United States Patent

[11] 3,596,770

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[45] Patented **Aug. 3, 1971**

[54] **DRYING RACK AND SUBASSEMBLIES THEREOF**
10 Claims, 10 Drawing Figs.

[52] **U.S. Cl.** 211/150, 34/238, 108/6, 211/170, 248/222, 248/226, 248/300
[51] **Int. Cl.** A47f 5/12, F26b 25/10, F26b 25/18
[50] **Field of Search** ..... 211/170—71, 150, 99—100, 126, 88—89, 169, 169.1, 47—48, 128—29, 133; 34/238; 108/6; 248/70, 72—73, 61, 300, 222, 231, 230, 226, 246; 24/73.7, 129 B, 129 W, 257, 259 C, 115.1

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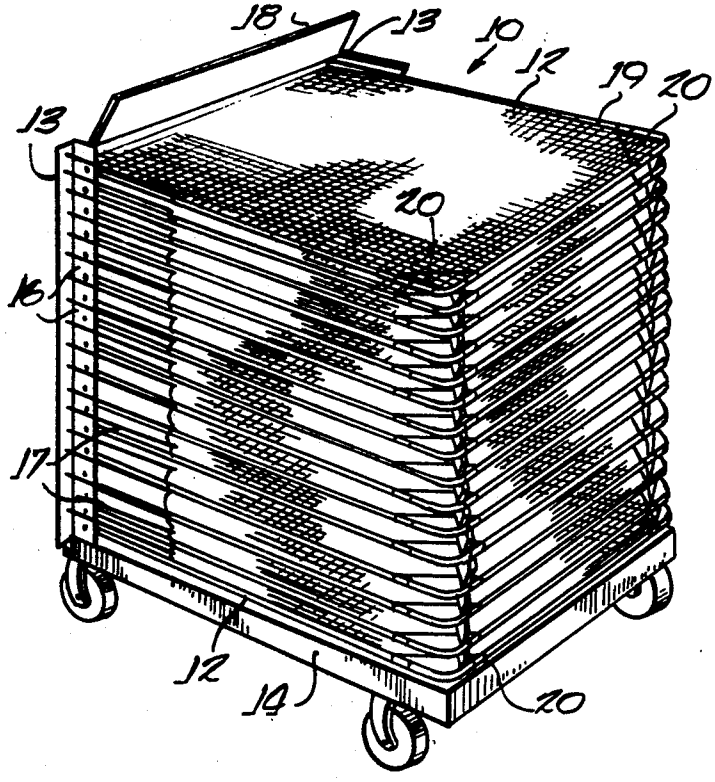
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ABSTRACT: A drying rack including a plurality of horizontally disposed, overlying trays adapted to pivot about one end and a spacing means connected to the other end of the trays comprising a supporting means, clamping means disposed on the supporting means for attaching the spacing means to a tray, and a foot depending from the supporting means for spacing the tray from the next underlying tray.



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SHEET 1 OF 2

Fig. 1.

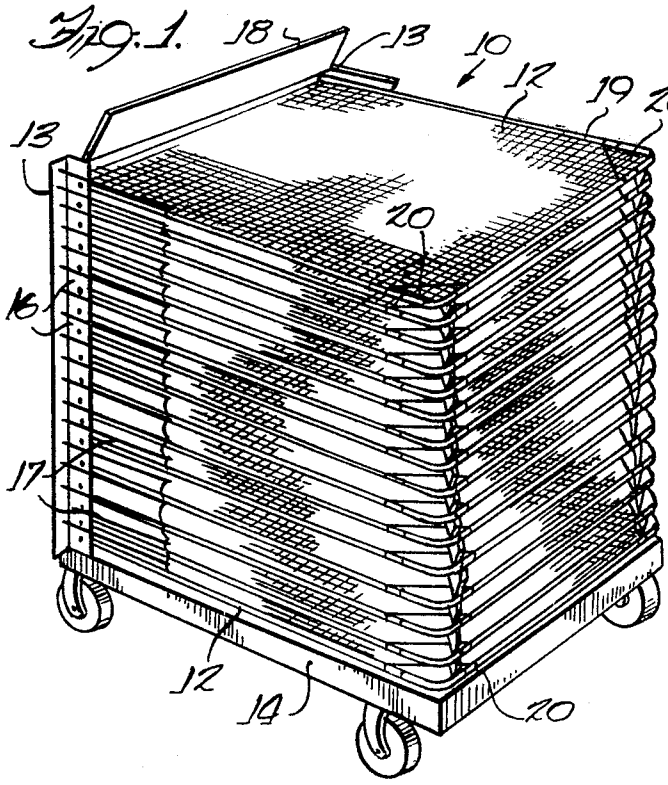


Fig. 2.

