March 10, 1970 J. G. FISHER 3,499,539

MOVABLE SUPPORT MEANS

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Fig. 1.

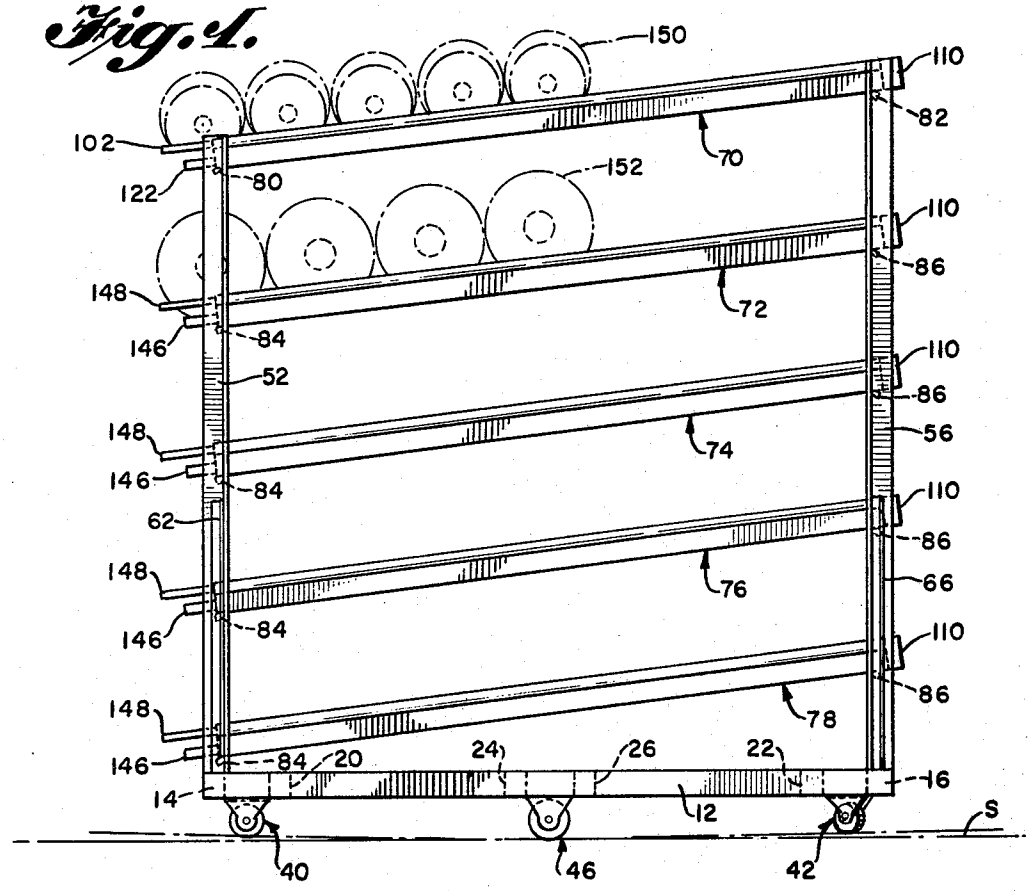
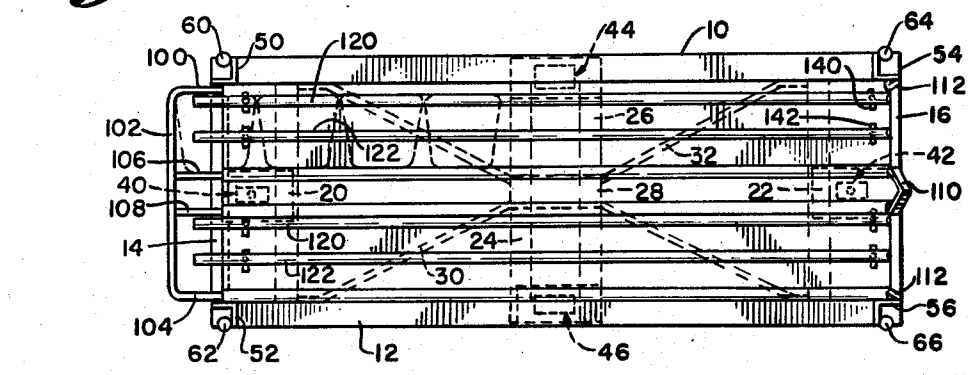


Fig. 2.



INVENTOR

James Glenn Fisher

BY Schmales and Mattare

ATTORNEYS

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Fig. 3.

