around the object with said second locking means moved into locking engagement with a selected one of said first locking means to secure the object against said base unit front surface.

2. The bracket assembly of **Claim 1** wherein said strap member is thin and narrow and said central locking means includes a narrower central section having a length slightly greater than the overall width of said base unit.

3. The bracket assembly of **Claim 2** wherein a pair of longitudinally spaced apart transversely ex-

tending wedge members project rearwardly from said strap member central section for engagement with a wall or the like during mounting of the base unit to force said central section to conform generally to the shape of said base unit inner wall.

4. The bracket assembly of **Claim 3** wherein said mounting means includes at least a pair of longitudinally spaced screw-receiving recessed wells in said base unit front surface.

5. The bracket assembly of **Claim 4**, adapted for mounting vertically on a wall, including a first support member at the lower end of said base unit, said support member extending outwardly for accepting a bottom wall of a cylindrical object thereon and thereby supporting the weight of said object.

6. The bracket assembly of **Claim 5** wherein said support member includes a portion projecting upwardly relative thereto for engaging a concave bottom wall of a cylindrical object.

7. The bracket assembly of **Claim 5** including a second support member at the upper end of said base unit, said second support member extending outwardly and adapted for engagement with the upper end portion of the cylindrical object.

8. The bracket assembly of **Claim 7** wherein said second support member is telescopically received within said base unit for longitudinal adjustment relative thereto so as to accommodate cylindrical objects of different lengths.

9. The bracket assembly of **Claim 1** wherein each of said first locking means includes a rectangular aperture extending through said one end portion of said strap member and spaced from an adjacent aperture and said second locking means includes an inverted L-shaped hook member extending rearwardly of said other end portion of said strap member, said hook member being lockingly engageable with said one end portion through any one of said apertures.

10. The bracket assembly of **Claim 9** including a guide strip along each side of said strap member at the free end of said other end portion, and a U-shaped section at the free end of said one end portion, said guide strips and said U-shaped section having a greater thickness than that of adjacent areas of the strap member.

11. The bracket assembly of **Claim 1** wherein said base unit is integrally molded from a plastics material such as polypropylene and said strap member is integrally molded from a plastics material such as ethylvinylacetate.

12. The bracket assembly of **Claim 9** including a pair of parallel protrusions at the free end of said one end portion and a rectangular tunnel portion at the free end of said other end portion, said tunnel portion including a longitudinally extending tunnel therethrough through which the free end of said

one end portion can pass, said protrusions acting as a stop to prevent unwanted backwards passage through said tunnel.

13. The bracket assembly of **Claim 5** wherein said support member includes a flat foot portion extending forwardly of said lower end of said base unit to act as a platform for a bottom of a cylindrical object.

14. The bracket assembly of **Claim 13** including a recess in said front surface adjacent said foot portion.

15. A bracket assembly for supporting a plurality of cylindrical objects thereon comprising: a plurality of rearwardly opening base units each including a longitudinally extending transversely concave front surface for cradling an object therein, a transversely convex rear surface, longitudinal side wall members extending rearwardly from said front surface, and a cutout in each of said side wall members; a flexible strap member for each of said base units, each strap member including central locking means engageable with said cutouts, a plurality of first locking means on one end portion of said strap member, and second locking means on the other end portion of said strap member, engageable with a selected one of said first locking means; and means for securing said assembly to a wall or the like; whereby with the central locking means of each strap member engaging the cutouts of an associated base unit said assembly may be mounted to a wall or the like with the end portions of the respective strap members extending away from the base unit associated therewith, a cylindrical object may be placed against the front surface of a base unit, and the strap end portions associated therewith may be wrapped around the object with the second locking means thereof moved into locking engagement with a selected one of said first locking means to secure the object against the base unit front surface.

