Aug. 21, 1945. S. G. JOHNSON 2,383,062

POST BINDER

Filed May 15, 1944 2 Sheets-Sheet 1

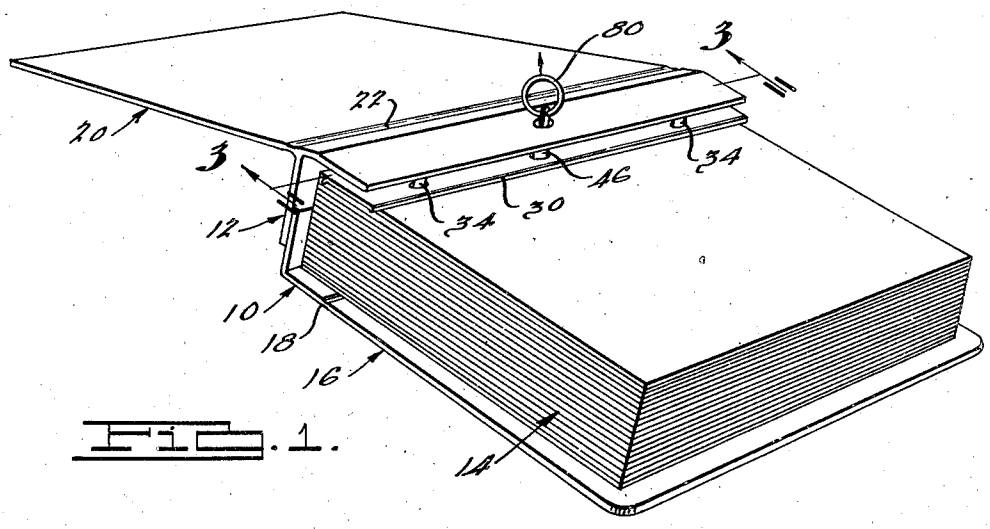


Fig. 1.

