



Oct. 29, 1929.

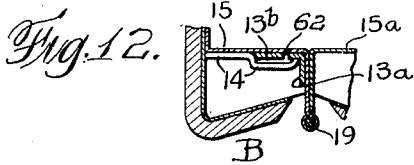
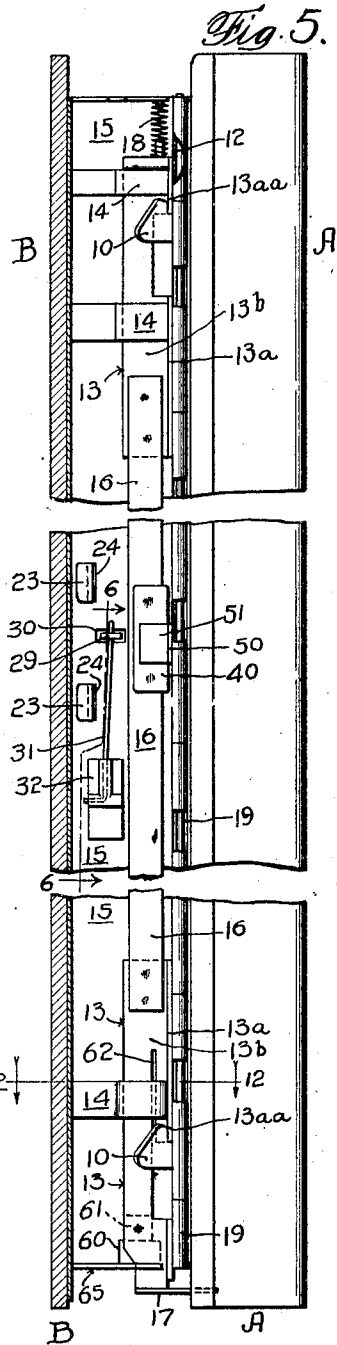
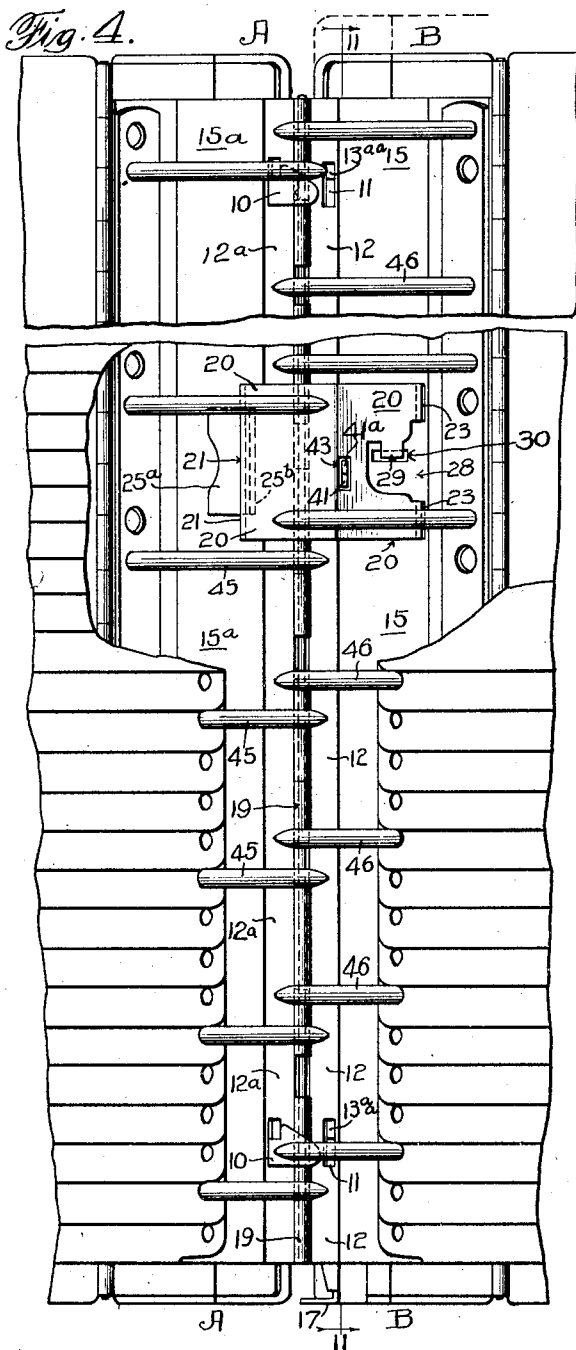
A. M. MARTIN

