May 3, 1938. G. G. MEVI 2,116,078

LOOSE LEAF BINDER

Filed May 11, 1935 2 Sheets-Sheet 1

Fig. 1.

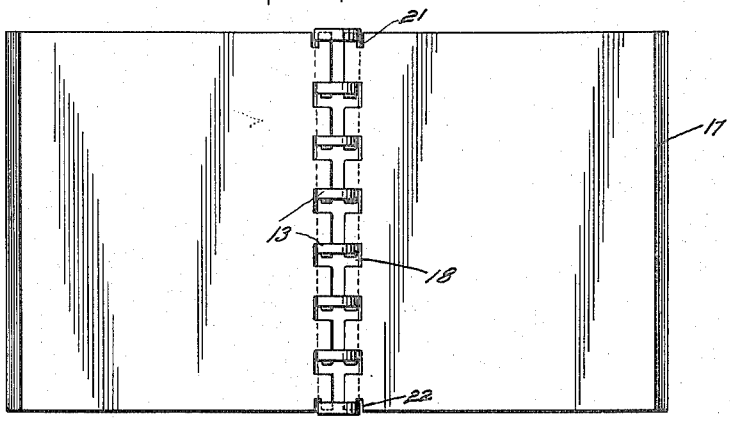


Fig. 2.

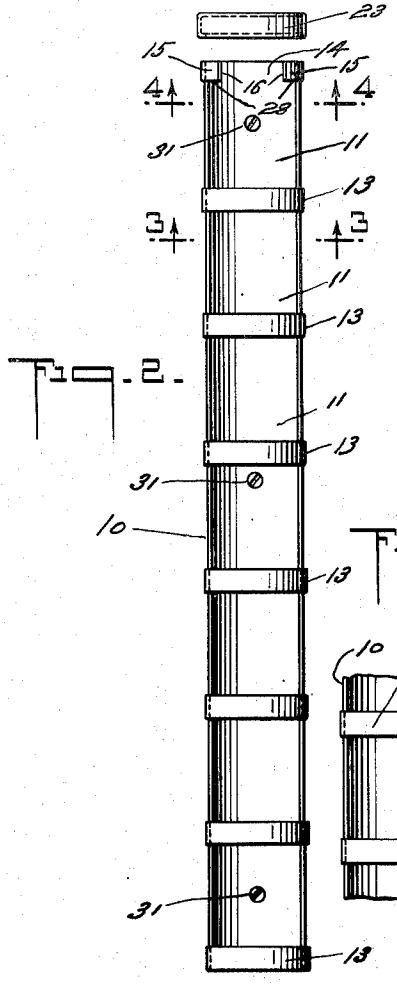


Fig. 7.

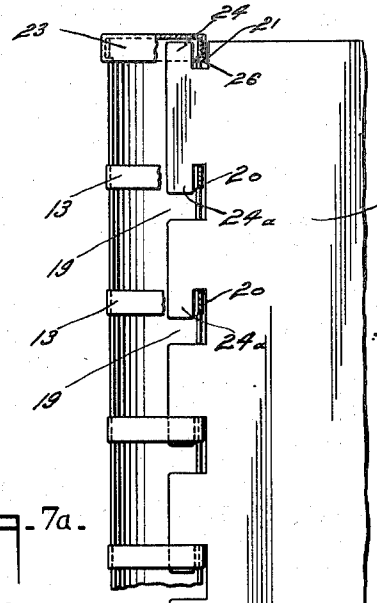
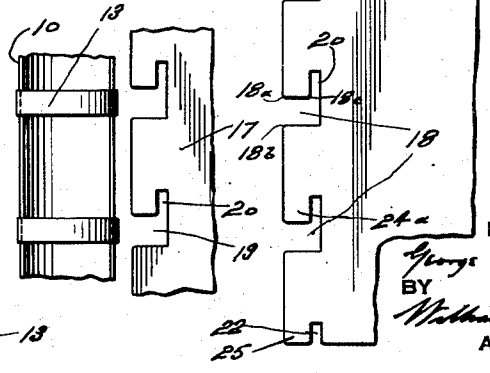


Fig. 7a.



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LOOSE LEAF BINDER

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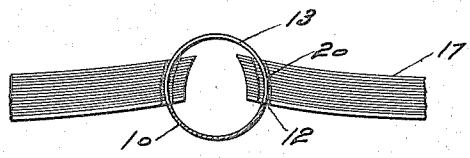


Fig. 3.