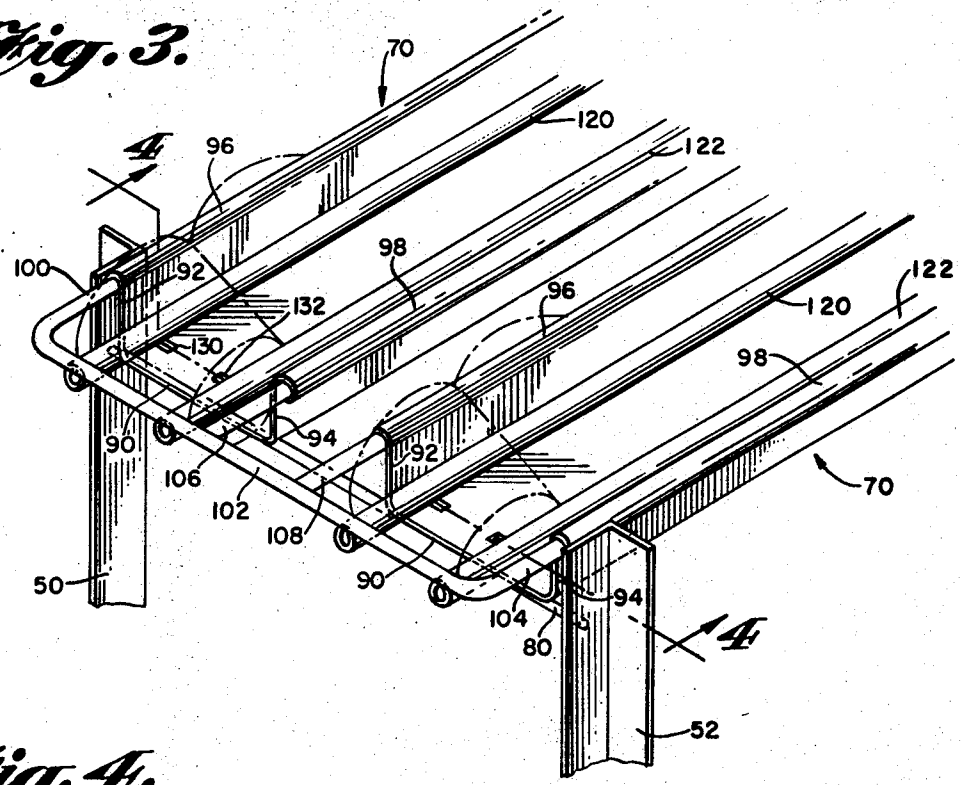
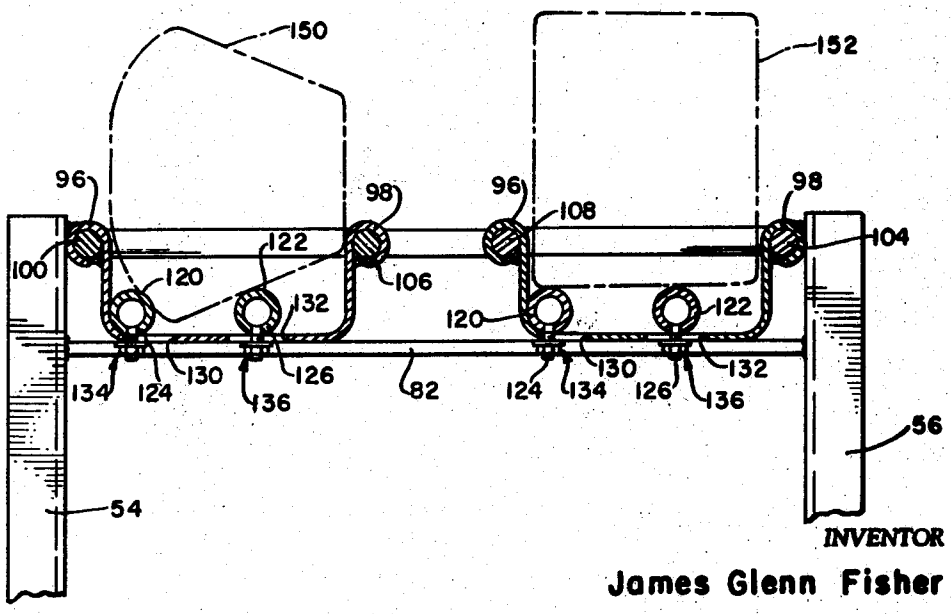


Fig. 4.



INVENTOR

James Glenn Fisher

BY Schmeiser and Mattare

ATTORNEYS

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Fig. 5.

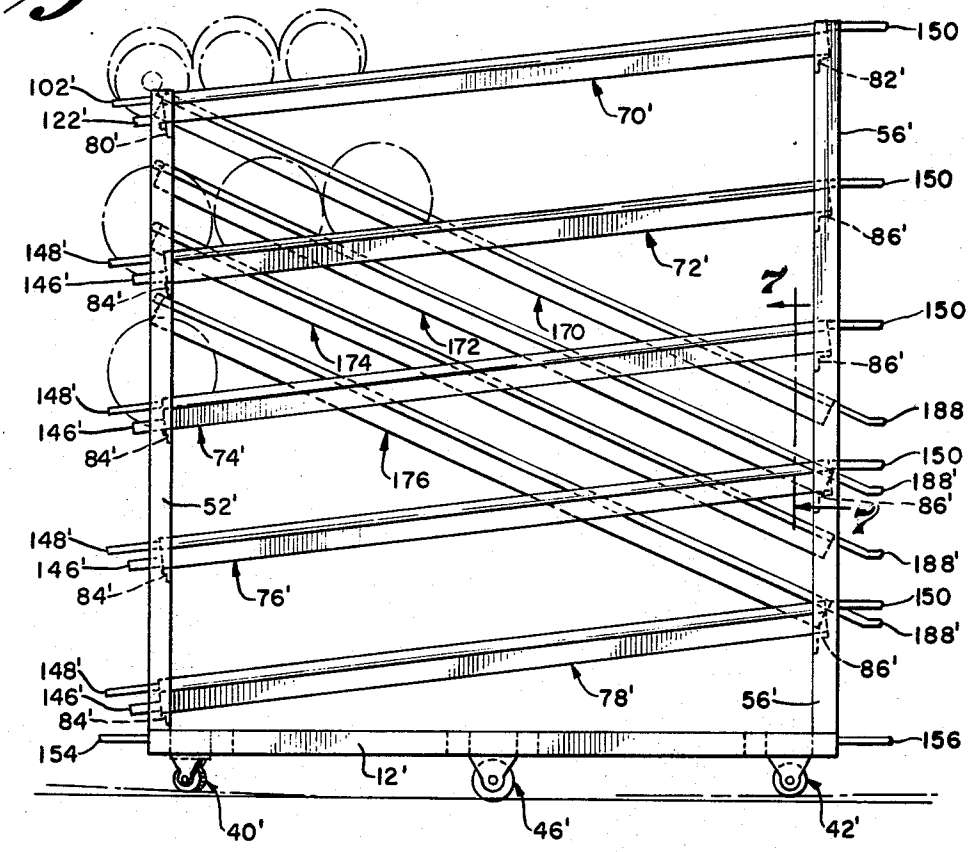
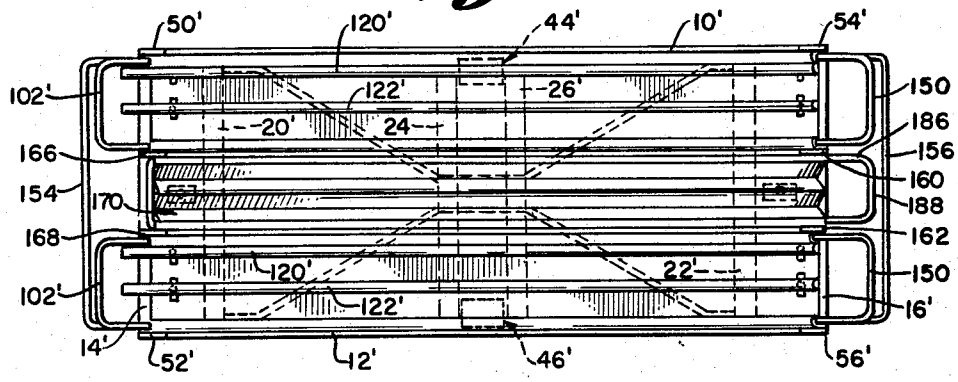