1,733,814

LATCH MEANS FOR LOOSE LEAF BINDERS

Filed Oct. 19, 1928

3 Sheets-Sheet 2

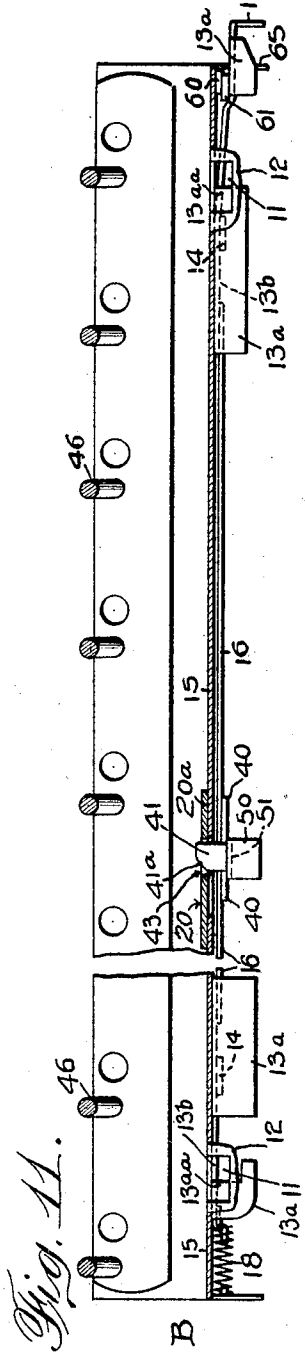
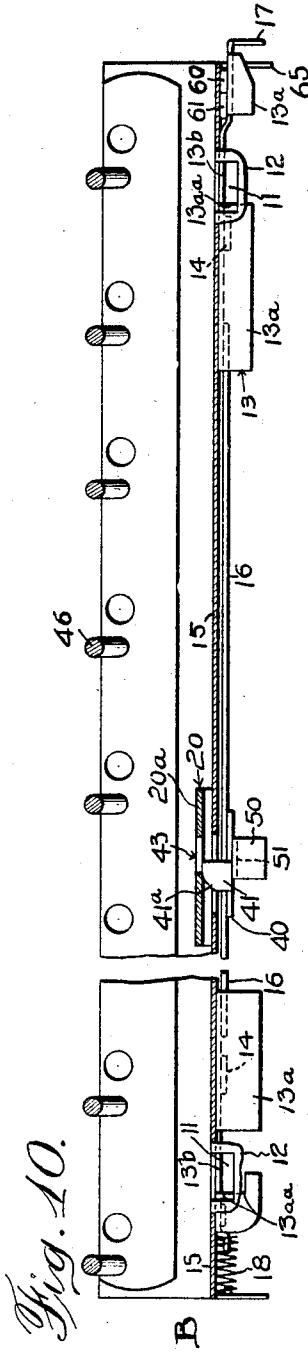
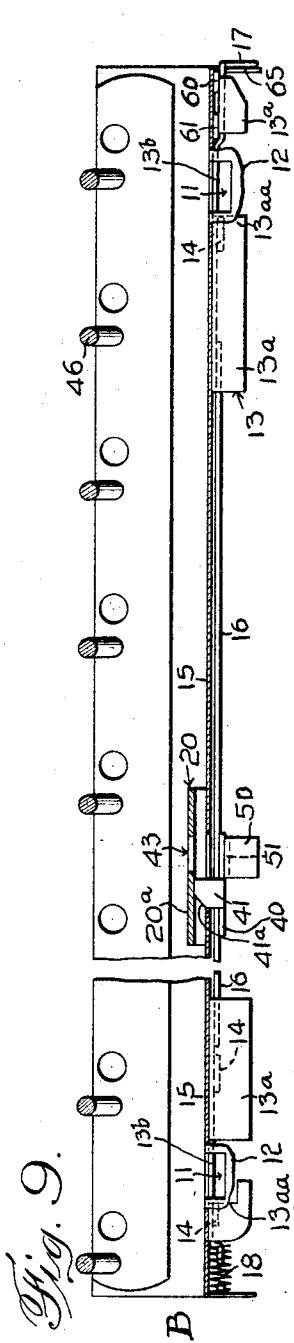