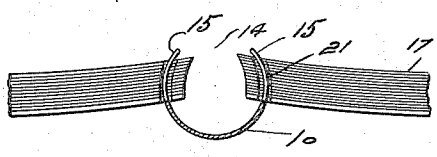


Fig. 4.

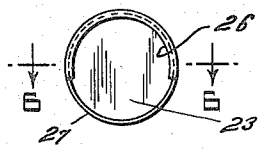


Fig. 5.

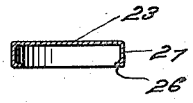


Fig. 6.

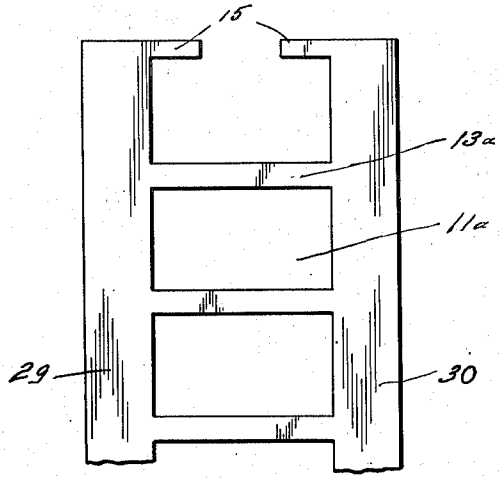


Fig. 8.

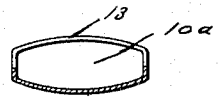


Fig. 9.

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LOOSE LEAF BINDER

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Application May 11, 1935, Serial No. 20,969

5 Claims. (Cl. 129—1)

The present invention relates to loose leaf binding devices, and to an assembly comprising such a device and the leaves therefor. More particularly, the invention relates to binders and leaves therefor of such character that, as a unit and in one operation, all or any desired part of the leaf content, or any number of sheets to the capacity of the binder, may be inserted therein and removed therefrom.

The invention relates, furthermore, to binders of tube style, having an open-work face or zone lengthwise thereof, formed by spaced cut-outs, which are demarked by transverse sheet-holding ribs constituting unitary, non-manipulable elements of the tube; to the elimination of all rings and other leaf anchors requiring opening and closing manipulations for reception and removal of leaf content. Heretofore, however, such tube binders have not provided, in any proper sense, for bulk placement and removal of leaf content, and so their merits of simplicity and durability have been largely lost.

An object of the invention is a binder of the unitary and fixed rib tubular class, above mentioned, but which is well and truly adapted for bulk placement and removal of leaf content, in an operation requiring but a moment, and in which the leaves are subjected to no bending, wear or injury.

A feature of the invention is the adaptation of such tubular binder for use with leaves having marginal holding tabs or recesses of the bayonet-type, or hook or equivalent shape, such that the registered and corresponding tabs of accumulated leaves may be passed in bulk or as a unit into their opposed spaces between the ribs, and then be given a longitudinal shift, still as a unit, to interlock the tabs behind the ribs; the tube being so cut or shaped as to allow such bulk insert and shift, and being provided with simple means for reliably locking the leaf content against any return, tab releasing, shift or displacement of the leaf content, until desired for removal or addition of leaf content.

Other objects and features of the invention will more fully appear on reference to the accompanying drawings, in which:

Fig. 1 is a view of leaves and cover pieces assembled and locked in the binder.

Fig. 2 is a top view of the binder, the lock-cap being shown above and separated from the tubular member thereof.

Fig. 3 is a cross section on the line 3—3 of Fig. 2.

Fig. 4 is a cross section on the line 4—4 of Fig. 2, showing the clearance or gap in the upper end rib for insertion and removal of covers and sheets.

Fig. 5 is a view looking into the lock-cap, and showing a bead on part of the periphery thereof for attachment to the end rib of the tube.

Fig. 6 is a cross section through the cap on the line 6—6 of Fig. 5.

Fig. 7 shows the binder, broken away except for the upper end thereof, and with a sheet or cover piece in locked position thereon.

Fig. 7a is a fragmentary view showing the relative positions of binder and sheets, with the binder ribs in registry with the sheet recesses, preliminary to insertion of the sheets into the binder.

Fig. 8 shows an open-work blank of sheet material which may be rolled laterally to form a tube such as shown in Fig. 1.

Fig. 9 is a view in cross section of a binder tube of another shape.

Referring first to Figs. 2, 3, and 4, there is shown an open ended tube 10 of circular cross section, which at predetermined areas 11 thereabout has been cut through to a level indicated at 12 in Fig. 3, thereby being made to present ribs 13 unitary with the body of the tube and which bridge the front of the tube from side to side thereof.

