

Description

The present invention generally relates to a rack for holding articles and more particularly to a rack used for storing a plurality of spools in juxtaposed relation to each other around which are spooled a plurality of elongated fabric strips of different colors, such as slide fastener chains, or ribbons, in which rack the elongated fabric strips of any desired color can be unwound easily out of the corresponding spools.

It has been common heretofore for a plurality of spools with elongated strips wound therearound to be rotatably mounted on a common axle in juxtaposed relation, with adjacent spools touching each other on their respective sides. Consequently, as a desired elongated strip is being drawn and unwound out of the spool, the thus caused rotation of the spool is transmitted to adjacent spools, so that undesired strips are unintentionally unwound out of the adjacent spools. To make the matter worse, the thus unintentionally unwound part of the undesired strip is likely to get entangled with the strip which is being drawn intentionally out of the selected spool.

Furthermore, when it is desired to replace a vacated spool on the elongated common axle; if the vacated spool does not happen to be located on or adjacent to either of the opposed extreme ends, then it is not very easy to remove; so, if it is located at or adjacent to the midpoint the elongated axle, the replacement of the vacated spool would entail temporary removal of many spools which need not be replaced, which makes replacement of spools very tedious and time-consuming.

With the foregoing drawbacks in view, it is an object of this invention to provide a rack for storing a plurality of spools with elongated strips wound therearound which is entirely free from the disadvantages encountered by conventional racks.

It is another object of this invention to provide a rack of the type described in which a desired elongated strip can be unwound from a desired spool without interfering with any other spools.

It is still another object of this invention to provide a rack of the type described in which any vacated spool can be replaced very easily and swiftly, in whatever part of the rack it may be positioned.

According to the present invention, as defined in independent claim 1 there is provided a rack for storing a plurality of spools with elongated strips wound therearound, the rack comprising a box-like frame including a pair of parallel spaced plates; a plurality of partitions, each of which has on one of its surfaces a support axle for rotatably and releasably holding the spool; and means for releasably fastening the partitions in a parallel spaced relation to each other between the plates.

Particular embodiments of the invention are set out in dependent claims 2 to 7.

The above and other objects and advantages of the present invention will become apparent to those skilled in the art from the following detailed description made with reference to the accompanying drawings in which preferred structural embodiments of the present invention are shown by way of example only.

FIG. 1 is a partly-broken-away exploded perspective view of a rack according to the present invention;

FIG. 2 is a perspective view of a spool and its corresponding partition as detached from each other;

FIG. 3 is diagrammatical view of an apparatus for processing a slide fastener chain, used with the rack according to the present invention; and

FIG. 4 is fragmentary front elevational view of a rack according to a modified embodiment of the present invention, with a lock plate detached from the intermediate plate.

FIG. 1 shows a rack comprising a box-like frame 1 in which three rows of spools 5 loaded with slide fastener chains 15 are disposed in vertical alignment. The box-like frame 1 comprises a pair of side boards 20, 20 standing vertically, a pair of parallel spaced end plates 21, 21 joined at their respective ends with the corresponding ends of the side boards 20, 20 and a back board 22 joined with the rear side edges of the side boards 20, 20 and the end plates 21, 21, so that the box-like frame 1 is only open only forward direction. The box-like frame 1 further includes a plurality of parallel spaced intermediate plates 2, 2 between the end plates 21, 21 to thus provide a plurality of chambers 23 in the frame 1. In each chamber 23, two confronting series of grooves 3, 4 are formed in the opposed surfaces of the adjacent plates 2, 21. The two confronting series of grooves 3, 4 are arranged in registry with each other, so that a plurality of partitions 6 with the spools 5 wound therearound can fit between the opposed plates 2, 21 with the opposite edges of the former slid along the opposed mating grooves 3, 4 of the latter. Each adjacent grooves 3, 4 are so spaced from each other that the partitions 6, 6 fitted therein are spaced from each other at an interval slightly greater than the width of the spool 5.

As better shown in FIG. 2, each of the partitions 6 is in the form of a substantially square plate and has an upright support axle 7 on one of its sides at its center. On the support axle 7, there is rotatably mounted a spool 5, around which a slide fastener chain 15 is wound. These spool-loaded partitions 6 have their opposite edges slidably fitted in the confronting mating grooves 3, 4 in the opposed surfaces of the adjacent plates 2, 21, with their support axles 7 directed in the same direction.

