March 23, 1943. F. S. BOLTZ 2,314,762

FOLDING CLOTHES DRIER AND METHOD OF MAKING SAME

Filed Sept. 24, 1940 3 Sheets-Sheet 1

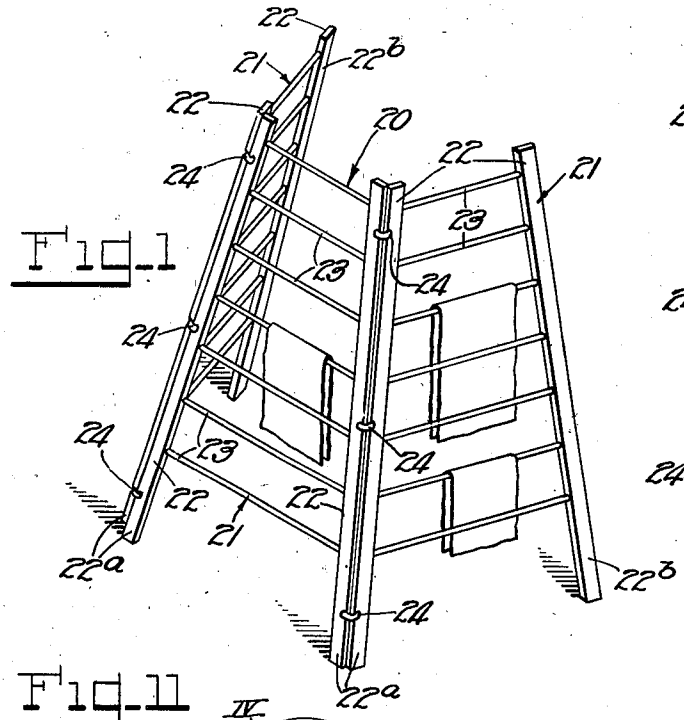


Fig-1

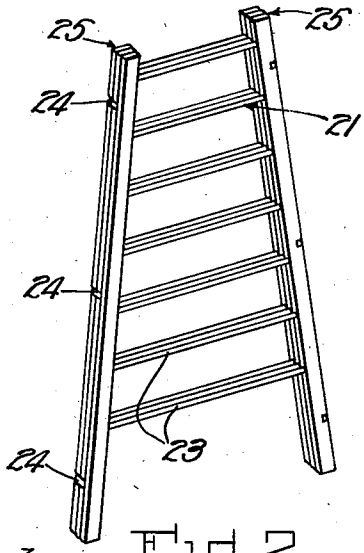


Fig-2

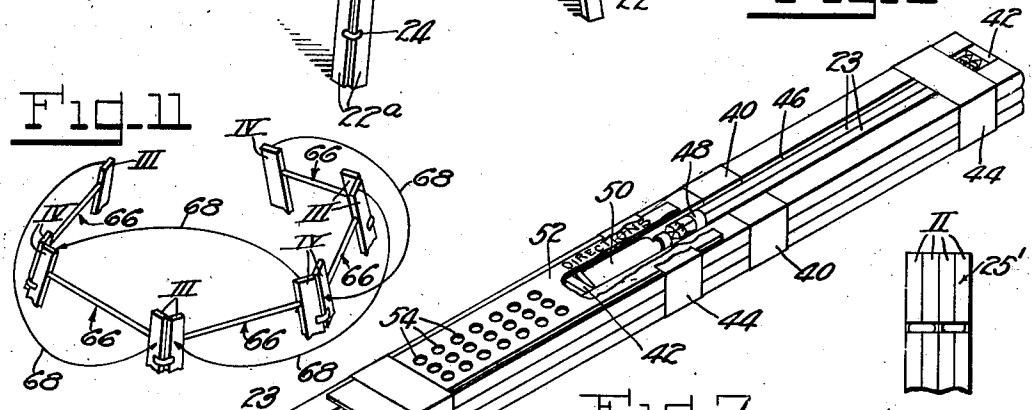


