Sept. 30, 1952 S. SEGAL 2,612,169

SLIDABLY ACTUATED LOOSE-LEAF BINDER

Filed June 14, 1948 2 SHEETS—SHEET 1

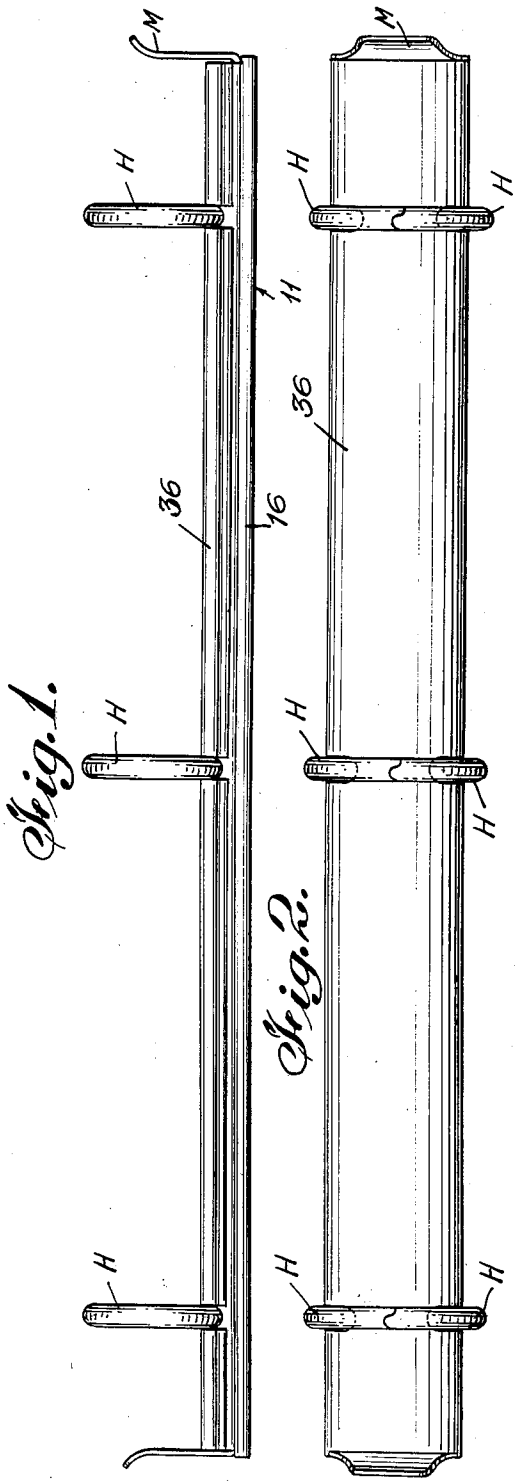


Fig. 1.

Fig. 2.

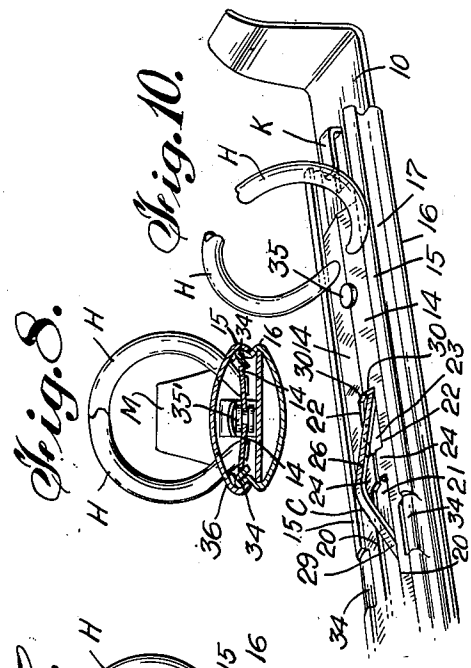


Fig. 10.

Fig. 8.