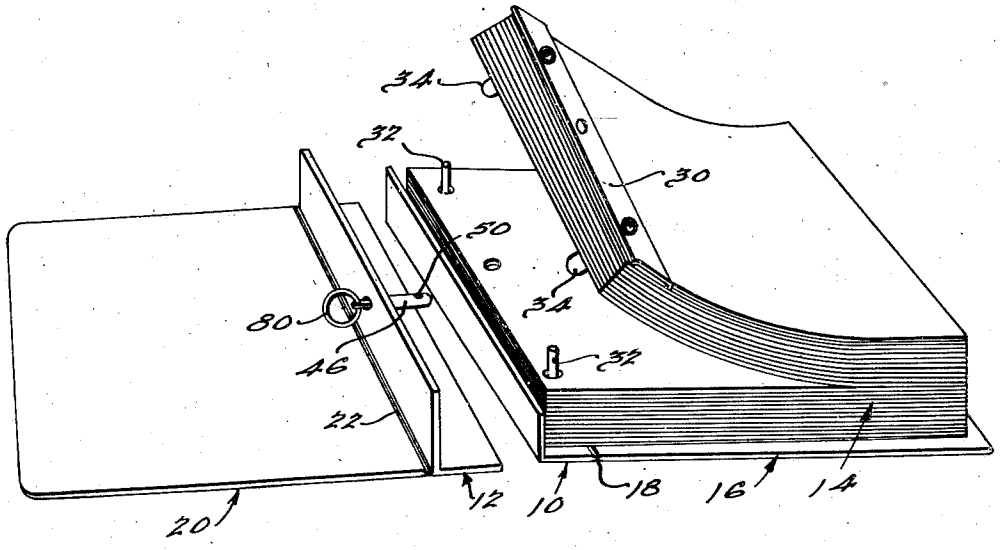


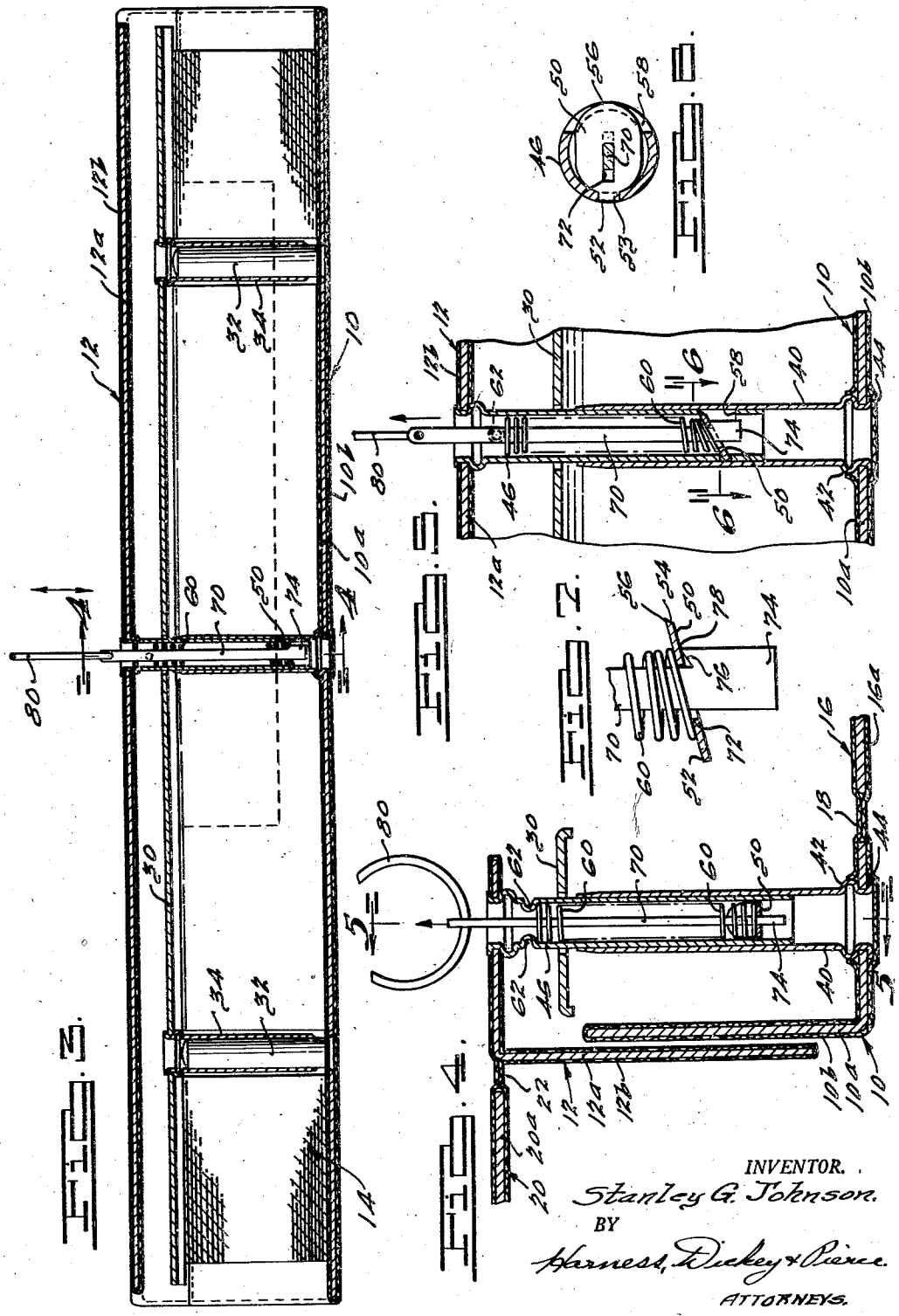
Fig. 2.

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2,383,062

POST BINDER

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5 Claims. (Cl. 129—13)

This invention relates to loose-leaf binders of the post type and particularly to a new and novel form of mechanism for locking telescoping post portions therefor in operative engagement with respect to each other.

