

C. C. MALTBY.
LOOSE LEAF BINDER.
APPLICATION FILED FEB. 13, 1905.

934,452.

Patented Sept. 21, 1909.
2 SHEETS—SHEET 1.

Fig. 1.

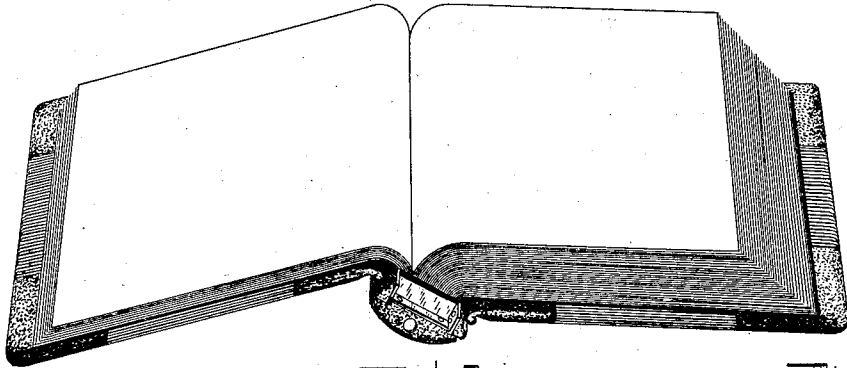


Fig. 2.

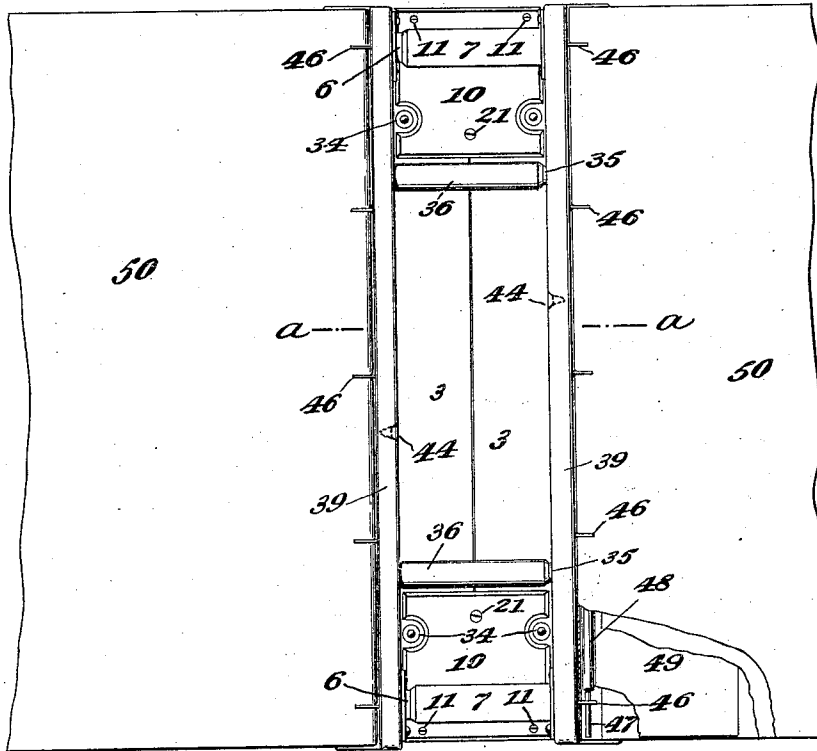
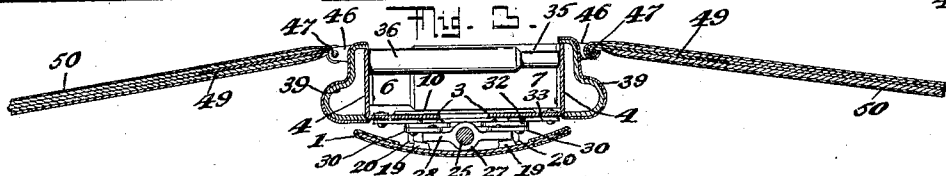
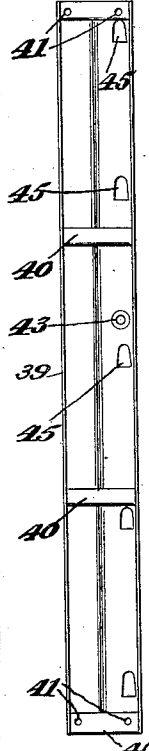
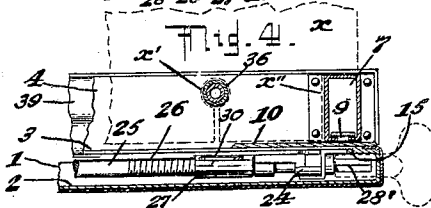


Fig. 3.