Fig-7

Fig-11

Fig-9

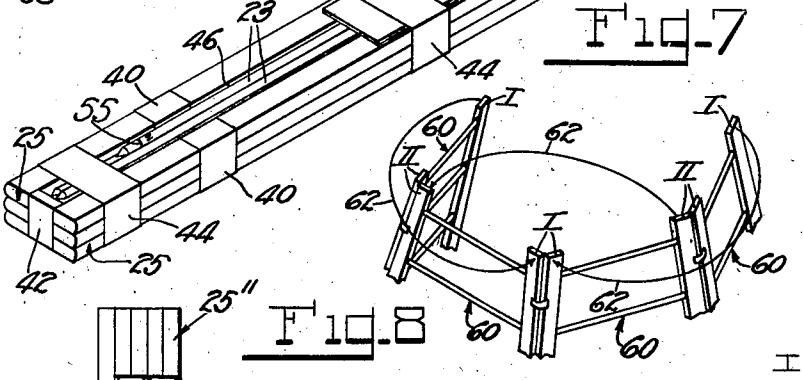


Fig-8

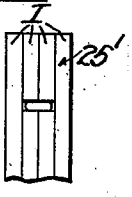


Fig-10

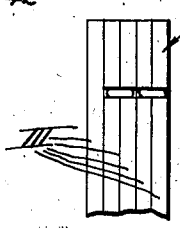


Fig-12

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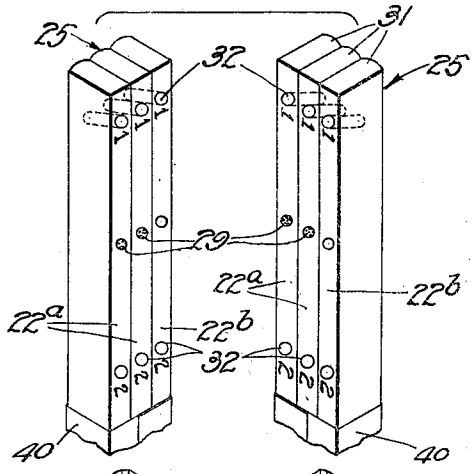


