March 17, 1925. 1,530,155

F. A. COOPER

APPLIANCE FOR BINDING LOOSE LEAF SHEETS

Filed Nov. 26, 1923

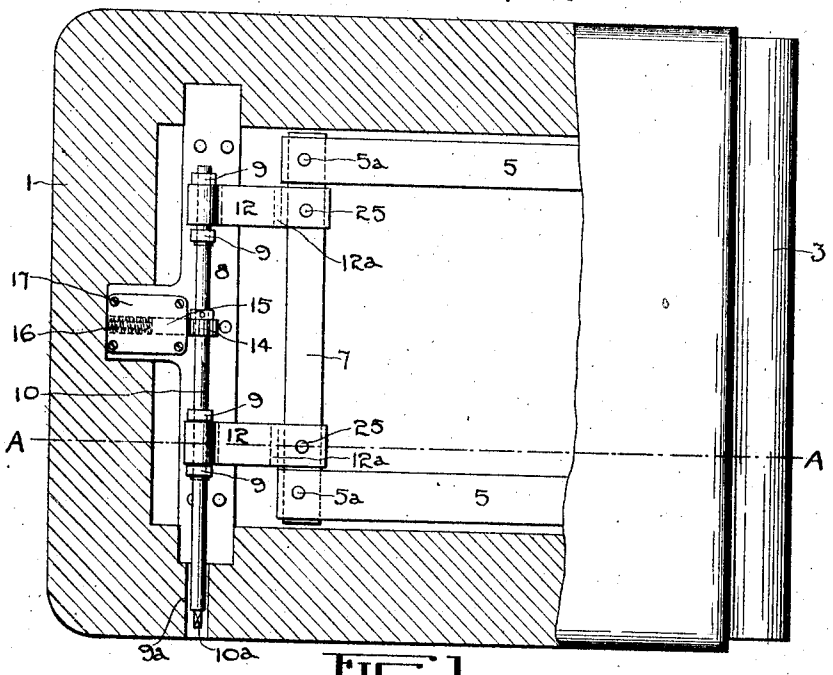


FIG. 1.

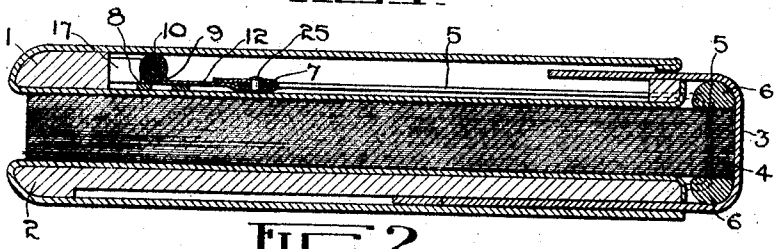


FIG. 2.

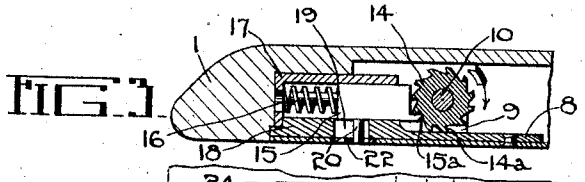


FIG. 3.

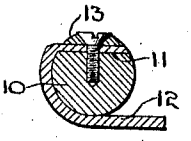


FIG. 5.

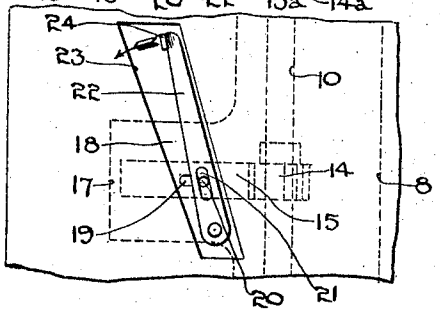


FIG. 4.

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UNITED STATES PATENT OFFICE.

FRANK ALBERT COOPER, OF AUCKLAND, NEW ZEALAND.