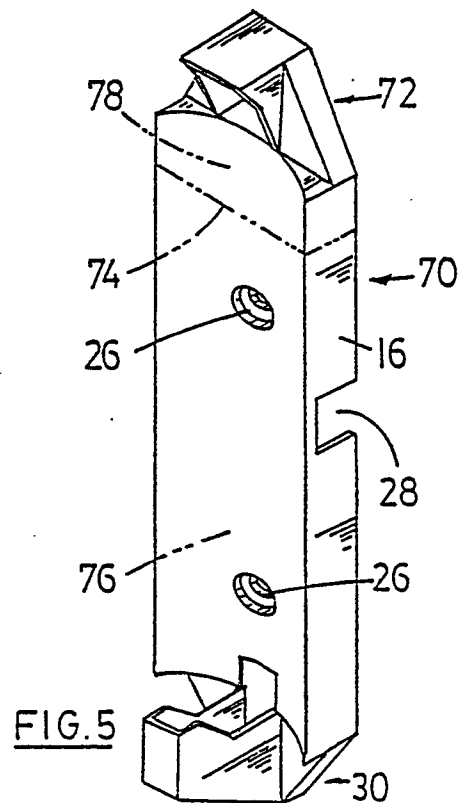
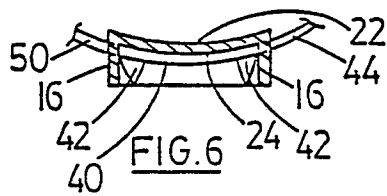
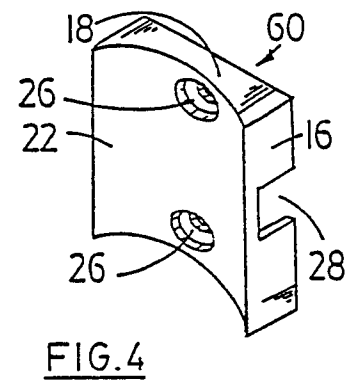
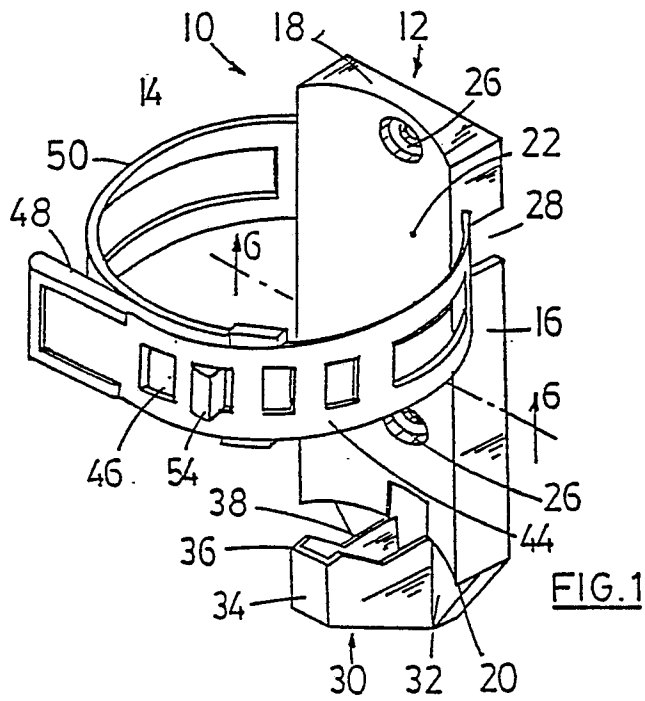
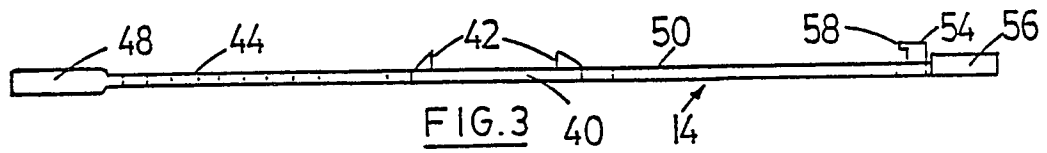
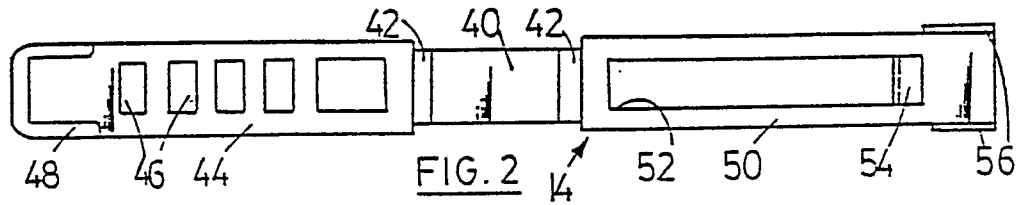
16. The assembly of **Claim 15** wherein each base unit is spaced laterally from an adjacent base unit and is joined thereto by at least one laterally extending web member integral with facing side wall members of the adjacent base units.