Inventor  
Alfred M. Martin  
By Luther Johns  
Atty.

LATCH MEANS FOR LOOSE LEAF BINDERS

Filed Oct. 19, 1928

3 Sheets-Sheet 3



Inventor  
 Alfred M. Martin  
 By Luther Johns  
 Atty.

# UNITED STATES PATENT OFFICE

ALFRED M. MARTIN, OF CHICAGO, ILLINOIS

LATCH MEANS FOR LOOSE-LEAF BINDERS

Application filed October 19, 1928. Serial No. 313,397.

This invention relates to latching means for book-type binders of the kind in which there is a pair of back members hinged together.

It is not broadly new to provide catch means for holding the back members spread apart to some extent in a certain type of binders, as witness the patent to Stoddard, No. 1,401,566, of Dec. 27, 1921.

The copending application of Harry J. Dornes, filed June 21, 1928, as Ser. No. 287,128, on latch means for loose leaf binders, illustrates, describes and claims certain structural matter shown in this present application. In said Dornes application it is stated that with respect to what are known as non-shift binders the main object of his invention is to provide simple and advantageous means for holding the back members releasably in a partly-spread-apart condition; and that with respect to what is known as a shift binder the chief object is to provide means for holding the back members in such intermediate or partly-open position while permitting one of the back members to be shifted relative to the other; and, further, that it is an object to accomplish these results by simple means, and by means so directly associated with the catch means for holding the binder closed that a single manual control will suffice for both.

The objects of the present invention include those just mentioned, and the further one of providing in any type of binder of this general kind means for releasably maintaining inoperative the means for holding the back members in the partly-open position, whereby the hinged back members of the binder may be swung freely toward and away from each other repeatedly and through a wide range without manipulating a releasing mechanism each time, as is necessary according to the Dornes device mentioned.

The importance of the present improvements arises chiefly in connection with the acts of inserting and removing sheets. Sometimes there are many sheets to be removed as for permanent filing, and frequently these sheet-removing-and-inserting operations are continued all day long, as where the operator

is posting information on the cards or sheets by a billing or posting machine. In such case sheets here and there throughout the binder are selected, withdrawn, written upon by machine, and replaced in the book.

The Dornes disclosure mentioned serves admirably where such posting is done by pen and ink directly upon the sheets without taking them out of the binder. Its use is somewhat inconvenient, however, when there is a considerable amount of insertion or removal of sheets. The means I suggest herein for overcoming such disadvantage comprise a readily releasable stop or catch device in connection with the finger piece mechanism whereby the auxiliary latch device is held inoperative. These additional results are obtained without adding another control.

