Nov. 8, 1927. **1,648,105**

T. V. BELL

LOOSE LEAF BINDER

Filed April 26 1926

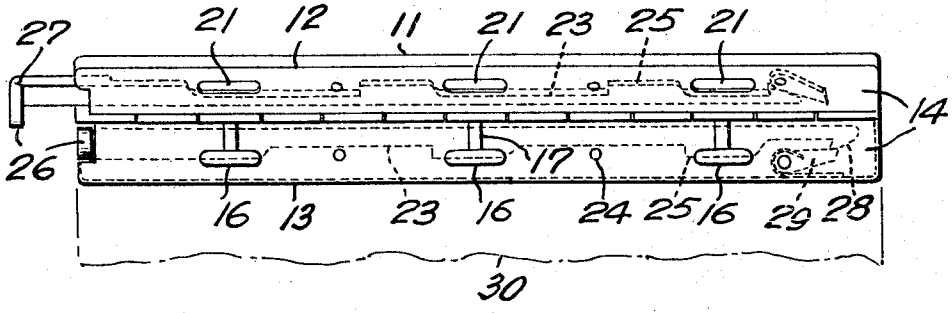


FIG. 1

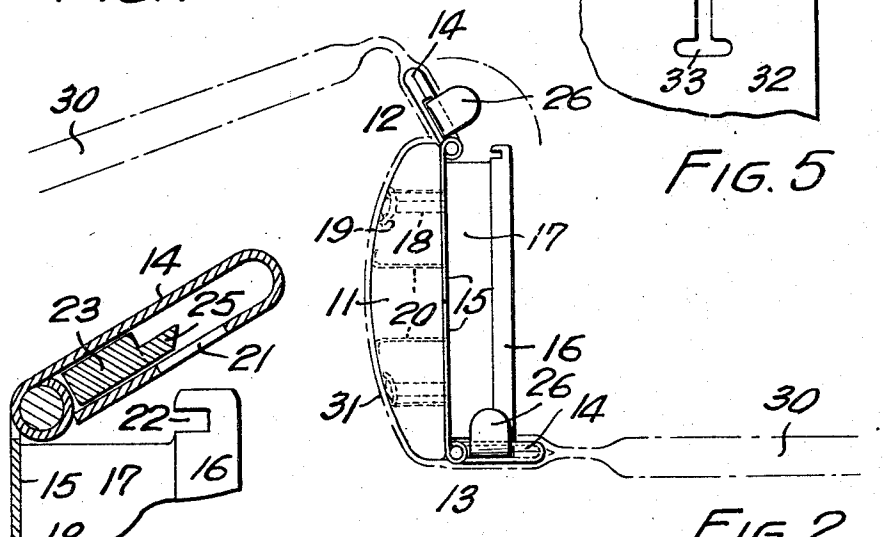


FIG. 2

FIG. 5

FIG. 4

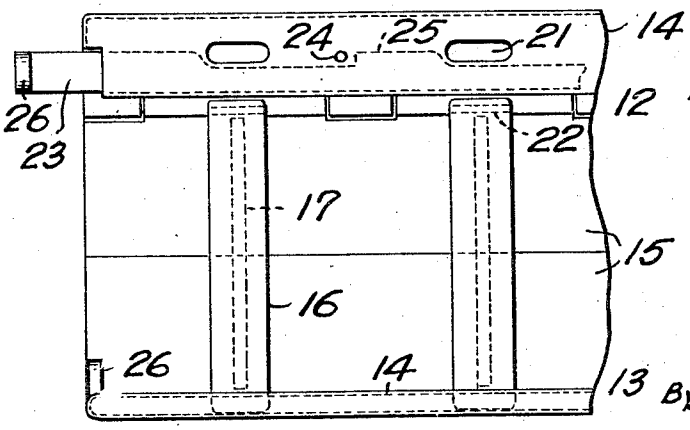


FIG. 3

Inventor
Thomas V. Bell
By
Attorney

Patented Nov. 8, 1927. 1,648,105

UNITED STATES PATENT OFFICE.

THOMAS V. BELL, OF MONTREAL, QUEBEC, CANADA.

LOOSE-LEAF BINDER.

Application filed April 26, 1926. Serial No. 104,702.

This invention relates broadly to loose leaf binders and more particularly to that class of binder adapted to be permanently closed so it cannot be again opened for insertion or removal of leaves, thus rendering it a permanent and legal record in the same sense as a bound book.

The primary object of the invention is to provide a binder in which the leaf holding posts are rigidly mounted so that the closure members will invariably move into proper operative relation with the ends of the posts and will not require careful manipulation to ensure co-operation with the posts.

