United States Patent

Whitley

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[54] RACK

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[51] **Int. Cl.** **A24b 1/06**

[58] **Field of Search**.....294/5.5; 56/27.5; 211/169.1; 214/5.5; 296/5

[56] **References Cited**

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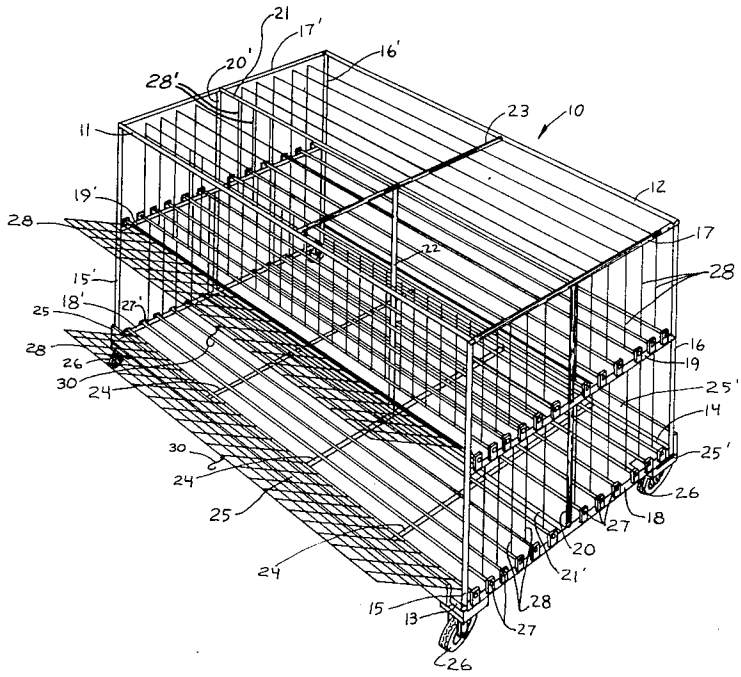
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[57] **ABSTRACT**

In abstract, a preferred embodiment of this invention is an improved rack for supporting tobacco during the curing process thereof, including a plurality of mesh separating partitions which fold for easy loading and unloading.