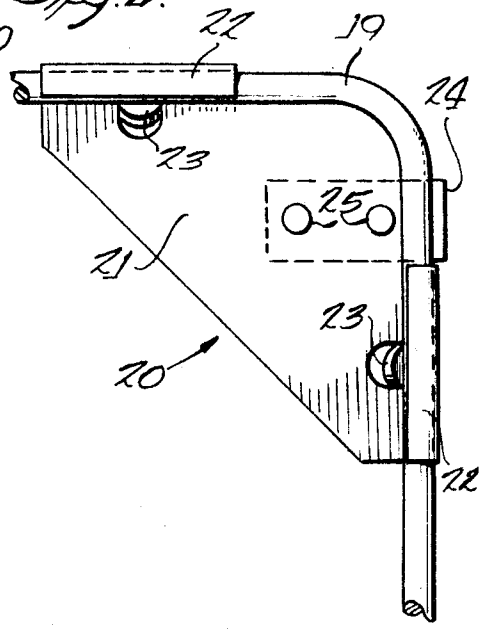


Fig. 3

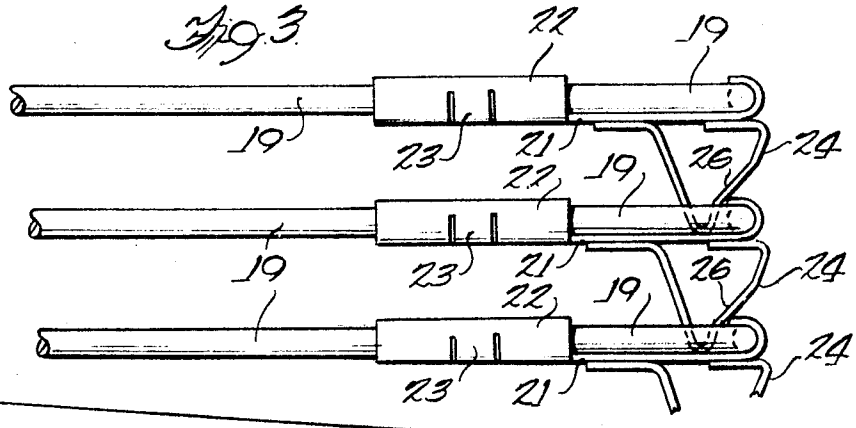
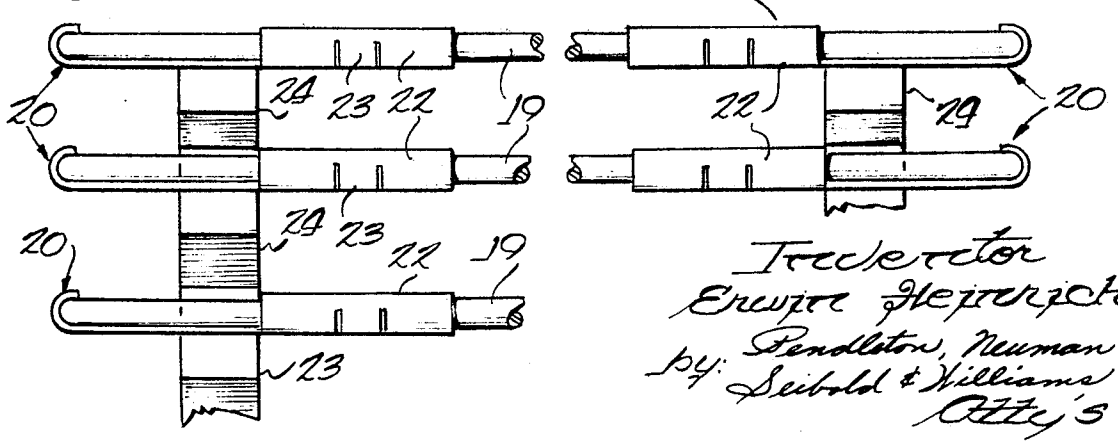


Fig. 4



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Fig. 5.