In the accompanying drawings Figure 1 fragmentarily shows lying on its side a binder of the kind in question equipped with these improvements in a highly advantageous form;

Fig. 2 shows the binder of Fig. 1 partly open and held by the auxiliary locking means;

Fig. 3 shows the binder fully opened;

Fig. 4 is a top view of the binder in the partly-open position of Fig. 2;

Fig. 5 is a longitudinal sectional view on the broken dotted line 5—5 of Fig. 1, positioned as if the binder were standing on its lower end (the end seen in Fig. 1) the view being directed toward the back members, covering material and a metal sheet-like part of the frame being removed from one back member whereby a rear view is had of the various mechanisms, the front view of the same being shown in Fig. 4;

Fig. 6 is a fragmentary sectional view on an enlarged scale in the direction of the arrow 6—6 of Fig. 5;

Fig. 7 is a sectional view on the line 7—7 of Fig. 6;

Fig. 8 is a view like Fig. 2 but showing the auxiliary latch held in its inoperative position according to the present invention;

Figs. 9, 10 and 11 are broken sectional longitudinal views on the line 11—11 of Fig. 4 showing respectively the finger piece pushed

in the full distance, held in its half-way position, and then released from its last-mentioned position, these last three figures showing also the effects of the several relative positions of the finger piece and associated parts upon the auxiliary latch; and

Fig. 12 is a fragmentary sectional view on the line 12—12 of Fig. 5.

Binders of the kind referred to are invariably provided with means for holding the back members releasably closed, as in Figs. 1 and 5. These locking means are shown as comprising a pair of headed leaf-like latch projections 10 rigidly secured to back member A and projecting so as to enter the openings 11 respectively in the inner wall 12 of the back member B. Mounted for sliding movement in the hollow interior of the back member B, and in the corner between the walls 12 and 15 thereof, are two angle iron pieces 13 (Fig. 5), one at each end of the binder and each comprising a web 13<sup>a</sup> lying against the wall 12 and a web 13<sup>b</sup> resting on the wall 15, and extending over these angle iron pieces 13 respectively are retaining brackets 14 secured as by spot-welding to the longitudinally-extending sheet metal frame part or wall 15. The top or outer surface of this plate-like frame part 15 is seen in Fig. 4 while the bottom or inner surface of it is seen in Fig. 5.

Each web 13<sup>a</sup> has an opening in it adjacent to the associated latch projection 10 so that there is a part 13<sup>aa</sup> thereof engaged by the head of the projection 10, as shown in Fig. 5, thus holding the two back members together, as in Fig. 1.

These two angle-iron members 13 are connected by a thin piece of strip-metal 16 spot-welded to the parts 13 so that when the finger piece 17 (integral with the lower angle iron piece 13 in Fig. 5) is pushed inward both of these members 13 are moved against the resistance of the compression spring 18 and the parts at 13<sup>aa</sup> are respectively freed from the heads of the projections 10 whereby the back members may swing apart on their hinge connection at 19. When the backs are brought together again the slanting surfaces respectively of the projections 10 force the members 13 longitudinally toward the compression spring 18, which spring returns the parts 13 so that both elements 13<sup>aa</sup> are engaged by the heads 10 respectively.

I have thus far described a latch device for holding the back members releasably in fully closed position, the release means extending to and including the finger piece at the lower or bottom end of the binder. Those locking means do not provide for longitudinal shifting movements of the back members relatively to each other, nor do they hold the binder in a partially open position. In the shift binder they hold the back member against longitudinal shifting when the book

is closed, which is an important function. This and other considerations, including the small amount of space available in the hollow interior of the back members, indicate that the auxiliary means for holding the backs partly open, and for shifting movements in the shift book, should be independent of the locking means just described, although desirably under the same control.

Turning to the auxiliary latching device, note first from Figs. 1 and 4 the latch member 20 having its free end 21 turned over to form a hook, its other end at 22 being mounted in the frame plate 15 for swinging movements of the latch member 20 by a pair of ears 23 (Fig. 5) passing through holes 24 in the plate, these ears being then bent over to form a loose connection permitting the free end 21 of the latch 20 to move away from and toward the plate 15<sup>a</sup>. The latch member 20 is in effect bowed upwardly by its two flat sides 20<sup>a</sup> and 20<sup>b</sup> forming a ridge between them, this construction providing that the part 20<sup>a</sup> will rest upon the frame plate 15 (see Fig. 2) thus limiting movement in that direction, and then the latch end 21 will be in position to slide over the catch 25 having the body part 25<sup>a</sup> secured as by spot-welding on the outer surface of the plate 15<sup>a</sup>.