Fig. 3

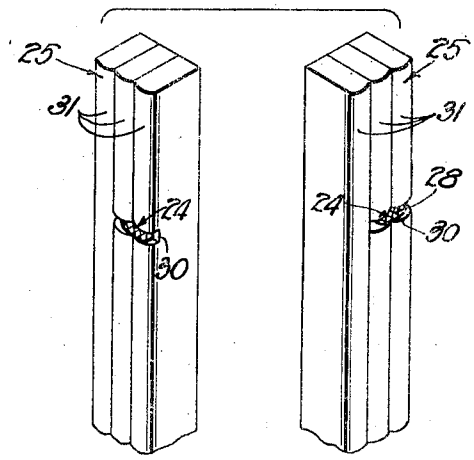


Fig. 4

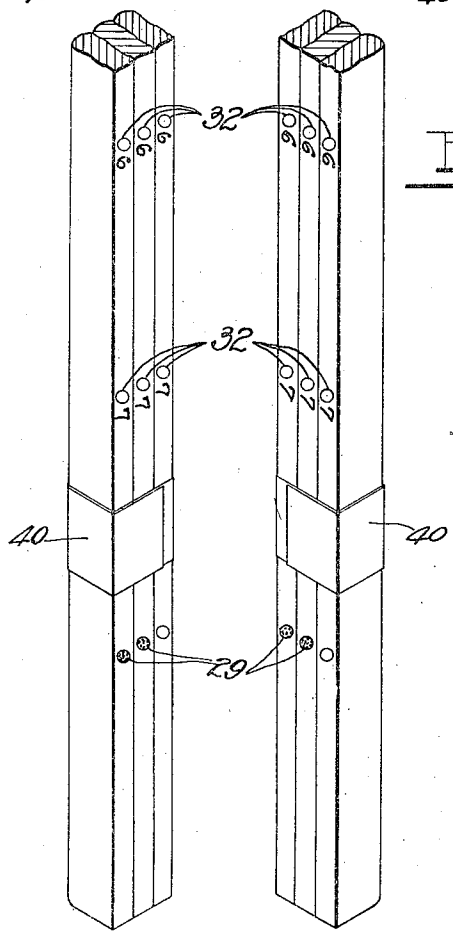


Fig. 6

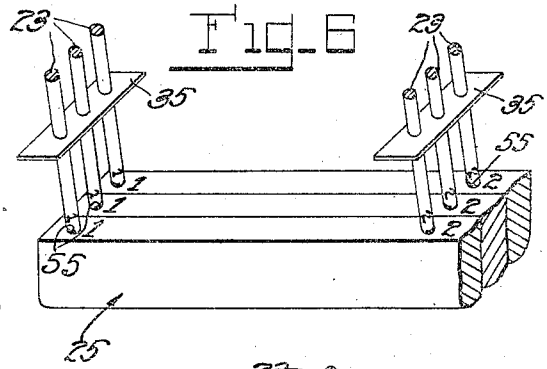
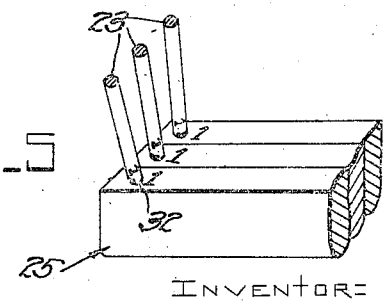


Fig. 5



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FOLDING CLOTHES DRIER AND METHOD OF MAKING SAME

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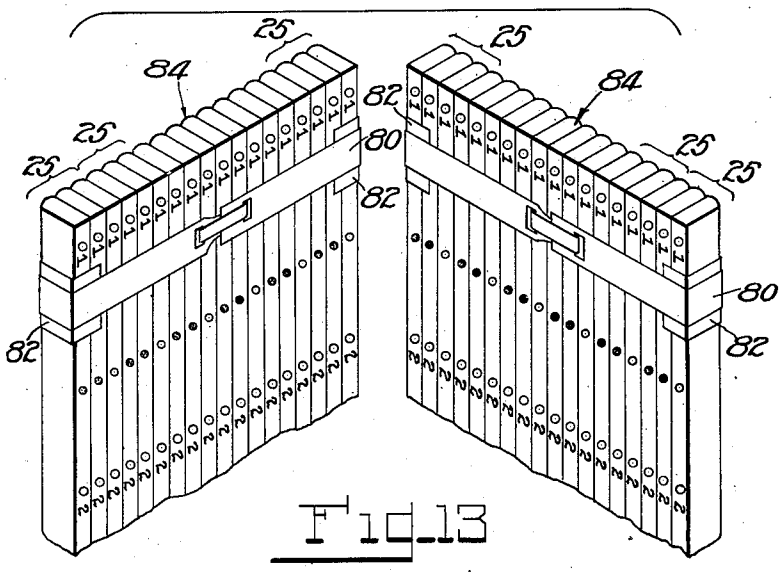


