

A RACK ASSEMBLY FOR AIRING OR DRYING ARTICLE

FIELD OF INVENTION

5 The present invention relates to a rack assembly for the airing or drying of articles, such as laundered items, and particularly to such racks that are fitted to a structure. More particularly, but not exclusively, the present invention relates to a rack assembly for fixing to the wall of a building, adjacent a window or other opening through which laundered items can be hung out on the rack assembly and later be retrieved by a user.

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BACKGROUND

The invention has application to the airing and drying of clothes and similar laundered items and is particularly useful for occupants of high rise apartment buildings where the only readily accessible outdoor space for the drying and airing of laundry is adjacent an opening, typically a window, at the exterior wall of the apartment.

European patent specification Nos. EP 0305623 and EP 0522246 each describe a laundry drier with a pair of parallel telescopic arms which extend generally horizontally from a structure. They include a set of parallel laundry bars that extends between respective pairs of the telescoping arm sections. To extend the laundry bars one after another, a force needs to be applied in the direction to which the laundry bars are to be extended. This can be done by either manually pulling a first laundry bar in the direction to which the laundry bars are to be extended or manually pushing the first laundry bar in a forward direction away from the rest of the laundry bars. The manual pulling of the laundry to extend the arm is not possible if the laundry drier is attached outside the wall structure of a high-rise apartment building. The manual pushing of the laundry bar to extend the arm will require an operator to lean out excessively from the window if the laundry drier is attached outside the wall structure of a high-rise apartment building.

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The prior art racks include sets of horizontal laundry-supporting poles that are carried in a pair of end arms which extend perpendicularly from a wall-mounted attachment, e.g.

adjacent a window. The poles are deployed by direct manipulation of the poles themselves. This is not easy when the poles are carrying a load of wet laundry. Any system that requires a user to lean out more than a minimal distance to deploy or adjust the poles, or to attach laundered items to the poles, increases the risk to a user who can easily
5 overbalance and fall from the window to the ground below.

It is one object of the present invention to provide a rack assembly for airing or drying clothes or laundered items which at least provide the public with a useful choice.

10 SUMMARY OF INVENTION

In one aspect, the invention comprises a rack assembly comprising a support arm and a plurality of carrier elements connected to the support arm, wherein the support arm comprises a plurality of discrete support elements, each support element connected to and supported by at least one other support element in the support arm, wherein each carrier
15 element is connected to a support element, wherein the support elements are moveable between a first configuration in which the carrier elements are spaced apart from one another and a second configuration wherein the carrier elements are closer to one another, and wherein at least one of the support elements includes a releasable catch mechanism to retain that support element in a fixed position relative to an adjacent support element.

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Preferably, the rack assembly further includes biasing means for biasing the support elements into the first configuration and the catch mechanism retains the support element in the second configuration. This means that when the rack assembly is attached to the side of a building, the user does not need to lean out to expand the rack; the catch merely needs
25 to be released. This dramatically improves user safety.

Alternatively, the support elements may be biased in to the second configuration and the catch mechanism retains the support elements in the first configuration.

30 Preferably, the catch mechanism engages with an adjacent support element. Alternatively, the catch mechanism can engage with an adjacent carrier element or with a connecting structure between adjacent support elements. In this manner, a carrier element can be

moved independently of other carrier elements by releasing the associated catch mechanism.

5 Preferably, the rack includes two support arms spaced apart from one another and the carrier elements are connected between the support arms. Preferably, the support arms are parallel to one another.

Preferably, each support arm is adapted for fitting to a fixed structure to support the carrier elements in a substantially horizontal orientation.

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Preferably, each support arm is adapted for fitting substantially perpendicularly to the generally vertical face of a fixed structure.

Preferably, the support elements are connected together in a concertina type structure.

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Alternatively, the support elements may be connected together to form a telescopic structure.

Preferably, adjacent support elements are joined to one another by a connecting structure disposed between the adjacent support elements, said connecting structure comprising a

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first rod and a second rod pivotally joined to the first rod.

Preferably, each rod includes a first connecting end and a second connecting end, wherein said first connecting end of the first rod and said second connecting end of the second rod are fastened to one support element and the first connecting end of the second rod and the
25 second connecting end of the first rod are fastened to an adjacent support element.