Fig. 6.



INVENTOR

James Glenn Fisher

BY Shoemaker and Mattare

ATTORNEYS

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Fig. 7.

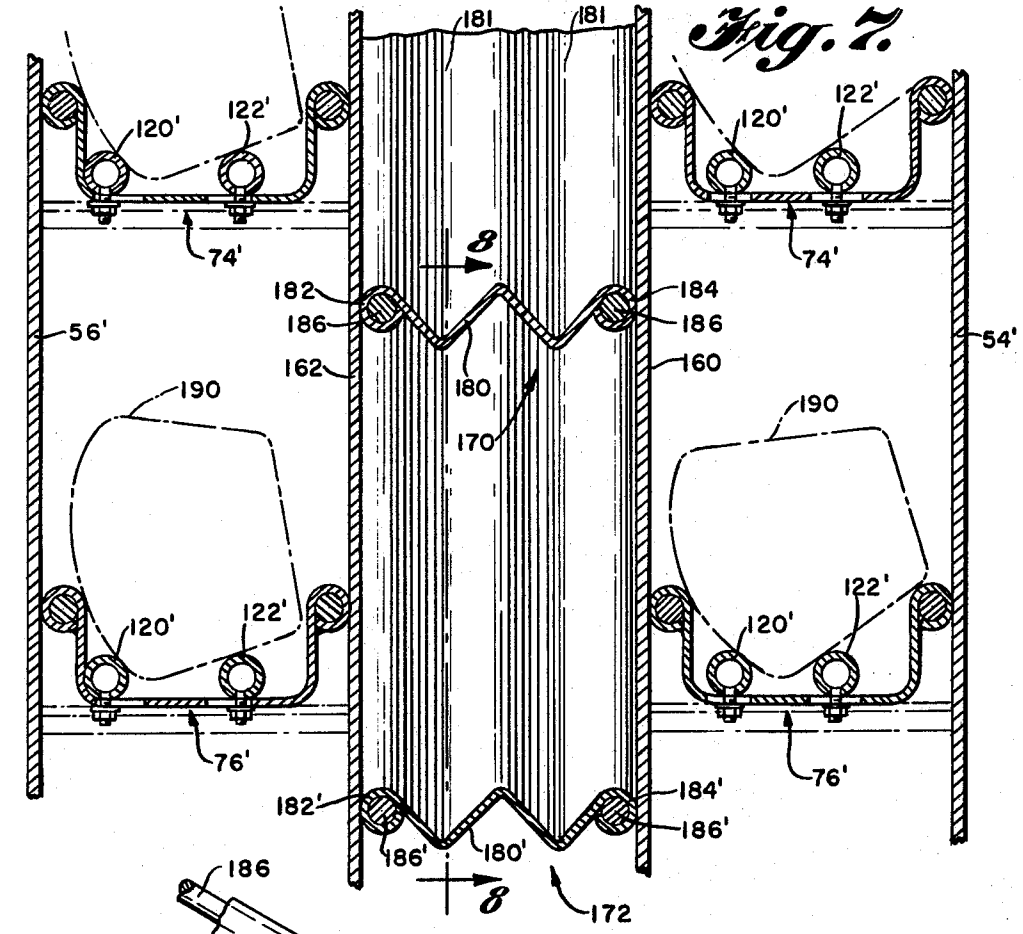
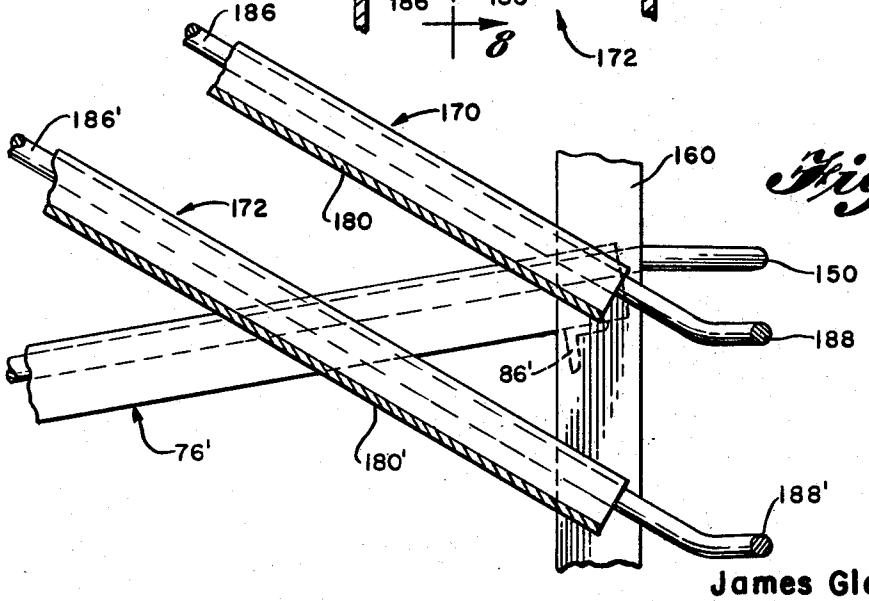


