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Magazine for bookbinding strips.

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Description

This invention relates to a magazine for supporting bookbinding strips of the type shown in Fig. 1 of US-A-4,369,013. The magazine may be used in equipment for binding books wherein the binding strips are mechanically fed into the equipment preparatory to binding by means of equipment such as that shown in US-A-3,811,146. However strips may be removed from the magazine hereinafter described manually for manual insertion into such equipment.

The invention provides a magazine for supporting a plurality of bookbinding strips by side, characterized in that the magazine comprises two parallel side rails having respective longitudinal channels facing each other for receiving the ends of the bookbinding strips, each rail having a plurality of connectors each having a first connector means, and at least two bars extending transversely of and interconnecting the side rails, each bar having at least two second connector means which co-operate with the first connector means to secure the side rails a selected distance apart from each other.

The magazine is constructed so as to support as a package a plurality of strips such as those heretofore described, such strips being a well-known means for binding books and documents. Heretofore such strips have been commercially packaged in boxes but have not been so packaged that they may be automatically fed into proper position for assembly of a book or a document preparatory to binding the book or document. The present invention provides a magazine wherein the strips are arranged side-by-side and able to be discharged from one end of the magazine into receiving means for transfer into a position whereby they may be assembled with punched sheets of paper so that the completed document or book may be bound.

Cartridge packaging of the strips is shown in Figs. 6-1OA of US-A-4,369,013, but in an entirely different manner from the present invention.

Binding strips of the type shown in US-A-4,369,013 comprise a set of two strips. The first strip is formed of narrow thermoplastic material and has integral studs projecting therefrom spaced at intervals. The length of the strips are varied to accommodate different widths of paper and the stud lengths are variable to accommodate different thicknesses of books or documents. The second strip of the set is flat and narrow and has holes spaced at the same intervals as the studs. Again, the length of the strip is variable and the hole spacing is variable to accommodate the studs of the first strip. Such strips are well known in the binding industry. Heretofore such strips have been molded and transported in boxes. At the time of use, the strips have been removed from the boxes one at a time and inserted in bookbinding means of the type shown in US-A-3,811,146 as well as other binding machines. The present invention provides a magazine for packaging the strips so that they are more conveniently available for insertion in the bookbinding machine and, indeed, may be automatically discharged from the magazine and transported into proper position for assembly of a book or document prior to the binding thereof.

One of the advantages of the invention is that the magazine is able to accommodate both the first strips and the second strips heretofore mentioned and accommodate strips of different lengths and also first strips of different stud heights. Merely by adding spacers to the magazine used for the second or flat strips, first strips may be accommodated and the lengths of the spacers make it possible to accommodate first strips of different stud lengths. Thus considerable economy in the manufacture of the magazine is achieved.

When first or male strips are being packaged, the magazine protects the studs from being bent out of alignment.

The magazine is intended for use in equipment which automatically advances strips longitudinally of the magazine. The structure of the magazine is such that it provides no obstructions to the portion of such equipment which engages the strips to so advance them.

In the accompanying drawings, Fig. 1 is a top plan view of a magazine for supporting a plurality of bookbinding strips; Fig. 2 is an end elevational view thereof showing additionally in dot and dash lines a second magazine upon which the first is stacked; Fig. 3 is a side elevation of the structure of Fig. 2; Fig. 4 is a fragmentary sectional view of a portion of Fig. 2 with the spacers eliminated so that flat second or female strips are packaged; Fig. 5 is a fragmentary sectional view taken on the line 5-5 of Fig. 4; Fig. 6 is an enlarged fragmentary view similar to Fig. 5 showing spacers in place to accommodate male strips; Fig. 7 is a fragmentary sectional view taken substantially along the line 7-7 of Fig. 4; and Fig. 8 is an enlarged fragmentary view showing a detent which is able to prevent strips from being discharged from the magazine.

The magazine hereinafter described in detail is used to package bookbinding strips. First strips 21 have a base 22 which is a thin narrow elongate strip of thermoplastic material from which project integral studs 23. The length of the base 22 and the heights of the studs 23 vary and the magazine...
hereinafter described is able to accommodate different lengths of strips and heights of studs. The ends 24 of base 22 of commercially available strips 21 extend outward of the outermost stud 23, and this projecting end 24 is a feature which is taken advantage of in the construction of the magazine. With each first strip 21 there is used a second strip 26 which has holes 27 at intervals spaced the same distances as the studs 23 and the strip 26 preferably has the same length as the base 22.