What would otherwise have been a rib at the upper end of the tube, (by virtue of the uppermost of the cuts 11), has, however, itself been centrally cut at 14, so as to present two flexible stubs 15, the opposed ends 16 of which are spaced commensurately with the desired maximum capacity of assembled sheets and covers receivable by the binder. As will appear upon reference to Fig. 7, such assembly of sheets and covers is as a unit placeable into and removable from the binder.

In Fig. 7 there is shown a sheet 17, which may be either a book page or a cover piece of metal or other material, or which may be considered as a front view of an assembly of such elements in registration with each other. Along one edge of sheet 17, at intervals corresponding to the pitch or spacing of the ribs 13 of the binder tube, are recesses 18 of bayonet-type formation. The inwardly directed mouths 19 of these recesses are of width to admit the ribs 13; and the upwardly directed offsets 20 of the recesses are of width with respect to the thickness of ribs 13, such that the ribs having been passed through the mouths 19 of the recesses, may be shifted into the offsets 20 thereof. Such shift represents a slight downward movement, or drop, of the sheets after the

mouths 19 of the recesses have received the ribs 13. The bayonet-type slots thus form leaf holding tabs 24a.

At the upper and lower ends of the sheets 17 there are no bayonet-type recesses corresponding in position to the rib stubs 15 at the top, or to the lowermost rib 13. Instead, there is on the top margin of the sheet, and in alignment with the recess offsets 20, a downwardly directed slot 21; and in the bottom margin of the sheet, also in alignment with offsets 20, is an upwardly directed slot 22. Slot 21 is of length and width to accommodate a lock-cap 23, presently to be described; and slot 22 is of length and width to accommodate the lowermost rib 13. The three corners 18a, 18b and 18c of the recesses are preferably rounded as shown in Fig. 7, so that a camming or self-centering of the sheets may take place in the insertion thereof, and so that the sheets may not be caught or injured by the binder ribs.

When the mouths 19 of the recesses in the sheets are in registration with the ribs 13, as shown in Fig. 7a, for placement of the assembly into the binder, the edges of the sheets just below the tabs 24 formed by the slots 21 at the upper corners of the sheets will register with the rib stubs 15 at the top of the binder, and therefore except for the space 14 between the stubs, the sheet assembly could not be passed into the binder. To the width of the space 14, however, the sheet assembly will pass therethrough as the ribs 13 pass into the mouths 19 of the bayonet-type recesses of the sheets. When, in such inserting movement, the sheet assembly is arrested by contact of the binder ribs with the inner walls of the sheet recesses, the assembly may be dropped down as a unit, to cause the ribs 13 to enter the recess offsets 20.

The tabs 25 at the lower corners of the sheets, formed by the slots 22, will not interfere with passage of the ribs into the bayonet-type slots; because, when the ribs 13 register with the openings 19, the tabs 25 are above and clear of the lowermost rib 13. On the subsequent drop of the sheet assembly to engage the ribs in the recess offsets 20, the lowermost rib 13 enters the slots 22 in the bottom edges of the sheets, and so holds the sheets against rumpling at their lower extremities.

When the assembly has been given the aforementioned vertical shift downward in the binder, it is in home position in the latter, and only requires to be locked against displacement from such home position. So to lock the assembly, there is provided the abovementioned lock-cap 23, shown in Figs. 2, 5, 6 and 7. It is preferably of a diameter snugly to fit over the tube end, so that it may be held frictionally in place thereon; and such a fit is the more readily obtained because of the yielding resiliency of the rib stubs 15 over which the cap is passed. In the drawings, however, there is shown a positive lock for the cap; and the lock consists of an inturned bead or crimp 26 on so much of the flange 27 as lies above the level 12 (see Fig. 4), of the cut 11 demarking the edges 28 of the rib stubs 15.

As the cap is slipped onto the tube, over the stubs 15, the latter may yield to the pressure of the bead 26 thereon; and, as the bead clears the stub edges 28, the stubs will be free to snap up behind the bead and so lock the cap in place; or the spring action may be in the metal of the cap. When the cap is applied, the sheets are in Fig. 7 position, and so the flange 27 of the cap enters the slots 21 in the upper margins of the sheets; the cap in its home position completing the bridge partially formed by the stubs 15, and so serving, like one of the ribs 13, to anchor the sheets to the binder at the upper edges. The upper corners of the sheets can therefore no longer be moved in the gap 16 between the rib stubs 15, and the end of the side flange 27 of the cap serves as an abutment to prevent such upward shift of the sheets as would be necessary for clearing the ribs of the recess offsets 20 for removal of the sheets. The flange 27 in anchoring the sheet ends to the tube assures effective abutment of cap and sheets.