7 Claims, 5 Drawing Figures



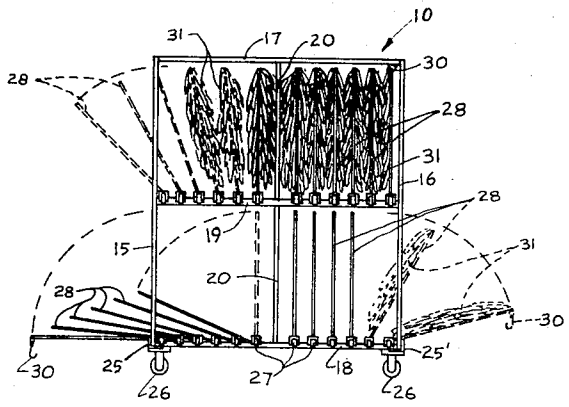


Fig 1

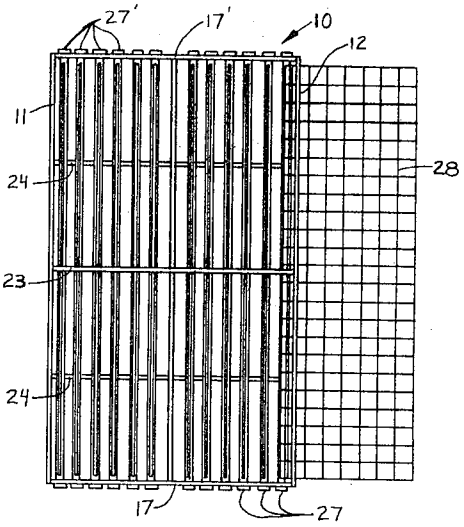


Fig 2

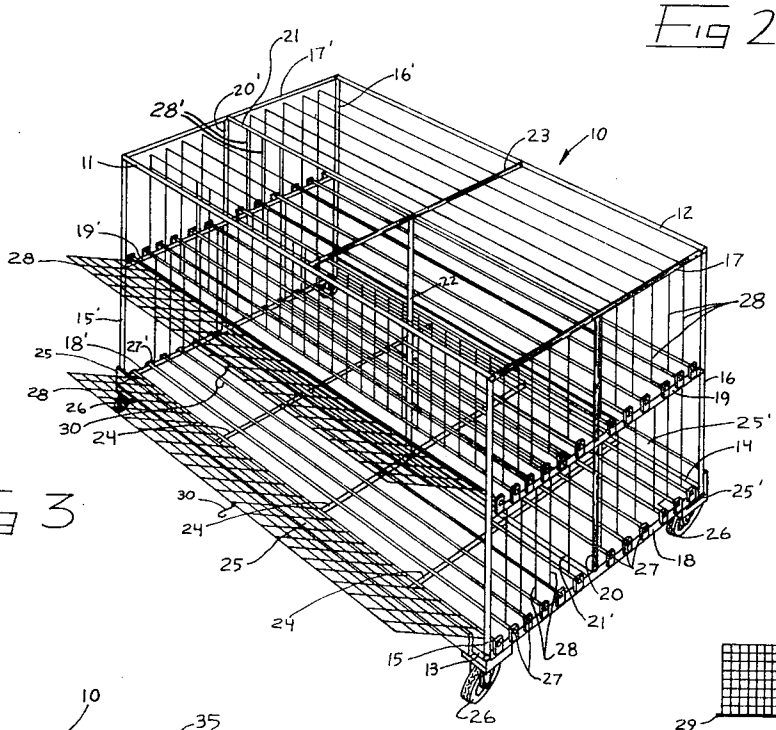


Fig 3

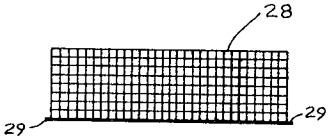


Fig 4

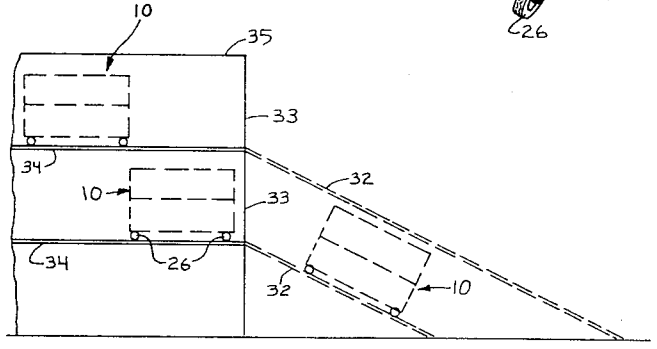


Fig 5

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RACK

This invention relates to racks and more particularly to racks for supporting tobacco leaves and similar products during drying or curing operations.

In the past, various types of racks and holders have been developed for use in connection with the drying of products. Many of these racks or holders have been specifically designed for use in connection with particular products such as the drying or curing of tobacco.

Referring in specific detail to the curing of tobacco, in the early 1600's, when the use of this product became popular, the leaves were either stalked dried or open air dried. As the demands for the product grew, barn curing, which included hanging the product in a confined space and circulating, by convection, heated air therethrough was developed. The early procedure of tying tobacco leaves on sticks and hanging such sticks inside the barn is by far the most widely used curing method in use today.

Various improvements in the time honored curing method have been made including automatic tying machines for looping, with a string, the tobacco to the tobacco sticks. Other methods such as hinged, two-piece sticks have been developed to clamp the tobacco therebetween prior to hanging in the barn. All of these attempts, however, have still resulted in the tobacco being hung in the barn. Even sophisticated, tobacco stick barn loading and unloading systems have been developed to aid in this process.

In the last few years, as the cost of farm labor increased substantially, new processes of curing tobacco were developed including what is commonly referred to as bulk curing. In this latter process, tobacco leaves are tightly packed in balelike form within a rack type framework and hot air forced therethrough. This process requires not only large, expensive blowers but also specially constructed barns and rack accommodation facilities. Because of the large initial investment and the cost of operation, a majority of the tobacco, as indicated above, is still cured in the age old manner of heated, convection circulated air passing through loosely hung leaves.

The present invention has been developed after much research and study into the above mentioned problems and is designed to reduce the labor cost of stringing or looping tobacco on sticks to that of filling bulk curing racks while allowing conventional, convection circulated barns to be used. With the use of this improved tobacco rack, high quality conventional barn curing can be accomplished at the labor saving rate of bulk curing without the large capital investment incident thereto.