From Fig. 4 note the irregular opening 28 in the latch 20. From the material originally there an integral rectangular leaf 29 is formed which in Fig. 4 is shown as passing through a rectangular opening 30 in the frame part 15. We see it emerging from the other side in Fig. 5. It has a hole through which extends loosely a spring wire 31 (Fig. 7) and the spring 31 is held rigidly at 32 (Fig. 5) by a covering and retaining plate spot-welded to frame plate 15. The tension of spring 31 is upward in Figs. 6 and 7. Its effect is to draw the latch member 20 downward in Fig. 2.

On the metal strip 16 is rigidly secured, as by spot-welding, a cam element having a base 40 (Fig. 5) and an upstanding cam part 41 (Figs. 4 and 5). In Figs. 1 and 2 it is seen projecting upwardly. Figs. 8, 9 and 10 show it in side view. It passes through a long and narrow opening in frame part 15 and into a rectangular opening 43 (Fig. 4) in the latch member 20. Its slanting surface at 41<sup>a</sup> is opposite one end of the opening 43 and it engages the metal there when the finger piece is forced inward. This action pushes the latch member 20 upward in Fig. 2, thereby releasing the latch element 21 from the catch 25. The stroke of the finger piece is such as to carry the outer end of the cam 41 under the latching member 20 thus holding member 20 free of the catch 25 so long as the finger piece is held advanced.

When the latch 20 is in its operative position and the book is entirely open as in Fig.

3 and the backs are then swung toward each other the latch end 21 first comes against the catch 25 and then slides over it, against resistance of the spring 31, and then the parts become caught at 21 and 25 as shown by Fig.

2. From this intermediate or partly-open position the backs can be moved further toward each other and completely closed, whereupon the locking elements 10 come into effect and hold the book closed, in which final or closed position the latch member 20 has no holding effect.

The longitudinally shifted position of one side of the binder or back member is shown by dotted lines at the top of Fig. 4. The latching member 20 is substantially wide and the engagement at 21—25 (Fig. 2) is thus maintained during the longitudinal shifting movements of one back member relative to the other.

The importance of this intermediate-position latching, as by the latch 20, arises from the fact that when the backs are only partially spread apart, as in Fig. 2, the shifting of sheets from one set of sheet prongs 45 to the other set 46, and vice versa, to change the location of sheets through the longitudinal shifting of a back member, as on the hinge pin 19, may be done much more easily than if one side of the binder and its mass of sheet material are elevated by hand to make the prongs 45 and 46 overlap and then held in that raised position while the transverse sheet-shifting operations are being performed. With this intermediate-position latching feature incorporated the operator can manipulate the sheets from side to side and shift a back member longitudinally while permitting the binder as a whole to rest at all times in the position of Fig. 2. Entries may also be made by hand without removing the sheets.

Fig. 7 shows an angle iron cleat having a web 50 spot-welded to the wall 12 and a web 51 overlying the part 40, thus holding the cam member in position.

What I have more specifically thus far described herein is the advance made by the Dornes improvement mentioned. Since that has been incorporated in the binder, at considerable expense for dies, etc., one of my problems was to embody the present invention in a form which would utilize that latch construction, and with as little new construction and as little additional expense as possible. The present improvements may be variously embodied, both with and without the said Dornes auxiliary latch means.

Turning to Figs. 9, 10 and 11, I provide an intermediate relative position of the finger piece 17 and its associated parts between the two positions shown by said Dornes case. In this middle position of the finger piece the cam element 41 holds the latch 20 elevated as in Fig. 8.