Although FIG. 1 shows the pair of confronting series of grooves 3, 4 formed in the plates 2, 21 serving as means for releasably fastening the partitions

6 in the box-like frame 1, a pair of confronting series of ridges 3', 4' may be provided on the opposed sides of the plates 2, 21 to serve the same purpose, as shown in FIG. 4. In this event, the partition 6 must have in each of its opposite edges a groove 25 adapted for sliding engagement with the ridges 4' on the plates 2, 21. Each adjacent ridges 3', 4' are so spaced from each other that the partitions 6, 6 fitted thereon are spaced from each other at an interval slightly greater than the width of the spool 5.

The rack further includes a plurality of elongated lock plates 8 which have a plurality of slots 10 formed in and arranged at uniform intervals longitudinally of the elongated lock plate 8. The same number of pins 11 as there are slots 10 are protuberantly provided at the same intervals on the front side of each intermediate plate 2. The elongated lock plate 8 is mounted slidably on and along the front side of each of the intermediate plates 2 with the elongated slots 10 of the former fittingly engaged with the protuberant pins 11 of the latter. The lock plate 8 further has a pair of series of notches 9, one in each side edge, which notches 9 are arranged at the same intervals as the grooves 3, 4. Each of the notches 9 is as great as or slightly greater than each of the grooves 3, 4. The elongated lock plate 8 is slidable on the front side of the intermediate plate 2 between the first position in which the notches 9, 9 of the former comes into registry with the grooves 3, 4 of the latter and the second position in which the notches 9, 9 comes out of registry with the grooves 3, 4. It is readily acknowledged that in the first position, the elongated lock plate 8 allows the spool-loaded partitions to come out of the chamber 23, while in the second position, the elongated lock plate 8 prevents the spool-loaded partitions from escaping off the chamber 23. A pair of brackets 12, 12 are provided on opposite ends of the elongated lock plate 8 so as to project forwards therefrom. Joined to the brackets 12, 12 is a round pole 13, which serves as a handle with which an operator can reciprocate the lock plate 8 and also serves as a guide bar on which the unwound part of the slide fastener chain 15 drapes via its own gravity.

Although the frame 1 is shown to contain a plurality of chambers 23 in FIG. 1, it may contain only a single chamber 23. Furthermore, although the frame 1 is so constructed as to hold the partitions 6 vertically thereon, the frame 1 may hold them either horizontally or at an angle.

FIG. 3 shows the way in which the slide fastener chain 15 is unwound from the desired spool 5 on the frame 1 and fed to a slide fastener finishing machine 14. Many spools 5 having slide fastener chains 15 of various types or colors wound therearound are housed neatly in the frame 1 in the manner set forth hereinabove. A slide fastener chain 15 can be unwound from any desired spool 5. If change of colors is required, one can select any color desired. When a

certain spool 5 has been vacated, one can replace the vacated spool 5 by simply sliding the partition 6 out of the chamber 23.

With the construction of the rack according to the present invention set forth hereinabove, each elongated strip such as a slide fastener chain can be unwound from the desired spool safely without interfering with adjacent spools.

Furthermore, since spool-loaded partitions are independently stored in their respective grooves, any vacated spool can be replaced very easily and swiftly.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

Claims

1. A rack for storing a plurality of spools (5) with elongated strips (15) wound therearound, the rack comprising a box-like frame (1) including a pair of parallel spaced plates (2, 21); a plurality of partitions (6) to be fastened between the plates (2, 21), characterized in that each of the partitions (6) has on one of its surfaces a support axle (7) for rotatably and releasably holding the spool (5); the rack further including means (3, 4; 3', 4') for releasably fastening the partitions (6) in a parallel spaced relation to each other between the plates (2, 21).
2. A rack according to claim 1, the fastening means (3, 4; 3', 4') comprising a pair of confronting series of grooves (3, 4) formed in the opposed sides of the parallel spaced plates (2, 21), with which the corresponding opposed edges of the partitions (6) come into slidable engagement.
3. A rack according to claim 1, the fastening means (3, 4; 3', 4') comprising a pair of confronting series of ridges (3', 4') provided on the opposed sides of the parallel spaced plates (21), each partition (6) having grooves (25) in and along its opposed edges and having its grooves (25) come into slidable engagement with the ridges (3', 4') on the opposed sides of the parallel spaced plates (2, 21).
4. A rack according to claim 2, each adjacent grooves (3, 4) being so spaced from each other that the partitions (6, 6) fitted therein are spaced from each other at an interval slightly greater than the width of the spool (5).