Objects of the invention include the provision, in a loose-leaf binder of the post type, of a pair of telescoping post portions together with means carried by one of the portions for automatically locking it against withdrawal from the other of such portions in any one of an infinite number of axially adjusted positions with respect thereto; the provision of a construction as above described in which the locking means comprises a wedge, lock or cam member pivoted with respect to one of the post members and constantly urged by spring means towards a position in which it is in binding engagement with respect to the other of the post members; the provision of a construction as above described in which the lock member comprises a plate-like member received within the inner of the telescoping post members and has a pivotal connection with one side thereof, the opposite side of the inner post member being cut away to permit the lock member to project through and into a position in which it is capable of bindingly engaging the bore of the other post member; the provision of a construction as above described in which means are provided for moving the lock member out of binding engagement with respect to the outer post member whereby to free the post members for relative axial withdrawing movements with respect to each other; the provision of a construction of the above described type in which the releasing means comprises a member projecting through the lock member and formed for engagement therewith on that side of the center thereof opposite its point of pivotal connection with the inner post member; and the provision of a construction as above described in which the releasing means for the lock member is provided with a hooked end portion limiting its outward movement in the inner post and with respect to the lock member and affording contact with the lock member at the point of a hook to facilitate the pivoting of the lock member out of locking position and against the force of the spring means urging the lock member toward locked position.

The above being among the objects of the present invention, the same consists in certain novel features of construction and combinations of parts to be hereinafter described with reference to the accompanying drawings, and then claimed, having the above and other objects in view.

In the accompanying drawings which illustrate a suitable embodiment of the present invention and in which like numerals refer to like parts throughout the several different views,

Fig. 1 is a perspective view of a loose-leaf binder enclosing a plurality of filler sheets and shown with one cover thereof in open position;

Fig. 2 is a view of the binder shown in Fig. 1 with one cover thereof removed and with portions of the filler sheets shown in partially separated relation with respect to the remainder thereof;

Fig. 3 is an enlarged transverse sectional view taken through the construction illustrated in Fig. 1 centrally of the posts thereof and as on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmentary, transverse sectional view taken on the line 4—4 of Fig. 3 but with the filler sheets removed;

Fig. 5 is a fragmentary sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is an enlarged transverse sectional view taken on the line 6—6 of Fig. 5 to better illustrate the construction of the wedge or locking member; and

Fig. 7 is an enlarged fragmentary, partially sectioned view illustrating the wedge or locking member and the construction of and manner in which the releasing member cooperates therewith.

The present invention is applicable to both closed-back and open-back binders and in fact to any binder, regardless of its construction, as long as it is capable of employing telescoping posts either solely for the purpose of clamping two relatively movable parts together for the purpose of clamping loose leaf filler sheets therebetween, or additionally for alignment of such filler sheets by virtue of reception of the posts in aligned holes in such filler sheets. It may be applied to all of the posts of a multiple post loose-leaf binder or to any number of such posts. However, because of the fact one such post will usually be sufficient to hold the separable parts of a loose-leaf binder together, it is usually desirable from the standpoint of economy in manufacture to employ only one of such locking posts, the remaining posts thus being of a non-locking type and, for this reason, this is the type of construction shown in the accompanying drawings. Furthermore, while one part of each of the telescoping posts may be carried by each of the relatively movable cover-carrying portions of such binder, the construction is equally applicable to those constructions in which a transfer bar is provided for mounting one-half of each telescoping post other than the locking post and this type of construction is shown in the drawings as preferable from the standpoint of ease in manipulation of the filler sheets. It will thus be appreciated that the particular binder in which the present invention is shown in the accompanying drawings is shown in an illustrative rather than a limiting sense.

