Aug. 1, 1939. L. F. SCHERZINGER 2,167,685

LOOSE LEAF BINDER

Filed April 30, 1938 2 Sheets-Sheet 1

Fig. 1

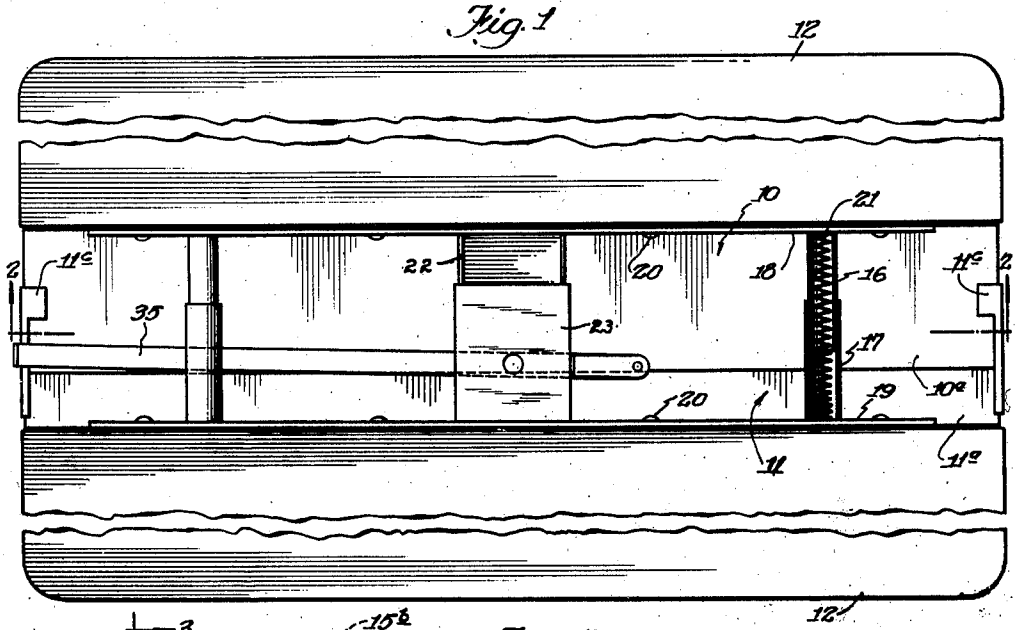


Fig. 2

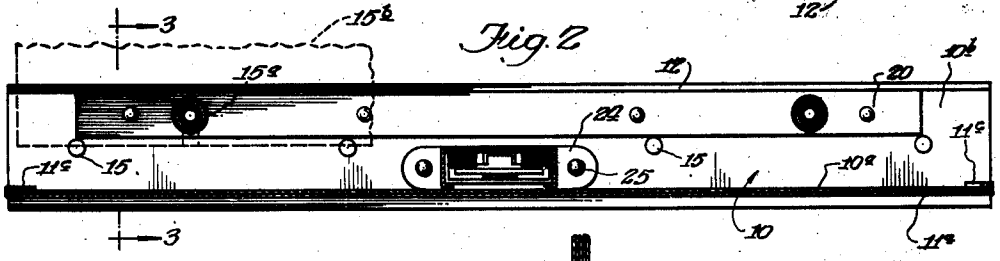
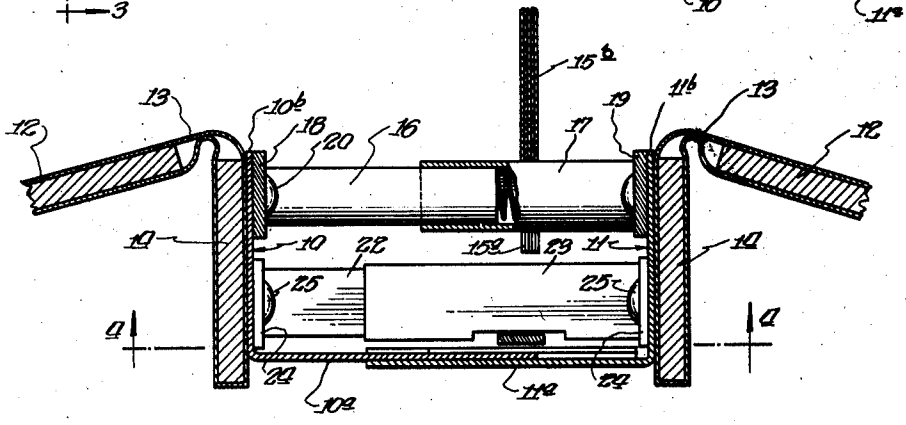