Preferably, each support element includes at least two slots for receiving the respective first connecting end and the second connecting end of the rods of the connecting structure.

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Preferably, the connecting structure includes a biasing means provided at a join between the first and the second rods.

Preferably, a catch mechanism is disposed at an end of each support element. Alternatively, or in addition, a catch mechanism may be disposed on some or all of the carrier elements.

- 5 Preferably, the catch mechanism includes a handle and an engagement arm, the handle and the engagement arm rigidly joined at one of their ends to form a substantially L-shaped configuration, wherein the L-shaped configuration is pivotally mounted to the support element about an axis substantially perpendicular to the handle and the engagement arm.
- 10 Preferably, the catch mechanism further includes an engagement arm biasing means for biasing the engagement arm against rotation about the axis in one direction. Preferably, the engagement arm biasing means includes a spring.

- Preferably, the engagement arm has a hook or cut-out for engaging a support element,
15 carrier element or joining structure proximate the engagement arm to retain the support elements in the first configuration. Preferably, the hook or cut-out engages with a knob provided on a support element, carrier element or joining structure proximate the engagement arm to retain the support elements in the first configuration. Alternatively, the engagement arm can include a protrusion, wherein the protrusion engages with a indent or
20 cut-out provided in a support element, carrier element or joining structure proximate the engagement arm to retain the support elements in the first configuration.

- Preferably, the engagement arm includes a flange having a curved surface adjacent to the cut-out.

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Preferably, the curved surface of the flange glides on the knob to engage the engagement arm with the knob.

- Alternatively, the curved surface of the flange glides on the knob to rotate the engagement
30 arm against the engagement arm biasing means before the hook or cut-out of the engagement arm engages with the knob.

Preferably, each support arm includes a plurality of support elements positioned substantially parallel to each other and substantially perpendicular to the carrier elements. Preferably, the support elements are of different dimensions to one another.

- 5 Preferably, the carrier elements are substantially parallel to one another and substantially perpendicular to the support arms.

The invention may further be said to consist in any alternative combination of parts or features mentioned herein or shown in the accompanying drawings. Known equivalents of
10 these parts or features which are not expressly set out are nevertheless deemed to be included.

BRIEF DESCRIPTION OF DRAWINGS

- 15 It will be appreciated that a rack may be implemented in various forms. Preferred embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of a clothes rack assembly according to the
20 present, with carriers in an extended configuration;

Figure 2 shows an enlarged side view of the bars and the connecting structure of the rack assembly;

Figure 3 shows a side view of the catch mechanism;

Figure 4 shows a front elevation view of the rack assembly;

25 Figure 5 shows a plan view of the rack assembly in a fully extended configuration;

Figure 6 shows a side view of the support arm in an unextended /retracted configuration;

Figure 7 shows a side view of the support arm in a first extended configuration;

Figure 8 shows a side view of the support arm in a partial extended configuration;

30 Figure 9 shows a side view of the support arm in a fully extended configuration;
and

Figure 10 shows a side view of an alternate form of the bar.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 shows a perspective view of a clothes rack assembly 1 according to the current invention. The rack assembly 1 has a pair of extendable support arms 2 which are adapted for attachment to the generally vertical surface of a wall. In a typical application, the wall is the exterior wall of a building such as an apartment or condominium. However, it is also suitable for use in the backyards of link houses and semi-detached houses. It can also be mounted on a backyard wall dividing houses. The support arms 2 are spaced apart from one another and are substantially parallel. The support arms 2 are adapted to be attached approximately perpendicularly to the generally vertical wall surface. In one embodiment, the support arms 2 may be joined by a flat plate 3 (not shown) extending between their rear ends 2a. The flat plate 3 provides a convenient platform for attachment to the wall surface of the building. In the preferred embodiment as shown in Figure 1, two flat plates 3 are provided with each attached to the rear end 2a of each support arm 2 for attachment to the wall surface of the building. In this embodiment, the support arms 2 are joined by at least one rigid elongate carrier 5 disposed between the support arms 2 and substantially perpendicular to the support arms 2.

In this embodiment the rack includes two parallel support arms and carriers connected between the support arms. However, a rack in accordance with the present invention can be made with any number of support arms, including only a single support arm from which carriers extend. Furthermore, the support arms need not be parallel with one another, nor do all the carriers need to extend between the support arms. It should also be apparent that, although it is preferred that the carriers extend perpendicular to the support arms, the carriers can be disposed at any angle from the support arms and need not be parallel to one another.