6 in the box-like frame 1, a pair of confronting series of ridges 3', 4' may be provided on the opposed sides of the plates 2, 21 to serve the same purpose, as shown in FIG. 4. In this event, the partition 6 must have in each of its opposite edges a groove 25 adapted for sliding engagement with the ridges 4' on the plates 2, 21. Each adjacent ridges 3', 4' are so spaced from each other that the partitions 6, 6 fitted thereon are spaced from each other at an interval slightly greater than the width of the spool 5.

The rack further includes a plurality of elongated lock plates 8 which have a plurality of slots 10 formed in and arranged at uniform intervals longitudinally of the elongated lock plate 8. The same number of pins 11 as there are slots 10 are protuberantly provided at the same intervals on the front side of each intermediate plate 2. The elongated lock plate 8 is mounted slidably on and along the front side of each of the intermediate plates 2 with the elongated slots 10 of the former fittingly engaged with the protuberant pins 11 of the latter. The lock plate 8 further has a pair of series of notches 9, one in each side edge, which notches 9 are arranged at the same intervals as the grooves 3, 4. Each of the notches 9 is as great as or slightly greater than each of the grooves 3, 4. The elongated lock plate 8 is slidable on the front side of the intermediate plate 2 between the first position in which the notches 9, 9 of the former comes into registry with the grooves 3, 4 of the latter and the second position in which the notches 9, 9 comes out of registry with the grooves 3, 4. It is readily acknowledged that in the first position, the elongated lock plate 8 allows the spool-loaded partitions to come out of the chamber 23, while in the second position, the elongated lock plate 8 prevents the spool-loaded partitions from escaping off the chamber 23. A pair of brackets 12, 12 are provided on opposite ends of the elongated lock plate 8 so as to project forwards therefrom. Joined to the brackets 12, 12 is a round pole 13, which serves as a handle with which an operator can reciprocate the lock plate 8 and also serves as a guide bar on which the unwound part of the slide fastener chain 15 drapes via its own gravity.

Although the frame 1 is shown to contain a plurality of chambers 23 in FIG. 1, it may contain only a single chamber 23. Furthermore, although the frame 1 is so constructed as to hold the partitions 6 vertically thereon, the frame 1 may hold them either horizontally or at an angle.

FIG. 3 shows the way in which the slide fastener chain 15 is unwound from the desired spool 5 on the frame 1 and fed to a slide fastener finishing machine 14. Many spools 5 having slide fastener chains 15 of various types or colors wound therearound are housed neatly in the frame 1 in the manner set forth hereinabove. A slide fastener chain 15 can be unwound from any desired spool 5. If change of colors is required, one can select any color desired. When a

certain spool 5 has been vacated, one can replace the vacated spool 5 by simply sliding the partition 6 out of the chamber 23.

With the construction of the rack according to the present invention set forth hereinabove, each elongated strip such as a slide fastener chain can be unwound from the desired spool safely without interfering with adjacent spools.

Furthermore, since spool-loaded partitions are independently stored in their respective grooves, any vacated spool can be replaced very easily and swiftly.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

Claims

1. A rack for storing a plurality of spools (5) with elongated strips (15) wound therearound, the rack comprising a box-like frame (1) including a pair of parallel spaced plates (2, 21); a plurality of partitions (6) to be fastened between the plates (2, 21), characterized in that each of the partitions (6) has on one of its surfaces a support axle (7) for rotatably and releasably holding the spool (5); the rack further including means (3, 4; 3', 4') for releasably fastening the partitions (6) in a parallel spaced relation to each other between the plates (2, 21).
2. A rack according to claim 1, the fastening means (3, 4; 3', 4') comprising a pair of confronting series of grooves (3, 4) formed in the opposed sides of the parallel spaced plates (2, 21), with which the corresponding opposed edges of the partitions (6) come into slidable engagement.
3. A rack according to claim 1, the fastening means (3, 4; 3', 4') comprising a pair of confronting series of ridges (3', 4') provided on the opposed sides of the parallel spaced plates (21), each partition (6) having grooves (25) in and along its opposed edges and having its grooves (25) come into slidable engagement with the ridges (3', 4') on the opposed sides of the parallel spaced plates (2, 21).
4. A rack according to claim 2, each adjacent grooves (3, 4) being so spaced from each other that the partitions (6, 6) fitted therein are spaced from each other at an interval slightly greater than the width of the spool (5).