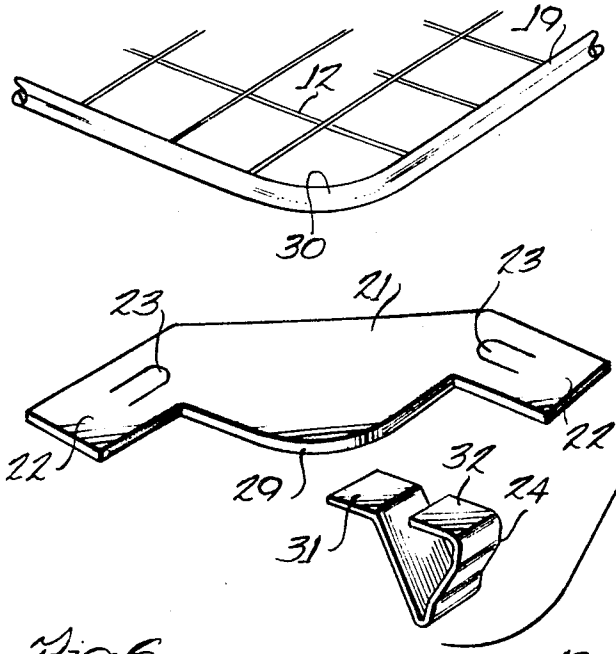


Fig. 6.

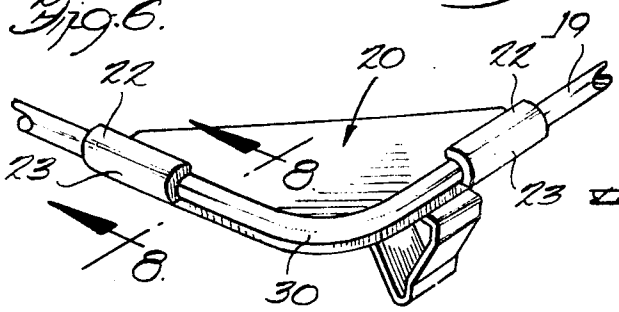


Fig. 7.



Fig. 8.

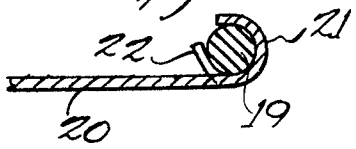


Fig. 9.

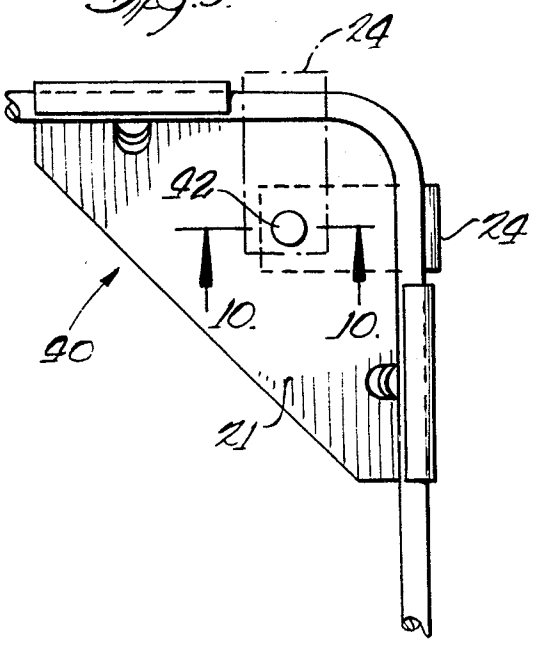
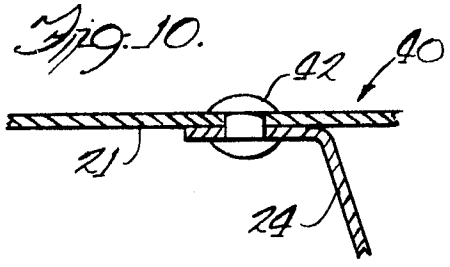


Fig. 10.



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DRYING RACK AND SUBASSEMBLIES THEREOF

BACKGROUND OF THE INVENTION

This invention relates to drying racks commonly used in silk screening, finish processes such as rubber drying, leather drying and decalcomania, and in other processes wherein a relatively flat article must lie in a horizontal position during air-drying or drying or curing in an oven. It also relates to subassemblies of such racks including trays, spacing means and spacing means which may be detachably connected to the trays of drying racks and the like.

Drying racks generally include a plurality of horizontally disposed, overlying trays which are each adapted to hold a product to be dried. The trays may be mounted on a vertical standard and be adapted to pivot in a vertical plane so that they may be loaded and unloaded. In industrial use a typical tray may be composed of heavy duty wire mesh welded to a frame of 1/4-inch steel bars. Since the trays are in overlying relation, each is provided with spacing means that prevent the trays and their contents from contacting each other. Until the present, the spacing means, if constructed of steel or other metal, was usually welded or otherwise permanently connected to the tray. If the spacing means was damaged during use, the entire tray often had to be removed in order to repair or replace the damaged part. Since suitable welding or repairing facilities are seldom available where drying racks of this type are normally used, the entire tray had to be sent out for repair and use of the entire rack was often completely lost during this time.

