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Description:

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"Sheet-retaining system"

The invention relates to a retaining system for securing sheets on a carrier, in particular for securing paper sheets in a cover, having a retaining and connecting device for securing at least one sheet at a sheet edge and for connecting the at least one sheet to the sheet carrier indirectly via the retaining and connecting device.

Such a sheet-retaining system which is known from use has binding ties as the retaining and connecting device, it being possible for a plurality of perforated sheets to be bound together with the aid of said binding ties. These binding ties are themselves perforated, with the result that the sheets bound together by the binding tie can be bound, for example, into a file as a sheet carrier with the aid of the binding tie.

The object of the present invention is to provide a retaining system of the type mentioned in the introduction which is an alternative to said known retaining system.

The retaining system according to the invention, which achieves this object, is characterized in that the retaining and connecting device has a retaining bar which is connected to the at least one sheet, may

possibly be subdivided into separate sections and extends along the sheet edge.

Such a retaining bar advantageously allows sheets to be secured in a space-saving manner, the usable sheet surface area not being restricted by perforations or tie parts projecting into the sheet.

In a preferred embodiment of the invention, the edge surface of the at least one sheet, or of a stack formed from a plurality of sheets, is directed towards the retaining bar and preferably butts against the retaining bar. It goes without saying that in the case of a plurality of sheets, which may be adhesively bonded to one another in accordance with the known bookbinding method, this edge side forms the spine of the sheet stack. The usable surface area is advantageously not covered and restricted by the retaining and connecting device in this embodiment.

The thickness of the retaining bar here advantageously does not at least to any significant extent exceed the thickness of the at least one sheet, or sheet stack. In a space-saving manner, as seen in the plan view of the edge side or spine, the retaining bar then does not project laterally beyond the edge side or the spine. For the thickness of a cover with the sheet stack bound therein, it is thus advantageously only the thickness of the sheet stack, and not of the retaining and connecting device, which is critical.

In a further embodiment of the invention, a plurality of retaining bars are provided for respectively securing a single sheet, or a plurality of stack-forming sheets. The different sheet stacks may be assigned, for example, different contents such as calendars, address books, etc. The individual constituent parts of a volume may then advantageously

be easily exchanged and can be handled separately from the volume.

If, corresponding to a further configuration of the invention, the retaining bar, which is connected to the sheet carrier, is mounted rotatably about its longitudinal axis, for example on the sheet carrier, it is possible for the entire sheet stack assigned to such a rotatable retaining bar to be pivoted, this possibility for pivoting making it easier, for example, with a plurality of sheet stacks bound into a file, binder or some other type of cover, to handle the individual sheet stacks within the cover separately from one another and to leaf through the same.

The retaining bar can expediently be released from the carrier by overcoming a spring force.

In a further preferred embodiment, the retaining bar has at least one recess, serving for connection to the carrier and/or such a protrusion. In particular, a recess is provided at least on one end side, it being possible for a connecting element which can be used for connection to the sheets or the carrier, in particular a connecting clip, to engage in said recess. Such a connecting clip is expediently elastic, with the result that, in order to release the connection between the retaining bar and carrier, it [lacuna] be freed from the engagement in the recess on the end sides of the retaining bar by bending.

In a further configuration of the invention, the retaining bar may extend, possibly in a plurality of spaced-apart sections, only over part of the length of the sheet edge. In this case, the remainder of the sheet edge length can be filled by a supplementary segment connected to the carrier or a plurality of such supplementary segments, the supplementary segments

engaging in the discontinuous retaining bar in a hinge-like manner.

The retaining bar and supplementary segment may be formed as a tube, with the result that it is possible to use, as the hinge pivot pin, a pin which may possibly be continuous over the entire sheet-edge length and can be drawn out in order to release the retaining bar from the carrier. The hinge connection may alternatively be formed by pegs which project from the end sides of a supplementary segment or retaining bar or retaining-bar section and engage in a corresponding opening on the opposite end side of a retaining-bar section or supplementary segment. One of these pegs may advantageously be moved counter to the force of a spring arranged in the retaining bar or supplementary segment, with the result that, by virtue of the peg being pressed into the retaining-bar section or the supplementary segment, the retaining bar can be released from the hinge connection to the supplementary segment.