Fig. 3



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LOOSE LEAF BINDER

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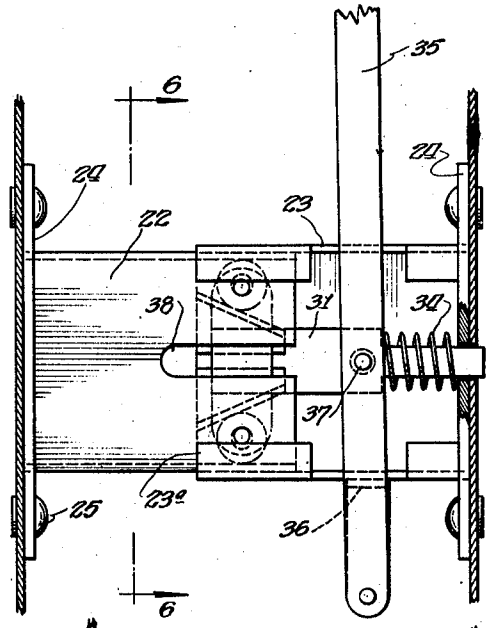


Fig. 4

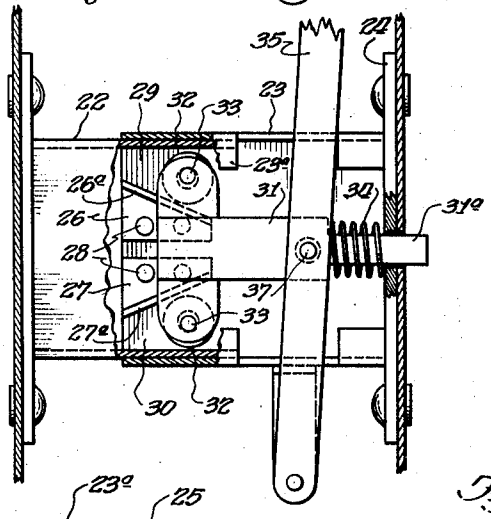


Fig. 5

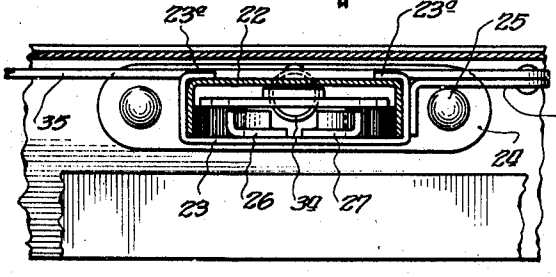


Fig. 6

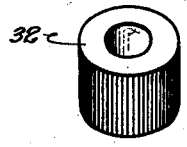


Fig. 7

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UNITED STATES PATENT OFFICE

2,167,685

LOOSE LEAF BINDER

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Application April 30, 1938, Serial No. 205,165

5 Claims. (Cl. 129—13)

My invention relates to loose leaf binders.

It is one of the objects of my invention to provide a novel and improved binder for loose leaves having positively operating locking means and so constructed that leaves may be easily, conveniently and quickly clamped in or released from the binder without turning the binder over as is the case with binders equipped with gravity operated locking means.

Another object of my invention is to provide improved locking means for loose leaf binders so constructed that it may be used with binders differing widely in leaf-carrying capacity.

A further object of my invention is to provide a loose leaf binder so constructed that the leaf-carrying posts therefor and their mounting plates, and the locking mechanism for the binder may be easily mounted in position at the bindery after the finishing material has been applied to the cover members and the exposed portions of the back members, if desired.