APPLIANCE FOR BINDING LOOSE-LEAF SHEETS.

Application filed November 26, 1923. Serial No. 677,117.

To all whom it may concern:

Be it known that I, FRANK ALBERT COOPER, of Lyndale, Mt. Albert Road, Auckland, in the Provincial District of Auckland, Dominion of New Zealand, a British subject, have invented an Improved Appliance for Binding Loose-Leaf Sheets, of which the following is a specification.

This invention relates to means employed for securing loose leaves in book form, in such a manner that any one or more of said leaves may be removed as occasion requires.

The object of the invention is to provide an improved form of adjustable loose leaf securing means of comparatively simple construction and capable of being operated to securely hold loose leaves in a binder and to enable any number of said leaves to be removed therefrom, as required, without employing a screw for applying pressure to and releasing the clamping bars as is done at present.

According to the invention the binder comprises a cover provided with the usual leaf clamping bars and thongs on which the leaves are fitted, said thongs being secured at one end to one side or member of the cover, and at the other end being adapted to be drawn taut or tightened to move the sides or members of the cover towards each other by tapes attached to and capable of being wound on a rod revolvably mounted in the other side or member of the cover, in order that the clamping bars will grip the leaves.

A key, handle or the like is provided for turning said rod, which has fixed thereon a toothed wheel, the latter being engaged by a pawl which prevents the toothed wheel and rod from turning under the strain of the tightened thongs and tapes (except when required) thereby causing the clamping bars to maintain a firm grip of the leaves placed between the cover, sides or members.

A lever is provided on the cover side or member carrying the revolvable rod for the purpose of enabling said pawl to be disengaged from the toothed wheel and so allow the thongs and tapes to be slackened off and leaves to be removed from the binder.

In the accompanying drawing in conjunction with which the invention will be more particularly described—

Figure 1 is a plan view of a binder fitted with the improved leaf securing means, closed, and having portion of the covering of the upper side or member of the binder removed.

Figure 2 is a vertical section of the binder on the line A—A, Figure 1.

Figure 3 is an enlarged part vertical section showing the pawl and the toothed wheel,

Figure 4 is an inverted plan view of the parts shown in Figure 3.

Figure 5 is a cross sectional view of the revolvable rod, showing the method of securing the tapes thereto.

In the drawings 1 and 2 represent the two sides or members which are hinged together by flexible material 3 and form the binder.

The back edges of the leaves 4 are shaped to fit on the thongs 5 in the usual way, the latter being secured at one end to the back portion of the cover side or member 2 inside same and passing through the usual half round leaf clamping bars 6, into the cover side or member 1 where their other ends are secured to the cross bar 7.

A cross plate 8 secured in the cover, side or member 1, has formed thereon bearings 9, in which a rod 10 is rotatable, the latter having an end 10^a extending into a hole 9^a opening through an edge of said cover side or member 1, squared or otherwise shaped to take a suitable key or handle whereby said rod 10 may be rotated in its bearings 9.

Between the bearings 9 of each pair thereof the rod 10 is flattened as shown in Figure 5 at 11, and on said flattened portion one end of a tape 12 is secured by a clamping strip 13 screwed to said rod 10.

As many tapes 12 as are required, preferably two, are attached at one end to the rod 10 in the manner shown, said tapes 12 being secured at their other ends to the cross bar 7 to which the thongs 5 are attached.

With the binder opened out flat, and by placing a key or handle on the end 10^a of the rod 10 the latter can be rotated to wind in the tapes 12, and draw the two cover sides or members 1 and 2 together, thereby forcing the clamping bars 6 together to grip the back edges of the leaves 4 previously placed in the binder and fitted on the thongs 5.