Another object is to provide a binder in which the posts are rigidly mounted and accessible at both ends, that is, at the front and back of the binder, for insertion and removal of leaves.

Still another object is to provide a binder with means for positively and permanently locking the same in closed position when it is desired to make the contents of the binder a permanent record.

A further object is to provide features as aforesaid applicable equally to a binder of fixed size and to an expansible binder.

A still further object is to provide a binder of durable, rugged and simple construction which will not get out of order, which will be inexpensive to manufacture and which may be operated quickly and easily.

Additional objects and the advantages of the invention may be ascertained from the following description and the accompanying drawings.

Loose leaf binders have been produced in which the posts are releasably connected at both ends to the front and back cover hinges to permit insertion and removal of leaves at both front and back of the binder. Difficulty has been experienced in the operation of such binders, particularly in closing the same, due to the fact that the posts are unsteady because of their releasable connection to whichever hinge is at the moment holding them. This unsteadiness of the posts permits them to move relatively to one another, so that much care must be exercised to secure proper alignment of all posts with the closure member. In large binders having more than three posts, attainment of proper alignment of all posts simultaneously with the closure member necessitates considerable delicate and tedious manipulation before the binder can be closed, which is exasperating and wasteful of time. Also, such binders are neither rugged nor durable, since the unsteadiness of the posts imposes relatively great stresses on the ends of the posts and on the means connecting them to the closure members. These stresses are productive of strains and deformations or breakages which aggravate the original disability.

According to the present invention, the foregoing disadvantages are entirely obviated by securing the posts intermediate their ends to the back of the binder, so that the posts are rigidly supported independently of the closure members and are maintained in proper relation to one another and to the closure members. The latching or fastening means of the closure members may be provided with a readily severable operating portion and/or with a positive locking means.

One of the many possible embodiments of the invention is hereinafter described and illustrated, but it is to be understood that the invention is not confined to that embodiment either generally or in detail, the same being disclosed for explanation and without limitative intent, but is capable of modification in type and in detail without departing from the spirit of the invention.

In the accompanying drawings which illustrate a binder of fixed size:—

Fig. 1 is a plan view of the improved construction showing the top cover hinge or post closure raised to open position.

Fig. 2 is an end elevation of the construction shown in Figure 1.

Fig. 3 is a partial inside elevation corresponding to Figures 1 and 2.

Fig. 4 is a cross sectional view of a cover hinge or post closure, on an enlarged scale.

Fig. 5 is a fragmentary view of a leaf suitable for use with the construction shown and illustrates the form of post opening.

Referring more particularly to the accompanying drawings, 11 designates the back filler of a binder, which in the case of the fixed size binder illustrated is usually shaped to resemble the back of a bound book and may be composed of wood, fibre, metal or in fact of any suitable material. The use of this back filler is optional and it may be dispensed with, its chief purpose being to impart a certain attractive and customary appearance to the binder. Front and back cover hinges 12 and 13 are provided, each having a leaf 14 for connection to a cover

and a second leaf 15 which, in the construction illustrated, is connected to the back filler 11 by any suitable fastenings. The hinge leaves 15 are shown as meeting and make it obvious that these leaves may be directly connected to one another so as to form, for all practical purposes, a single member common to the two leaves 14 and which common member or its equivalent may be regarded as being the real back of the structure.

A series of posts 16 are provided extending transversely of the back in spaced relation thereto. These posts are rigidly connected intermediate their ends to the back. As illustrated, the connection or mounting of each post is effected by means of a thin web 17 extending nearly the full length of the post and secured to the back by studs 18 passing through the hinge leaves 15 and back filler 11 and upset or clinched over burrs 19 embedded below the outer surface of the filler. Obviously, the studs 18 need not pass through the filler but may be upset against the outer surfaces of the hinge leaves 15, as shown in Figure 4, thus serving to connect the hinges independently of any direct connection or any connection established through the filler and enabling the filler to be dispensed with. It will thus be seen that the filler does not of necessity perform any mechanical function and that the extension of the studs 18 through it is for the convenience of using them as securing means for the filler. If desired, independent fastenings 20 may be provided for the filler, and such will of course be necessary if the studs 18 do not pass through the filler. Obviously, separate hinge leaves 15 need not meet or be directly connected, since the posts 16 and supports 17 will serve to connect the leaves. The posts may be of any suitable cross-section and the form of the supports 17 may be varied from the simple web shown.

The hinge leaves 14 are each of flattened tubular form, closed at the ends. Each leaf 14 is provided with openings 21 of size, shape and spacing to receive the ends of the posts 16. The posts are provided preferably on the sides adjacent the hinge leaves 15, close to the ends with transverse notches 22 extending parallel with the axes of the hinges.