The sheet carrier may have carrier rails, extending parallel to the retaining bar, the supplementary segment or the supplementary segments projecting laterally therefrom.

While it is conceivable for the sheets to be connected to the retaining bar in a non-releasable manner, for example, by adhesive bonding, possibly via adhesive strips, a preferred embodiment may provide a releasable connection between the at least one sheet and the retaining bar. For this purpose, it is possible to use clips which can be fitted, for example, onto the retaining bar in the direction transverse to the longitudinal axis thereof and of which the legs project laterally beyond the retaining bar and grip the sheets and hold them together. In an embodiment in which in each case two sheets are formed by a large folded

sheet, it is possible to use, for the purpose of fastening the sheets on the retaining bar, a clamping wire strap which extends along the retaining bar and the abovementioned folding line and engages, by way of angled ends, in engagement openings which are provided on the end sides of the retaining bar.

The invention will now be explained in more detail with reference to exemplary embodiments and the attached drawings, which relate to these exemplary embodiments and in which:

Figure 1	shows a first exemplary embodiment for a retaining system according to the invention, having a retaining bar, which is intended for paper sheets at the ends of which there are formed engagement openings for connecting elements for connecting the retaining bar to a carrier,
Figure 2	shows a second exemplary embodiment for a retaining system according to the invention, in the case of which in each case two sheets are formed by a large folded sheet, the sheets being secured on a retaining bar by a wire strap engaging in the fold,
Figures 3 to 12	show different exemplary embodiments of a sheet-retaining system according to the invention, in the case of which a retaining bar can be connected to supplementary segments, which are fitted on a carrier rail, in a hinge-like manner,
Figures 13 and 14	show further exemplary embodiments for sheet-retaining systems according to the invention, which are similar to the systems from Figures 1 and 2, and

Figure 15 shows a sheet-retaining system according to the invention with an elastic carrier rail.

Figure 1 shows paper sheets 1, 2 and 3 which can be connected to form a sheet stack 7. 4 indicates a retaining bar which, in the exemplary embodiment shown, is of tubular form, and has retaining clips 5 and 6 engaging in its tube openings, said retaining clips connecting the retaining bar 4 to a carrier (not shown) e.g. to the spine of a cover. The sheets 1, 2, 3 may be adhesively bonded in accordance with the known bookbinding method to form the sheet stack 7. The retaining bar 4 extends along the sheet edges which are directed towards it, said retaining bar being located opposite the spine of the bound sheet stack or block and butting against the same.

The sheet stack may be connected to the retaining bar 4 by means of adhesive tape. For connection to the sheet stack, however, it is also possible to use clips which are indicated at 8, can be fitted onto the retaining bar 4 in the direction transverse to the longitudinal axis thereof and of which the legs grip the edge of the sheet stack. If the clips have a sufficiently large clamping force, prior binding of the sheets may possibly be dispensed with. It goes without saying that it would be possible for the entire retaining bar to have such a clip profile throughout its cross section.

Finally, it would also be possible for the retaining bar to be adhesively bonded to the sheets over the entire length of the stack spine. For this purpose, the retaining-bar surface which is directed towards the stack spine could be suitably shaped and could possibly be planar.

It is possible for a plurality of retaining bars 4, which are each connected to a sheet stack, to be

accommodated, for example, within a cover, for example one sheet stack containing an address book and another sheet stack containing a calendar.

At least one of the retaining clips 5 and 6 is expediently elastic, with the result that it can be released from engagement in the retaining bar 4 by bending. It is then advantageously possible for optionally the calendar or the address book to be removed individually from the cover.

