

A CLOTHES RACK

TECHNICAL FIELD

[001] The present invention relates to a clothes rack and a method of manufacturing a clothes rack efficiently and cleanly. The clothes rack allows for a movable rail system to allow easy access to the clothes on the poles.

BACKGROUND

[002] Externally wall mounted clothes racks are popular for apartment spaces, since they occupy space outside the living area that cannot be otherwise utilized. Various types of fixed clothes racks have been designed and used, although these have some drawbacks such as requiring extensive welding either on site or in a factory, or the fixed nature of the clothes rack makes it difficult to hang the clothes without the use of an external pole or hanging aid. Naturally, one would try to reduce the number of welds in an external clothes drying rack to ensure that the integrity of the clothes rack arm is maintained, so that the load of clothes being hung on the clothes rack does not cause it to collapse.

[003] Most solutions for external clothes racks range from the simple fixed sort to complex motor driven extension poles and there is a need for an effective clothes rack that is easy to use, and more importantly easy to manufacture. Hence, there is a need for an external clothes drying rack that fulfils these requirements.

SUMMARY

[004] The above and other problems are solved and an improvement in the art is made by an apparatus and a method of manufacture in accordance with this invention. A first advantage of the apparatus and method of manufacture in accordance with this invention is the ability to easily mass produce the component parts and fit them together as a complete product without requiring extensive welding. This ensures reliability of the product and maintains the integrity of the clothes rack when loaded with wet laundry. A second advantage of the apparatus and method of manufacture in accordance with this invention is the ease in which clothes can be hung out to dry using the movable poles. This allows the clothes to be hung or collected with the poles closer to the wall, and for drying with the poles further from the wall.

[005] The present invention provides an apparatus and a method of manufacture for a clothes rack. In one embodiment in accordance with the invention, there is a clothes rack mounted on an external wall comprising a first clothes rack arm, a second clothes rack arm, and a pole for hanging clothes, said pole positioned to straddle the first clothes rack arm and the second clothes rack arm, where the first clothes rack arm is made from a first single piece of material and the second clothes rack arm is made from a second single piece of material. In another embodiment in accordance with the invention, the clothes rack also has the first clothes rack arm with a first base with means for affixing to the external wall, and a first external arm in firm connection to the first base, and the

second clothes rack arm comprising a second base with means for affixing to the external wall, and a second external arm in firm connection to the second base, where the first base is made from a first single piece of material and the second base is made from a second single piece of material. In yet another embodiment according to the invention, the pole also has a universal bearing on a first end and a universal bearing on a second end, wherein the first end resides within a track in the first external arm and the second end resides with a track in the second external arm, wherein the first and the second ends are able to move between a first position closer to the wall, and a second position further from the wall. In yet another embodiment according to the invention, the universal bearings can be locked in the second position. And in a further embodiment according to the invention, the universal bearings are locked into the first position or the second position using a locking mechanism. Further, there is an embodiment according to the invention having a plurality of poles, where the plurality of poles are connected with connectors to enable the plurality of poles to move together between a first position closer to the wall and a second position further from the wall.

[006] In another embodiment according to the invention, there is a method of manufacturing a clothes rack for mounting on an external wall, the method comprising cutting out profiles of a first base, a second base, a first external arm, a second external arm from a single piece of steel, forming a first base and a second base by a first series of bends, forming a first external arm and a second

external arm by a second series of bends, welding the first base to the first external arm and welding the second base to the second external arm, and connecting the first external arm and the second external arm with a pole, where the pole is able to move between a first position closer to the wall, and a second position further from the wall. In a further embodiment in accordance with the invention, the method of manufacturing a clothes rack also includes welding a first joint cap to the first base and the first external arm, and welding a second joint cap to the second base and the second external arm.

BRIEF DESCRIPTION OF THE DRAWINGS

[007] The accompanying drawings, which are incorporated herein and form part of the specification, illustrate various embodiments of the present disclosure and, together with the description, further serve to explain the principles of the disclosure and to enable a person skilled in the pertinent art to make and use the embodiments disclosed herein. In the drawings, like reference numbers indicate identical or functionally similar elements.