Fig. 8.



INVENTOR

James Glenn Fisher

BY Shoemaker and Mattare

ATTORNEYS

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Fig. 9.

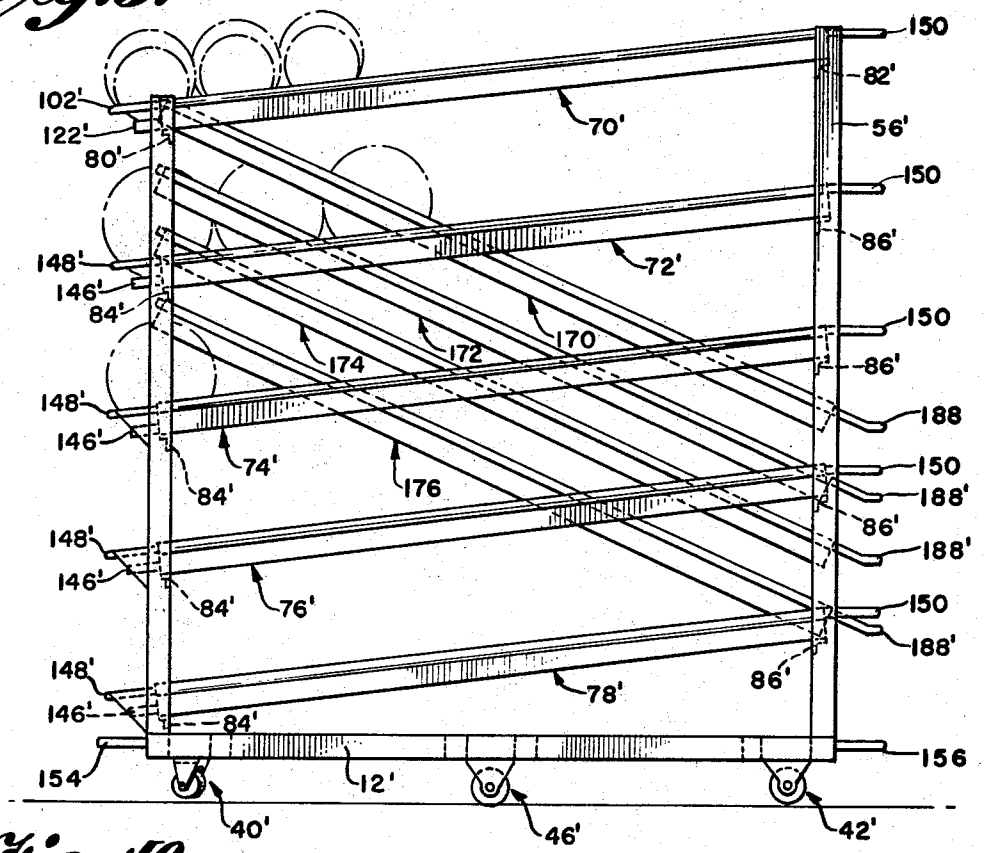


Fig. 10.

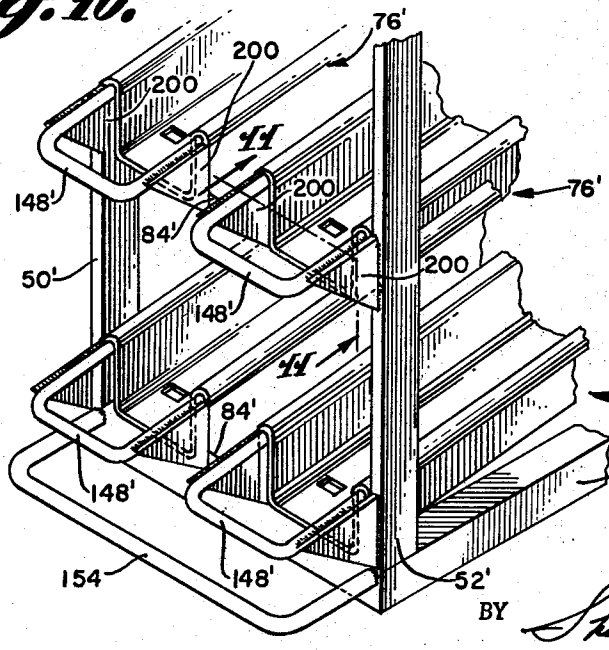
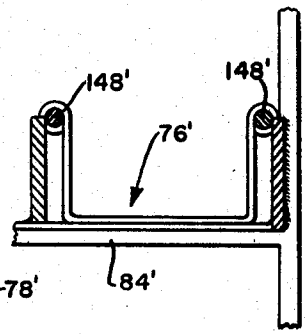


Fig. 11.