Another form of spacing means heretofore employed in drying racks were rubber feet or spacers. Use of a rubber foot, however, limited the use of such racks to air-drying applications, since the rubber feet were incapable of withstanding the heat of oven drying or curing.

SUMMARY OF THE INVENTION

One mode of this invention comprises a drying rack having a plurality of horizontally disposed, overlying trays, which are all pivotally attached at one end to a vertical standard. The trays are preferably of a wire mess construction having a frame consisting of a steel bar with a circular cross section. Each tray has novel spacing means connected to the free ends opposite that attached to the standard. The spacing means includes a supporting plate, clamping means disposed on said plate for holding the spacing means firmly on a tray, and a foot depending from the plate for spacing the tray from the next underlying tray on the rack. The clamping means comprises grooved portions disposed on the plate and adapted to receive the edges which form the corner of a tray. Cooperating with the grooved portions are two adjustable tab means on said plate adapted to be bent towards said grooved portion and around the edge of said tray to create a tight fit between the spacing means and the tray. The spacing means is preferably made from steel so that the rack may be used in oven-drying operations. It generally will be finished with a plating or coating such as cadmium, black oxide or paint.

Because of the construction of the spacing means, it may be readily removed and replaced on a tray without necessitating removal of the entire tray. The spacing means may be removed from, or connected to, a tray with a simple pliers, thereby permitting repairs or replacement at the location where the racks are being used. Because of this feature the spacing means may be sold and stored separate from the trays, thereby obviating the problems which arise when the prior art trays with permanently affixed spacing means are employed.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of this invention.

FIG. 2 is an enlarged fragmentary plan view of the embodiment of FIG. 1, showing one corner of a tray and the attached spacing means.

FIG. 3 is an enlarged fragmentary side elevational view of the embodiment of FIG. 1, showing the trays in stacked relation.

FIG. 4 is an enlarged fragmentary front elevational view of the embodiment of FIG. 1, showing the trays in stacked relation.

FIG. 5 is an exploded view of the spacing means and tray edge prior to assembly and attachment.

FIG. 6 is a perspective view of the spacing means of FIG. 5 after assembly and attachment to a tray edge.

FIG. 7 is a sectional view of the spacing means and tray edge before the means has been clamped to the edge.

FIG. 8 is a fragmentary sectional view taken along line 8–8 of FIG. 6.

FIG. 9 is a plan view of a modification of the spacing means of the present invention.

FIG. 10 is a fragmentary sectional view taken along line 10–10 of FIG. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings and more specifically to FIG. 1, a mobile drying rack 10 is shown. The rack 10 comprises a plurality of trays 12, each of which is pivotally attached at one end to a standard 13 mounted on a platform 14. The trays 12 are connected to the standard 13 by means of lugs 16 disposed in holes provided in the standard. The trays 12 are adapted to pivot in a vertical plane, being actuated by springs 17 connecting the standard 13 and the trays 12. The upward movement of the trays is limited by a steel plate or stop 18 extending from the standard 13.

The trays 12 are preferably constructed of a steel wire mesh and are provided with a steel bar frame 19 having a circular cross section. The size, design and construction of the trays will, of course, depend upon the intended use of the drying rack.

Spacing means 20 are provided on each tray to prevent the trays or their contents from contacting each other. The spacing means are attached to the free end of the trays opposite the end connected to the standard 13.

The spacing means 20 is shown in detail in FIG. 2. It is attached to the frame 19 of a tray 12. Means 20 includes a supporting plate 21, and clamping means comprising grooved portions 22 extending from the plate 21, and struck out portions 23, which cooperate with the grooved portions. The tray frame 19 fits into the grooved portions 22 and the struck out portions are bent upward until they contact the tray frame 19. In this manner the spacing means is held tightly to the tray. The struck out portions 23 are adjustable with respect to corresponding grooved portions 22 so that the spacing means 20 may be readily removed from the trays 12.

A foot or spacer 24 depends from plate 21 and is connected thereto by spot welds 25. However, while the foot 24 is shown welded to the plate 21, any other suitable means may be used to attach the foot to the plate. One such other means is shown in FIGS. 9 and 10 and will be discussed hereinafter.

FIGS. 3 and 4 show the relationship of the trays 12 and the spacing means 20. the plate 21 of the spacing means 20 of one tray supports the foot 24 of the spacing means 20 of the tray immediately above. One element 26 of the foot is bent inwardly so that the bottom of the foot will contact the plate 21 of the next lower tray immediately adjacent the frame portion 19 of the tray, thereby ensuring both a more stable tray stack and a maximization of useful tray area.