Each support arm 2 comprises at least two bars or support elements 4 positioned substantially parallel to each other. In the preferred embodiment, a plurality of bars 4 is provided on one support arm 2 and a corresponding plurality of bars 4 is provided on the other support arm 2 as shown in Figure 1. When mounted onto a wall surface, the bars 4

are substantially parallel to the vertical wall surface. Each bar 4 is connected to a preceding one by a connecting structure 7 disposed between the bars 4. In a preferred form, the bar 4 is a flat plate of any suitable thickness and with a width in the range from 30mm to 60mm. In an alternate form, the bar 4 may be hollow with flat surface area. The bars 4 are
 5 positioned one preceding another in such a manner that each of its flat surfaces is substantially perpendicular to the vertical wall surface when the rack assembly 1 is mounted to the wall.

Each bar 4 includes a first end 4a, a second end 4b and at least two slots 6a, 6b for
 10 engagement with the connecting structure 7. In the preferred embodiment, four slots 6a – 6d are provided as shown in Figure 1. The first pair of the slots 6a, 6b may be positioned any where along the bar 4, but in this example are positioned close to the first end 4a of the bar 4. A second pair of the slots 6c, 6d are positioned closer to the second end 4b of the bar 4. The slots in each pair of the slots 6a – 6d are preferably disposed adjacent one another.
 15 The slots 6a – 6d may have a shape that is oblong or round for engagement with the connecting structure 7. In Figures 1 and 2, the first pair of the slots 6a, 6b is oblong and the second pair of the slots 6c, 6d is round. In an alternate form as shown in Figure 9, the first pair of the slots 6a, 6b is round and the second pair of the slots 6c, 6d is oblong.

20 In one embodiment, the first pairs of the slots of the plurality of bars 4 are positioned in-line with each other and the second pairs of the slots of the plurality of the bars are also positioned in-line with each other as illustrated in Figure 1.

Referring now to Figure 2, the connecting structure 7 is comprised of two rods 7a, 7b
 25 pivotally attached to one another at pivot point 7c located at the midsection of each rod 7a, 7b to form an “X” shaped structure. Pivot point 7c includes a biasing means, such as a torsion spring or compression spring connected between the rods. Each rod 7a, 7b includes a first connecting end 7a', 7b' and a second connecting end 7a'', 7b''. The first connecting end 7a' of the first rod 7a is fastened to one of the first pair of the slots 6a of a first bar 40a and the first connecting end 7b' of the second rod 7b is fastened to one of the first pair of
 30 the slots 6b of a preceding bar 40b. The second connecting end 7a'' of the first rod 7a is fastened to one of the second pair of the slots 6d of the preceding bar 40b and the second

connecting end 7b'' of the second rod 7b is fastened to one of the second pair of the slots 6c of the first bar 40a. The connecting ends 7a', 7a'', 7b', 7b'' are fastened to its respective slot by bolts and nuts. In the preferred embodiment as shown in Figure 1, the first pair of the slots 6a, 6b of the bars 40a, 40b is oblong. This allows the first connecting end 7a', 7b' of the respective rod 7a, 7b to be slidably fastened to the respective first pair of the slots 6a, 6b such that when in operation, each first connecting end 7a', 7b' slides within the space of the slot that each is slidably fastened to in a direction parallel to the vertical wall surface.

Each bar 4 further includes a catch mechanism 10 disposed at the first end 4a of the bar 4. The catch mechanism 10 can be provided at first end 4a of every bar 4 of the support arms 2 or it can be provided at first end 4a of every bar 4 except for outermost one or two bars 4 positioned away from the rear ends 2a of the support arms 2 as shown in Figure 1. The catch mechanism 10 may be provided on each bar of the two supporting arms 2 or it may be provided on each bar of one supporting arm 2.

The catch mechanism 10 as shown in Figure 3 comprises a handle 12, an engagement arm 14 and a plurality of biasing means 16. The handle 12 and the engagement arm 14 are preferably positioned substantially perpendicular to one another to form an approximately "L" shaped configuration. When the rack assembly 1 is mounted to the vertical wall surface, the handle 12 is substantially parallel to the vertical wall surface and the engagement arm is substantially perpendicular to the vertical wall surface. The handle 12 and the engagement arm 14 may be of two separate pieces or of an integral unit. They may be of any suitable shape, size or length and can be made of any suitable materials, preferably stainless steel.