The invention consists of the novel constructions, arrangements and devices to be hereinafter described and claimed for carrying out the above stated objects and such other objects as will appear from the following description of a preferred embodiment of the invention illustrated in the accompanying drawings, wherein—

Fig. 1 is a plan view of a loose leaf binder embodying the principles of my invention with fragmentary portions of its covers in open position;

Fig. 2 is a longitudinal sectional view through the back of the binder taken on the line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view on an enlarged scale taken on the line 3—3 of Fig. 2;

Fig. 4 is an inverted plan view of the preferred locking mechanism of my binder taken on the line 4—4 of Fig. 3 with the locking rollers thereof in holding position;

Fig. 5 is a view similar to Fig. 4 with the locking rollers in retracted or non-holding position;

Fig. 6 is a transverse sectional view through the locking mechanism taken on the line 6—6 of Fig. 4; and

Fig. 7 is an enlarged view of one of the locking rollers.

Like characters of reference designate like parts in the several views.

Referring now to Figs. 1 to 3, it will be noted that my binder comprises back members 10 and 11 which are in the form of angles having web portions 10*a* and 11*a* and flange portions 10*b* and 11*b*, respectively. The back members are arranged so that their web portions slide one over the other. In the construction illustrated the web portion of the member 10 slides over the web portion of the member 11, the web portion 11*a* at its ends being bent upwardly and inwardly to provide holding flanges 11*c* under which the end marginal portions of the overlying web portion 10*a* may freely slide. The covers 12 of the binder may be provided with any suitable covering material 13, such as thin leather, canvas or the like, which serves as a means to hinge the covers to the cover holding strips 14 which are secured to the outer faces of the flange portions of the back members 10 and 11, respectively, by fastening means such as rivets 15 as shown in Fig. 2. In the embodiment illustrated the leaves 15*b* to be bound in the binder are punched along their rear edges with slotted openings 15*a* so that they may be slipped over telescoping posts 16 and 17 secured to holding strips 18 and 19 which in turn are secured by any suitable means, such as the rivets 20, to the flange portions of the respective back members 10 and 11. Springs 21 are positioned within the telescoping posts 16 and 17 to facilitate spreading the back members of the binder when it is desired to remove from or insert leaves in the binder.

The locking mechanism comprises housing members 22 and 23 carried by base plates 24 which are secured to the inner faces of the flange portions of the respective back members 10 and 11 by any suitable means, such as rivets 25 as clearly shown in Figs. 3 and 6. As best shown in Figs. 4 to 6, the housing members 22 and 23 are in the form of cooperating channels, the member 22 being freely slidable within the member 23, the free edges of the side walls of the member 23 being turned inwardly at 23*a* to hold the housing members in cooperative relation. Plates 26 and 27 are secured to the web portion of the housing member 23 in any suitable way, as by spot-welding, indicated at 28 in Fig. 5, said plates being provided with obliquely disposed flanges 26*a* and 27*a*. The spaces between the flanges 26*a*, 27*a* and the adjacent side wall portions of the housing member 22 provide guideways 29 and 30 of V-shape. A T-shaped member 31 is slidably mounted within the housing member 23, the stem of said member terminating in a portion 31*a* of reduced size so that it may freely slide through openings provided in the adjacent base plate 24 and the flange portion of the adjacent back member. Rollers 32 positioned within the guideways 29 and 30 are loosely

mounted on studs 33 carried by the member 31. A coiled spring 34 around the portion 31a of the slidably mounted member 31 normally tends to move the member 31 to the left, as viewed in Figs. 4 and 5, thereby causing the rollers 32 to wedge themselves, in the respective V-shaped guideways 29 and 30, between the flanges 26a, 27a and the adjacent side wall portions of the housing member 22, as clearly shown in Fig. 4. The rollers 32 may have their edges knurled as shown in Fig. 7 to insure positive and secure locking of the housing members together.

The means for releasing the locking mechanism comprises a manually operated lever 35 pivotally mounted on a bracket member 36 secured to a side wall portion of the housing member 23. The lever 35 is pivotally connected to the sliding member 31 by means of a short stud or shaft in the form of a rivet 37, the housing member 22 being slotted at 38 to receive the rivet 37 and avoid interference therewith. When the lever 35 is moved into the position shown in Fig. 5 the sliding member 31 is moved to the right, against the force of the spring 34, thereby retracting or withdrawing the rollers 32 from holding engagement with the sides of the V-shaped guideways 29 and 30, respectively.