Fig. 13

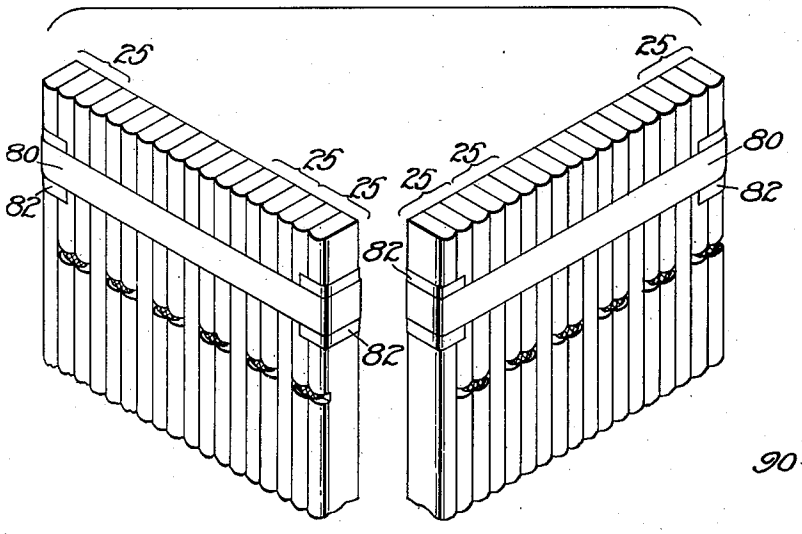


Fig. 14

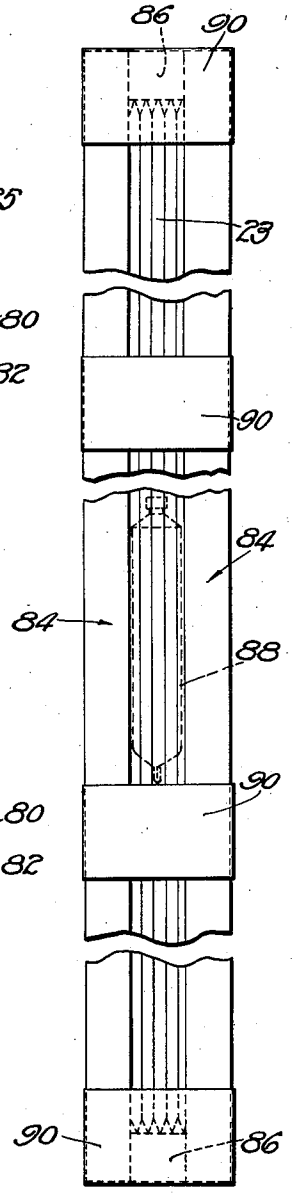


Fig. 15

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2,314,762

UNITED STATES PATENT OFFICE

2,314,762

FOLDING CLOTHES DRIER AND METHOD OF MAKING SAME

Fred S. Boltz, Mansfield, Mass.

Application September 24, 1940, Serial No. 358,095

6 Claims. (Cl. 211—178)

This invention relates to folding clothes driers of the type having upright rails and connecting cross bars, and a method of making such driers.

It is the primary aim and object of the present invention to devise a rapid assembly of the separate rails and cross bars of a folding clothes drier which admits of no error and requires little skill.

It is another object of the present invention to construct the separate rails of the folding clothes drier and coordinate them in provisionally tied stacks so that said stacks may be packed with the unattached cross bars in a small bundle for sale to the public as a clothes drier in semi-assembled or knocked-down form, and so that the stacks may, before being untied, be readily assembled with said cross bars by the purchaser in a manner which requires little skill and permits of no error.

The foregoing and other objects of the invention, together with means whereby the latter may be carried into effect will best be understood from the following description of an illustrative embodiment shown in the accompanying drawings: in which,

Fig. 1 is a perspective view of a folding clothes drier in an open or unfolded state.

Fig. 2 is a perspective view of the drier in a closed or collapsed state.

Fig. 3 shows perspectively certain parts of the drier coordinated prior to the final assembly of the drier.

Fig. 4 shows fragmentarily the same coordinated parts from another direction.

Fig. 5 illustrates fragmentarily the assembly of certain other parts of the drier.

Fig. 6 illustrates the use of a gage or templet in the assembly of parts of the drier.

Fig. 7 is a perspective view of the clothes drier packed in knocked-down form.

Fig. 8 is a fragmentary perspective view of a different drier.

Figs. 9 and 10 illustrate fragmentarily the opposite rail structures, respectively, of the drier in Fig. 8, when the same is folded or collapsed.

Fig. 11 is a fragmentary perspective view of a third drier.

Fig. 12 fragmentarily illustrates one of the two identical rail structures of the drier in Fig. 11 when the latter is folded or collapsed.

Fig. 13 illustrates fragmentarily certain preassemblies of a plurality of driers in knocked-down form.

Fig. 14 shows the preassemblies of Fig. 13 from another direction.

Fig. 15 shows the preassemblies of Figs. 13 and 14 packed together with other parts of the driers.

Referring to the drawings, Fig. 1 illustrates a folding clothes drier **20** which is made according to the present method. The drier consists of three identical, hingedly connected racks **21** of which each consists of two opposite rails **22** and a plurality of cross bars **23**. The contiguous rails **22***a* of the racks **21** are hingedly connected at **24** to permit the collapse of the drier (Fig. 2) when the same is not in use.