As shown in FIGS. 1 and 4, each tray 12 is provided with spacing means 20 at each corner of the free end of the tray. FIG. 4 illustrates the orientation of the feet 24 of the spacing means 20 with respect to the corners of the trays to which spacing means are connected. The feet 24 are arranged with respect to the plates 21 so that the pair of spacing means 20 for each tray are mirror images of each other.

FIGS. 5—8 illustrate the components of the spacing means 20 and the manner in which means 20 is connected to the frame portion 19 of the tray 12. FIG. 5 is an exploded view of

the unassembled spacing means **20**. One corner of a typical tray **12** is shown, including a portion of the frame **19**. A plate **21**, together with the grooved portions **22** and the struck out tab portions **23**, are shown as a blank prior to being formed into the shape in which they are employed in spacing means **20**.

When formed, the plate **21** is generally triangular in shape, but has an arcuate corner **29** which is adapted to correspond with the curved corner **30** of the tray **12**. The grooved elements **22** extend from said plate **21** and are bent back upon themselves from the blank. The foot **24** is formed so that it has two portions **31** and **32** which are adapted to be attached to the plate **21** by welding or other suitable means.

FIGS. **7** and **8** show how the spacing means **20** is clamped to the frame portion **19** of the tray **12**. In FIG. **7**, the frame portion **19** is inserted into grooved element **22** prior to clamping. In FIG. **8**, the struck out tab portion **23** is bent towards the grooved element **22** and against the frame portion **19** inserted therein, so that portion **19** is held tightly in the grooved element. Since tab **23** is adjustable, it may be bent away from the grooved element **22** to permit the frame portion **19** to be removed therefrom. Thus, replacement of a damaged spacing means is facilitated since no welding operation is necessary and the tray need not be removed to carry out the replacement procedure.

FIGS. **9** and **10** disclose a modified embodiment **40** of the spacing means **20** wherein a single rivet **42** or like means is used to connect foot **24** to the plate **21**. This rivet connection allows the foot **24** to pivot through an arc of 90 degrees, thereby allowing a single uniform spacing means to be used in either corner of a tray.

While specific embodiments of this invention have been described above, it should be understood that the invention is not limited thereto since many modifications may be made; and it is contemplated, therefore, to cover by the following claims any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A drying rack comprising a plurality of horizontally disposed, overlying trays adapted to pivot about one end, and spacing means detachably connected to the corners of the other end of said trays, said spacing means being constructed of a metallic material capable of withstanding the heat of oven drying and curing processes, and including means for supporting an overlying tray, said supporting means having channels receiving said tray corners and locking tabs cooperating with said channels to tightly retain said tray corners in said channels, said locking tabs being adjustable with respect to said channels to permit accommodation of varying-sized tray corners and removal of such corners, and a foot depending from said supporting means for retaining said trays in spaced relation to each other.

2. The apparatus of claim **1** wherein said supporting means of said spacing means includes a generally triangular plate and the corner of said plate which is opposite the longest side thereof corresponds to a corner of said trays.

3. The apparatus of claim **2** wherein said supporting means has a channel and a corresponding locking tab located on each of the short sides of said triangular plate.

4. The apparatus of claim **3** wherein said supporting means consists of a single unit and said channels and locking tabs are formed from said unit.

5. In a drying rack including a plurality of horizontally disposed, overlying trays adapted to pivot about one end, spacing means located adjacent the corners of the other end of said trays and constructed of a metallic material capable of withstanding the heat of oven drying and curing processes, said spacing means comprising means for supporting an overlying tray, said supporting means having channels detachably receiving said tray corners, and locking tabs cooperating with said channels to tightly retain said tray corners in said channels, said locking tabs being adjustable with respect to said channel to permit accommodation of varying sized tray corners and removal of such corners, and a foot depending from said supporting means for retaining said trays in spaced relation to each other.

6. The spacing means of claim **5** wherein said supporting means includes a generally triangular plate and a corner of said plate opposite the longest side thereof corresponds to a corner of said tray.

7. The apparatus of claim **6** wherein said foot is connected to said triangular plate adjacent one of said short sides thereof.

8. The apparatus of claim **7** wherein said foot is rotatable with respect to said supporting plate and is positioned on said plate so that it may be rotated from a position adjacent one of the short sides of said plate to a position adjacent the other short side of said plate.

9. The apparatus of claim **7** wherein said foot consists of a generally V-shaped flat strip having flanges at each end for attachment to said supporting plate.

10. The apparatus of claim **9** wherein the flanges of said foot are welded to said supporting plate.