United States Patent

[11] 3,610,422

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[33] **Austria**
[31] **A 10,616/69**

[54] **CLOTHES DRYER**
13 Claims, 8 Drawing Figs.

[52] **U.S. Cl.** **211/1.3**
[51] **Int. Cl.** **A47b 53/00**
[50] **Field of Search** 211/1.3, 94, 172; 312/21, 26, 29

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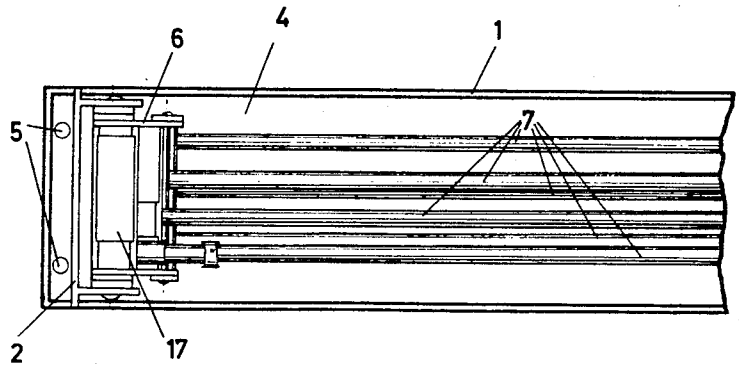
ABSTRACT: The clothes dryer comprises a housing and a frame, which is adapted to be extended out of said housing. The frame comprises two spaced-apart, self-supporting carrying arms, which are articulatedly connected to said housing and foldable inwardly about a point disposed approximately in the middle of their length. In a folded condition, the arms are adapted to be swung into said housing. Equally spaced mounting brackets are mounted in each of said carrying arms. Horizontal carrying rods are mounted in said mounting brackets for displacement relative thereto and connect said carrying arms.