Within each hinge leaf 14 is a latch member 23 common to all the post openings 21. This latch member may be formed and arranged in a variety of ways. In the arrangement shown, the latch member is a bar of approximately the same length as the hinge leaf and slidable longitudinally within the leaf. The bar is located at the pivoted edge of the leaf and extends to approximately the adjacent edges of the post openings 21, as clearly shown in Figures 1 and 3. Pins or rivets 24 passing through the leaf hold the latch bar in position. The bar carries a plurality of catches 25 equal in number to the number of post openings and so located that by moving the bar longitudinally all the catches may be simultaneously moved into or out of position opposite the post holes, both the positions being shown in Figure 1. These catches are of less thickness than the latch bar and located at that surface thereof adjacent the post apertures 21, as clearly shown in Figure 4. These catches are of a thickness to slide into the post grooves 22, when the leaf is closed down on the posts so that ends of the posts project through the openings 21 into the interior of the leaf. The edge and one end of each catch may be bevelled to facilitate its entry into a post groove. The arrangement of the catches on the latch bar is such that when the bar is fully housed in the leaf the catches are opposite the openings 21 and, when the bar is partly withdrawn, the catches are out of register with the openings.

The latch bar is provided with any suitable form of operating knob by means of which it may be conveniently manipulated. Preferably, such knob is readily severable from the bar. A satisfactory form of knob is shown at 26 and is formed by bending the bar near its end. This knob is rendered readily severable by means of a groove 27 (Figure 1) extending part way through the bar at the base of the knob and so weakening the material that the knob may be readily broken off.

At that end of each bar opposite the knob, a hook 28 may be provided for engagement by a spring pressed pawl 29 pivoted within the leaf, the hook and pawl being inaccessible by reason of closed end of the leaf. Ordinarily, the knob serves as a stop to limit inward movement of the bar, so that its hook will not pass from under the pawl and permit the same to drop. The pins 24 serve to hold the latch bar against excessive outward or withdrawing movement.

The front and back covers of the binder, designated 30, are suitably connected to the leaves 14 of the hinges and the covers, back and leaves 14 are covered with any suitable material indicated at 31.

The leaves to be used in the binder are each provided at one edge with a series of openings of a shape, size and spacing corresponding to the posts and supports of the binder, the corner of a leaf 32 with opening 33 being shown in Figure 5.

The operation of the binder is extremely simple and convenient. Assuming the binder to be closed, the hinge leaves 14 will be found covering the ends of the posts with the latch bars completely housed in the leaves and the catches engaged in the post grooves,

holding the leaves over the post ends so that sheets cannot be applied to or removed from the posts. The knobs are shrouded in the ends of the hinge leaves and are thereby protected against damage or accidental operation. To open the binder at either front or back, the appropriate knob is grasped and the attached latch bar pulled out as far as it will come. This withdraws the catches from the post grooves and releases the hinge leaf, so that it may be raised to expose the ends of the posts. The operations are reversed to close the binder. When it is desired to effect a permanent closure, the knobs of both latch bars are broken off, thus making it impossible to grasp and withdraw the bars. If the locking device is used, the latch bars when pushed in as far as they will go advance farther than usual, owing to absence of the knobs, so that their end hooks 29 pass under the tips of the pawls 28, which drop in front of the hooks and positively prevent subsequent withdrawal of the latch bars.

It will be seen that the posts are connected directly and rigidly to the binder back, so that both the front and back hinges may be raised at the same time without affecting the attachment of the posts and without danger of the sheets as a whole separating from the binder. When the binder is to be closed, the hinge leaves will swing down and enclose the ends of the posts without any manipulation of the posts, because the posts are rigidly mounted and cannot move individually or collectively out of position. The post supports are of sufficient width to space the posts well away from the back, so that ample width of material may be provided between the post holes 33 and the edges of the sheets 32 to ensure secure binding of the sheets and freedom from tearing.

All the features of the invention herein described may be incorporated in an expansible binder, the posts being connected in such case to the relatively movable parts of the binder back. Modifications may be made in the details of the latching mechanism and in other features or equivalent mechanisms substituted without departing from the spirit of the invention, as aforesaid, wherefore all modifications, substitutions, rearrangements or alterations whatsoever as fall within the scope of the appended claims whether the same are herein specifically contemplated or not are to be deemed as included in and forming a part of the invention.

Having thus described my invention, what I claim is:—

1. In a loose leaf binder, a back, a series of posts each of which is connected intermediate its ends to the back, thereby leaving both ends of the post free for application and removal of leaves, and means hingedly connected to the back and releasably connected to the ends of the posts to retain leaves thereon.