In making the drier **20**, all rails **22** thereof are first coordinated in two separate identical units **25** (Fig. 3) in the manner which they are to assume in the collapsed drier (Fig. 2). Hence, each hingedly connected rail pair **22***a* is superposed upon a separate rail **22***b* to form a stack **25**. Each rail stack **25** is then preferably tied together by means to be described hereinafter in order to hold the rails in their properly coordinated relationship. The hinges **24**, which connect the rail pairs **22***a*, may be of any suitable type and are preferably of the type shown in my co-pending application, Serial No. 339,915, filed June 11, 1940, which comprise a comparatively heavy piece of cord **28** whose ends are inserted into adjacent holes **29** of the hinged rails and suitably secured therein. The exposed hinge portions lie preferably in alined transverse notches **30** of the rails as best shown in Fig. 4. The hinges **24** are, furthermore, so arranged that one rail may be swung through 180 degrees relative to the rail hinged thereto. The exposed back faces of the rails in each stack **25** are preferably rounded as shown at **31** (Fig. 3), while the plane front faces of said rails are provided with equally located dowel recesses or sockets **32** which are adapted to receive the cross bars **23**. The sockets **32** of the rail stacks **25** are inclined are inclined to the longitudinal axis of the latter (Fig. 3) so that they come into co-axial alinement for the reception of the cross bars **23** when said stacks are placed opposite each other at the angle which they form in the assembled drier (Fig. 2). The sockets **32** may be provided in the rails before or after they are pre-assembled into the stacks **25**. If the sockets **32** are provided in the rails before they are pre-assembled into the stacks **25**, care has to be taken that the rails are subsequently superposed in proper end relation such that their sockets become laterally alined in the stacks **25** since the end sockets of each rail are differently spaced from the adjacent rail ends as appears clearly from Figs. 1 and 3. Also, the hinges **24** may be applied prior or subsequent to the assembly of the rails into the stacks **25**. However, it is preferable

to first hingedly connect pairs of superposed rails and then superpose each hingedly connected rail pair upon a separate rail in order to form identical stacks **25**. In doing so, hingedly connected rail pairs for any number of folding driers may be made separately and subsequently conveniently assembled with separate rails into identical rail stacks **25** any two of which may, on demand, be further assembled with the cross bars **23** into a folding clothes drier.

After pre-assembling the rail stacks **25** as explained, the proper cross bars **23** are inserted into the axially alined sockets **32** of two identical rail stacks **25** of which one has been inverted upon its longitudinal axis relative to the other stack and placed at an angle thereto (Fig. 2). The sockets **32** or the ends of the cross bars **23**, or both, may be supplied with a sufficient amount of any suitable cement or other binder to securely hold said cross bars in their sockets. Preferably, all cross bars **23** are inserted in their sockets with the aid of suitable guiding means. In the present instance, templets **35** of cardboard or other readily tearable material are placed over the cross bars **23** of equal length (Fig. 6) in order to properly space the same for ready insertion into their respective sockets in each rail stack **25** and prevent, for instance, the random tilting of the cross bars after the same have been assembled with one rail stack as shown in Fig. 5. After assembly of the cross bars with both rail stacks **25**, the templets are torn off and the rail stacks untied so that the assembled drier may be unfolded for use.

In case the entire drier is to be assembled in the factory, the rails of each stack are preferably tied together by readily removable clamps or clips (not shown). However, where the drier is sold in semi-assembled form as hereinafter described, the rails of each stack are preferably tied together by spaced wrappers **40** of paper or other readily tearable material (Fig. 3).

If the drier is sold to the public in semi-assembled form (Fig. 7), the pre-assembled rail stacks **25** are placed opposite, and slightly spaced from, each other. Suitable spacers **42** of wood, for instance, are interposed between the spaced rail stacks **25** in the middle and at the ends thereof while a few spaced paper wrappers **44** (four in the present instance) suffice to keep the rails with their spacers **42** bound together and the cross bars **23** within two receptacles **46**, formed between the rail stacks **25** by the spacers **42**. The cross bars of equal length are preferably tied together by spaced wrappers **48** to facilitate their assembly with the rail stacks **25** by the purchaser. A tube **50**, containing cement for the secure attachment of the cross bars **23** to their respective sockets **32**, is also placed into one of the receptacles **46** at the end of the shortest cross bars **23** and held in place by a templet **52** of cardboard or other readily tearable material which is in turn held in place by the two middle wrappers **44**. The templet **52** has printed directions for the final assembly of the knocked-down drier, as well as lateral rows **54** of dowel holes. The purchaser of a semi-assembled drier, after having removed the wrappers **44**, cuts the templet **52** into sections of which each has a row **54** of dowel holes and uses each section the same as the templets **35** (Fig. 6) in the final assembly of the drier. To further assist the purchaser in assembling the rail stacks **25** with the cross bars **23**, the latter as well as their respective sockets **32** in the rail stacks may be marked in any desired manner, as by printed numerals **1**, **2**, etc., as shown in Figs. 3, 5 and 6. The cross bars **23** are also preferably provided at both ends with printed depth marks **55** to indicate the extent to which these cross bars are to be inserted in their respective sockets **32**.