On both sides of the magazine are mutually facing side rails 31 which are of a length to accommodate a plurality of strips 21 or 26. At locations spaced inward but adjacent to the ends of the rails 31 are upward projecting connector members 32. Extending the entire length of each rail 31 are upper and lower longitudinal guides 33, 34 between which is a channel 36 having the width of the thickness of the base 22 or strip 26 and deep enough to receive the ends 24 of the strips 21 or the ends of strips 26. At intervals along the length of the rail 31 are downward projections 37 which are rectangular in shape. Three such projections are shown in Fig. 3 but the number of such projections is subject to variation. A gusset 38 interconnects the bottom of the lower guide 34 and the projection 37 to reinforce them. To both sides of each connector member 32 are locators 39 for the spacer legs 46 hereinafter described. Projecting inward of each connector member 32 is a horizontally disposed pin 41 to effect connection with the spacer leg.

When female strips 26 are packaged, no vertical spacer legs 46 are required. However when packaging male strips 21, a plurality of the spacer legs 46 are used. The lengths of the legs 46 depend upon the lengths of the studs 23. Hence the legs 46 are an interchangeable part for the completed magazine. Each spacer leg 46 has a base 47 which extends longitudinally outwardly and at the lower corners of the base 47 are sockets 48 which receive the pins 41 in a snap in arrangement. Thus the base 47 is positioned between the locators 39.

Vertical reinforcement ribs 52 strengthen the legs 46. On the upper ends of the legs 46 are vertically disposed connector pins 53 which fit into sockets 62 on horizontal connector bars 56 when the legs 46 are used. As shown in Fig. 5, when packaging strips 26 (when no legs 46 are used) pins 71 on the rails 31 fit into the sockets 62. When the legs 46 are used, the pins 71 fit into grooves 73 on the outside of the leg 46, there being bosses 74 on the inside to define the grooves. To further stabilize the assembled magazines, inverted U-shaped rib receptors 64 are formed at the bottom of the central reinforcing rib 52 of each leg 46 and projections 51 on the top of the rails 31 slide into said receptors when the pins 41 slide into the sockets 48. Further, the upper edge of the central reinforcing rib 52 fits into a groove 76 on the underside of interconnecting bar 56 (see Fig. 6).

Horizontal interconnector bars 56 extend transversely of the magazine adjacent to but spaced inward of both ends of the rails 31. Each bar 56 has a base 57 having a central longitudinally upwardly extending reinforcing rib 58 and the rib 58 at both ends has an upward extension 59. The upper edge of each extension 59 is formed with notches 61 and to both sides of the extension 59 are the sockets 62. As best seen in Figs. 1 and 2, on the left hand end of each bar 56 there is a single notch 61 and to each side thereof is a single socket 62. On the right-hand end of each bar 56 are three notches 61 and to each side of each notch is a socket 62. This arrangement makes it possible to fabricate the magazine so that a single size bar 56 will accommodate strips 21 or 26 of different lengths. Thus the innermost sockets 62 on the right-hand side may accommodate strips which are 216mm (8.5 in) in length, the middle sockets 62 strips which are 279mm (11 in) in length and the outermost sockets 62 strips which are 356mm (14 in) in length. Of course the number and spacing of the sockets 62 is subject to variation. The connector pins 53 for the legs 46 fit into the sockets 62 and are positioned in the selected socket 62 so that the magazine formed will accommodate the desired length of strip. As best shown in Fig. 2, the notches 61 receive the bottom projections 37 so that a plurality of magazines may be stacked on top of each other and aligned by reason of the projections 37 fitting into the notches 61. Notches 63 are formed on the bottom edges of the projections 37. When stacked as in Fig. 3, the upper extension 59 of the undermost magazine fits into the notch 63 to promote stacking stability.

As best shown in Fig. 8, as an optional feature, a slot 66 is formed in the end of each side rail 31 and a retainer detent 67 prevents strips from being removed from the channels 36, the detent 67 closing off the end of the channel 36. A lever 68 connected to the rail 31 below the slot 66 may be swung from the solid line position to the dot and dash line position, thereby swinging the detent 67 out of the way of channel 36 and permitting the strips to be discharged from the channels 36. When the magazines are used in automatic machinery, when the magazine is inserted into the machine, an abutment (not shown) contacts the lever 68 and swings it down to the dot and dash line position so that the strips may be fed out of the magazine for assembly with perforated sheets to be bound.