On the inner surface of the frame member 15, and close to the end thereof at the finger piece 17, is a stop 60 consisting of a flat piece of metal spot-welded to the frame part 15. Spot-welded to the angle iron piece 13 which terminates in the finger piece is a similar piece of flat metal 61 arranged to engage the stop 60 and hold the finger piece and associated parts in the intermediate or middle position mentioned. In this middle position of the finger piece, shown by Fig. 10, the cam element 41 has not yet come fully in register with the opening 43 in the latch 20, (considering the movement in the outer direction or toward the finger piece end) and so the latch 20 is maintained raised so as to clear the catch 25. The back members A and B may therefore be moved toward and away from each other as though the auxiliary latch 20 were not present.

The angle-iron piece 13 in question is a springy member, and by its own spring tension the latch element 61 is maintained in abutment with the stop 60. To render this part 13 more flexible than as shown in the said Dornes application, wherein its flexibility is not necessary, I make a longitudinal saw-cut or narrow slot-like punching 62 in it, separating a relatively slender spring portion of web 13<sup>b</sup> terminating in the finger piece. To obtain the full advantage of this spring portion of web 13<sup>b</sup> the cleat 14 is formed with clearance opposite the face of the spring and the free end of the cleat bears against other parts of the angle iron 13 as shown in Fig. 12.

Fig. 9 shows the relative positions when the finger piece has been moved inward the full distance, releasing the projections 10 and holding the latch 20 raised. When the finger piece is released in Fig. 9, the middle latch device 60—61 comes into effect. Fig. 10 shows the parts in this middle position of the finger piece and cam element 41, the latter still holding the latch 20 raised, as in Fig. 8. In this position the backs may be swung toward and away from each other freely up to but not including the fully closed position of Fig. 1. Now if the finger piece be pressed toward the hinge 19, substantially downward in Fig. 8, the catch 61 will come away from the stop 60 and the coiled spring 18 (Fig. 5) will force the finger piece and element 41 into the relative positions of Fig. 11. The element 41 is now opposite or in register with the hole 43 and the latch 20 lowers into the position of Fig. 2 and, according to the position of the backs, the catch 25 is either then caught or will be caught by latch element 21 on movement toward each other of the back members. Releasing the latch element 61 is a simple matter, the operator merely pressing, but more easily striking, downward with a finger upon the finger piece. Only a light flipping blow is required. In order

to provide for sufficient flexible movement of the finger piece spring 13<sup>a</sup> the hole 64 in the end wall 65 is suitably enlarged.

According to these improvements, then, I accomplish all that may be done by the said Dornes device and, in addition thereto, provide means which render the binder backs as freely movable toward and away from each other as though the auxiliary latching mechanism as 20 were entirely omitted, and these results are had through the operation of the one control, and in an exceedingly simple and easy way, making for convenience and celerity in operation.

With the latch 20 raised as in Fig. 8 the longitudinal shifting of one back member relative to the other is not interfered with, nor does such shifting change the relations shown in Fig. 8, since all of these mechanisms involved are carried by the same back member.

I contemplate as being included in this invention all such changes, departures and modifications from what is thus specifically illustrated and described as fall within the scope of the appended claims.

I claim:

1. In a binder of the character described having a pair of back members hinged together, the combination with said back members of means for holding the back members releasably in closed position, means independent of said holding means for holding the back members releasably in a partially-open position, means common to both of said holding means for releasing them respectively to open the binder fully, and means for releasably maintaining said independent holding means inoperative.

2. In a binder of the character described having a pair of back members hinged together, the combination with said back members of means for holding the back members releasably in closed position, operating means including a finger piece for releasing said holding means, latching means independent of said holding means for holding the back members releasably in a partly-open position, means operatively connecting said latching means to said operating means whereby an operation of the finger piece will release said latching means, and means for releasably maintaining said independent holding means inoperative.

3. In a shift binder of the character described having a pair of back members hinged together and having provisions whereby one back member may shift relative to the other thereof, the combination with said back members of means for holding the back members releasably in a partly-open position in all shifted positions of one back member relative to the other thereof, means under the control of the operator for releasing said holding means, and means for releasably

maintaining said first-mentioned means inoperative.