[008] Figures 1A, 1B, and 1C, are illustrations of a clothes rack in accordance with an embodiment of the invention;

[009] Figure 2 is an illustration of a clothes rack arm in isometric view in accordance with an embodiment of the invention;

[0010] Figure 3 is an illustration of a clothes rack arm in side view in accordance with an embodiment of the invention;

[0011] Figure 4 is an illustration of a clothes rack arm in exploded isometric view in accordance with an embodiment of the invention;

[0012] Figure 5 is an illustration of a clothes rack arm in exploded side view in accordance with an embodiment of the invention;

[0013] Figure 6 is an illustration of a clothes rack arm in side view when mounted on a wall in accordance with an embodiment of the invention;

[0014] Figures 7A and 7B are illustrations of a clothes rack in skeleton side view in accordance with an embodiment of the invention;

[0015] Figures 8A, 8B, 8C, 8D, and 8E are illustrations of a base used in a clothes rack in different views in accordance with an embodiment of the invention;

[0016] Figures 9A, 9B, and 9C are illustrations of an extension arm used in a clothes rack in different views in accordance with an embodiment of the invention;

[0017] Figure 10 is an illustration of a joint cap used in a clothes rack in accordance with an embodiment of the invention;

[0018] Figure 11 is an illustration of a rear guide used in a clothes rack in accordance with an embodiment of the invention;

[0019] Figure 12 is an illustration of a universal bearing used in a clothes rack in accordance with an embodiment of the invention.

DETAILED DESCRIPTION

[0020] The various configurations discussed in these non-limiting examples can be varied and are used to illustrate at least one embodiment and are not intended to limit the scope thereof.

[0021] Figures 1A, 1B, and 1C are various isometric views of an external arm and a base enjoined together 100 mounted on a wall 111 using a series of bolts 140. The external arm and the base can be welded together, possibly using a full fillet weld, for added strength and durability. Also seen within the side of the external arm is a track 105 for accepting one end of a pole. Thus, with a pair of external arms and bases mounted on a wall 111, the pole can reside within the tracks 105 of the external arms. With the addition of a universal bearing on each of the two ends of the pole, the pole is able to move between a first position closer to the wall and a second position further from the wall.

[0022] Further details of the clothes rack arm 200 can be seen in Figure 2, with the base being fastened to the wall using a series of bolts via the bolt holes 240. The track 205 on the side of the arm for receiving the end of the pole or a hanger pole can also be clearly seen, along with the joint cap 204. The side view of the clothes rack arm 200 can be seen in Figure 3, where the various parts including the base 301, the external arm 302, the joint cap 304, and the track 305 can be seen, although the rear guide is not shown as it sits within the clothes rack arm. Yet further details can be seen in the exploded view of the clothes rack arm in Figure 4 where the base 401, the external arm 402, and the joint cap 404 can be seen (the rear guide is not shown). The holes 440 for affixing the base

against the wall (not shown) can clearly be seen. Further details of how these parts are manufactured will be described in a later section. Figure 5 shows the exploded side view of the clothes rack arm where the side profile of the base 501, the external arm 502, and the joint cap 504 can be seen, along with a track or groove 505 within the external that accepts the end of the pole. The track 505 runs continuously from the base 501 near the wall to the external arm 502 forming a single track on which the end of the pole moves on, aided by a universal bearing mounted on the end of the pole (not shown).

[0023] Looking at the external side elevation of the clothes rack arm in Figure 6, we can see the base 601 mounted to the wall 611 via anchor bolts 640, and the base is connected to the external arm 602 such that it looks like a single piece, especially when welded together although the seam can be seen at 610. Not shown within is the rear guide and the joint cap 604 can just be seen affixed beneath the external arm, covering the joint between the external arm 602 and the base 601. Also seen is a drainage hole 630 which allows water to drain off instead of being collected within the clothes rack arm. Some industrial foam 635 can also be mounted within the clothes rack arm so that the universal bearings are cushioned when they are returned to the first position from the second position.

[0024] The internal side elevation of the clothes drying rack can be seen, with the poles 720 in a first position in Figure 7A and a second position in Figure 7B. The poles 720 can be joined by a rod 725, and also shown is a locking

mechanism 726 for locking the holes in either position. The locking mechanism can be in the form of a lock nut, a lock and pin, or any other conventional locking mechanism that would hold the poles in position. The top cover 727 of the clothes rack arm can be opened for inspection and maintenance of the poles and bearings. The base of the clothes rack arm is secured to the wall using anchor bolts 740 and the drainage hole 730 and industrial foam 735 can also be present. The poles in Figure 7B can be connected using L plate connectors instead of rods (in Figure 7A).