The end of each channel 36 opposite to the detent 67 is blocked by a permanent stop 69 which
prevents removal of the strips 21 or 26 from that end.

To load the magazine, the opposed rails 31 are sprung apart sufficiently for strips to be loaded. Alternatively, the strips may be loaded before all elements of the magazine are snapped together. When the rails are released they move together, holding the strips therebetween. Figs. 4 and 5 illustrate that by connecting the rails 31 directly to the interconnecting bars 56 the flat female strips 26 may be supported in the magazine. For such purpose, connector pins 71 which are formed on the rails 31 are received directly in the sockets 62 on the transverse bars 56. By inserting the pins 71 in the appropriate sockets 62, the effective width of the magazine may be changed to accommodate strips 21 or 26 of different lengths.

In order to accommodate male strips 21, a spacer leg 46 of appropriate height is used. For such purpose, the pins 41 of the rail 31 are inserted in the appropriate sockets 48 in the legs 46. The pins 53 on the upper ends of the legs 46 are inserted in the appropriate socket 62 in the connecting bar 56 depending on the length of strip 21 being packaged. The projections 51 slide into the receptors 64. The foregoing arrangement makes it possible to use a set of rails 31 and a set of bars 56 to package female strips 26 of any length as well as male strips of any length and the height of the studs 23 of the male strip is accommodated simply by selecting spacer legs 46 of appropriate height.

Claims

1. A magazine for supporting a plurality of book-binding strips (21,26) side by side, characterised in that the magazine comprises two parallel side rails (31) having respective longitudinal channels (36) facing each other for receiving the ends of the bookbinding strips (21,26), each rail (31) having a plurality of connectors (32) each having a first connector means (71), and at least two bars (56) extending transversely of and interconnecting the side rails (31), each bar (56) having at least two second connector means (62) which cooperate with the first connector means (71) to secure the side rails (31) a selected distance apart from each other.

2. A magazine as claimed in Claim 1, wherein each bar (56) has at least three second connector means (62), one first connector means (71) of one side rail (31) engaging with one second connector means (62) of one bar (56) and one first connector means (71) of the other side rail (31) engaging in one of the remaining second connector means (62) of the said one bar (56).

3. A magazine as claimed in Claim 1 or 2, wherein each side rail (31) has a detent (67) blocking the channel (36) and preventing discharge of a bookbinding strip (21, 26) from the magazine, and a lever (68) operable to move the detent (67) away from the channel (36) and allow discharge of a bookbinding strip from the magazine.

4. A magazine as claimed in Claim 1, 2 or 3, wherein each side rail (31) has a projection (37) extending longitudinally of the rail, and each bar (56) has a rib (58) extending longitudinally of the bar, the projection (37) having a notch (63) and the rib (58) having notches (61) aligned with the plurality of second connector means (62), whereby one magazine can be stacked on another with the notches (63,61) of the projections (37) and the ribs (58) engaging in one another.

5. A magazine as claimed in Claim 1, 2, 3 or 4, and including spacer legs (46) spacing the side rails (31) perpendicularly from the bars (56), each leg (46) having a third connector means (48) at one end and a fourth connector means (53) at the other end, each rail (31) having a fifth connector means (41) cooperating with the third connector means (48), and the fourth connector means (53) cooperating with the second connector means (62).

6. A magazine as claimed in Claim 5, wherein the spacer legs (46) are interchangeable with other spacer legs of different lengths.

7. A magazine as claimed in Claim 5 or 6, wherein each bar (56) has at least three second connector means (62), the third connector means (48) of one spacer leg (46) engaging with the fifth connector means (41) of one side rail (31) and the fourth connector means (53) engaging in one second connector means (62) of one bar (56), and the third connector means (48) of another spacer leg (46) engaging with the fifth connector means (41) of the other side rail (31) and the fourth connector means (53) engaging in one of the remaining second connector means (62) of the said bar (56).

8. A magazine as claimed in any preceding claim, wherein each first connector means (71) comprises a pin, and each second connector means (62) comprises a socket in which the pin is received with a friction-tight fit.
9. A magazine as claimed in any one of the claims 5, 6 or 7 wherein each fourth connector means (53) comprises a pin, and each second connector means (62) comprises a socket in which the pin is received with a friction-tight fit.