INVENTOR

James Glenn Fisher

BY Schmeiser and Mattare

ATTORNEYS

United States Patent Office 3,499,539
Patented Mar. 10, 1970

3,499,539

MOVABLE SUPPORT MEANS

James Glenn Fisher, Hartwell, Ga., assignor to
NVF Company, Wilmington, Del.

Filed Mar. 4, 1968, Ser. No. 710,181
Int. Cl. A47f 7/00
U.S. Cl. 211—49 11 Claims

ABSTRACT OF THE DISCLOSURE

A framework is mounted on wheels so as to be readily movable. A plurality of support portions are mounted on the framework and are normally inclined with respect to horizontal so that cheeses or cones supported thereby will move toward one end thereof. The support means for cones includes at least two elongated guide portions adjustably mounted to accommodate different size cones to ensure proper rolling movement thereof. In a modified form of the invention, further support portions are mounted on the framework and are inclined oppositely to the first-mentioned support portions and at a greater angle with respect to horizontal for receiving empty starters or bobbins.

BACKGROUND OF THE INVENTION

The present invention relates to movable support means commonly called "cheese trucks" and employed in the textile industry for moving and loading or unloading cheeses and cones with respect to textile machines.

Movable support means for cheeses and cones have been used for many years in the textile industry for loading and unloading operations with respect to a machine. For example, such support means are employed for moving a full package including a central starter or bobbin having thread wound thereon to a loom in the weave room where an operator removes the packages from the support means and applies them to the loom. This is often ineffecient when employing prior art arrangements since it is sometimes necessary for the operator to walk around the truck or reach through the side of the truck, which cannot be accomplished due to the space restrictions between adjacent machines.

Such support means are adapted to receive both cheeses and cones. The cheese generally has a substantially cylindrical outer configuration, while the cones are substantially frusto-conical in shape. These cones come in different sizes and the taper thereof may be within a relatively wide range. A particular problem arises when such cones are carried by a movable support means and are designed to roll downwardly along suitable support portions thereof. The cones tend to roll in circles and will bind in the support portions which are generally of channel-like shape. As a result, the cones do not roll properly along the support portions and will not automatically be disposed in proper position for handling by an operator.

Additionally, when it is desired to unload a package from a machine and place it on the support means while further placing empty bobbins on the machine from a support means, special handling trucks have been employed in the prior art for loading while other trucks are employed for unloading. Accordingly, two trucks have been required for carrying out this dual function operation resulting in an inefficient arrangement and excessive fatigue of the operator.

Additionally, such prior art movable support means have been excessively heavy and bulky in construction.

SUMMARY OF THE INVENTION

The present invention employs a framework which carries support means including at least two elongated support portions which are spaced from one another. At least one of these support portions is adjustable relative to the other cooperating support portion to vary the spacing therebetween. Accordingly, this adjustable spacing may be varied as required in accordance with the size and taper of the cone to be supported thereby to ensure that the cones will roll properly along the support portions and will not bind. The cones are thereby allowed to roll freely and are properly guided in their movement so that they will be disposed in position automatically to be readily grasped by an operator standing at one end of the support means.

Additionally, the support portions of the present invention which comprise two elongated support portions substantially reduce the amount of friction between the cheeses or cones and the associated support portions, while at the same time serving as means for accurately guiding movement particularly of cones supported thereby.

In a modified form of the present invention, an arrangement is provided wherein a single movable support means is adapted to be employed when carrying out the dual function of unloading and loading a machine from one end of the movable support means. This reduces the number of support means required and also substantially cuts down on the amount of effort required by the operator so as to minimize fatigue.

This modified form of the invention enables the same number of full packages to be loaded onto the support means as the number of bobbins which are carried by the support means and are adapted to be mounted on the machine.

The present invention provides a lightweight, yet compact and rigid movable support means. Means is further provided for protecting threads on the corners of cheeses or cones supported at the end portions of the support means, and a novel wheel arrangement is provided whereby the support means may be readily tilted to place it in proper operative position.

In still a further modified form of the invention, the support portions of the guide means at one end thereof are provided with reinforcing means in the form of gusset plates or the like so that this end of the guide means serves to provide steps upon which an operator can climb thereby forming a ladder so that as the package is rolled down toward the operator on the rear and he is loading them into a creel which is considerably above his head, the effective ladder means simplifies his loading problems.

An object of the present invention is to provide a new and novel movable support means for cheeses and cones as employed in the textile industry, and which is lightweight and compact in construction, and further which will properly feed cones from one end thereof to the other, and further which enables loading and unloading operations to be carried out at the same time from one end of the support means.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of a movable support means according to the present invention;

FIG. 2 is a top view of the structure shown in FIG. 1;

FIG. 3 is a top perspective view on an enlarged scale of an upper end portion of the support means shown in FIGS. 1 and 2;

FIG. 4 is a sectional view taken substantially along line 4—4 of FIG. 3 looking in the direction of the arrows;

FIG. 5 is a side view of a modified form of support means according to the present invention;

FIG. 6 is a top view of the structure shown in FIG. 5;

FIG. 7 is a sectional view on an enlarged scale taken substantially along line 7—7 of FIG. 5 looking in the direction of the arrows;

FIG. 8 is a sectional view taken substantially along line 8—8 of FIG. 7 looking in the direction of the arrows;

FIG. 9 is a side view of still a further form of support means according to the present invention;

FIG. 10 is a top perspective view of a lower end portion of the structure shown in FIG. 5; and

FIG. 11 is a sectional view taken substantially along line 11—11 of FIG. 10 looking in the direction of the arrows.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings wherein like reference characters designate corresponding parts throughout the several views, a first form of the invention is illustrated in FIGS. 1–4 inclusive. As seen particularly in FIGS. 1 and 2, the movable support means includes an open framework having a base portion including opposite longitudinally extending parallel side members **10** and **12** which are interconnected at the opposite ends thereof by end members **14** and **16** disposed in spanning relationship between members **10** and **12**. All of these members may be formed of a suitable material such as stainless steel, galvanized iron, aluminum, Fiberglas, rigid plastic or the like which will provide a strong structure which is of lightweight construction. The members may be suitably interconnected with one another in accordance with the material used to provide a rigid framework.