2. In a loose leaf binder, a back, posts spaced away from the back, means intermediate the ends of each post rigidly connecting the same to the back, means hingedly related to the back to cover the ends of the posts and means to latch said hinged means to the posts.

3. In a loose leaf binder, a back, posts spaced away from the back, means intermediate the ends of each post rigidly connecting the same to the back, and means hingedly related to the back to cover the ends of the posts, said covering means being adapted for releasable connection to the ends of the posts and covers hingedly related to the free edges of said hinged means.

4. In a loose leaf binder, a back, leaf holding posts, means to retain leaves on the posts, said means being hingedly related to the back and releasably connected to the posts, and rigid connections between the posts and back holding the posts always in position for co-operation with the leaf retaining means upon movement thereof into engagement with the posts.

5. In a loose leaf binder, a back, means hinged to opposite edges of the back to embrace leaves, a series of posts disposed between said hinged means and each releasably connected at both ends to said means whereby leaves may be removed at either front or back of the binder, and rigid connections between the posts and back holding the posts in position for co-operation with the hinged means.

6. In a loose leaf binder, a back, posts connected intermediate their ends to the back, said posts being transversely grooved adjacent their ends, means hingedly related to the back to cover and uncover the ends of the posts, and latch mechanism on said means to engage the post grooves and releasably hold the said means against post-end-uncovering movement.

7. In a loose leaf binder, a back, posts connected intermediate their ends to the back, said posts being transversely grooved adjacent their ends, means hingedly related to the back to cover and uncover the ends of the posts, and latch mechanism on said means to engage the post grooves and releasably hold the said means against post-end-uncovering movement, and a readily severable operating member for said latch mechanism whereby upon severance of said operating member the latch mechanism when in latching position is rendered inaccessible for operation to disengage the posts.

8. In a loose leaf binder, a back, posts connected intermediate their ends to the back, said posts being transversely grooved adjacent their ends, means hingedly related to

the back to cover and uncover the ends of the posts, latch mechanism on said means to engage in the post grooves and releasably hold the said means against post-end-uncovering movement, a readily severable operating member for said latch mechanism serving to limit movement of the same in one direction, and a positive locking device engageable by said latching mechanism upon extra normal movement subsequent to severance of the operating member.

9. In a loose leaf binder, a back, posts connected intermediate their ends to the back, a tubular closure member hinged to the back and having apertures therein to receive the ends of the posts, and a latching mechanism mounted in the closure member to engage the ends of the posts and releasably hold the closure member thereto.

10. In a loose leaf binder, a back, posts connected intermediate their ends to the back, a tubular closure member hinged to the back and having apertures therein to receive the ends of the posts, a latching mechanism mounted in the closure member and operable by movement into said member to engage the posts and releasably hold the closure member thereto, and an operating member for the latching mechanism readily severable therefrom and being the only portion thereof extending beyond the closure member when the latching member is in normal latching position, whereby upon severance of said operating member the latching mechanism is rendered inaccessible for retraction from its normal latching position to disengage the posts.

11. In a loose leaf binder, a back, posts connected intermediate their ends to the back, a tubular closure member hinged to the back and having apertures therein to receive the ends of the posts, a latching mechanism mounted in the closure member and operable by movement into said member to engage the posts and releasably hold the closure member thereto, an operating member for the latching mechanism readily severable therefrom and being the only portion thereof extending beyond the closure member when the latching member is in normal latching position, whereby upon severance of said operating member the latching mechanism is rendered inaccessible for retraction from its normal latching position to disengage the posts, said operating member forming a stop engageable with the closure member to limit latching movement of the latching mechanism, and a positive locking means in the closure member operatively engageable by the latching mechanism upon extra normal inward movement thereof subsequently to severance of the operating member.

12. In a loose leaf binder, a back, a post connected through the major portion of its length to the back and having its end portion free for encirclement, and means hingedly related to the back to encircle the end of the post and to be releasably connected thereto to retain leaves on the post.

13. In a loose leaf binder, a pair of hinge members arranged in parallelism, means connected to adjacent leaves of the two hinges transversely thereof, longitudinal enlargements of said connecting means forming leaf holding posts disposed to have their ends covered by the free hinge leaves and means to latch the free hinge leaves to the ends of the posts and covers hinged to the free edges of the free hinge leaves.

14. In a loose leaf binder, a pair of hinge members arranged in parallelism each including a solid leaf and a tubular apertured leaf, means extending transversely of the solid leaves connecting them together in a single plane, longitudinal enlargements of said connecting means forming leaf holding posts disposed to have their ends received in the apertures of the tubular leaves, and means slidably mounted in the tubular leaves to engage the post ends and hold the tubular leaves thereto.

In witness whereof, I have hereunto set my hand.

THOMAS V. BELL.