It is, therefore, an object of the present invention to provide a stickless tobacco supporting rack for use in conventional, convection circulated curing enclosures.

Another object of the present invention is to provide a large capacity tobacco holding means for use in a convection type curing operations.

Another object of the present invention is to provide a bulk curing type labor-saving tobacco support for use in convection circulated tobacco curing enclosures.

A further object of the present invention is to provide a multi-layer tobacco supporting rack.

An additional object of the present invention is to provide a foldable, multi-layer loose leaf tobacco supporting rack usable in a convection type tobacco barns.

Another object of the present invention is to provide an improved convection type tobacco barn loading and unloading means.

Another object of the present invention is to provide a high capacity convection type tobacco curing process.

Another object of the present invention is to provide an improved method of loading and unloading conventional convection type curing enclosures.

Another object of the present invention is to provide a high capacity tobacco supporting means that is inexpensive to construct, durable in structure and adapted for use in convection type drying enclosures.

Other objects and advantages of the present invention will become apparent and obvious from the study of the following description and the accompanying drawings which are merely illustrative of such invention.

In the drawings:

FIG. 1 is an end elevational view of the improved drying rack of the present invention;

FIG. 2 is a top plan view of such rack;

FIG. 3 is an upper elevational view of the rack of the present invention;

FIG. 4 is a side elevational view of a typical mesh separator; and

FIG. 5 is a cutaway side elevational view of a method of loading a convection type curing enclosure with racks of the present invention.

With further reference to the drawings, the improved rack of the present invention is indicated generally at **10**. This rack is in the form of an open frame that substantially defines a square prism in shape. As oriented in the drawings, the elongated portion of the rack has longitudinally disposed, rodlike members **11**, **12**, **13** and **14** defining the horizontal edges thereof. The ends of the rack are defined by a generally square frame composed of upright members **15** and **16** and horizontal members **17** and **18** at one end and upright members **15'** and **16'** and horizontal members **17'** and **18'** at the other end.

Disposed between and secured to the central portion of upright members **15** and **16** is cross frame **19**. A corresponding cross frame **19'** is similar disposed between upright **15'** and **16'**.

A vertical brace member **20** extends between the central portions of horizontal frame members **17** and **18** and is secured thereto as well as being secured to cross member **19** where such brace intersects such member. A similar vertical brace **20'** is similarly disposed between members **15'** and **16'**.

To give further stability against warping or other undesirable distortions is an upper stiffening member **21** disposed parallel to members **11** and **12** and attached at the junctions of brace **20** and frame member **17**, and brace **20'** and frame **17'**. Along the lower portion of rack **10**, and extending between members **18** and **18'**, is a second stiffening member **21'** similarly disposed to member **21**.

A vertical brace member is secured to and disposed between the central portions of stiffening members **21** and **21'**.

A single cross member **23** is disposed between horizontal frame members **11** and **12** and secures the same to stiffening member **21**. A plurality of equally spaced lower cross members **24** are disposed between and secured to lower horizontal frame members **13** and **14** and stiffening member **21'**.

Lying juxtaposed to horizontal frame member **13** is an angle iron shaped base member **25**. Juxtaposed to frame member **14** is base member **25'** corresponding to member **25**. To the bottom at each end of base members **25** and **25'** is attached a swivel or cast type wheel **26**.

Periodically spaced along the lower horizontal frame members **18** are a plurality of inverted, U-shaped, notchlike members or hinge points **27**. An equal number of similarly spaced hinge members **27'** are attached to and disposed from frame member **18'**. Also matching hinge points are secured to and disposed along horizontal cross members **19** and **19'**.

A plurality of generally rectangular, meshlike separator partitions **28** are provided. These partitions or separators are preferably constructed of a mesh type wire material and include outwardly projecting panels **29**, particularly as seen in FIG. 4.

When the panels **29** of the partitions **28** are inserted in corresponding, oppositely disposed hinge members **27** and **27'**, a plurality of pivotable, hinged, meshlike partitions are provided within the framework of the rack **10**.