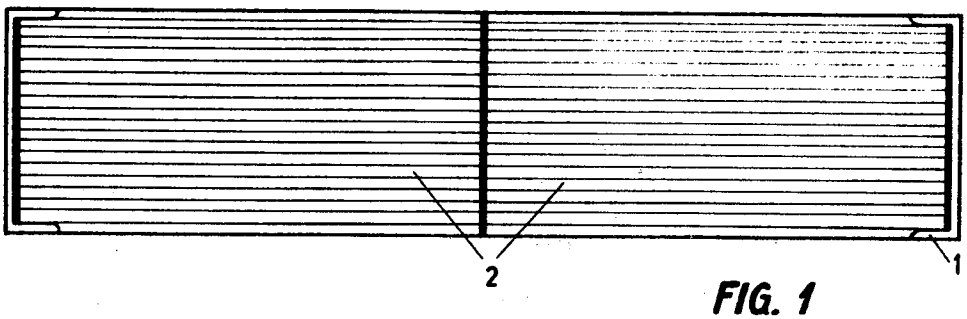


FIG. 1

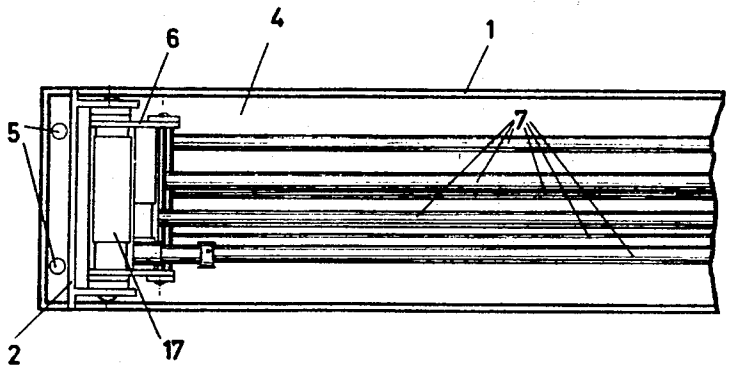


FIG. 3

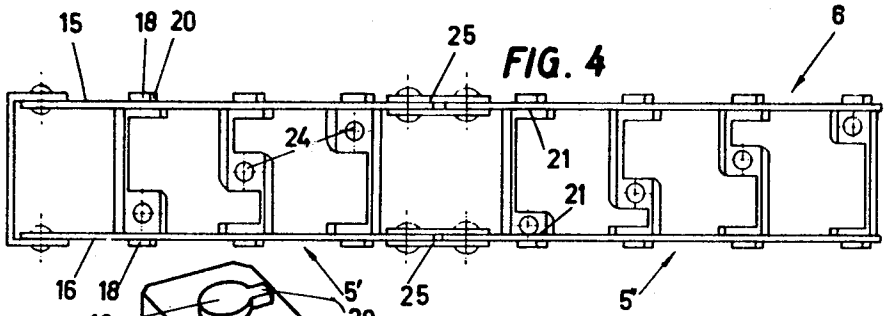


FIG. 4

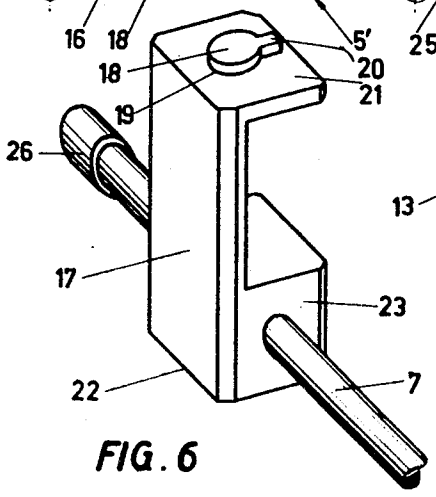


FIG. 6

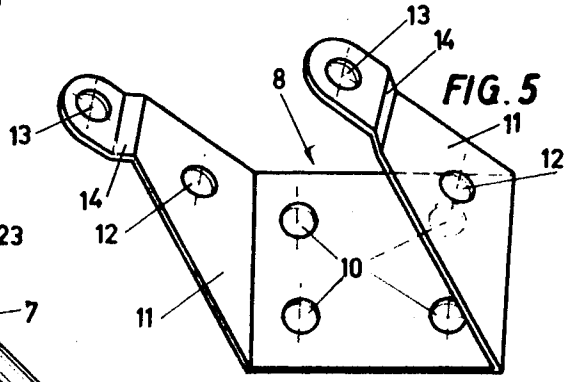


FIG. 5

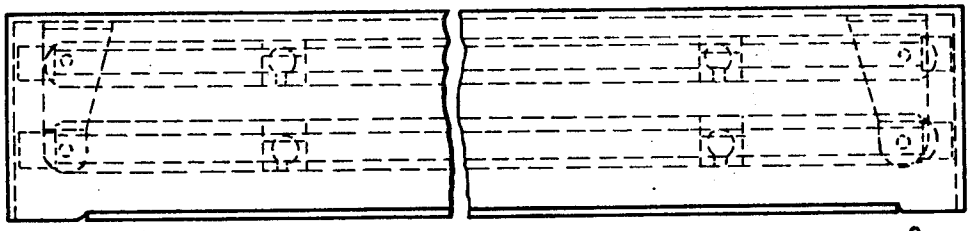


FIG. 2

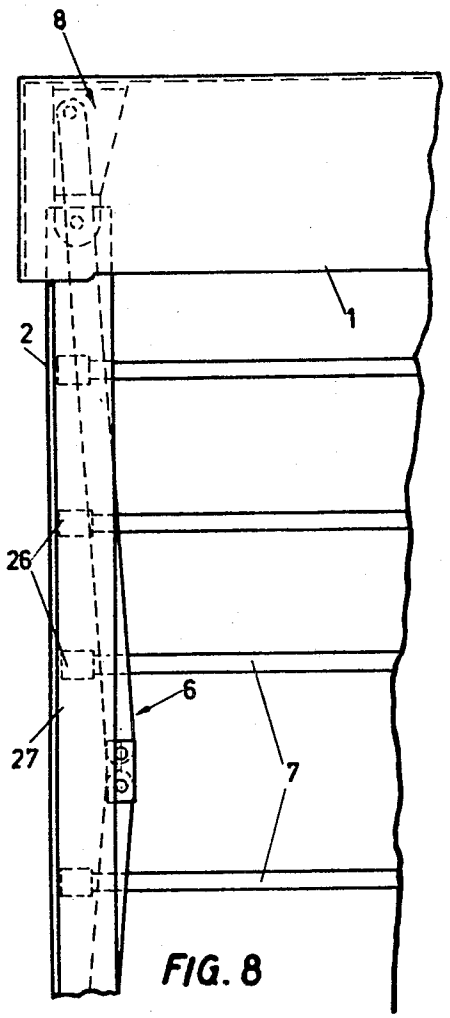


FIG. 8

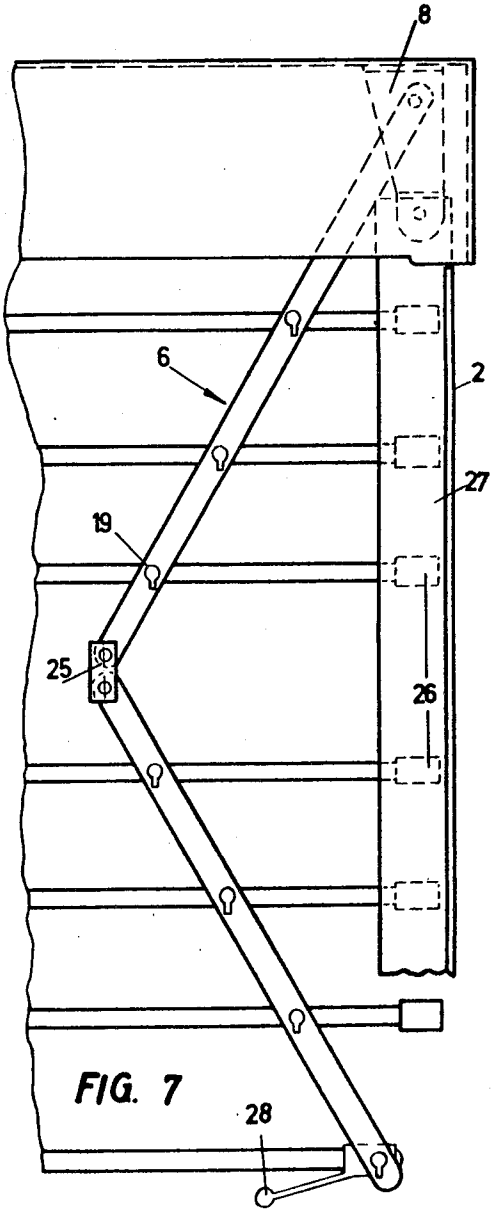


FIG. 7

CLOTHES DRYER

This invention relates to a clothes dryer, which consists of a housing, which is adapted to be secured, e.g., to a wall, and a frame, which is articulatedly connected to the housing and can be extended and pushed together and comprises two spaced-apart, self-supporting carrying arms, which are interconnected by horizontal carrying rods, on which clothes can be hung.

Such clothes dryers having carrying arms in the form of lazy tongs are known in various designs. They have not been fully satisfactory, particularly because those parts which are to carry the heaviest loads consist of plastics material so that they break easily when improperly handled or substantially loaded. Besides, the frames cannot be perfectly enclosed when pushed together so that they may become soiled by a deposition of dust or the like when they are out of use for a prolonged time.

Other known clothes dryers comprise carrying arms which can be folded toward each other and serve to carry clothes lines, which by means of sliders are slidably movable between positions in which these lines are parallel to each other. The carrying arms are provided with rails, which carry the sliders and which are disposed one below the other. These clothes dryers too have the disadvantage that they do not resist heavy loads. Besides, they are not very attractive in appearance and cannot be completely enclosed when folded together.