When it is desired to insert leaves into the binder the lever 35 is operated to retract the clutching rollers from holding engagement whereupon the back members are free to slide outwardly with respect to each other. After the leaves are positioned on the posts 16—17, the back members are moved toward each other to clamp the leaves together. When the back members are moved manually into leaf-clamping position, the operation of the lever 35 not being interfered with, the rollers 32 instantly move under the influence of the spring 34 into clutching position in their respective guideways, thereby locking the housing members to each other and the back members in the desired clamping position. To free the leaves of the clamping grip of the back members, it is necessary merely to move manually the lever 35 against the action of the spring 34 which moves the rollers carried by the sliding member 31 pivoted to the lever 35 into non-clutching position.

The back members, the leaf mounting posts and their base plates and the locking mechanism may be easily stamped or formed of metals suitable for such purposes. The design of my improved binder is such that the metal parts therefor may be supplied to a binder manufacturer ready for convenient assembly with the cover members. The locking mechanism of my binder adapts itself to binders varying considerably in leaf capacity. The binder manufacturer may readily secure the flange portions of the back members to the cover-holding strips 14, the plates 18 and 19 carrying the leaf-holding posts then being readily secured in position. The locking mechanism may be supplied to the binder manufacturer in unit form and when such is the case it is quickly secured in position. The entire arrangement is such that the operations of the binder manufacturer are not interfered with in applying the desired finishing leather or fabric to the covers and, if desired, to the exposed web portions of the back members. The binder is easy and convenient to operate. The locking mechanism is positive in action both in securing the back members in leaf binding relation and in releasing them from such relation. The spring action of the compacted leaves, augmented by the action of the springs in the leaf holding posts, makes certain and positive the action of the clutching rollers on the housing members of the locking mechanism to hold the back members in leaf-clamping relation.

I do not intend to limit the invention to the details of construction shown and described, except only in so far as certain of the appended claims are specifically so limited, as it will be obvious that modifications may be made without departing from the principles of the invention.

I claim:

1. In a loose leaf binder, the combination of two back members relatively slidable to bind together varying numbers of leaves and mechanism for securing said members in leaf binding relation comprising housing members carried by said respective back members and relatively slidable one within the other, a guide element on one of the housing members and disposed with respect to an adjacent portion of the other housing member so as to provide therebetween a V-shaped guideway, a spring pressed sliding element carried by one of the housing members, a locking element on said sliding element and positioned in said guideway, and manually operated means for retracting said sliding element.

2. In a loose leaf binder, the combination of two back members relatively slidable to bind together varying numbers of leaves and mechanism for securing said members in leaf binding relation comprising housing members carried by said respective back members and relatively slidable one within the other, guide elements on one of the housing members and disposed with respect to adjacent portions of the other housing member so as to provide two V-shaped guideways, a spring pressed sliding element carried by one of the housing members, locking elements on said sliding element and positioned in said respective guideways, and manually operated means for retracting said sliding element.

3. In a loose leaf binder, the combination of two back members relatively slidable to bind together varying numbers of leaves and mechanism for securing said members in leaf binding relation comprising housing members carried by said respective back members and relatively slidable one within the other, guide elements on the outer housing member and disposed with respect to adjacent wall portions of the inner housing member so as to provide two V-shaped guideways, a spring pressed sliding element carried by one of the housing members, wedging rollers on said sliding element and positioned in said respective guideways, and manually operated means for retracting said sliding element.

4. In a loose leaf binder, the combination of two back members relatively slidable to bind together varying numbers of leaves and mechanism for securing said members in leaf binding relation comprising channel shaped housing members carried by said respective back members and relatively slidable one within the other, guide elements on the outer housing member and disposed with respect to adjacent side wall portions of the inner housing member so as to provide two V-shaped guideways, a spring pressed sliding element carried by the outer housing member, wedging rollers on said sliding element and positioned in said respective guideways, and manually operated means for retracting said sliding element.

5. In a loose leaf binder, the combination of two back members relatively slidable to bind

together varying numbers of leaves and mechanism for securing said members in leaf binding relation comprising housing members carried by said respective back members and relatively slidable one within the other, guide elements on the outer housing member and disposed with respect to adjacent wall portions of the inner housing member so as to provide two V-shaped guideways, a spring pressed sliding element carried by the outer housing member, wedging rollers on said sliding element and positioned in said respective guideways, and a manually operated lever pivotally mounted with respect to the outer housing member and pivotally connected to said sliding element for retracting the latter.

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