A pair of cross frame members **20** and **22** extend between the side frame members **10** and **12** and are rigidly affixed thereto in parallel relationship and spaced from the opposite end members **14** and **16** respectively. A further pair of cross frame members **24** and **26** extend between the side frame members **10** and **12** at the medial portion of the base of the framework.

A member **28** is secured between cross frame members **24** and **26** and supports intermediate portions of cross brace members **30** and **32**, the ends of which are secured to side frame members **12** and **10** respectively. This overall arrangement provides a very rigid and yet lightweight construction.

A swivel wheel assembly indicated generally by reference numeral **40** is supported by frame members **14** and **20**, and a similar swivel wheel assembly indicated by reference numeral **42** is mounted between frame members **16** and **22** at the opposite end of the framework. Wheel assemblies **40** and **42** may also be mounted for rotation about fixed axes rather than being of swivel type in some cases. A pair of wheel assemblies **44** and **46** are mounted for rotation about fixed axes and are supported by the frame members **24** and **26**. As seen most clearly in FIG. 1, the diameter of the wheel assemblies **44** and **46** which are identical with one another is greater than the diameter of the wheel assemblies **40** or **42**. These wheel assemblies form an anti-friction means which enables the support means to be readily moved from place to place, the larger diameter central wheel assemblies permitting the support means to be readily tilted in either direction so that one or the other ends of the support means can be lowered as desired.

Four upright members **50**, **52**, **54** and **56** extend vertically from the four corners of the base of the framework, these latter members being channel members as seen most clearly in FIG. 2. Four cylindrical or tubular members **60**, **62**, **64** and **66** also extend upwardly from the base of the framework adjacent members **50**, **52**, **54** and **56** respectively, these cylindrical members providing a rub guard or bumper means to prevent damage to the framework.

As seen most clearly in FIG. 3, an uppermost pair of troughs or channel members **70** are provided, these members being spaced laterally with respect to one another and as seen in this figure are secured to the inwardly facing surfaces of the upright members **50** and **52** in any suitable manner as by welding or the like. As seen in FIG. 1, this pair of channel members **70** slope downwardly from the right-hand side of the support means toward the left-hand side thereof, or in other words they are inclined with respect to horizontal. Similar pairs of troughs **72**, **74**, **76** and **78** are disposed in parallel relationship to the first described pair of troughs **70** and are similarly supported and oriented with respect to the remaining portions of the framework. Any suitable number of pairs of troughs may be employed in accordance with the plant space available and the size of the package to be utilized.

As seen in FIG. 1, the left-hand end of the channel members **70** may be supported by a cross member **80** which may comprise a rod having the opposite ends thereof rigidly affixed to the upright members **50** and **52**. Similarly, the right-hand end of the channel members **70** is supported by a rod **82** extending between the upright members **54** and **56**. Cross members **84** similar to cross member **80** serve to support the left-hand end of the remaining channel members, and cross members **86** similar to cross member **82** serve to support the right-hand end of the remaining channel members.

As seen in FIGS. 3 and 4, each of channel members **70** includes a base wall **90** having integral side walls **92** and **94** extending substantially normally therefrom and terminating in generally cylindrical tubular upper end portions **96** and **98** which are adapted to receive cylindrical rods therein. The construction of all of the channel members and the associated support portions as hereinafter described is identical, and accordingly, the specific structure of the uppermost channel members and the associated structure will suffice for a description of all of the similar components of the apparatus.

A rod member **100** is supported within the tubular portion **96** and extends outwardly therefrom and is curved at the outer end thereof to join with a laterally extending portion **102** which serves as a stop means for a purpose hereinafter described. This portion **102** in turn joins with a rod portion **104** extending within the tubular portion **98** of the other of the two channel members **70** as may be seen most clearly in FIG. 3. A further pair of rod members **106** and **108** are received within the tubular portions **98** and **96** respectively of the two channel members and have the ends thereof rigidly secured to the portions **102**.

As seen most clearly in FIGS. 1 and 2, a plurality of inner guide means **110** are secured between the adjacent pairs of channel members, these inner guide means being of generally triangular configuration so as to guide cheeses or cones into the channel members. As seen most clearly in FIG. 2, further outer guide means **112** are secured between the outer edge portions of the various channel members and the adjacent upright members to also serve to effectively guide cheeses or cones into the channel members when inserting same from the right-hand end of the apparatus as seen in FIGS. 1 and 2.

As seen most clearly in FIGS. 3 and 4, the support means for supporting cheeses or cones on the structure includes guide means comprising a pair of elongated support portions **120** and **122** supported by each of the channel members **70**. These portions **120** and **122** are of tubular construction, and as seen most clearly in FIG. 4 include depending lugs **124** and **126** respectively which extend downwardly through slots **130** and **132** provided in each of channel members **70** adjacent the end thereof and extending laterally of the structure. Nut and washer assemblies **134** and **136** are threaded on the lower threaded ends of lugs **124** and **126** as seen in FIG. 4 for securing the elongated guide portions in a particular spaced relationship with respect to one another. Similar

slots **140** and **142** are provided through the opposite end portions of the channel members **70** for enabling the opposite ends of the elongated guide portions **120** and **122** to be similarly adjusted. The guide portions **120** and **122** will ordinarily be disposed in parallel relationship with one another, and the spacing therebetween can be altered in accordance with the size and taper of the cones to be supported thereon.