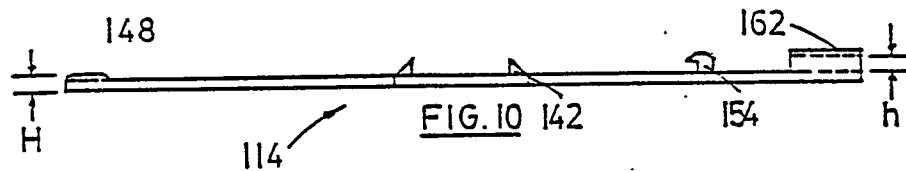
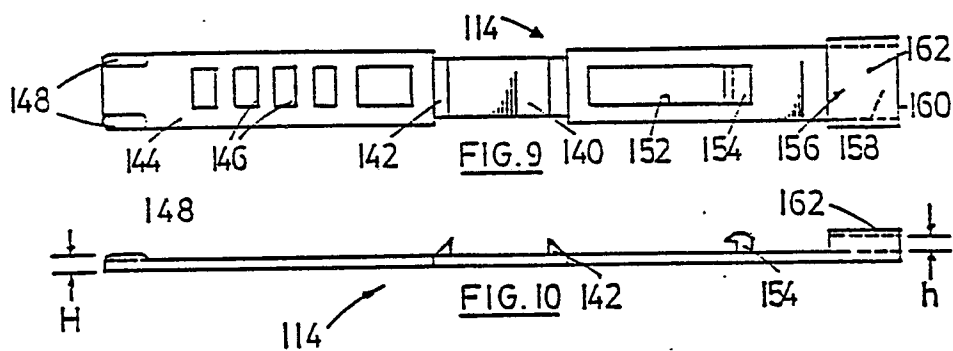
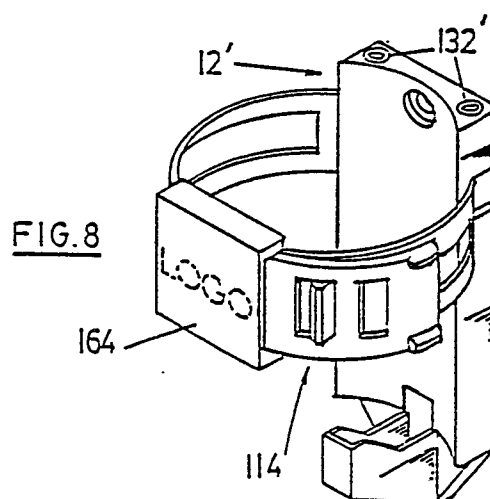
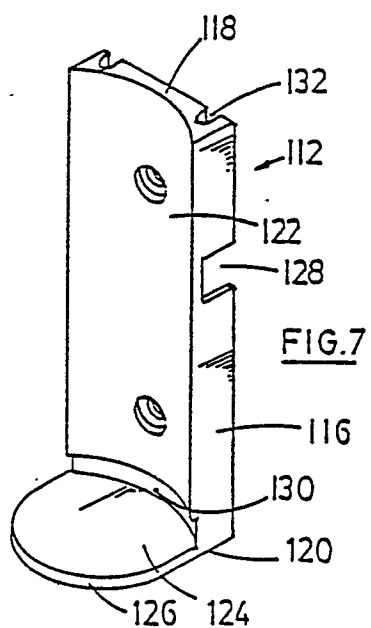
17. A bracket assembly for supporting a plurality of cylindrical objects thereon comprising: a plurality of rearwardly open base units each including a longitudinally extending transversely concave front surface for cradling an object therein, a transversely convex rear surface, longitudinal side wall members extending rearwardly from said front surface, a cutout in each of said side wall members and a support member projecting forwardly from a lower portion thereof; a substantially inflexible annular retainer ring for each of said base units, each ring being adapted for retained engagement with the cutouts of an associated base unit and to