The sheet stack removed from the cover is advantageously stabilized by the retaining bar 4. It can barely be flexed in the direction transverse to the retaining bar.

In particular if the thickness of the retaining bar 4 does not exceed the thickness of the sheet stack, the retaining bar 4 requires only a small amount of installation space. Above all, the thickness of a sheet-stack-containing cover is then determined possibly just by the thickness of the sheet stacks. At clip locations, the retaining bar 4 could be provided with corresponding annular recesses, with the result that, apart from projecting in the direction of the sheets, the clips do not project radially beyond the retaining bar.

In the following figures, parts which are the same or have the same effect, are given the same designation and this, corresponding to the order of the figures, has the letters a, b, c, etc. appended to it in alphabetical order.

In Figure 2, a sheet stack 7a is formed by large folded sheets 9 and 10 with folds 11. A tubular retaining bar 4a extends over the entire length of the folds 11. The sheet stack 7a is retained on the retaining bar 4a by a wire strap which engages against a [sic] in the fold of

the outermost large sheet and has angled ends engaging in the tube openings of the retaining bar 4a. Furthermore, it would also be possible for connecting elements which correspond to the abovedescribed retaining clips 5 and 6 and are intended for connection to a sheet carrier, in particular a cover, to engage in the tube opening.

In the exemplary embodiment from Figure 3, a retaining bar 4b extends only over part of the length of the sheet edges, or of the sheet stack spine, directed towards it. Projecting from the carrier rail 13 are supplementary segments 14 and 15, which can be arranged coaxially with the tubular retaining bar 4b. In the relevant exemplary embodiment the supplementary segments correspond to the retaining bar 4 in terms of cross section.

Extending axially from the supplementary segment 15 is a peg 16 for engagement in that tube opening of the retaining bar 4 which is directed towards it. The peg 16 is connected rigidly to the supplementary segment 15. A peg 17, which projects axially from the supplementary segment 14 and is provided for engagement in the opposite tube opening, can be moved in a guide in the supplementary segment 14 counter to the force of a spring 18 arranged therein. The retaining bar and the supplementary segments with the pegs produce a hinge connection between the block 7b and the carrier rail 13.

The distance between the supplementary segments 14 and 15 is greater than the length of the retaining bar 4b, with a displacement clearance being left. The peg 17 butts against a stop (not shown) in the retaining bar 4b. Upon displacement in the axial direction, with the spring 18 being compressed in the process, the peg 16 can be freed from engagement in the retaining bar and the retaining bar, with the sheet stack 7b fastened

thereon, can be released from its securing means. For release purposes, it is necessary for the retaining bar 4b to be moved upwards. This means, advantageously, that the weight of the stack 7b cannot cause the retaining bar to be separated accidentally from the carrier.

The exemplary embodiment from Figure 4 differs from the exemplary embodiment from Figure 3 in that the pegs 16c and 17c, rather than being fitted on supplementary segments 14c and 15c, are fitted, together with a spring 18c, on a retaining bar 4c, and the supplementary segments have corresponding engagement openings for the pegs.

In the exemplary embodiment from Figure 5, a retaining bar 4d is discontinuous, and it is possible for the interspace produced by the discontinuity to be filled in a coaxial arrangement with the retaining bar 4d by a supplementary segment 19 connected to a carrier rail 13d.

With the production of a hinge connection, a peg 16d engages in a corresponding opening on the end side of the supplementary segment 19, which may be formed, for example, as a tube. A peg 20 engages in such an opening on the opposite end side, and is guided through a tubular section of the retaining bar 4d. The peg 20, which is provided with a head, has a thickening 21 by means of which the fitted-in peg is clamped and secured against dropping out. In order to remove the peg for the purpose of removing the retaining bar from its securing means, however, the clamping can easily be released.