5. A rack according to claim 3, each adjacent ridges (3', 4') being so spaced from each other that the partitions (6, 6) fitted thereon are spaced from each other at an interval slightly greater than the width of the spool (5).
6. A rack according to claim 2, further including an elongated rectangular lock plate (8) having a plurality of slots (10) formed in and arranged at uniform intervals longitudinally of the lock plate (8) and a series of notches (9) formed in and along a side edge thereof so as to be arranged at the same intervals as the grooves (3, 4), the lock plate (8) being mounted slidably on and along the front side of either of the plates (2, 21) so that the lock plate (8) is slidable between the first position in which the notches (9) come into registry with the grooves (3, 4) and the second position in which the notches (9) come out of registry with the grooves (3, 4).
7. A rack according to claim 3, further including an elongated rectangular lock plate (8) having a plurality of slots (10) formed in and arranged at uniform intervals longitudinally of the lock plate (8) and a series of notches (9) formed in and along a side edge thereof so as to be arranged at the same intervals as the ridges (3', 4'), the lock plate (8) being mounted slidably on and along the front side of either of the plates (2, 21) so that the lock plate (8) is slidable between the first position in which the notches (9) come into registry with the ridges (3', 4') and the second position in which the notches (9) comes out of registry with the ridges (3', 4').

Patentansprüche

1. Lagerregal für mehrere Wickelspulen (5), auf die ein bandförmiges Material (15) aufgewickelt ist, wobei das Lagerregal einen kastenartigen Rahmen (1) mit zwei parallelen Platten (2, 21); mehrere zwischen den Platten (2, 21) zu befestigende Trennwände (6) umfaßt, dadurch gekennzeichnet, daß jede Trennwand (6) an einer ihrer Seiten eine Stützachse (7) zum drehbaren und lösbaren Halten der Wickelspule (5) aufweist; daß das Lagerregal ferner Mittel (3, 4; 3', 4') umfaßt, um die Trennwände (6) zwischen den Platten (2, 21) im Abstand parallel zueinander lösbar zu befestigen.
2. Lagerregal nach Anspruch 1, wobei die Befestigungsmittel (3, 4; 3', 4') zwei einander gegenüberliegende Reihen von Nuten (3, 4) umfassen, die in den gegenüberliegenden Seiten der parallelen Platten (2, 21) ausgebildet sind, mit denen

entsprechende einander gegenüberliegende Ränder der Trennwände (6) in Gleiteingriff gelangen.

3. Lagerregal nach Anspruch 1, wobei die Befestigungsmittel (3, 4; 3', 4') zwei einander gegenüberliegenden Reihen von Rippen (3', 4') umfassen, die an den gegenüberliegenden Seiten der parallelen Platten (21) ausgebildet sind, wobei jede Trennwand (6) in und entlang ihren gegenüberliegenden Rändern Nuten (25) aufweist und wobei ihre Nuten (25) mit den Rippen (3', 4') an den gegenüberliegenden Seiten der parallelen Platten (2, 21) in Gleiteingriff gelangen.

4. Lagerregal nach Anspruch 2, wobei benachbarte Nuten (3, 4) jeweils in einem solchen Abstand angeordnet sind, daß die in diese eingesetzten Trennwände (6, 6) unter einem gegenseitigen Abstand angeordnet sind, der geringfügig größer ist als die Breite der Wickelspule (5).

5. Lagerregal nach Anspruch 3, wobei benachbarte Rippen (3', 4') jeweils in einem solchen Abstand voneinander angeordnet sind, daß die darauf aufgesteckten Trennwände (6, 6) unter einem gegenseitigen Abstand angeordnet sind, der geringfügig größer ist als die Breite der Wickelspule (5).

6. Lagerregal nach Anspruch 2, ferner umfassend eine längliche, rechteckige Verriegelungsplatte (8), in der mehrere Schlitz (10) ausgebildet sind, die in Längsrichtung der Verriegelungsplatte (8) in gleichen Abständen angeordnet sind, und eine Reihe von Kerben (9), die in und entlang einem Seitenrand derselben ausgebildet sind, so daß sie im gleichen Abstand wie die Nuten (3, 4) angeordnet sind, wobei die Verriegelungsplatte (8) an und entlang der Vorderseite jeder Platte (2, 21) verschiebbar gelagert ist, so daß die Verriegelungsplatte (8) zwischen der ersten Stellung, in der die Kerben (9) mit den Nuten (3, 4) fluchten, und der zweiten Stellung verschiebbar ist, in der die Kerben (9) mit den Nuten (3, 4) außer Deckung gelangen.