It is an object of the invention to provide a clothes dryer which avoids the above-mentioned disadvantages so that it has a much higher load-carrying capacity, is less delicate and can easily be handled and which when pushed together can be completely enclosed in a housing and has a pleasing appearance.

This object is accomplished according to the invention in that the carrying arms, which are articulatedly connected to the housing, are foldable inwardly about a point disposed approximately in the middle of their length and in their folded condition can be swung into the housing, and the carrying arms carry mounting brackets, which are approximately equally spaced-apart and which hold the carrying rods for a displacement relative to the mounting brackets.

According to a feature of the invention, the carrying rods are arranged in steps in the two foldably interconnected parts of the carrying arms, and the carrying rods are adapted to be moved to a position in which they are arranged one above the other in rows associated with respective parts of the carrying arms as the latter are swung into the housing.

According to further features of the invention, two door wings are hinged to the housing, which can be swung open laterally and are U-shaped in cross section and adapted to receive the carrying arms and when swung to an open position serve as means for guiding the carrying rods. Adjacent to the hinges for the door wings, the housing may be provided with respective projecting stops, which prevent a pivotal movement of the door wings by more than 90° from their closed position.

According to additional features of the invention, bearing brackets made from a stainless material, such as stainless steel, may be used as means which pivotally connect the carrying arms and the door wings to the housing, the webs of such brackets may be provided with apertures for the fixation of such webs to the inside of the rear wall of the housing, and the flanges of said brackets may protrude substantially at right angles from said webs and may be provided with apertures for the pivotal connection of the carrying arms and wing doors, the wing doors being pivotally connected to the angled end portions of the flanges. The bearing brackets may also be used to assist in the fixation of the housing to a wall and their webs may be provided with corresponding additional apertures.

According to further features of the invention, the foldably interconnected parts of the carrying arms consist of carrying frames, each of which comprises two rails of stainless materials, which rails are equally vertically spaced in all said frames, the mounting brackets are of equal length and are disposed between the rails and are rotatably mounted with the aid of pins which protrude through corresponding apertures in the rails. The latter may be provided with noses, which prevent their axial displacement in position for use. Next to their ends, the mounting brackets are provided with engaging surfaces, which hold the rails of the carrying frames equally spaced apart and from which the bearing pins of the mounting brackets protrude at right angles to said surfaces whereas the mounting part of the bracket, which mounting part serves to hold and guide the respective carrying rod, is disposed on such a level as is required to provide for a stepped arrangement of the carrying rods. The folding joints in the divided carrying arms consist of articulated joints, which are provided with corresponding backing flanges to prevent a complete straightening of the two parts into a self-locking position. The distance between the two carrying arms is determined by the design of that carrying rod which is foremost when the frame is being pulled out of the housing.

It is contemplated within the scope of the invention to provide the ends of the carrying rods other than the foremost one with cover caps, which during the displacement of the frame slide on the inside surfaces of the swung-open door wings and limit the axial displacement of the carrying rods. Handle lugs may be provided at the points where the foremost carrying rod is connected to the carrying arms and serve to facilitate the pulling of the frame out of the housing.

The invention will now be explained more fully with reference to an embodiment which is shown diagrammatically and by way of example in the accompanying drawing, in which:

FIG. 1 is a front elevation showing the clothes dryer in a closed condition,

FIG. 2 is a top plan view showing the closed clothes dryer,

FIG. 3 is a front elevation showing one-half of the clothes dryer when the door wing is swung open and the frame has been pushed into the housing,

FIG. 4 is a side elevation showing a carrying arm in an extended condition,

FIG. 5 is a perspective view showing a bearing bracket for the pivotal mounting of a carrying arm and a door wing,

FIG. 6 is a perspective view showing one of the mounting brackets by which the carrying rods are mounted in the carrying frames,

FIG. 7 is a top plan view showing the right-hand half of the clothes dryer with the frame partly pulled out of the housing, and

FIG. 8 is a top plan view showing part of the left-hand half of the clothes dryer with a frame which has been fully extended.