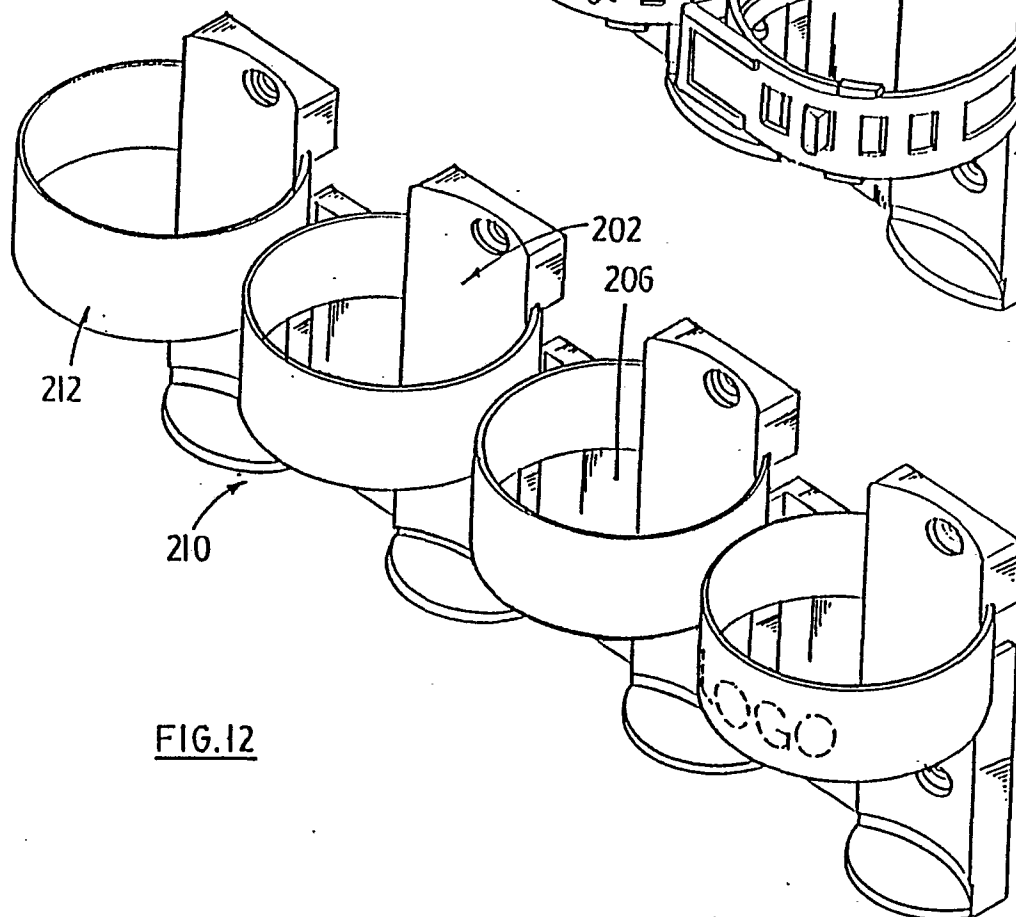
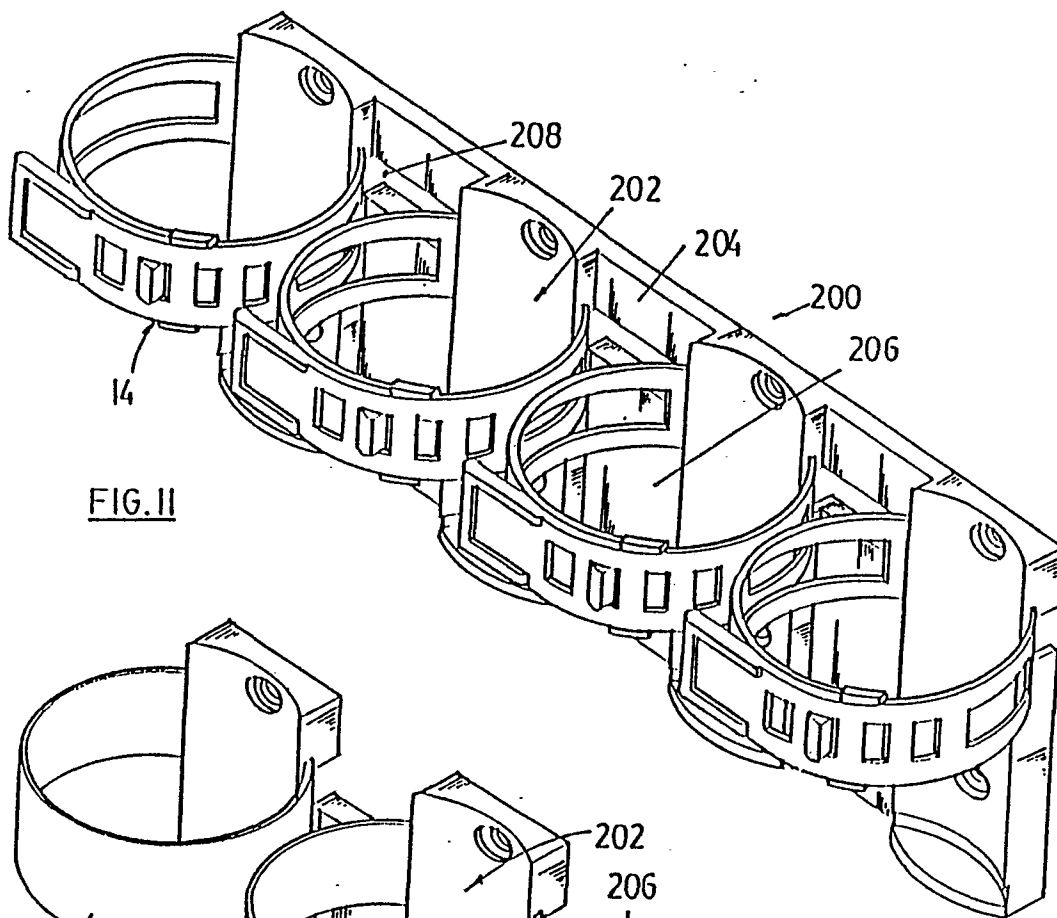
project forwardly of the base unit front surface; and means for securing said assembly to a wall or the like; whereby with each retainer ring engaging the cutouts of an associated base unit said assembly may be mounted to a wall or the like and a cylindrical object may be lowered through a ring to rest on the support member therebelow to be held in position by the ring and associated support member generally against the concave front surface of the adjacent base unit.