It should be understood that each of the channel members of the support means is provided with pairs of similar slots adjacent opposite ends thereof, and similar guide portions **146** as seen in FIG. 1 are disposed within each of the channel members to support cones therewithin. As noted in FIG. 1, the stop means **12** is disposed beyond the ends of the support portions **120** and **122** to serve as a stop means to enable cones or cheeses supported by the apparatus to be limited in their downward movement on the support portions. Similar stop means **148** is provided in association with each of the remaining channel members of the apparatus.

Various cones are indicated by phantom lines **150** supported in operative position on the apparatus, and various cheeses **152** are indicated by phantom lines in operative position in the apparatus. It is apparent that the full packages can be loaded at the right-hand end of the apparatus as seen in FIG. 1 and will automatically roll downwardly into the operative position shown in FIG. 1 at the left-hand end of the apparatus for removal therefrom.

As seen in FIG. 4, a cone may be so supported by the support portions **120** and **122** that it will roll in a straight line downwardly along the inclined support portions and will not tend to bind. Accordingly, the adjustable support portions enable the apparatus to be adjusted so that it can effectively receive and guide rolling movement of cones of varying size and configuration. Furthermore, these spaced support portions in association with both cones and cheeses provide line points of contact which minimize friction as the cheeses or cones roll downwardly therealong.

It should also be noted that in some instances the guide means including the support portions **120** and **122** may be removed, particularly when generally cylindrical cheeses are used, for example.

Referring now to FIGS. 5–8 inclusive, a modified form of the invention is illustrated wherein the support means includes the same basic components as discussed in connection with FIGS. 1–4, and similar portions have been given the same reference numerals primed. Additional structure is incorporated in this form of the invention for enabling the structure to carry out a dual function.

It will be noted that the framework arrangement is substantially identical with that peviously described in that the same base means and upright members are provided, although these upright members in this case may comprise bars instead of channel members, but nevertheless the corresponding members serve the same function. A plurality of support channels **70'**, **72'**, **74'** and **76'** are provided, the only principal difference being that these pairs of channel members are disposed with a greater lateral spacing therebetween for a purpose hereinafter described.

It should also be noted as seen particularly in FIGS. 5 and 6 that the upper ends of the various channel members have stop means **150** associated therewith which is substantially identical with the stop means **102'** and **148'** provided at the opposite ends of the structure, these stop means in this form of the invention simply comprising U-shaped portions extending from the channel members at opposite ends thereof.

In this form of the invention, additional protective means in the form of U-shape members **154** and **156** are supported upon the opposite ends of the base means of the framework and extend outwardly beyond the stop means as clearly seen in FIGS. 5 and 6. This protective means serves to protect the threads on the corners of cheeses or cones supported by the apparatus.

As seen in FIG. 5, the uppermost cross members **82'** and the two cross members **86'** disposed immediately therebeneath extend in spanning relationship between the upright members **54'** and **56'**. On the other hand, the two cross members **86'** shown in the lowermost positions in FIG. 5 each consist of two spaced portions which extend between the upright members **54'**, **56'** and the members **160** and **162** respectively as seen in FIG. 7, these members **160** and **162** serving to support additional support means hereinafter described.

Similarly, the three lowermost cross members **84'** as seen in FIG. 5 extend in spanning relationship between the upright members **50'** and **52'**, while the uppermost cross members **80'** and **84'** each consist of two spaced portions extending between the upright members **50'**, **52'** and vertical parallel members **166** and **168** corresponding to the members **160** and **162** provided at the opposite end of the framework.

The lower ends of members **166** and **168** are rigidly secured to the cross member **84'** which is at the central portion of FIG. 5, and the lateral portions of members **166** and **168** are rigidly affixed to the associated channel members to securely affix all these members in operative relationship with respect to one another. The members **160** and **162** at the opposite end of the framework have the upper ends thereof rigidly secured to the cross member **86'** in the vertical central portion of the framework, and similarly the side portions thereof are rigidly secured to the associated channel members to provide a lightweight strong framework arrangement.

As seen particularly in FIG. 5, additional support means comprises four elongated support portions **170**, **172**, **174** and **176** which are inclined in the opposite direction with respect to the channel members **70'**, **72'**, **74'**, **76'** and **78'** and are further disposed at a greater angle with respect to the horizontal. These support portions **170**, **172**, **174** and **176** are rigidly secured to the associated members **160**, **162** and **166**, **168** so as to be fixedly secured in the operative relationship illustrated.

As seen most clearly in FIGS. 7 and 8, the support portion **170** includes an intermediate corrugated portion **180** having tubular portions **182** and **184** formed integrally with the opposite edges thereof. These corrugations provide two substantially V-shaped slots **181** for receiving empty bobbins.

Rod portions **186** disposed within the tubular portions **182** and **184** join with an integral stop means portion **188** as seen most clearly in FIG. 6, this stop means portion extending outwardly beyond the end of the support portion **170**.

Referring to FIG. 7, the support portion **172** is of substantially the same construction as support portion **170**, and similar parts have been given the same reference numerals primed, it being understood that each of the support portions **170**, **172**, **174** and **176** are substantially identical, and accordingly, similar reference numerals primed have been applied in connection with each of the components of the support portions **172**, **174** and **176**. As in the other forms of the invention, the number of support portions or troughs employed may be varied as desired.