The clothes dryer which is shown by way of example has an antistatic housing 1, which can be closed at its forward longitudinal side by two door wings 2, which can be laterally swung open and the pivotal movement of which from their closed position is limited to 90° by projecting stops 3. The housing is provided on its rear longitudinal side 4 with apertures 5, with the aid of which the housing can be fixed with screws or the like, e.g., to a wall. A frame which is extensible and can be pushed together is connected to the housing 1 and comprises two self-supporting carrying arms 6, which are interconnected by carrying rods 7, on which clothes can be hung. Two substantially U-shaped bearing brackets 8 consisting of stainless steel are provided for the pivotal connection of the carrying arms 6 and the door wings 2 to the housing 1. Each of these bearing brackets 8 comprises a web 9. These webs are provided with apertures 10, with the aid of which the webs can be fixed to the inside of the rear wall 4 with screws or rivets. Each bearing bracket also comprises two flanges 11, which extend substantially at right angles from the web 9 and taper toward their ends and are formed with apertures 12 for the pivotal mounting of the carrying arms 6 and with apertures 13 for the pivotal mounting of the door wings 2. In the present case, the door wings are pivoted to the free end portions of the flanges 11 and these end portions extend from angles 14 out of the plane of the flange. The bearing brackets 8 may alternatively be used to assist the fixation of the housing 1 to a wall. In this case the web is suitably extended and additionally provided with apertures, which are aligned with the apertures serving for the fixation of the housing.

The carrying arms 6 consist of carrying frames. The latter consist of two parts 6', 6'', which are foldably interconnected. Each of these parts comprises two rails 15, 16, which are arranged one over the other and consist of a stainless material, e.g., an aluminum alloy. The distances between the rails are the same. Mounting brackets 17 of equal length are disposed between the rails and have end journals 18, with which they are rotatably mounted in corresponding apertures 19 of the rails 15, 16. The bearing pins 18 are provided with noses 20, which hold the mounting brackets 17 against axial displacement. The apertures 19 serving to mount each mounting bracket 17 in the two rails 15, 16 are aligned and conform to the cross section of the pin 18, which is provided with the nose 20. As a result, the pins 18 can be passed in the proper position through the apertures 19 of the rails but even after a slight rotation of the mounting brackets can no longer be separated from the rails 15, 16.

Adjacent to their ends, the mounting brackets 17 are provided with surfaces 21, which are transverse to the longitudinal axis of the mounting brackets and engaged by the rails 15, 16. The pins 18 protrude at right angles from these surfaces 21. Between the surfaces 21, the mounting bracket 17 has a mounting part 23, which serves to hold and guide the respective carrying rod 7 and which has a bore 24 having a diameter that is slightly larger than the cross section of the carrying rod 7 so that the mounting bracket can slide on the rail during the displacement of the frame. The mounting part 23 is arranged on such a level that the adjacent carrying rods 7 are arranged in steps.

The two parts 6', 6'' are foldably interconnected by articulated joints, which are pivoted in such a manner to those ends of the rails 15, 16 to be connected that a perfect straightening of the two arm parts 6', 6'' to a self-locking position is prevented as the frame is extended from the housing 1.

The distance between the two carrying arms 6 is determined by the length of that carrying rod 7' which is foremost as the frame is pulled out of the housing 1. This carrying rod 7' is firmly connected to the lower part of the foremost mounting bracket 17 mounted in the carrying arm 6. The ends of the remaining carrying rods 7 are provided with cover caps 26 of plastics material, which during the displacement of the frame slide on the inside surfaces 27 of the door wings 2, which are U-shaped in cross section. These caps 26 limit the axial displacement of the carrying rods 7. To facilitate the pulling of the frame out of the housing 1, handle lugs 28 are provided at the joints between the foremost carrying rod 7' and the carrying arms 6.