Now referring to the drawings, it will be noted that the loose-leaf binder there shown includes a pair of stiff and preferably rigid L-sectioned portions indicated generally at 10 and 12, respec-

tively, arranged in face-to-face relationship with a leg of each in parallel and overlapped relation with respect to a leg of the other and forming a channel between the remaining legs and within which the filler sheets, indicated generally at 14, are adapted to be received. A preferably rigid cover member indicated generally at 16 is hingedly secured to the forward edge of the portion 10 along a hinge line such as 18 and an opposed cover member indicated generally at 20 is hingedly secured to the portion 12 along a hinge line such as 22 which, in the particular case shown, is in closely adjacent parallel relationship with respect to the line of junction between the two legs of the angle of the member 12.

While the particular construction of the members 10, 12, 16 and 20 is immaterial as far as the present invention is concerned, the particular case shown by way of illustration and best brought out in Figs. 3, 4, and 5, indicates that the portions 10 and 12 comprise preferably stiff and rigid cores 10*a* and 12*a*, respectively, preferably formed of metal and extending over the whole contour of the respective members 10 and 12 and each completely encased in a flexible covering material 10*b* and 12*b*, respectively, and which, for instance, may comprise cloth or other suitable sheet fabric material, leather or the like. Likewise, the cover portions 16 and 20 each comprises a stiff and preferably rigid core portion 16*a* and 20*a*, respectively, which are encased by a continuation of the coverings 10*b* and 12*b*, respectively, the cores 16*a* and 20*a* being slightly spaced from the cores 10*a* and 12*a*, respectively, along their opposed edges so that the coverings 10*b* and 12*b* extending between them serve to provide the hinge lines 18 and 22, respectively.

Although, as previously mentioned, the two separable parts of all of the telescoping posts employed may be carried directly by the portions 10 and 12, respectively, in the particular construction shown a conventional transfer bar 30 is employed and to which the corresponding portions of the non-locking telescoping posts are secured, such a construction being preferable for the reason that it facilitates the introduction and/or removal of individual sheets from the stack of filler sheets 14. Accordingly, in the construction shown, a pair of inner posts 32, one arranged adjacent each end of the portion 10, are rigidly fixed at one end thereof to the forwardly projecting leg of the core 10*a* approximately midway the width thereof and project upwardly therefrom in parallelism with the remaining leg of the core 10*a*. In turn the transfer bar 30 has rigidly fixed thereto midway between its side edges a pair of hollow posts 34 spaced from each other longitudinally of the transfer bar 30 in accordance with the spacing of the posts 32 and projecting perpendicularly to the plane of thickness of the transfer bar 30. The posts 34 are of an internal diameter such as to be relatively closely but slidably received upon the posts 32 and this is the position which they assume in operation and as best brought out in Fig. 3. It will be appreciated that the filler sheets 14 are provided with openings therein spaced in accordance with the spacing of the posts 32 and 34 and in which the posts 34 are received for the purpose of maintaining the various filler sheets in alignment with each other. Where the combined thickness of all of the filler sheets 14 is less than the effective length of a post 34, then ordinarily the free ends of the posts 34 will abut the portion 10, whereas if the combined thickness of the filler sheets 14 is greater than the length of the posts 34 then the hollow post 34 will necessarily terminate short of the member 10 when in assembled relation with respect thereto.

In order to hold the portions 10 and 12 together and to cause the transfer plate 30 to be pressed downwardly upon or against the corresponding margin of the stack of filler sheets 14 the following mechanism is provided. Midway between the posts 32 and 34 and preferably arranged with its axis in a plane including the axes of the posts 32 and 34 a hollow post 40, best brought out in Figs. 4 and 5, is rigidly fixed to the portion 10. While in the broader aspects of the invention any suitable means or method may be employed for securing the post 40 to the portion 10, in the particular construction shown the lower end of the post 40 is provided with a radially outwardly projecting peripheral annular bead 42 which abuts against the inner face of the lateral flange of the core 10*a* of the portion 10, the corresponding end of the post 40 projecting through an opening in the core 10*a* provided therefor and its outer end being flared outwardly as at 44 thus to clamp the core 10*a* between the bead 42 and the flared end 44.