The semi-assembled driers are packed in the factory in the provisional manner shown in Fig. 7 and may be shipped to retail stores or warehouses in bundles of any desired lot. On selling a semi-assembled drier to an individual purchaser in a retail store, the provisionally wrapped drier (Fig. 7) may be wrapped in ordinary wrapping paper just like any other article and sent to the purchaser or carried home by the purchaser. The provisionally wrapped driers (Fig. 7) may also be completely wrapped in the factory and delivered that way to the retailer.

Fig. 8 shows a drier having four hingedly connected racks **60**. When this drier is folded or collapsed in the manner indicated by the arrows **62**, it appears that the rail stacks **25'** thereof (Figs. 9 and 10) are not identical. Thus, the rails I of the drier (Fig. 8) will, on collapse of the latter, form the rail stack **25'** shown in Fig. 10 which consists of a hingedly connected rail pair, flanked on both sides by separate rails. On the other hand, the rails II will, on collapse of the drier, form the rail stack **25'** shown in Fig. 9 which consists of two superposed pairs of hingedly connected rails. Except for this difference in the rail stacks **25'** of a drier, the assembly of the drier is the same as that of the three-rack drier shown in Fig. 1.

Fig. 11 shows a drier having five hingedly connected racks **66**. When this drier is folded or collapsed in the manner indicated by the arrows **68**, it appears that the rail stacks **25''** thereof (Fig. 12) are identical. Thus the rails III and IV of the drier will, on collapse of the latter, form two identical rail stacks **25''** of which one is shown in Fig. 12 and consists of a separate rail and two pairs of hingedly connected rails superposed thereon.

In conclusion, the rail stacks of a folding drier are identical and consist of a separate rail and an equal number of pairs of hingedly connected rails superposed thereon, if the drier has an uneven number of hingedly connected racks. On the other hand, the rail stacks of a folding drier are not identical and consist of one or more superposed pairs of hinged rails flanked by separate rails, respectively of two or more superposed pairs of hinged rails without any separate rails, if the drier has an even number of hingedly connected racks. Of course, the number of rails is the same in either stack of any drier.

The present assembly of the various parts of a folding clothes drier is advantageous, regardless of whether the drier is finally assembled in the factory or at home by the purchaser who acquired the drier in the semi-assembled form shown in Fig. 7. In either case is the pre-assembly of the rails of a drier in stacks of great benefit in their subsequent assembly with the cross bars. Even a mechanically disinclined purchaser of a semi-assembled drier will have no difficulty in assembling the same with or without the aid of the printed directions. The rail stacks **25** of the packed drier in semi-assembled form (Fig. 7) are so placed that the corresponding sockets thereof are opposite and face each other, thus immediately suggesting the correct disposition of the rail stacks to each other for the assembly with the cross bars. Furthermore, no error can be committed by the purchaser in the assembly of the rail stacks with the cross bars if

he pays attention to the numbers on the cross bars and corresponding sockets of the rail stacks. The folding drier in semi-assembled form has also a definite appeal to the purchasing public inasmuch as it can be sold at less cost than a completely assembled drier and can be purchased and immediately carried home in a relatively small bundle instead of requiring delivery by mail or in a truck the cost for which would have to added to the sales price. Furthermore, a large lot of knocked-down driers may be shipped from the factory to a retail store at little cost and there kept in store without requiring much space.