To use the improved tobacco curing rack of the present invention, the rack **10** with its hinged, mesh partitions **28** is either placed at the tobacco barn in the area where tobacco stringing or looping onto tobacco sticks is usually accom-

plished or it can be placed on a mobile tobacco harvester in the position usually occupied by similar size bulk tobacco racks. As the tobacco **31** is either brought into the barn or primed by primers on the harvester, such tobacco is placed in overlapping fashion on the folded, relatively flat innermost partition. When this partition is substantially covered with tobacco, it is folded to the vertical position exposing a second partition therebelow lying in a relatively flat, horizontal position. This second partition is then covered with tobacco as hereinabove described and it too is folded to a vertical position adjacent the first partition. This process is continued until all of the partitions have been filled and folded.

A latching means such as the spring biased hook shown at **30** can be used to secure the filled partitions in the upright position to prevent accidental down folding thereof and thus disturbance of the leaves **31** held therebetween. This is particularly true of the outermost partitions which tend to hold the other partitions vertically.

It is, of course, understood that a fixed, mesh partition **28'** is provided in the center of the rack **10** in the area defined by stiffening members **21** and **21'** and brace members **20** and **20'**. The purpose of this partition is to give the tobacco carried by the first hinged partition something to bear against.

Since the rack of the present invention has pivoted partitions on both sides of central partition **28'**, such rack can be loaded from two sides simultaneously. In actual practice it has been found that a single level of partitions is filled from both sides until full and then the second level is opened for filling.

The standard convection circulated tobacco barn is readily converted from stick type leaf support to rack support by cutting a plurality of openings in the side of the barn and building a simple ramp and tract arrangement therein such as that shown schematically in FIG. **5**. If desired, of course, some type of elevator arrangement (not shown) could be substituted for the ramp loading disclosed.

If the loose tobacco is brought to the barn for filling of the rack, once the same is full it can be rolled up ramp **32**, through a door closed opening **33**, and onto tract ramp **34**.

If the rack of the present invention is filled on a mobile tobacco harvester, the same can be off loaded therefrom either onto the ramp **32** or directly into the opening **33** and onto tract ramp **34**, as desired. In either case, the curing enclosure or barn **35** is quickly loaded with minimum time and labor involved and is ready for curing in the normal manner through the use of heaters or furnaces which cause the warm air to rise through the loosely packed leaves to remove the moisture therefrom.

Once the normal curing cycle has been accomplished, the racks **10** are removed from the barn **35**, the partitions **28** folded from vertical to generally horizontal positions and the tobacco removed therefrom for transport to the tobacco warehouse for sale. Once the rack has been unloaded, it is ready to again receive freshly primed, green tobacco leaves for a repeat of the curing cycle.

From the above, it is evident that the present invention has the advantage of providing an easily loadable and unloadable, loosely packed tobacco curing rack that is inexpensive to manufacture and yet is simple to use. This invention also has the advantage of providing a fast and efficient tobacco barn loading and unloading system that is useable in convection circulated curing enclosures.

The terms "upper", "lower", "horizontal", "vertical" and so forth have been used herein merely for convenience of the foregoing specification and the appended claims to describe the tobacco rack and its parts as oriented in the drawings. It is to be understood, however, that these terms are in no way limiting to the invention since the rack may be obviously disposed in many different positions when in use.

The present invention may, of course, be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

What is claimed is:

1. A device for field loading with tobacco and holding the same during transport to, and curing in, a convection type tobacco barn comprising: a generally box shaped, self-supporting frame; a previous partition disposed across and fixedly secured to the central portion of said frame; a plurality of movable, pervious partitions disposed on each side of said central partition, one edge of each said last mentioned partitions being hingedly attached to said frame whereby said partitions can be folded from a position generally parallel to said central partition to a position generally perpendicular thereto thereby allowing tobacco to be loaded in the perpendicular position in the field and returned to the parallel position for transport and curing; and means for releasably securing the foldable partitions farthest from said central position in said parallel position whereby said tobacco can be held within said device.

2. The support means of claim **1** wherein the partitions are constructed of a wire mesh material.

3. The support means of claim **1** wherein the frame is constructed of metal rod type material.

4. The support means of claim **1** wherein the frame is constructed at least partially of wood.

5. The support means of claim **1** wherein means are connected to said frame to assist in the movement thereof.

6. The support means of claim **5** wherein the assist means are a plurality of wheels operatively connected to one side of said frame.

7. The device of claim **1** wherein means are provided for securing each of the foldable partitions in the parallel position.

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