Another hollow post 46 is similarly fixed at one end to the core 12*a* of the portion 12 in such a position that when the portions 10 and 12 are arranged in complementary and operative relationship with respect to each other it is axially aligned with the post 40. The post 46 is of such size as to be relatively closely but slidably received within the post 40. In this connection it will be appreciated that although the various posts 32, 34, 40 and 46 may be of any suitable cross-sectional configuration, for ease in production they are preferably cylindrical in cross-sectional configuration and such section is shown in the drawings. It will be appreciated, of course, that the filler sheets 14 and transfer bar 30 are perforated for reception of the posts 40 and 46.

The post 46, as best brought out in Figs. 4 to 7, inclusive, is interiorly provided with a locking member 50 adjacent its lower or outer end. This locking member in one direction, transversely as viewed in Figs. 5, 6, and 7, is slightly greater than the external diameter of the post 46. At one side in such direction it is provided with an outwardly projecting lug 52 which is loosely confined against movement longitudinally of the post 46 in an opening 53 provided in the wall of the post 46. The opposite edge is beveled as indicated at 54 so as to provide it with a chisel-like point 56, the bevel 54 providing clearance so as to permit binding engagement of the edge 56 with the inner surface of the outer post 40 as will hereinafter be better appreciated. The edge 56 is rounded as indicated in Fig. 6 so as to provide for more or less line contact between it and the inner wall of the outer post 40. The post 46 from the side thereof opposite the opening 42 is cut away as at 58 so as to permit the edge 56 to project therethrough and be afforded a material amount of movement longitudinally of the post 46 therein.

It will, of course, be appreciated that as far as the present invention is concerned it makes no difference whether, when the post 46 is assembled to the post 40 the lug 52 of the locking member 50 projects through the opening 53 sufficiently to engage the inner wall of the post 40, or whether it is of such length as to preclude such engagement, the latter construction being shown by way of illustration. In any event it

will be appreciated that the effective length of the locking member 50 is such that when the member 50 is pivoted to the limit of its pivotal position in a counterclockwise direction of rotation as viewed in Figs. 5 and 7 within the limits of the cut-away portion 58 the edge 56 will lie within the axially extended peripheral surface of the member 46, under which conditions it will be out of interengaging relation with respect to the interior walls of the post 40 and the post 46 will be free to be axially withdrawn from the post 40. On the other hand, clockwise pivotal movement of the locking member 50 from the position illustrated in Fig. 5 will bring the pointed end 56 thereof into engagement with the inner walls of the post 40, under which conditions any attempt to withdraw the post 46 from the post 40 will cause the pointed edge 56 to bite into the inner walls of the post 40 and cause the member 50 to be wedged between the posts 40 and 46 thereby to effectively prevent withdrawal of the post 46 from the post 40 as long as such engagement exists.

The locking member 50 is constantly urged toward locking position by means of a coiled compression spring 60 received within the post 46 and maintained under compression between the locking member 50 and the post 46 at a point remote therefrom. While any suitable means may be provided to form an abutment for that end of the spring 60 opposite the locking member 50, in the construction shown the post 46 is provided with a pair of diametrically opposite indentations 62 therein, as best brought out in Fig. 4, which form projections on the interior of the post 46 which provide abutments for the corresponding end of the spring 60. Thus with the construction thus far described it will be appreciated that the post 46 may be freely inserted into the post 40 and during such insertion although the spring 60 is constantly urging the locking member 50 towards a locking position, because of the angular relationship of the locking member 50 with respect to the axis of the post 46 it will slide freely down into the post 40 without offering any material resistance, but that any attempt to reverse the movement of the post 46 in the post 40 will cause the pointed edge 56 of the locking member 50 to bite into the inner wall of the post 40 and prevent such withdrawing movement. The locking member 50 thus acts in the nature of a ratchet permitting free movement between the posts 40 and 46 in one direction only, and capable of locking the post 46 against withdrawal from the post 40 in any one of an infinite number of axially adjusted positions between them.