In the exemplary embodiment from Figure 6, use is made, instead of a peg 20 which is guided through a section of the retaining bar, of a peg 4e [sic] which can be displaced in a retaining bar 4e counter to a spring 18e and comes into abutment against a stop (not shown)

within a supplementary segment 19e. Release of the retaining bar 4e from its securing means can also be achieved here, in the manner described with reference to Figure 3, by displacement of the divided retaining bar 4c [sic], with the spring 18c [sic] being compressed in the process.

In the exemplary embodiment from Figure 7, a peg 17f which can be moved counter to the force of a spring 18f is fitted on a supplementary segment 19f in addition to a peg which is connected rigidly to the supplementary segment 19f. As in the case of the previous exemplary embodiments, for the purpose of releasing a discontinuous retaining bar 4f from its securing means, the spring 18f is compressed via the peg 17f, which butts against a stop in the retaining bar 4f, until the peg which is located opposite the peg 17f is freed from its engagement in the retaining bar 4f.

In the exemplary embodiment from Figure 8, two movable pegs 17g and 17g' are fitted on a supplementary segment 19g, and each of these pegs butts against a stop (not shown) in the discontinuous retaining bar 4g and can be displaced counter to the force of a spring 18g, 18g' respectively. For the purpose of releasing a retaining bar 4g from its securing means, it is possible, in this exemplary embodiment, for the retaining bar 4g to be displaced optionally in opposite directions.

In the exemplary embodiment from Figure 9, a retaining bar 4h and supplementary segments 14h and 15h are formed continuously as a tube, with the result that a peg 20h extending over the entire sheet length can be used in order to produce a hinge connection.

In the exemplary embodiment from Figure 10, two retaining sections 4i and a supplementary segment 19i likewise form a continuous tube, and use is made of a peg 20i which is the same as the peg 20h.

In the exemplary embodiment from Figure 11, a retaining bar 4j is subdivided into a plurality of spaced-apart sections. Supplementary segments 19j are provided to correspond to the interspaces present. The retaining-bar sections as well as the supplementary segments are of tubular form, with the result that a continuous peg 20j can be fitted through the mutually aligned bar sections and supplementary segments, a hinge connection being formed in the process.

In the exemplary embodiment from Figure 12, a tension spring 23 is arranged in a tubular retaining bar 4k, the ends of said tension spring being connected to a hook element 24, 25. The hook elements 24 and 25 can act on a possible hook-in means, e.g. an eyelet, formed on a sheet carrier 22, e.g. a cover.

In the exemplary embodiment from Figure 13, a sheet carrier 22l has a tubular carrier rail in which a tension spring 23l, corresponding to the tension spring 23, is arranged by way of hook elements 24l and 25l. The hook elements 24l and 25l can be fitted into the tube openings of a correspondingly formed retaining bar 4l. It goes without saying that, rather than having to be formed continuously as a tube, the retaining bar 4l merely requires suitable recesses at its ends, into which the hook elements 24l and 25l can be fitted.

In the exemplary embodiment from Figure 14, a carrier rail 13m, preferably in the form of a sheet-metal part, has angled portions 26 and 27 each with an eyelet. A compression spring 28 is arranged in a tubular retaining bar 4m. The compression spring 28 has, at both ends, an end segment which is guided in the retaining bar 4m and has a peg 30 which engages in the eyelet of the respective angled portion 26, 27.

The exemplary embodiment from Figure 15 provides a sheet-metal retaining bar 4n with eyelet-containing

angled ends 26n and 27n. An elastic carrier rail 13n engages in the eyelets. The carrier rail 13n can be released from engagement in the eyelets by elastic bending.

In the exemplary embodiments in which a carrier rail 13 is used, said carrier rail is sewn, adhesively bonded or fastened by stapling elements or in some other way to the rest of the carrier, e.g. a cover.