4. In a shift binder of the character described having a pair of back members hinged together and having provisions whereby one back member may shift relative to the other on the hinge connection between them, the combination with said back members of releasable means for holding the back members in a partly-open position during shifting movements of one back member relative to the other thereof on their hinge connection, said holding means being effective so to hold the back members when the back members are moved from their fully-open position to such partly-open position, means under the control of the operator for releasing said holding means whereby the back members may open fully from said partly-open position, and means for releasably maintaining inoperative said means for holding the back members in the partly-open position.

5. In a shift binder of the character described having a pair of back members hinged together with provisions whereby one back member may shift on the hinge connection relative to the other thereof, the combination with said back members of releasable locking means for holding the back members in closed position, means for holding the back members in a partly-open position, said last-mentioned means including a holding element elongated in the direction of the hinge connection between the backs and providing a sliding connection whereby one back member may be shifted relative to the other thereof while the back members are maintained in such partly-open position, and means for releasably maintaining inoperative said means for holding the back members in partly-open position.

6. In a binder of the character described having a pair of back members hinged together, the combination with said back members of two releasable locking devices, one for holding the back members releasably in closed position and the other for holding the back members releasably in a partly-open position, said devices including an operating member mounted on one back member for longitudinal movements substantially parallel with the hinge connection between the back members, one of said devices having a holding part cooperating directly with said operating member, the other of said devices having a spring-actuated part movable in directions toward and from said hinge connection, an operating connection between said operating member and said spring-actuated holding part to move it in one of its said directions, and means for releasably maintaining said spring-actuated holding part inoperative.

7. In a binder of the character described

- having a pair of back members hinged together, the combination with said back members of a catch element rigid with one back member, a latch member having a part adapted to engage said catch element to hold the back members in a given position relative to each other, said latch member being mounted to swing in directions away from and toward said back members whereby said part engages and is disengaged from said catch element, means under the control of the operator for moving said latch member in a direction away from said back members to release its engagement with said catch element, and means for releasably maintaining said latch member inoperative.
8. The combination of claim 1 hereof in which all of the releasing means include a single manual control.
9. The combination of claim 2 hereof in which said last-mentioned means are operatively associated with said finger piece for release by an operation thereof.
10. The combination of claim 3 hereof in which said last-mentioned means are operatively associated with said means under the control of the operator for releasing the first-mentioned holding means and are releasable thereby.
11. The combination of claim 4 hereof in which said last-mentioned means are under the control of said means under the control of the operator.
12. The combination of claim 5 hereof in which there is a unitary manual control for releasing said first-mentioned locking means and also said means for holding the back members in a partly open position and also said means maintaining inoperative said means for holding the back members in partly-open position.
13. The combination of claim 6 hereof in which said last-mentioned means are operatively associated with said operating member.
14. The combination of claim 7 hereof in which said means under the control of the operator is adapted to release also said last-mentioned means.
15. In a binder of the character described having a pair of back members hinged together, the combination with said back members of means for holding the back members releasably in partially-open position, and means cooperating with said holding means for releasably maintaining said holding means inoperative.
16. In a binder of the character described having a pair of back members hinged together, the combination with said back members of means for holding the back members releasably in closed position, means for holding the back members releasably in partially-open position, and means cooperating with both of said holding means for releasably maintaining inoperative one of said holding means.
17. In a binder of the character described having a pair of back members hinged together, the combination with said back members of means including a hook-like member for holding the back members releasably closed, means including a hook-like member for holding the back members releasably in partly-open position, means common to both of said holding means for releasing them respectively, and means associated with said releasing means for releasably maintaining inoperative one of said holding means.
18. In a binder of the character described having a pair of back members hinged together, the combination therewith of means for holding the back members releasably closed, means for holding the back members releasably in partly-open position, means including a single manual control for releasing said holding means respectively, and means associated with said releasing means and under the control of said manual control for releasably maintaining one of said holding means inoperative.

ALFRED M. MARTIN.