In order to release the locking member 50 from locking relation with respect to the post 40 and thereby permit the post 46 to be withdrawn from the post 40 the following mechanism is provided.

As best brought out in Figs. 4 to 7, inclusive, a bar member 70, preferably formed from sheet metal, extends downwardly through the hollow interior of the post 46 within the spring 60. The locking member 50 is provided with a central slot 72 through which the bar member 70 freely projects and below the locking member 50 the bar member is provided with a head 74 of greater lateral dimensions than the length of the slot 72 so as to prevent the head 74 from being withdrawn upwardly through the slot 72. The head 74, as best brought out in Fig. 7, is formed by a lateral extension of the bar 70 and at its point of junction with the bar 70 is formed with an angular face 76 providing a hook-like portion having a point 78 which bears against the under-face of the locking member 50 on the opposite side of the center thereof from the lug 52 and at a point relatively close to the edge 56 of the locking member 50. The angularity of the surface 76 is preferably such as to limit the point of contact between the head 74 and the locking member 50 to the point 78.

The bar member 70 projects axially beyond the post 46 at the anchored end of the latter and is there provided with a ring 80 swiveled thereto, the ring 80 being a size greater than the bore of the post 46 so as to limit downward movement of the bar 70 therein and large enough to provide a finger hold for manipulating the bar 70.

It will be appreciated that in assembly the bar member 70 is projected first through the locking member 50, then through the spring 60 until the upper end thereof as viewed in the figures projects outwardly beyond the fixed end of the post 46, upon which the ring 80 is inserted in the bar member 70 thereby to operatively locate the bar member 70 in place. The wedge or locking member 50 is of a minimum transverse dimension slightly less than the width of the cut-out portion 58 in the post 46, as brought out in Fig. 6, so as to enable it to be assembled through such cut-out portion, this being done after the spring 60 has been inserted into position and sufficiently compressed to allow for the insertion of the locking member 50 upon which the insertion of the bar member 70 as described locks all these parts in their assembled relationship.

It will be appreciated from the foregoing that when the posts 40 and 46 are in assembled relationship with respect to each other the spring 60 urges the locking member 50 into locking relationship with respect to the post 40 thereby to lock the posts 40 and 46 against axial separation. Under such conditions if the ring 80 is grasped and pulled outwardly away from the fixed end of the post 46 the point 78 of the head 74 of the bar member 70 in bearing against the locking member 50 will cause the locking member 50 to pivot about the pivotal connection of the locking member 50 afforded by the lug 52 received in the opening 53 of the post 46, and will withdraw the edge 56 of the locking member 50 out of engaging relationship with respect to the inner wall of the post 40. Continued movement of the ring 80 outwardly away from the fixed end of the post 46 will bring the margin of the locking member 50 adjacent the pointed edge 56 thereof into contact with the upper wall of the cut-out portion 58 upon which the pull on the ring 50 will withdraw the post 46 from the post 40 and, of course, will carry the portion 12 of the binder outwardly therewith.

When the posts 40 and 46 are in their interengaging and operative relation with respect to each other the bar member 70 is free to move downwardly in the post 46 until the ring 80 engages the fixed end of the post 46. In practice under such conditions the ring 80 is pivoted over into substantially flat contacting relationship with respect to the outer face of the portion 12 which thereupon permits the cover 20 to be folded over into opposed and complementary relationship with respect to the cover 16 so as to enclose the filler sheets 14 between them.

It will be appreciated from the above description that the present invention provides an extremely simple and efficient means by which the

two parts of a telescoping post structure may be automatically locked against withdrawal with respect to each other by simply inserting the inner post member within the outer post member, and that the construction is such as to enable these two members to be locked together in any one of an infinite number of axially adjusted positions with respect to each other and that, when locked together, they may be released from locking engagement with respect to each other and the two separate parts of the binder be simultaneously separated simply by applying a pull to the ring 80.