In summary, the following advantages of the novel retaining system may be cited: it allows files and the like to be of compact form, by known annular retaining elements on files being dispensed with. This compact form is beneficial to the appearance. The solution allows flexibility and a wide range of variants. Calendar units may be exchangeable, monthly, quarterly, or half-yearly. Possible supplements may be provided by a wide range of supplementary sheets which are printed in different ways (blank, square ruled, ruled, info blocks, etc.). The space-saving form ultimately increases the utilization of the paper. Products with the sheet-securing means according to the invention have a stable appearance because the paper blocks are secured in a play-free manner in the volumes. It is possible, for example, for 2, 3, 4 or even more retaining bars, each for one block, to be accommodated in a volume.

Patent claims

1. Retaining system for securing sheets (1, 2, 3) on a carrier (13, 22), in particular for securing paper sheets (1, 2, 3) in a cover, having a retaining and connecting device for securing at least one sheet (1, 2, 3) at the sheet edge and for connecting the at least one sheet to the carrier (13, 22) indirectly via the retaining and connecting device, characterized in that the retaining and connecting device has a retaining bar (4) which is connected to the at least one sheet (1, 2, 3), may possibly be subdivided into separate sections and extends along the sheet edge.

2. Sheet-retaining system according to Claim 1, characterized in that the edge surface of the at least one sheet, or of a sheet stack (7) formed from a plurality of sheets (1, 2, 3), is directed towards the retaining bar (4) and preferably butts against the retaining bar (4).

3. Sheet-retaining system according to Claim 1 or 2, characterized in that the thickness of the retaining bar (4) is less than or approximately equal to the thickness of the at least one sheet, or of a stack of a plurality of sheets (1, 2, 3).

4. Sheet-retaining system according to one of Claims 1 to 3, characterized in that a plurality of retaining bars (4) for respectively securing at least one sheet, or a stack of a plurality of sheets, can be fitted on the carrier.

5. Sheet-retaining system according to one of Claims 1 to 4, characterized in that the retaining bar (4b-4j), which is connected to the carrier, is mounted about its longitudinal axis.

6. Sheet-retaining system according to one of Claims 1 to 5, characterized in that the retaining bar can be released from the carrier by overcoming a spring force.

7. Sheet-retaining system according to one of Claims 1 to 6, characterized in that the retaining bar (4) has at least one recess, serving for connection to the carrier, and/or such a protrusion, and a recess for the engagement of a connecting element (5, 6; 20; 24, 25) is provided preferably on at least one end side.

8. Sheet-retaining system according to one of Claims 1 to 7, characterized in that the retaining bar extends, possibly in a plurality of spaced-apart sections, only over part of the length of the sheet edge.

9. Sheet-retaining system according to Claim 8, characterized in that a free section of the edge length or a plurality of free sections of the edge length is/are filled by a supplementary segment (14, 15; 19) or a plurality of supplementary segments (14, 15; 19), the supplementary segments engaging in the retaining bar (4b-4j) in a hinge-like manner.

10. Sheet-retaining system according to one of Claims 1 to 9, characterized in that the sheet carrier has a carrier rail (13) extending parallel to the retaining bar (4).

11. Sheet-retaining system according to Claim 10, characterized in that the supplementary segment (14, 15; 1g [sic]) or the supplementary segments is/are connected to the carrier rail (13).

12. Sheet-retaining system according to one of Claims 1 to 11, characterized in that the at least one sheet is connected releasably to the retaining bar (4, 4a).

13. Retaining and connecting device for securing at least one sheet (1, 2, 3) at the sheet edge and for connecting the at least one sheet to a carrier (13, 22), in particular a cover, indirectly, characterized by a retaining bar (4) which is connected, or can be connected, to the sheet (1, 2, 3), may possibly be subdivided into separate sections and extends along the sheet edge.

14. Retaining and connecting device according to Claim 13 characterized in that the edge surface of the sheet (1, 2, 3), or of a sheet stack formed from a plurality of sheets (1, 2, 3), is directed towards the retaining bar (4) and preferably butts against the retaining bar.