A distal end of the engagement arm 14 includes a flange 18 and a U-shaped cut-out 20 for engagement with another bar. The flange 18 has a curved surface and the cut-out 20 is adjacent to the curved surface.

The catch mechanism 10 further comprises a biasing means holder 22 and a catch stopper 24. In the preferred form, the biasing means 16 are a plurality of springs and are attached

to the biasing means holder 22, in the configuration as shown in Figure 3. The spring holder is round for holding the springs at its circumference to facilitate the rotation of the handle 12 and the engagement arm 14 in a first direction and in a second direction. To strengthen the biasing force on the engagement arm 14, one end of the spring 16' is secured to the engagement arm 14 and other end of the spring 16' is secured to the biasing means holder 22. When the handle 12 moves in the first direction as indicated by an arrow A as shown in Figure 3, it expands the springs 16 and lifts up the engagement arm 14 in the same direction as indicated by an arrow A. As the engagement arm 14 is lifted, it expands the spring 16'. When the handle 12 moves from the first direction to the second direction as indicated by an arrow B as shown in Figure 3, the stretched springs 16 release their stored energy to bring the handle 12 and the engagement arm 14 back to their original position.

The handle 12 is prevented from moving beyond a desired point by the catch stopper 24 positioned at the first end 4a of the bar 4, abutting the handle 12. The catch stopper 24 may be a protrusion extending from the flat surface of the bar and abutting the handle 12, a bulge, a nut, a knob, a block or any other suitable piece that can serve the purpose.

Each bar 4 is further provided with a knob 26 positioned along one side of the bar 4, away from the engagement arm 14, for engagement with the cut-out 20 of the engagement arm 14 of another bar. The biasing force from the springs allows the cut-out 20 of the engagement arm 14 to have a firm engagement with the knob 26 of another bar 4. To enable a firmer engagement of the cut-out 20 with the knob 26 of another bar 4, the internal diameter of the cut-out 20 and the external diameter of the knob 26 of the adjacent bar 4 are preferably of the same size. The cut-out 20 is preferably of the same shape as the exterior surface of the knob 26 of the adjacent bar 4.

At least one rigid elongate carrier 5 is provided in the rack assembly 1. In the preferred embodiment, seven such carriers 5 are provided as shown in Figure 1. However, it should be noted that any suitable number of such carriers may be provided. Each carrier 5 is supported by the supporting arms 2 at its respective ends. Each carrier is connected to the ends 4a of a pair of the bars 4 of the supporting arms 2 such that the carrier 5 is

perpendicular to the support arms 2 when mounted onto the rack assembly 1 (as shown in Figure 5). Preferably, the number of carriers provided is equal to the number of bars 4 provided on each supporting arm 2. The bars 4 support and guide the carriers 5 as the bars 4 move sequentially when in operation. In one embodiment, the catch mechanism 10 at the end 4a of the bar 4 is coupled to the end of the carrier 5. In the preferred application, when the rack assembly 1 is mounted to a generally vertical wall surface, the carriers 5 are substantially horizontal to the vertical wall surface. The carriers 5 are preferably straight and preferably have round cross-sections. The carriers 5 may be rods, bars, poles, pipes or tubes, for example. In the preferred embodiment, the carriers 5 are made of stainless steel or aluminium. The surface of at least some portions of the carriers 5 may be textured, e.g. by knurling, to help retain items hung on, or clipped or pegged to the carriers.

In one configuration, the engagement arm 14 of each bar 4 engages with the knob 26 of another bar 4 proximate the engagement arm 14 to hold the carriers 5 in a retracted or parked configuration in which the carriers 5 are bunched together near the rear or attached end of the support arm 2 (as shown in Figure 6) and disengages with the knob 26 of the another bar 4 proximate the engagement arm 14 to extend the carriers 5 in a second configuration in which the carriers 5 are spaced apart and deployed away from the rear end of the support arm 2 (as shown in Figure 9).

In a preferred installation, the rack assembly 1 is installed on an outside wall of a room in a building, just below a window. When the window is opened, the rack assembly is accessible by an operator standing in the room.