7. Lagerregal nach Anspruch 3, ferner umfassend eine längliche, rechteckige Verriegelungsplatte (8) in der mehrere Schlitz (10) ausgebildet sind, die in Längsrichtung der Verriegelungsplatte (8) in gleichen Abständen angeordnet sind, und eine Reihe von Kerben (9), die in und entlang einem Seitenrand derselben ausgebildet sind, so daß sie unter den gleichen Abständen angeordnet sind wie die Rippen (3', 4'), wobei die Verriegelungsplatte (8) an und entlang der Vorderseite jeder Platte (2, 21) verschiebbar gelagert ist, so



daß die Verriegelungsplatte (8) zwischen der ersten Stellung, in der die Kerben (9) mit den Rippen (3', 4') fluchten, und der zweiten Stellung verschleubar ist, in der die Kerben (9) mit den Rippen (3', 4') außer Deckung gelangen.

Revendications

1. Rayonnage pour stocker une pluralité de bobines (5) autour desquelles sont enroulées des bandes (15) allongées, le rayonnage comportant une structure (1), en forme de boîte, qui contient une paire de plaques (2, 21) parallèles et espacées, une pluralité de parois de séparation (6) que l'on va fixer entre les plaques (2, 21) caractérisé en ce que chacune des parois de séparation (6) comporte sur l'une de ses faces un axe de support (7) pour maintenir la bobine (5) en vue de sa rotation de façon libérable, le rayonnage comportant en outre des moyens (3, 4; 3', 4') pour fixer de façon libérable les parois de séparation (6) entre les plaques (2, 21) en les maintenant parallèles et espacées les unes des autres.

2. Rayonnage selon la revendication 1, les moyens de fixation (3, 4; 3', 4') comportant en une paire de séries de rainures (3, 4) en vis-à-vis formées dans les côtés opposés des plaques (2, 21) espacées et parallèles avec lesquelles les bords correspondant opposés des parois de séparation (6) viennent s'engager de façon coulissante.

3. Rayonnage selon la revendication 1, le moyen de fixation (3, 4; 3', 4') comportant en une paire de séries de nervures (3', 4') en vis-à-vis placées dans les côtés opposés des plaques (21) parallèles et espacées, chaque paroi de séparation (6) ayant des rainures (25) dans et le long de ses bords opposés, ces rainures (25) venant en engagement coulissant avec les nervures (3', 4') sur les côtés opposés des plaques (2, 21) parallèles et espacées.

4. Rayonnage selon la revendication 2, toutes les rainures adjacentes (3, 4) étant espacées les unes des autres pour que les parois de séparation (6, 6) qui s'y emboîtent soient espacées les unes des autres suivant un intervalle légèrement supérieur à la largeur de la bobine (5).

5. Rayonnage selon la revendication 3, toutes les nervures adjacentes (3', 4') étant espacées les unes des autres de telle sorte que les parois de séparation (6, 6) qui s'y emboîtent soient espacées les unes des autres suivant un intervalle légèrement supérieur à la largeur de la bobine (5).

6. Rayonnage selon la revendication 2, comportant en outre une plaque de verrouillage (8), rectangulaire et allongée, qui comporte une pluralité de fentes (10) formées à des intervalles réguliers dans le sens longitudinal de la plaque de verrouillage (8) et une série d'entailles (9) formées dans un bord latéral de celle-ci de façon à être situées suivant les mêmes intervalles que les rainures (3, 4), la plaque de verrouillage (8) étant montée de façon coulissante sur et le long du bord avant de l'une ou l'autre des plaques (2, 21) si bien que la plaque de verrouillage (8) peut coulisser entre une première position dans laquelle les entailles (9) sont en correspondance avec les rainures (3, 4) et une seconde position dans laquelle les entailles (9) ne sont pas en correspondance avec les rainures (3, 4).

7. Rayonnage selon la revendication 3, comportant en outre une plaque de verrouillage (8), rectangulaire et allongée, avec une pluralité de fentes (10) formées suivant des intervalles réguliers dans le sens longitudinal de la plaque de verrouillage (8) et une série d'entailles (9) formées dans et le long du bord latéral de celle-ci de façon à être situées suivant les mêmes intervalles que les nervures (3', 4'), la plaque de verrouillage (8) étant montée de façon coulissante sur et le long du bord avant de l'une ou l'autre des plaques (2, 21) si bien que la plaque de verrouillage (8) peut coulisser entre une première position dans laquelle les entailles (9) sont en correspondance avec les nervures (3', 4') et une seconde position dans laquelle les entailles (9) ne sont pas en correspondance avec les nervures (3', 4').