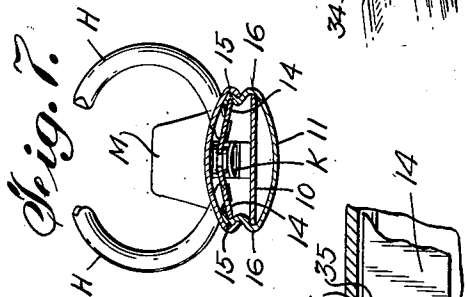


Fig. 7.

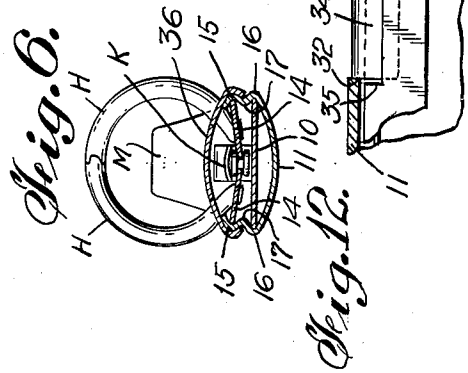


Fig. 6.

Fig. 12.

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SLIDABLY ACTUATED LOOSE-LEAF BINDER

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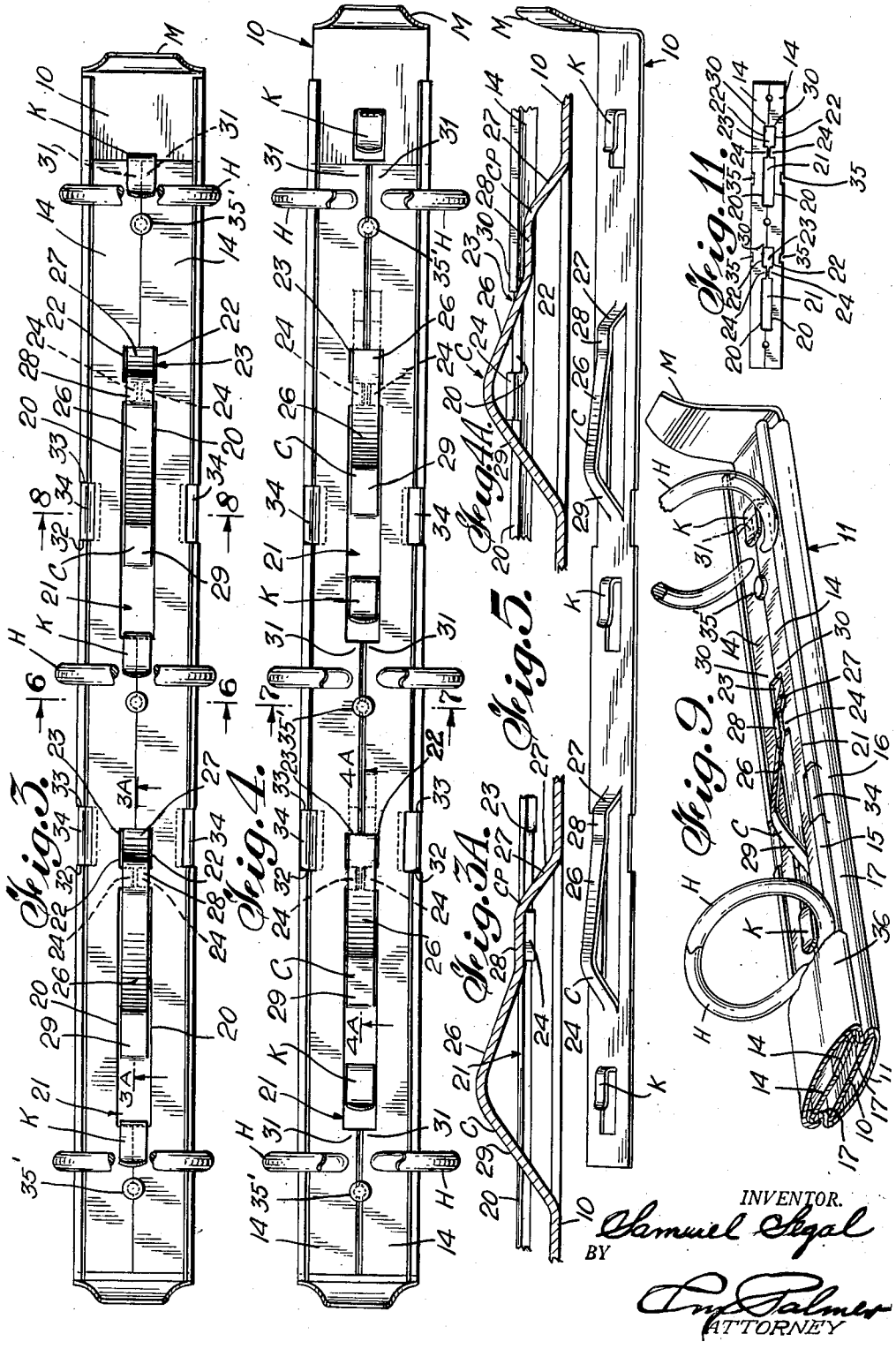