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Figure 6 shows the rack assembly 1 with the carriers 5 (not shown) closely bunched together in a fully retracted, or parked configuration, except for the outermost carrier 5'. In this configuration, the carriers 5 are drawn back to the rear end 2a of the support arm 2 and are held in a bunched or retracted position by the engagement between the engagement arm 14 of each bar and the knob 26 of another bar 4 proximate the engagement arm 14. The handle 12 of the catch mechanism 10 of each bar 4 is readily accessible by an operator standing inside a room at an open window, outside and below which the rack is installed.

The outermost carrier 5' may be supported at its respective ends by a bar 30 that has a different structure to the remaining bars 4. The bar 30 may have only one slot for receiving an end of a second connecting structure 70 to secure the bar 30 to the bar 4 proximate it. In the preferred form, the second connecting structure 70 is a rod with one end secured to the first pair of slots 6a of the bar 4 proximate the bar 30 and with second end secured to the slot of the bar 30. The bar 30 extends from one of the second pair of slots 6c of the bar 4 proximate the bar 30 (as shown in Figure 2).

In an exemplified operation for extending the rack assembly 1, wet clothes are first arrayed on the outermost carrier 5'. Once that is completed and if more clothes are to be arrayed, the operator may extend the rack assembly 1 by rotating the handle 12 of the catch mechanism 10 on a third bar 40d (shown in Figure 6) of one support arm 2 in a first direction towards the rear end 2a of the support arm 2. This in turns rotates the engagement arm 14 in the same direction to enable the cut-out 20 of the engagement arm 14 to disengage from the knob 26 of the second bar 40c and thereby releases the gripping force ("hereinafter known as "the catch") of the cut-out 20 of the engagement arm 14 onto the knob 26 of the bar 40c. If the corresponding bar 40d of opposing support arm 2 is also provided with a catch mechanism 10, the catch is released in the same manner as described above.

Once the catch or catches of the engagement arm 14 on the knob 26 of the second bar 40c is released, the biasing force at midsections 7c of the rods 7a, 7b of the connecting structure 7 pushes the second bar 40c away from the third bar 40d, towards the outermost carrier 5 and thereby extending the support arm 2 in a configuration as shown in Figure 7. Once the second bar 40c is moved away from the third bar 40d, the handle 12 is rotated in a second direction, away from the rear end 2a of the support arm 2. This is done by simply releasing the handle 12 from the grip from the hand of the operator. The springs 16 on the catch mechanism 10 enables the handle 12 to rotate/spring back to position automatically once the catch is released. In this configuration, the remaining carriers 5 remain in their retracted positions. The clothes may be readily arrayed on, or retrieved from the first and

second carriers 5 by an operator standing inside a room at an open window outside and below which the rack is installed.

Once the clothes are arrayed on the second carrier on the second bar 40c, the operator may
 5 release the catch on a fourth bar 40e by rotating the handle 12 of the catch mechanism 10 on the fourth bar 40e in the first direction to disengage the engagement arm 14 of the fourth bar 40e from the knob 26 of the third bar 40d, to thereby move the third bar 40d outwardly away from the fourth bar 40e to extend the rack assembly 1 to a configuration as shown in Figure 8. This configuration allows the operator to array clothes on the third
 10 carrier 5. The remaining carriers 5 remain in their retracted positions.

The above steps for releasing the catch are performed until all the carriers 5 are fully deployed in an extended configuration as shown in Figure 9. No carrier remains in the retracted position. In this configuration, clothes on the carriers 5 are fully extended
 15 outwardly from the exterior wall of the building, in a drying or airing position.

In an exemplified operation for retracting the rack assembly 1, the carrier that is first to be retracted is the second innermost carrier 5 proximate the rear ends 2a of the support arms 2. The carrier 5 is retracted by manually pulling the carrier 5 in a direction towards the rear
 20 ends 2a of the supporting arms 2, towards the innermost first carrier 5. As the second innermost carrier 5 approaches the first innermost carrier 5, the flange 18 of the engagement arm 14 of the first innermost bar 40h (as shown in Figure 9) supporting the innermost first carrier 5 comes in contact with the knob 26 of the second innermost bar 40g supporting the second innermost carrier 5. The curved surface of the flange 18 glides on
 25 the knob 26 as the pulling continues. The sliding movement lifts the engagement 14 until the cut-out 20 of the engagement arm 14 sits on the knob 26 of the second innermost bar 40g to secure the second innermost carrier 5 in a retracted configuration.