10. A magazine as claimed in any one of Claims 5, 6, 7 or 9, wherein each fifth connector means (41) comprises a pin, and each third connector means (48) comprises a socket in which the pin is received with a friction-tight fit.

Patentansprüche

1. Magazin zum Halten einer Vielzahl von Buchbindestreifen (21, 26) nebeneinander, dadurch gekennzeichnet, daß das Magazin zwei parallele Seitenchienen (31) mit jeweiligen einander zugewandten Längskanälen (36) für die Aufnahme der Enden der Buchbindestreifen (21, 26) aufweist, wobei jede Schiene (31) eine Vielzahl von Verbindungsstücken (32), von denen jedes eine erste Verbindungseinrichtung (71) hat, und wenigstens zwei Stäbe (56) aufweist, die sich quer zu den Seitenchienen (31) erstrecken und sie miteinander verbinden, und jeder Stab (56) wenigstens zwei zweite Verbindungseinrichtungen (62) hat, die mit den ersten Verbindungseinrichtungen (71) zusammenwirken, um die Seitenchienen (31) in einem ausgewählten Abstand voneinander entfernt festzulegen.

2. Magazin nach Anspruch 1, bei welchem jeder Stab (56) wenigstens drei zweite Verbindungseinrichtungen (62) hat, wobei eine erste Verbindungseinrichtung (71) einer Seitenchiene (31) mit einer zweiten Verbindungseinrichtung (62) eines Stabes (56) in Eingriff steht und eine erste Verbindungseinrichtung (71) der anderen Seitenchiene (31) in eine der verbleibenden zweiten Verbindungseinrichtungen (62) des einen Stabes (56) eingeht.

3. Magazin nach Anspruch 1 oder 2, bei welchem jede Seitenchiene (31) eine Sperrklinke (67), die den Kanal (36) blockiert und die Abgabe eines Buchbindestreifens (21, 26) aus dem Magazin verhindert, und einen Hebel (68) hat, der betätigbar ist, um die Sperrklinke (67) von dem Kanal (36) wegzubewegen und die Abgabe eines Buchbindestreifens aus dem Magazin zu ermöglichen.

4. Magazin nach Anspruch 1, 2 oder 3, bei welchem jede Seitenchiene (31) einen Vorsprung (37), der sich längs der Schiene erstreckt, und jeder Stab (56) eine Rippe (58) hat, die sich längs des Stabs erstreckt, wobei der Vorsprung (37) eine Kerbe (63) und die Rippe (58) Kerben (61) hat, die fluchsend zu der Vielzahl der zweiten Verbindungseinrichtungen (62) ausgerichtet sind, wodurch ein Magazin auf einem anderen so gestapelt werden kann, daß die Kerben (63, 61) der Vorsprüinge (37) und die Rippen (58) ineinander eingreifen.

5. Magazin nach Anspruch 1, 2, 3 oder 4, welches Abstandsbene (46) aufweist, durch welche die Seitenchienen (31) mit Abstand senkrecht auf den Stäben (56) angeordnet werden, wobei jedes Bein (46) eine dritte Verbindungseinrichtung (48) an einem Ende und eine vierte Verbindungseinrichtung (48) an einem Ende und eine vierte Verbindungseinrichtung (48) an einem Ende und eine vierte Verbindungseinrichtung (48) an einem Ende und eine vierte Verbindungseinrichtung (48) zusammenwirkt, und die vierte Verbindungseinrichtung (53) mit der zweiten Verbindungseinrichtung (62) zusammenwirkt.


7. Magazin nach Anspruch 5 oder 6, bei welchem jeder Stab (56) wenigstens drei zweite Verbindungseinrichtungen (62) hat, wobei die dritte Verbindungseinrichtung (48) eines Abstandsbene (46) mit der fünften Verbindungseinrichtung (41) einer Seitenchiene (31) und die vierte Verbindungseinrichtung (53) mit einer zweiten Verbindungseinrichtung (62) eines Stabes (56) in Eingriff steht und die dritte Verbindungseinrichtung (48) eines weiteren Abstandsbene (46) in die fünfte Verbindungseinrichtung (41) einer anderen Seitenchiene (31) und die vierte Verbindungseinrichtung (53) in eine der verbleibenden zweiten Verbindungseinrichtungen (62) des Stabes (56) eingreift.