Where a retailer wishes to sell the drier completely assembled, the rail stacks **25** of any number of driers may be provisionally assembled in the factory in the fashion shown in Figs. 13 and 14. Removable steel bands **80** or other suitable wrappers are wound around any desired number of superposed rail stacks **25** at both ends thereof. Pieces **82** of cardboard or other suitable material are used to prevent the steel bands **80** from cutting into the edges of the wooden rails. To pack the driers in semi-assembled form, spacing blocks **86** (Fig. 15) are placed between the rail pre-assemblies **84** to form therebetween a receptacle for the cross bars **23** for the various driers. A large tube **88** of cement is also placed in the receptacle and the whole unit tied together by spaced wrappers **90**. One or more of these units may then be placed into a carton and shipped to the retailer for final assembly. The retailer mounts the cross bars **23** into the proper sockets of all rails of the preassemblies **84** and then unties the latter by removing the steel bands **80**, thereby immediately obtaining a plurality of completely assembled driers.

I claim:

1. Method of assembling a clothes drier of the type having several hingedly connected drying racks foldable one upon another and each consisting of spaced side rails and cross bars therebetween, comprising the steps of hingedly connecting side rails in pairs, superposing separate and hingedly connected side rails in two units in the relation which they are to assume in the assembled drier when the same is folded, tying the superposed side rails of each unit together, securing the ends of cross bars to the corresponding side rails of the tied units, and then untying said rail units.

2. Method of assembling a clothes drier of the type having several hingedly connected drying racks foldable one upon another and each consisting of spaced side rails and cross bars therebetween, comprising the steps of providing all side rails with sockets, hingedly connecting some side rails in pairs, superposing separate and hingedly connected side rails in two units in the relation which they are to assume in the assembled drier when the same is folded, tying the superposed side rails of each unit together, inserting and securing the ends of cross bars in the sockets of the corresponding side rails of the tied units, and then untying said rail units.

3. Method of assembling a plurality of clothes driers of the type having several hingedly connected drying racks foldable one upon another and each rack consisting of spaced side rails and cross bars therebetween comprising the steps of providing all side rails with sockets, hingedly connecting some side rails in pairs, superposing the separate and hingedly connected side rails in two units in the relation which they are to assume in the assembled driers when the same are folded and superposed upon each other, tying the superposed side rails of each unit together, inserting and securing the ends of cross bars in the sockets of the corresponding side rails of the tied units, and then untying said rail units.

4. Method of assembling a clothes drier of the type having several hingedly connected drying racks foldable one upon another and each consisting of spaced side rails and cross bars therebetween, comprising the steps of providing all side rails with sockets, hingedly connecting some side rails in pairs, superposing separate and hingedly connected side rails in two units in the relation which they are to assume in the assembled drier when the same is folded, tying the superposed rails in each unit together, inserting and securing cross bars in the sockets of one rail unit, placing a removable templet on the cross bars near the free ends thereof to position the same relative to each other, inserting and securing said positioned ends of the cross bars in the sockets of the other rail unit, removing the templet, and then untying the rail units.

5. Method of assembling a clothes drier having an uneven number of hingedly connected drying racks foldable one upon another and each consisting of spaced side rails and cross bars therebetween, comprising the steps of providing all side rails with sockets, hingedly connecting same side rails in pairs, superposing said rails in two identical stacks so that each stack has said uneven number of rails of which there is only one separate rail on top of the remaining, hinged rails thereof and the sockets of the rails of each stack face in the same direction, tying the superposed rails of each stack together, inserting and securing the ends of cross bars in the sockets of the corresponding rails of the tied stacks, and then untying said rail stacks.

6. Method of assembling a clothes drier of the type having an even number of hingedly connected drying racks foldable one upon another and each consisting of spaced side rails and cross bars therebetween, comprising the steps of providing all side rails with sockets, hingedly connecting some side rails in pairs, superposing said rails in two stacks so that each stack has said even number of rails of which there are as many superposed, hinged rail pairs, beginning with the first rail in one stack and with the second rail in the other stack, as are placeable in each stack and the sockets of the rails of each stack face in the same direction, tying the superposed rails of each stack together, inserting and securing the ends of cross bars in the sockets of the corresponding rails of the tied stacks, and then untying said rail stacks.

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