The clothes on the third innermost carrier 5 may be retrieved before retracting the third
 30 innermost carrier 5 in the same manner as described above. The remaining carriers 5 may be retracted in the same manner until the rack assembly 1 is in a fully retracted configuration as shown in Figure 6.

At any point of time in using the rack assembly 1, the rack assembly 1 need not be in a fully extendable or fully retracted configuration. Intermediate configuration such as those shown in Figures 7 and 8 may be employed as desired.

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In an alternate embodiment, the catch mechanism 10 may be positioned at an end 4a of each bar in a manner such that when releasing the catch, the handle 12 of the catch mechanism is rotated in a direction away from the rear ends 2a of the support arms instead of towards the rear ends 2a of the support arms as described above.

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As noted above, and as may be best appreciated from a comparison of Figures 6 to 9, the plurality pairs of bars 4 are of different lengths. The length of the innermost pair of bars 40h proximate the rear ends 2a of the support arms 2 is shortest. The length of the bars increases as more bars are added, with outermost pair of bars 40c being the longest. The differing lengths allow easy access to the handle 12 of the catch mechanism 10.

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In the retracted configuration (as shown in Figure 6), the first connecting ends 7a', 7b' of the connecting structure 7 are at the upper end of the first pair of slots 6a, 6b whilst in the extended configuration (as shown in Figure 9), the first connecting ends 7a', 7b' of the connecting structure 7 are at the lower end of the first pair of slots 6a, 6b. The length of the oblong slots and the length of the rods 7a, 7b of the connecting structure 7 can be altered accordingly to obtain a desired distance between any two bars 4.

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In summary, the parallel carriers 5 are sequentially moved from the bunched retracted configuration as shown in Figure 6 to the fully deployed extended configuration as shown in Figure 9, by releasing the catch on each bar 4, and are returned to the retracted configuration by engaging the catch with another bar. Clothes may be conveniently hung on or retrieved from the carriers 5 while they are relatively close to an operator standing inside a window at which the rack is fitted. The operator does not need to lean out excessively from the window nor need to support an excessive weight of clothes when hanging out or retrieving clothes, ensuring a higher degree of operator safety than with clothes racks of the prior art.

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The foregoing describes the invention including preferred forms thereof. Alterations and modifications as will be obvious to those skilled in the art are intended to be incorporated within the scope of the invention as defined in the accompanying claims. For example, the

5 support arms may be made in a telescopic structure, with the catch mechanism of the present invention retaining the telescopic elements of the support arm in a fixed spatial relationship. The catch mechanism may be made to be releasable using a push button rather than a handle and may engage with adjacent carrier elements or joining structures rather than to adjacent bars.

Claims

1. A rack assembly comprising, in combination:-
a support arm; and
a plurality of carrier elements connected to the support arm,
wherein the support arm comprises a plurality of discrete support elements, each support element connected to and supported by at least one other support element in the support arm, wherein each carrier element is connected to a support element,
wherein the support elements are moveable between a first configuration in which the carrier elements are spaced apart from one another and a second configuration wherein the carrier elements are closer to one another, and
wherein at least one of the support elements includes a releasable catch mechanism to retain that support element in a fixed position relative to an adjacent support element, and adjacent support elements of each support arm are joined by a connecting structure disposed between the adjacent support elements, the connecting structure comprising a first rod, and a second rod pivotally joined to the first rod with each rod including a first connecting end and a second connecting end, wherein the first connecting end of the first rod and the second connecting end of the second rod is fastened to one support element and the first connecting end of the second rod and the second connecting end of the first rod are fastened to an adjacent support element.
2. A rack assembly according to claim 1, further including biasing means for biasing the support elements into the first configuration, wherein the catch mechanism retains the support element in the second configuration.
3. A rack assembly according to claim 1 or 2, wherein the catch mechanism engages with an adjacent support element, an adjacent carrier element or a connecting structure between adjacent support elements.
4. A rack assembly according to any one of the preceding claims, wherein the rack includes two support arms spaced apart from one another and the carrier elements are connected between the support arms.