Having thus described my invention what I claim by Letters Patent is:

1. In a telescoping binder, in combination, a pair of hollow posts, one telescopically received within the other, the inner of said posts having an opening formed in the side wall thereof, an elongated locking member within said inner post pivoted thereto at one end for movement about an axis extending transversely of said post and on the side of said post opposite said opening, the opposite end of said locking member extending through said opening and being adapted to engage the inner surface of the outer post when in locking position, yieldable means normally urging said locking member toward locking position, said locking member having a longitudinally extending slot formed therein, and means for releasing said locking member including a flat bar slidably but non-rotatably received in said slot, said bar having a lateral projection disposed below said locking member and extending in a direction away from the pivotal axis of said locking member, said lateral projection including an upper edge portion engageable with said locking member to release the same from locking position upon upward movement of said bar.

2. In a telescoping binder, in combination, a pair of hollow posts, one telescopically received within the other, the inner of said posts having an opening formed in the side wall thereof, an elongated locking member within said inner post pivoted thereto at one end for movement about an axis extending transversely of said post and on the side of said post opposite said opening, the opposite end of said locking member extending through said opening and being adapted to engage the inner surface of the outer post when in locking position, yieldable means normally urging said locking member toward locking position, said locking member having a longitudinally extending slot formed therein, and means for releasing said locking member including a flat bar slidably but non-rotatably received in said slot, said bar having a lateral projection disposed below said locking member and extending in a direction away from the pivotal axis of said locking member, said lateral projection having an upper edge defined by a surface which diverges downwardly and inwardly with respect to the adjacent surface of said locking member, said edge being engageable with said locking member to release the same from locking position upon upward movement of said bar.

3. In a telescoping binder, in combination, a pair of hollow posts one telescopically received within the other, the inner of said posts having an opening therein, a locking member within said inner post pivoted thereto for movement about an axis extending transversely of said post on the side opposite said opening, said locking member projecting through said opening and into engagement with the inner surface of the outer of said posts, spring means constantly urging said locking member towards engagement with the inner surface of the outer of said posts, and means for releasing said locking member from said engagement comprising a bar member extending through said locking member in slidable but non-rotatable relation therewith and having one end thereof projecting beyond the upper end of said inner post, the opposite end of said bar member having a head extending in a direction away from the pivotal axis of said locking member and being engageable with the under side of said locking member to release the same from locking position upon upward movement of said bar member.

4. In a telescoping binder, in combination, a pair of hollow posts one telescopically received within the other, the inner of said posts having an opening therein, a locking member within said inner post pivoted thereto at one end for movement about an axis extending transversely of said post on the side opposite said opening, said locking member being greater in length than the inner diameter of said outer post and having its opposite end beveled and projecting through said opening and into engagement with the inner surface of the outer of said posts, spring means constantly urging said locking member towards engagement with the inner surface of the outer of said posts, and means for releasing said locking member from said engagement comprising a bar member projecting through said locking member in slidable but non-rotatable relation therewith and having a head disposed below said locking member and extending in a direction away from the pivotal axis of said locking member and being engageable with the underside of said locking member to release the same from locking position upon upward movement of said bar member.

5. In a telescoping binder, in combination, a pair of hollow posts one telescopically received within the other, the inner of said posts having an opening therein, a locking member within said inner post pivoted thereto for movement about an axis extending transversely of said post on the side opposite said opening, said locking member projecting through said opening and into engagement with the inner surface of the outer of said posts, a plurality of projections in the bore of said inner post lying substantially in a common plane perpendicular to the axis of said post and in spaced relation axially of said post from said locking member, a coil spring within said inner post maintained under compression between said projections and said locking member and constantly urging said locking member towards engagement with the inner surface of the outer of said posts, and means for releasing said locking member from said engagement comprising a bar member projecting through said locking member in slidable but non-rotatable relation therewith and having a head disposed below said locking member and extending in a direction away from the pivotal axis of said locking member and being engageable with the underside of said locking member to release the same from locking position upon upward movement of said bar member.

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