It is obvious that a spider or other lock device may be substituted for the cap 23; and where, for appearances, or to close the lower end of the tube, a cap at the lower end may be desired, and the same may be set and locked upon the lowermost rib 13. For appearance, the cap 23 is shown as of the same width as the ribs 13; and hence the rib stubs 15 are shown in Fig. 2 as slightly narrower than the ribs 13 so as to allow for the additional cap width of the bead or crimp 26.

The binder tube may be of any desired cross sectional shape, as for instance, the oval cross section 10a shown in Fig. 9; and it may be of metal, "vinylite", or of any of a great variety of substances. It may be rolled, cast, or tooled out, and the cuts or apertures 11 may be made therein after formation of the tube, or at any earlier stage, as expediency may dictate. If the tube be made of "vinylite" or other sheet material, it may be formed from a blank such as shown in Fig. 8, in which the cuts 11a and ribs 13a, corresponding to cuts 11 and ribs 13 of Fig. 2, form an open-work. Such an open-work when rolled laterally to cause its side margins 29 and 30 to abut or overlap will present a binder tube of substantially Fig. 2 style, or of any desired cross sectional shape.

The flexibility and elasticity of the sheet material of the tube 10 and its cap 23 are such, that to remove the cap, it is simply necessary to seize the cap and pull it off the tube by application of force. On such a pull, there will be sufficient relative yield of the crimp 26 and rib stubs 15 to allow passage of the cap over the end of the tube. It will be understood, however, that the interlockment of crimp 26 with rib stubs 15, in Fig. 7 position of the parts, is sufficient to hold the parts in normal position against any accidental displacement.

The binder has been described above as having sheet covers of metal or other material, recessed like the page sheets. It may, however, with or without cover sheets, be set as a unit, as by screws 31, (see Fig. 2), to the back strip of an ordinary book-cover.

I claim:

1. A loose leaf binder, comprising a tube having a zone of selectively spaced areas opening to the interior of the tube for receiving the leaf margins, ribs which demark said open areas and permanently bridge the interior of the tube therebetween for interlockment with tabs on the leaf margins, and means placeable on the tube in a position in which it holds the leaves against disengagement of said tabs and ribs, and movable from such a position to free the leaves for a shift thereof which will unlock the tabs from the ribs for removal of the leaves.

2. A loose leaf binder, comprising a tube having a zone of selectively spaced areas opening to

the interior of the tube for receiving the leaf margins, ribs which demark said open areas and permanently bridge the interior of the tube therebetween for interlockment with tabs on the leaf margins, a cap slidable over one end of the tube to serve as an abutment whereby the leaves may be held against an otherwise permissible longitudinal shift on the tube which would unlock the tabs thereof from the ribs of the tube, and means for releasably holding the cap in effective position.

3. A loose leaf binder, comprising a tube having a zone of selectively spaced areas opening to the interior of the tube for receiving the leaf margins, ribs which demark said open areas and permanently bridge the interior of the tube therebetween for interlockment with tabs on the leaf margins, a cap slidable over one end of the tube to serve as an abutment whereby the leaves may be held against an otherwise permissible longitudinal shift on the tube which would unlock the tabs thereof from the ribs of the tube, and a spring device for releasably holding the cap in effective position.

4. A loose leaf binder, comprising a tube having a zone of selectively spaced areas opening to the interior of the tube for receiving the leaf margins, ribs which demark said open areas and permanently bridge the interior of the tube therebetween for interlockment with tabs on the leaf margins, and a cap slidable over one end of the tube and having a flange adapted to enter a slot in an end margin of each leaf, whereby to hold the corresponding leaf-ends to the tube, and to serve as an abutment for holding the leaves against an otherwise permissible longitudinal shift on the tube which would unlock the tabs thereof from the ribs of the tube, and means for releasably holding the cap in effective position.

5. A loose leaf binder, comprising a tube having a zone of selectively spaced areas opening to the interior of the tube for receiving the leaf margins, ribs which demark said open areas and permanently bridge the interior of the tube therebetween for interlockment with tabs on the leaf margins, except that the rib at one end of the tube has a gap therein as wide as the elected tube capacity thickness of leaf assembly and forming stubs, and means removably attachable to the stubs of said end rib, in a path of a leaf-unlocking, longitudinal shift of the leaf assembly, for preventing such shift after the leaf tabs have been interlocked with the ribs which bridge the interior of the tube.

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