5. A rack assembly according to claim 4, wherein the support arms are parallel to one another.
6. A rack assembly as claimed in any one of the preceding claims, wherein each support arm is adapted for fitting to a fixed structure to support the carrier elements in a substantially horizontal orientation.
7. A rack as claimed in any one of the preceding claims, wherein each support arm is adapted for fitting substantially perpendicularly to the generally vertical face of a fixed structure.
8. A rack as claimed in any one of the preceding claims, wherein the support elements are connected together in a concertina type structure.
9. A rack assembly comprising, in combination:
 - a support arm; and
 - a plurality of carrier elements connected to the support arm,wherein the support arm comprises a plurality of discrete support elements, each support element connected to and supported by at least one other support element in the support arm, wherein each carrier element is connected to a support element,
 - wherein the support elements are moveable between a first configuration in which the carrier elements are spaced apart from one another and a second configuration wherein the carrier elements are closer to one another, and
 - wherein at least one of the support elements includes a releasable catch mechanism to retain that support element in a fixed position relative to an adjacent support element, and adjacent support elements of each support arm are joined by a connecting structure disposed between the adjacent support elements, the connecting structure comprising a first rod, and a second rod pivotally joined to the first rod, wherein the connecting structure includes a biasing means provided at a pivot point between the first and the second rods.

10. A rack assembly as claimed in claim 9, wherein each rod includes a first connecting end and a second connecting end, wherein said first connecting end of the first rod and said second connecting end of the second rod is fastened to one support element and the first connecting end of the second rod and the second connecting end of the first rod are fastened to an adjacent support element.

11. A rack assembly as claimed in claims 1 or 10, wherein each support element includes at least two slots for receiving the respective first connecting end and the second connecting end of the rods of the connecting structure.

12. A rack assembly as claimed in claim 1, wherein the connecting structure includes a biasing means provided at a pivot point between the first and the second rods.

13. A rack assembly as claimed in any one of the preceding claims, wherein a catch mechanism is disposed at an end of each support element.

14. A rack assembly comprising, in combination:

- a support arm; and

- a plurality of carrier elements connected to the support arm,

- wherein the support arm comprises a plurality of discrete support elements, each support element connected to and supported by at least one other support element in the support arm, wherein each carrier element is connected to a support element,

- wherein the support elements are moveable between a first configuration in which the carrier elements are spaced apart from one another and a second configuration wherein the carrier elements are closer to one another, and

- wherein at least one of the support elements includes a releasable catch mechanism to retain that support element in a fixed position relative to an adjacent support element and the catch mechanism includes a handle and an engagement arm, the handle and the engagement arm rigidly joined at one of their ends to form a substantially L-shaped configuration, wherein the L-shaped configuration is pivotally

mounted to the support element about an axis substantially perpendicular to the handle and the engagement arm.

15. A rack assembly as claimed in claim 14, wherein the catch mechanism further includes an engagement arm biasing means for biasing the engagement arm against rotation about the axis in one direction

16. A rack assembly as claimed in claim 15, wherein the engagement arm biasing means includes a spring.

17. A rack assembly according to any one of claims 14 to 16, wherein the engagement arm has a hook or cut-out for engaging a support element, carrier element or joining structure proximate the engagement arm to retain the support elements in the first configuration.

18. A rack assembly according to claim 17, wherein the hook or cut-out engages with a knob provided on a support element, carrier element or joining structure proximate the engagement arm to retain the support elements in the first configuration.

19. A rack assembly as claimed in any one of claims 14 to 18, wherein the engagement arm includes a flange having a curved surface adjacent to the hook or cut-out.

20. A rack assembly as claimed in claim 19, wherein the curved surface of the flange glides on the knob of a knob proximate the engagement arm to engage the engagement arm with the knob.

21. A rack assembly as claimed in claim 19, wherein the curved surface of the flange glides on a knob proximate the engagement arm to rotate the engagement arm against the engagement arm biasing means before the hook or cut-out of the engagement arm engages with the knob.

22. A rack assembly as claimed in any one of the preceding claims, wherein each support arm includes a plurality of support elements positioned substantially parallel to each other and substantially perpendicular to the carrier elements.
23. A rack assembly according to any one of the preceding claims, wherein the support elements are of different dimensions to one another.
24. A rack assembly as claimed in any one of the preceding claims, wherein the carrier elements are substantially parallel to one another and substantially perpendicular to the support arms.