Revendications

1. Magasin de support de multiples bandes de reliure (21, 26) côté à côté, caractérisé en ce que le magasin comprend deux rails latéraux parallèles (31) comprenant des rainures longitudinales respectives (36) qui se font face pour loger les extrémités des bandes de reliure (21, 26), chaque rail (31) comprenant de multiples raccords (32) dont chacun comprend un premier élément de raccord (71), ainsi qu'au moins deux barres (56) orientées transversalement à et reliant lesdits rails latéraux (31), chaque barre (56) comprenant au moins deux seconds éléments de raccord (62) qui coopèrent avec le premier élément de raccord (71) pour fixer les rails latéraux (31) à une distance sélectionnée l'un de l'autre.

2. Magasin selon la revendication 1, dans lequel chaque barre (56) comprend au moins trois seconds éléments de raccord (62), un premier élément de raccord (71) d'un rail latéral (31) se fixant à un second élément de raccord (62) d'une barre (56) et un premier élément de raccord (71) de l'autre barre latérale (31) se fixant à l'un des seconds éléments restants de raccord (62) de ladite une barre (56).

3. Magasin selon la revendication 1 ou 2, dans lequel chaque rail latéral (31) comporte un organe d'arrêt (67) bloquant la rainure (36) et empêchant la décharge d'une bande de reliure (21, 26) du magasin, ainsi qu'un levier (68) pouvant être actionné de manière à écarter l'organe d'arrêt (67) de la rainure (36) et permettre la décharge d'une bande de reliure du magasin.

4. Magasin selon la revendication 1, 2 ou 3, dans lequel chaque rail latéral (31) comporte une protubérance (37) orientée dans la direction de la longueur du rail et chaque barre (56) comporte une nervure (58) orientée dans la direction de la longueur de la barre, la protubérance (37) comportant une encoche (63) et la nervure (58) comportant des encoches (61) alignées sur les multiples seconds éléments de raccord (62), de manière qu'un magasin puisse être empilé sur un autre de façon que les encoches (63, 61) des protubérances (37) et les nervures (58) s'empoîtent les unes avec les autres.

5. Magasin selon la revendication 1, 2, 3 ou 4 et comprenant des jambes d'entretienissement (46) plaçant les rails latéraux (31) perpendiculairement à distance des barres (56), chaque jambe (46) comprenant un troisième élément de raccord (48) à une extrémité et un quatrième élément de raccord (53) à l'autre extrémité, chaque rail (31) comportant un cinquième élément de raccord (41) coopérant avec le troisième élément de raccord (48), et le quatrième élément de raccord (53) coopérant avec le second élément de raccord (62).

6. Magasin selon la revendication 5, dans lequel les jambes d'entretienissement (48) sont interchangeables avec d'autres jambes d'entretienissement de différentes longueurs.

7. Magasin selon la revendication 5 ou 6, dans lequel chaque barre (56) comporte au moins trois seconds éléments de raccord (62), le troisième élément de raccord (48) d'une jambe d'entretienissement (46) se fixant au cinquième élément de raccord (41) d'un rail latéral (31) et le quatrième élément de raccord (53) se fixant à un second élément de raccord (62) d'une barre (56) et le troisième élément de raccord (48) d'une autre jambe d'entretienissement (46) se fixant au cinquième élément de raccord (41) de l'autre rail latéral (31) et le quatrième élément de raccord (53) se fixant à l'un des seconds éléments restants de raccord (62) de ladite barre (56).

8. Magasin selon l'une quelconque des revendications précédentes, dans lequel chaque premier élément de raccord (71) consiste en une broche et chaque second élément de raccord (62) consiste en une douille dans laquelle la broche se loge à ajustement étroit à frottement.

9. Magasin selon l'une quelconque des revendications 5, 6 ou 7, dans lequel chaque quatrième élément de raccord (53) consiste en une broche et chaque second élément de raccord (62) consiste en une douille dans laquelle la broche se loge à ajustement étroit à frottement.

10. Magasin selon l'une quelconque des revendications 5, 6, 7 ou 9, dans lequel chaque cinquième élément de raccord (41) consiste en une broche et chaque troisième élément de raccord (48) consiste en une douille dans laquelle la broche se loge à ajustement étroit à
frottement.