As seen in FIG. 7, cones are illustrated by phantom lines **190** as disposed in various operative positions within the framework and supported by the support portions **120'** and **122'**. It is apparent that the cones may assume various operative relative positions dependent upon the size and configuration of the cones.

With the arrangement as illustrated in FIGS. 5–8 inclusive, empty bobbins may be disposed within the various support portions **170**, **172**, **174** and **176** so as to be available at the right-hand end of the apparatus as seen in FIGS. 5 and 6. Full packages will be placed upon the various support portions associated with channel members

70', 72', 74', 76' and 78' so as to roll downwardly toward the left-hand end of the support means, while the operator picks up the empty bobbins from the lower ends of the additional support means to put them into operative relationship with a machine. The steep angle of the support portions **170**, **172**, **174**, and **176** ensures that the empty bobbins will slide downwardly therein to be at the right-hand end of the support means.

It is apparent that the opposite end of the support means may be employed when an operator is disposed for example at a twister frame wherein the empty bobbins are placed in the upper ends of support portions **170**, **172**, **174** and **176**, while full packages are removed from the first-mentioned support portions.

The second support portions **170**, **172**, **174** and **176** are so designed as to hold the same number of empty bobbins as the first-mentioned support portions are adapted to support full packages.

Referring now to FIGS. 9–11 inclusive, still another modified form of the invention is illustrated. This structure is substantially identical with that shown in FIGS. 5–8 inclusive, and the same parts have been given the same reference numerals primed.

The only difference in this form of the invention is the provision of reinforcing means at one end of the guide means of the structure whereby said one end of the guide means may serve as steps upon which an operator's weight is adapted to be supported, thereby effectively forming a ladder.

As seen in FIGS. 9–11, the first three troughs on the lower end of the outside troughs of the device are provided with reinforcing metal gusset plates indicated by reference numerals **200**. These gusset plates are welded in the position illustrated and serve to reinforce the portions **148'** of the guide means, the outer ends of portions **148'** serving as stop means as aforedescribed.

The gusset plates are each welded along an upper edge thereof to a longitudinally extending rod portion of one of the parts **148'**, while a portion of the vertically extending edge of each of the gusset plates is welded to an adjacent portion of the supporting framework. In the case of the outer gusset plates, they are welded to the upstanding portions **50'** and **52'**, while the inner gusset plates are welded to the cross members **84'**.

It is apparent that these gusset plates will sufficiently reinforce the end portions of the guide means so that they may support the weight of an operator whereby these end portions may be used as a ladder when it is desired to load packages into a creel which is considerably above the head of the operator.

It is apparent from the foregoing that there is provided according to the present invention new and novel movable support means for cones and cheeses and the like which is lightweight, compact and yet strong and rugged in construction, and which will properly feed cones therewithin; and which further enables loading and unloading operations to be carried out at the same time from one end of the support means.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claims, all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by those claims.

I claim:

1. Portable support means for cones or the like comprising means to maintain the same in an inclined position, means carried by the support means to guide the cones or the like downwardly on said maintaining means, said guide means comprising a plurality of channel-shaped members and including means on the base of said channel-shaped members to orient said cones or the like as they move along said guide means to prevent canting and binding of said cones or the like, the sides of the channel-shaped members containing the cones or the like therebetween, said maintaining means including a framework comprising a plurality of interconnected members defining an open framework, said framework including a base portion, and anti-friction means carried by said base portion for supporting the framework for movement.

2. Apparatus as defined in claim **1** wherein said antifriction means comprises a plurality of wheels, said wheels including first wheel means at the central portion of the base of the framework, said wheels also including wheel means at the end portion of the base of the framework, the wheel means at the central portion of the base of the framework being of greater diameter than the wheel means at the end portion of the base of the framework.

3. Apparatus as defined in claim **1** including protective means in the form of a generally U-shaped member extending from said maintaining means for protecting cones or the like supported by said support means adjacent an end portion of the maintaining means.

4. Apparatus as defined in claim **1** including stop means disposed in spaced relationship to the ends of said guide means to engage cones or the like supported by the guide portions and for limiting movement thereof.

5. Portable support means as in claim **1** wherein said base portion includes cross brace means to provide a lightweight rigid arrangement.

6. Apparatus as defined in claim **1** including reinforcing means operatively connected between one end of said guide means and said maintaining means for rigidifying the structure and to provide a means for supporting additional load at said one end of the guide means.

7. Apparatus as defined in claim **6** including reinforcing plate means engaging one end of said guide means and also being in engagement with said maintaining means, said maintaining means comprising a rigid open framework.

8. Portable support means for cones or the like comprising means to maintain the same in an inclined position, first guide means carried by the support means and inclined in one direction to horizontal to guide the cones or the like downwardly on said maintaining means, second guide means carried by the support means and inclined in the opposite direction to horizontal, said first and second guide means being independent of each other, said maintaining means including a framework comprising a plurality of interconnected members defining an open framework, said framework having a base portion, and antifriction means carried by said base portion for supporting the framework for movement.

9. Apparatus as defined in claim **8** wherein said second guide means is inclined at a greater angle to horizontal than said first guide means.

10. Apparatus as defined in claim **8** wherein said second guide means is of generally corrugated cross sectional configuration.

11. Apparatus as defined in claim **8** wherein said first guide means includes portions spaced laterally with respect to one another, said second guide means being positioned intermediate said laterally spaced portions of said first guide means.

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JAMES A. LEPPINK, Primary Examiner

U.S. Cl. X.R.

211—162; 221—312