Fig. 3.

Fig. 4.

Fig. 4A.

Fig. 5.

Fig. 5A.

Fig. 9.

Fig. 11.

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SLIDABLY ACTUATED LOOSE-LEAF BINDER

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Application June 14, 1948, Serial No. 32,809

2 Claims. (Cl. 129—24)

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The subject matter of this invention is a new and efficient loose leaf binder of the type having complementary half ring sections carried by companion leaves which may be tiltably actuated for opening and closing the half ring sections when desired. The primary object of the invention is to effectively utilize a slidably guided plate having cam means projecting into the complementary leaves to tiltably displace the latter to open or close the half ring sections. Another object resides in the provision of spaced cam shaped loops on the slidably guided plate for cooperating with longitudinally spaced abutment means constituted by adjacent portions of the companion leaves for tiltably actuating adjacent inner portions of the latter upwardly on the opening stroke of the plate for separating the half ring sections, or for tiltably shifting contiguous inner portions of the leaves downwardly on the closing stroke of the plate for closing the half ring sections. The invention comprehends as a further and specific object the employment of serviceable primary and supplementary locking means to preclude involuntary upward tilting of the companion leaves and consequently accidental opening of the half ring sections. More particularly the invention has as another object the provision of spaced loops provided with corresponding offset limb portions defining primary and supplementary means for upwardly and tiltably shifting the companion leaves on the opening stroke of the plate. As a further aspect, the invention is concerned with the provision of intervening retaining or keeping portions integrally merged with offset cam portions of the spaced loops. Another important object is realized in employing uninterrupted corresponding limbs of the loops to cooperate with abutment means integral with the leaves for limiting the extent of opening of the plate. Other important objects and functional and structural advantages of the invention will appear from the following detailed specification taken with the accompanying drawings wherein:

Fig. 1 is a side elevational view of the loose leaf binder.

Fig. 2 is a plan view of Fig. 1 illustrating the complementary ring sections closed.

Fig. 3 is a view similar to Fig. 2 with the cover removed to illustrate the internal construction, and showing complementary ring sections partly broken away to exhibit the several keeper means interlocked with the swingable leaves to prevent accidental opening of the ring sections.

Fig. 3A is an enlarged fragmentary longitudinal sectional view on the line 3A—3A of Fig. 3.

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Fig. 4 is a view along the lines of Fig. 3 but showing the cam plate in open position in which it is unlocked from the swingable half ring supporting leaves.

Fig. 4A is an enlarged fragmentary sectional view on the line 4A—4A of Fig. 4.

Fig. 5 is a perspective view of the slidably actuated cam plate.

Fig. 6 is a transverse sectional view on the line 6—6 of Fig. 3.