[0025] The overall process of manufacturing the various parts of the clothes rack begins with the various profiles being cut out or punched out from a tough material, like steel although other metals can also be used. For precision, a laser cutting machine can be used by programming the design profile to cut the desired profiles. Some burrs and sharp edges may be removed by sanding, filing, or buffing. The base and the external arm can then be formed using a press brake or a bending machine. By using modified punches and v-blocks, the base and the external arm can be formed from a single sheet of material. The clothes rack is strengthened by the fact that the base is made out of a single piece instead of welding two separate members together to form a base. The present invention uses less joints to form the profile of the clothes rack arm, and thus makes it stronger and more rigid.

[0026] The sheet profile of the base 801 can be seen in Figure 8A, where the bending machine is used to bend along the lines to form the base as shown in

the various perspective views in Figures 8B, 8C, 8D, and 8E. The bolt holes 840 used to secure the base to the wall can be predrilled to speed up the installation process. The drainage hole 830 can also be drilled.

[0027] Similarly the sheet profile of the external arm 902 can be seen in Figure 9, and after the bending machine is used to bend along several lines, the external arm 902 as shown in Figures 9B (end view)(or AA view in Figure 9C) and Figure 9C is formed.

[0028] The joint cap 1004 in Figure 10 can be cut or stamped out before being finished by grinding and polishing to remove burrs and smoothen the surfaces. The stamping also gives the joint cap its curved shape. The rear guide 1103 in Figure 11 can be rolled out to form a smooth radius to ensure smooth movement and operation. Other parts such as a cover plate and a stopper plate can also be used although these are not shown but are known to one skilled in the art. All the parts are then welded together to form the clothes rack arm and the welds can be ground lightly to remove surface imperfections.

[0029] The universal bearing 1220 as shown in Figure 12 can be specially designed for this purpose of ensuring smooth movement and translation of the hanger poles. The universal bearing 1220 is able to absorb lateral shocks and also allows for user related inconsistency during operation of the retractable clothes drying rack. The bearing construction is such that one end has a ball bearing 1230 that is mounted in a spring loaded base 1235, and is mounted in roller bearing 1240 thus allowing for lateral cushioning effect.

[0030] Thus, the present invention has been fully described with reference to the drawing figures. Although the invention has been described based upon these preferred embodiments, to those of skill in the art, certain modifications, variations, and alternative constructions would be apparent, while remaining within the spirit and scope of the invention. In order to determine the metes and bounds of the invention, therefore, reference should be made to the appended claims.

CLAIMS

1. A clothes rack for mounting on an external wall, the clothes rack comprising:

a first clothes rack arm,

a second clothes rack arm, and

a pole for hanging clothes, said pole positioned to straddle the first clothes rack arm and the second clothes rack arm,

wherein the first clothes rack arm is made from a first single piece of material and the second clothes rack arm is made from a second single piece of material.

2. The clothes rack according to claim 1, further comprising the first clothes rack arm comprising a first base with means for affixing to the external wall, and a first external arm in firm connection to the first base, and the second clothes rack arm comprising a second base with means for affixing to the external wall, and a second external arm in firm connection to the second base,

wherein the first base is made from a first single piece of material and the second base is made from a second single piece of material.

3. The clothes rack according to claims 1 or 2, the pole further comprising a universal bearing on a first end and a universal bearing on a second end, wherein the first end resides within a track in the first external arm and the second end resides with a track in the second external arm, wherein the first and

the second ends are able to move between a first position closer to the wall, and a second position further from the wall.

4. The clothes rack according to claim 3, wherein the universal bearings can be locked in the second position within the clothes rack arm.

5. The clothes rack according to claim 4, wherein the universal bearings are locked into the first position or the second position using a locking mechanism.

6. The clothes rack according to any one of claims 2-5, further comprising a plurality of poles, wherein the plurality of poles are connected with connectors to enable the plurality of poles to move together between a first position closer to the wall and a second position further from the wall.

7. A method of manufacturing a clothes rack for mounting on an external wall, the method comprising:

punching out profiles of a first base, a second base, a first external arm, a second external arm from a single piece of steel,

forming a first base and a second base by a first series of bends,

forming a first external arm and a second external arm by a second series of bends,

welding the first base to the first external arm and welding the second base to the second external arm, and

connecting the first external arm and the second external arm with a pole,

wherein the pole is able to move between a first position closer to the wall, and a second position further from the wall.

8. The method of manufacturing a clothes rack according to claim 7, further comprising welding a first joint cap to the first base and the first external arm, and welding a second joint cap to the second base and the second external arm.