What is claimed is:

1. A clothes dryer which comprises;
a housing, and
a frame adapted to be extended out of said housing, said frame comprising
two spaced-apart self-supporting carrying arms, which are articulatedly connected to said housing and are foldable inwardly about a point disposed approximately at the middle of their length and in a folded condition are adapted to be swung into said housing,
equally spaced mounting brackets mounted in each of said carrying arms,
horizontal carrying rods mounted in said mounting brackets for displacement relative thereto and connecting said carrying arms, and
said housing comprising two door wings, which are U-shaped in cross section and adapted to be swung to an open position and to receive said carrying arms and to guide the same when said door wings are in said open position.

2. A clothes dryer as claimed in claim 1, in which each of the two foldably interconnected parts of the carrying arms are arranged at different height levels whereby when said carrying arms are collapsed the rods are adapted to be positioned in two vertical rows.

3. A clothes dryer as set forth in claim 1, which comprises
hinge means connecting said door wings to said housing, and
protruding stops carried by said housing and disposed near said hinge means and arranged to prevent a pivotal movement of said door wings through more than 90° from a closed position.

4. A clothes dryer as set forth in claim 1, in which said housing comprises a rear wall opposite to said door wings and which comprises
U-shaped bearing brackets consisting of stainless material,
each of said bearing brackets having a web and flanges protruding substantially at right angles from said web,
said webs being formed with apertures, with the aid of which said webs are secured to said rear wall,
said flanges having angled end portions,
said flanges being formed with apertures by which said carrying arms are pivotally connected to said flanges,
said end portions being formed with apertures by which said door wings are hinged to said end portions,

5. A clothes dryer as set forth in claim 4, in which said bearing brackets consist of stainless steel.

6. A clothes dryer as set forth is claim 4, in which
said webs are provided with additional apertures, with the aid of which said housing is adapted to be secured to a wall.

7. A clothes dryer as set forth in claim 1, in which
each of said carrying arms has a free end,
one of said carrying rods is disposed nearest to said free ends of said carrying arms, and
each of said carrying rods other than said one carrying rod has end portions provided with caps adapted to slide along the inside of said wing doors when swung open and to limit an axial displacement of said carrying rods.

8. A clothes dryer as set forth in claim 1, in which
said carrying arms consist of foldably interconnected carrying frames, each of which consists of two vertically spaced rails of a stainless material,
the distance between said rails is the same in all said frames,
said mounting brackets are of equal length and disposed between said rails,
said rails are formed with apertures and
said mounting brackets carry pins rotatably mounted in said apertures.

9. A clothes dryer as claimed in claim 7, in which the mounting brackets are essentially C- or S-shaped and are provided at their ends with flat engagement surfaces abutting on the rails, said pins protruding from said engagement surfaces, one leg of the C-shaped or the middle portion of the S-shaped brackets being provided with a bore for holding and guiding a carrying rod.

10. A clothes dryer as claimed in claim 7, in which the free end of each pin protruding from the rail is provided with a nose to prevent an axial displacement of said pin in position for use.

11. A clothes dryer as set forth in claim 1, in which
each of said carrying arms consists of two foldably interconnected parts, a hinge connecting said parts, and a backing flange arranged to prevent a complete straightening of the carrying arm to a self-locking position.

12. A clothes dryer as set forth is claim 1, in which
each of said carrying arms has a free end,
one of said carrying rods is disposed nearest to said free ends of said carrying arms, and determines the spacing between said two carrying arms.

13. A clothes dryer as set forth in claim 1, in which
each of said carrying arms has a free end,
one of said carrying rods is disposed nearest to said free ends of said carrying arms, and
each of said carrying arms carries a handle lug adjacent to the area where said one carrying rod is connected to said carrying arm.