Fig. 7 is a sectional view on the line 7—7 of Fig. 4.

Fig. 8 is a sectional view taken on the line 8—8 of Fig. 3.

Fig. 9 is a fragmentary perspective view of the loose leaf binder shown partly broken away and with the cam plate in closing position and locked or retained by the primary and secondary keeping means.

Fig. 10 is a fragmentary view similar to Fig. 9 but with the cam plate partly withdrawn with the primary and secondary keeper means thereof unlocked or removed from the swingable leaves.

Fig. 11 is a plan view on a smaller scale of the complementary and juxtapositioned swingable leaves but with the half rings or ring sections removed, and

Fig. 12 is a fragmentary enlarged horizontal sectional view of Fig. 8 with the cover removed, taken across upper part of the casing for purposes of clearly illustrating the manner of preventing longitudinal displacement of the ring section carrying means relative to the casing.

In the drawings, the cam plate generally designated 10 is slidably guided longitudinally of the arcuate casing 11. This longitudinal sliding movement is facilitated by a manipulating portion M which extends upwardly from the end of the cam plate projecting beyond the end of casing 11. The cam plate is adapted by reason of spaced loop C to tiltably displace the juxtapositioned and companion leaves 14 which have their outer margins pivotally retained within the channels of the transversely alined and spaced ribs or beads 15 at the upper parts of the spaced upstanding sides of the casing. The casing is also provided with lower hollow and transversed alined beads or ribs 16 constituting inwardly arranged channels or grooves in which the cam plate is slidably guided and so held therein by the inwardly overhanging transversely alined retaining lips 17. By this arrangement the cam plate is also slidably retained on the sides of the arcuate bottom wall of the casing 11 as illustrated.

Referring to Fig. 11, it will be observed that the companion leaves 14 are interrupted by the mating cut-away portions 20 to characterize elongated and longitudinally arranged slots 21. Further interrupting leaves 14 are the cutaway portions 22 to form the spaced openings 23. With this arrangement inwardly extending lugs 24 are formed in the companion leaves 14 which carry the companion and complementary half rings or sections H as is well understood.

More specifically the spaced cams C are struck out of the body of the slidable plate 10 and each is preferably in a form of an upstanding loop as illustrated, having one leg or limb thereof provided with spaced upper and lower but offset inclined or sloping portions 26 and 27 merged with an intermediate retaining part or primary keeper means 28. The other legs of the loops C are characterized by the inclined portions 29 which project upwardly through slots 21 of the leaves 14 while the upper portions 26 are adapted to removably be received in the spaced openings 23.

If the cam plate 10 be slidably displaced from its closing position shown in Fig. 3, that is, moved to the right relative to the casing 11, the intermediate primary cam shaped portions CP, in part defined by the lower limbs 27, ride under leaves 14, thus partly tilting the latter upwardly. This movement of the cam plate causes the primary retaining portions or keepers 28 to move free of the top faces of the lugs 24. The keepers 28 are driven into openings 23 and under the leaves 14 as shown in Fig. 4A. During this operation, the hooks or supplementary keeper or retaining means K extending from the cam plate also move free of the companion leaves 14 thereby also unlocking the cam plate from the leaves.

As the cam plate is further withdrawn or opened, the inclined portions or supplementary camming portions 26 of the loops C abut and cam under ends 30 of the openings 23 of the tiltable leaves 14, thereby further raising or tilting the inner ends upwardly. The withdrawal of cam plate 10 causes the half ring sections to fully open as in Fig. 7, at which time the sloping limbs or inclined portions 29 of the loops hit the lugs 24, thus limiting outward displacement or opening of the cam plate 10.