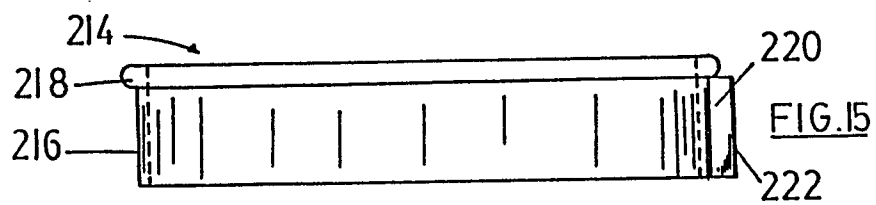
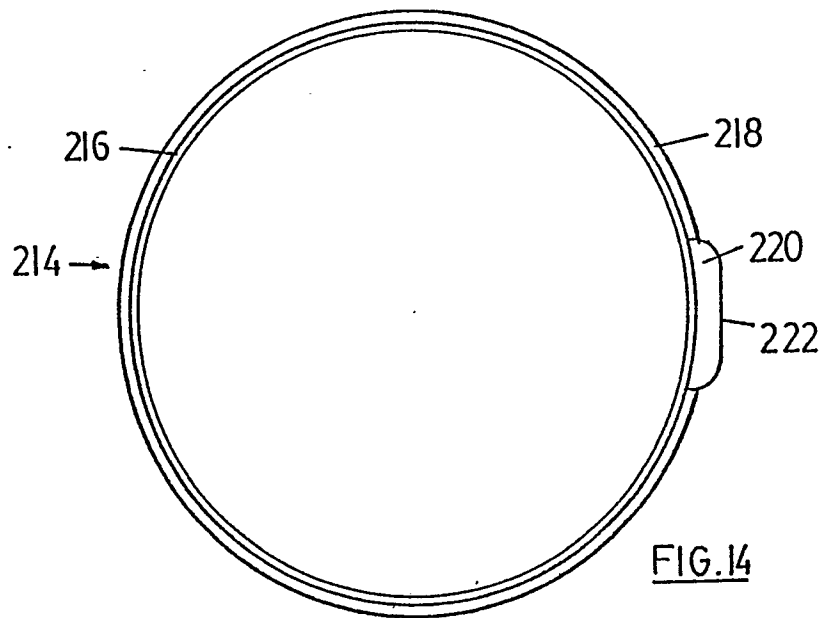
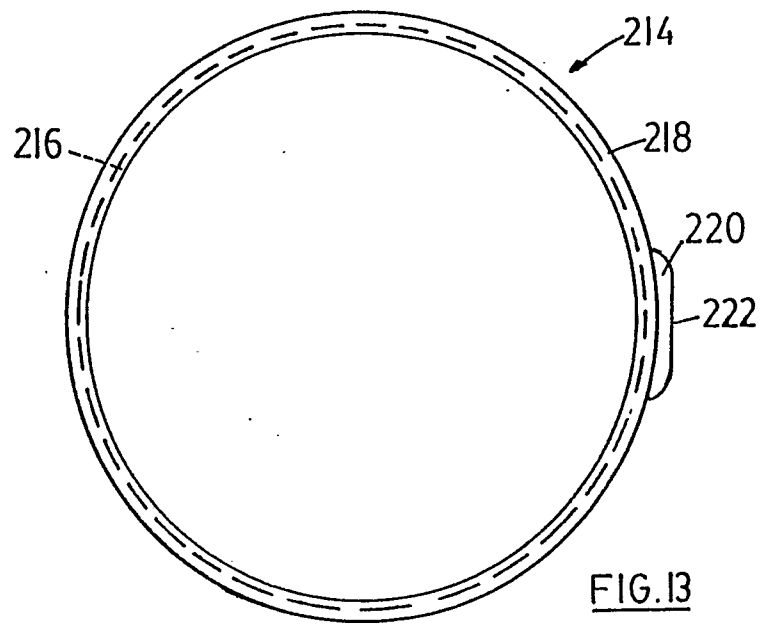
18. The assembly of **Claim 17** wherein each base unit is spaced laterally from an adjacent base unit and is joined thereto by at least one laterally extending web member integral with facing side wall members of the adjacent base units.

19. The bracket assembly of **Claim 17** wherein each retainer ring has a cylindrical wall portion, an annular rib projecting outwardly of the wall portion at one end thereof, and a wedge member projecting radially of the wall portion for abutment against a wall or the like after said assembly has been mounted thereto.











EP 90 30 1661

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	US-A-4304383 (HUSTON) * column 2, line 35 - column 4, line 57; figures *	1, 2, 9, 11	A62C13/78
A	---	4, 7	
Y	US-A-3994051 (SERRETTI) * column 3, line 48 - column 4, line 41; figures 1-9 *	1, 2, 9, 11	
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A	DE-A-3207858 (DEUGRA GESELLSCHAFT FUR BRANDSCHUTZSYSTEME) * page 7, lines 20 - 28; figure 7 *	1, 5	
A	FR-A-718568 (MAHN) * page 2, lines 23 - 60; figures 1, 3, 5 *	15, 17	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A62C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31 MAY 1990	Examiner KAPOULAS T.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			