In order to maintain the tension on the tapes 12 and thongs 5, and to ensure the leaves 4 being kept firmly gripped by the clamping bars 6, a toothed wheel 14 is fixed on the rod 10, said wheel 14 having its teeth undercut as at 14^a and being engaged by a

sliding pawl 15 kept pressed against said wheel 14 by a spring 16. The end of the sliding pawl 15, which engages the wheel 14, is bevelled as at 15ª (Figure 3) in order to permit said wheel to be rotated in the direction indicated by the arrow in Figure 3 and the rod 10 to wind in the tapes 12, while preventing turning movement of said rod 10 in the reverse direction.

The pawl 15 and spring 16 are housed in a casing 17 fitted into the cover side or member 1, the bottom plate 18 of said casing containing a slot 19 through which a pin 20 from the pawl 15 projects and is entered in a slot 21 in a lever 22 pivoted to the plate 18 of the casing 16 and working in an opening 23 in the inner side of the cover member 1. At its outer end the lever 22 is provided with a projection 24 capable of being engaged by a thumb or finger of the person operating the device.

By moving the lever 22 in the direction indicated by the arrow in Figure 4, the pawl 15 can be slid from engagement with the wheel 14 and held in its disengaged position against the action of the spring 16, in order to allow the tapes 12 to be unwound from the rod 10, and the thongs 5 slackened off sufficiently to permit leaves 4 to be removed from between the clamping bars 6.

The tapes 12 are passed completely around the bar 7 and besides being secured thereto by fastenings such as rivets 25, have the doubled portions sewn together as at 12ª.

The thongs 5 are also passed around the bar 7, and are secured thereto by rivets 5ª or the like through the doubled portions, and if desired said doubled portions can be extended and sewn together in the same manner as the tapes 12.

In some cases the bar 7 may be dispensed with and the tapes 12 attached direct to the thongs 5, but the construction described and illustrated is preferred on account of its strength, besides which the bar 7 serves as a spreader and keeps the tapes 12 and thongs 5 in position when slackened off.

What I do claim and desire to obtain by Letters Patent of the United States of America is:—

1. A loose leaf binder comprising, flexibly connected cover members, thongs, on which the leaves to be bound are detachably fittable, secured at one end to the back portion of one cover member and passing through leaf clamping bars into the other cover member, and means for tightening the thongs, including, a rotatable axle operatively connected with the thongs, a ratchel wheel and pawl normally restraining the axle from rotation in one direction, and a pivoted lever for disengaging the pawl from the ratchet wheel.

2. A loose leaf binder, comprising flexibly connected cover members, thongs, on which the leaves to be bound are detachably fittable, secured at one end to the back portion of one cover member, a rotatable axle mounted in the other cover member and operably connected with the thongs for tightening the same, a ratchet wheel on the axle, a pawl normally engaging the ratchet wheel, and a pivoted slotted lever for disengaging the pawl from the ratchet wheel.

3. A loose leaf binder, comprising flexibly connected cover members, thongs, on which the leaves to be bound are detachably fittable. secured to one end to the back portion of one cover member, a rotatable axle mounted in the other cover member and operably connected with the thongs for tightening the same, a ratchet wheel on the axle, a pawl normally engaging the ratchet wheel, and a pivoted slotted lever for disengaging the pawl from the ratchet wheel, the pawl being reciprocable in a housing, and a spring in the same housing urging the pawl toward the ratchet wheel.

4. A loose leaf binder comprising, flexibly connected cover members, thongs, on which the leaves to be bound are detachably fittable, secured at one end to the back portion of one cover member and passing through leaf clamping bars into the other cover member, and means for tightening the thongs, including, a rotatable axle operatively connected with the thongs, a ratchet wheel and pawl normally restraining the axle from rotation in one direction, and a pivoted lever for disengaging the pawl from the ratchet wheel, a spring for the pawl, a housing containing both the pawl and spring, a slot in the pawl casing, a pin on the pawl and projecting through the casing, and a slot in the lever receiving the pin on the pawl.

In testimony whereof I have signed my name to this specification in the presence of two witnesses.

FRANK ALBERT COOPER.

Witnesses:

WILLIAM PINCHES,

MARY TILKINGTON.