On the closing or retractive stroke of the cam plate 10, for example, when slidably displaced to the left, limbs or sloping portions 26 meet the lugs 24, hence camming or tilting leaves 14 downwardly, and eventually intervening retaining keeping portions 28 ride over and frictionally bear against lugs 24 thereby holding the leaves against accidental opening. At the same time the keeper means or hooks K ride over corresponding and contiguous parts as 31 of the leaves to supplement the locking relation of the cam plate against opening. It is apparent therefore that the cam plate 10 in cooperation with the leaves 14 constitute primary and secondary disconnectable interlocking means to preclude accidental opening of the half ring sections H, the primary interlocking means being constituted by the intervening portions 28 and the lugs 24, while the secondary interlocking means is defined by the keeper K and contiguous portions 31 of the companion leaves 14 adjacent corresponding ends of slots 21.

While the companion leaves 14 have their outer longitudinal portions pivotally associated within the upper ribs 15, nevertheless these leaves are anchored to the casing to resist their longitudinal displacement. In this connection it will be observed that the upper ribs are interrupted by pairs of spaced kerfs 32 and 33 forming biased or downwardly and inwardly extending lugs 34 closely projecting into notches 35 in the sides of the leaves 14 to interlock therewith.

Grooved studs 35' of the type well known in the art are utilized to cooperatively position and retain the tiltable leaves 14 in alinement as desired. A relatively thin sheet metal member 36 which is of a pleasing arcuate appearance and provided with depending arcuate margins adapted to snap over and frictionally grasp the upper beads 15 forms a top cover for the structure.

Briefly recapitulating, portions of the tiltable leaves 14 at the ends of openings 23 may be said to be abutment means for receiving the thrust imparted by the inclined portions 26 on opening or closing of the cam plate.

In other words, on the closing stroke of the slidably guided cam plate 10, lugs 24 receive the thrust imparted by the inclined cam portions 26. Thus lugs 24 are in effect abutment means and the same may be said of portions 30 at the ends of the openings 23 since they receive the impact of the cam portions 26 on the opening stroke of the cam plate.

Various changes may be made in the details of construction and arrangement of parts without departing from the spirit of the invention or sacrificing any of the advantages thereof inherent therein.

I claim:

1. In a loose leaf binder, a casing, a plate slidably mounted in said casing, a pair of complementary leaves pivotally mounted in said casing above said plate, complementary and separable ring sections mounted on said leaves, an opening in said leaves, a loop projecting upwardly from said plate through said opening, said loop having one end inclined to cooperate with the edge of said leaves adjacent one end of said opening to tilt the inner edges of said leaves upwardly upon slidable movement of said plate in one direction, a lug extending inwardly of said opening intermediate the ends of said loop, said lug engaging the opposite end of said loop to limit slidable movement of said plate in said one direction, said lug engaging said first mentioned end of said loop to tilt the inner edges of said leaves downwardly upon slidable movement of said plate in the opposite direction, and an intermediate retaining portion on said loop cooperating with said lug to prevent accidental sliding movement of said plate relative to said leaves.

2. In a loose leaf binder, a casing, a plate slidably mounted in said casing, a pair of complementary leaves pivotally mounted in said casing above said plate, complementary and separable ring sections mounted on said leaves, an opening in said leaves, a loop projecting upwardly from said plate through said opening, said loop having one end inclined to cooperate with the edge of said leaves adjacent one end of said opening to tilt the inner edges of said leaves upwardly upon slidable movement of said plate in one direction, a lug extending inwardly of said opening intermediate the ends of said loop, said lug engaging the opposite end of said loop to limit slidable movement of said plate in said one direction, said lug engaging said first mentioned end of said loop to tilt the inner edges of said leaves downwardly upon slidable movement of said plate in the op-

posite direction, an intermediate retaining portion on said loop cooperating with said lug to prevent accidental sliding movement of said plate relative to said leaves, and a plurality of supplementary keepers projecting upwardly from said plate, said supplementary keeper engaging the inner edges of said leaves at a plurality of longitudinally spaced points to help hold said leaves against accidental pivotal displacement.

SAMUEL SEGAL.

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