Witnesses

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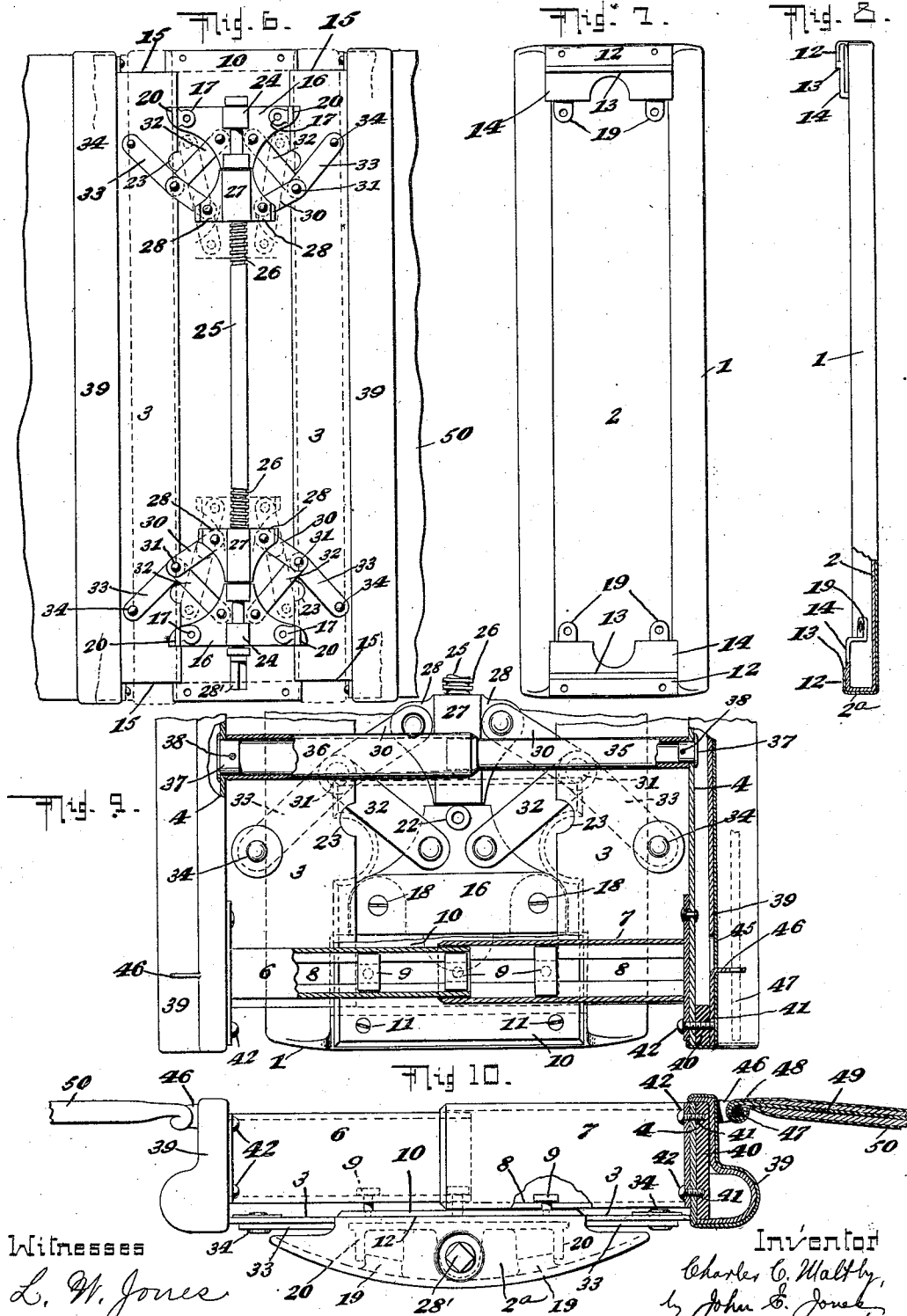


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UNITED STATES PATENT OFFICE.

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LOOSE-LEAF BINDER.

934,452.

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To all whom it may concern:

Be it known that I, CHARLES C. MALTBY, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

This invention relates to certain improvements in loose-leaf binders and has for its object to provide a device of this general character of a simple and inexpensive nature and of a compact, strong and durable structure which shall be adapted for securely holding the leaves or sheets while being capable of convenient and ready operation to detach such leaves or sheets to permit their removal, substitution or replacement and being also capable of a wide degree of adjustability to accommodate the improved binder for holding a greater or lesser number or thickness of the loose leaves or sheets.

The invention consists in certain novel features of the construction, combination and arrangement of the several parts of the improved loose-leaf binder whereby certain important advantages are attained and the device is rendered simpler, cheaper and stronger and is otherwise better adapted and made more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings which serve to illustrate my invention—Figure 1 is a perspective view showing a binder constructed according to my invention. (This view is drawn upon a small scale.) Fig. 2 is a fragmentary view showing the interior of the back of the improved binder, its sides or covers being thrown flat or open and partially broken away for lack of space. This view is upon a larger scale and illustrates those portions of the mechanism of the binder which are visible when the device is opened in the way shown. Fig. 3 is a transverse section taken through the back and sides or covers of the binder in the plane indicated by line *a— a* in Fig. 2. Fig. 4 is a partial section taken longitudinally through one end portion of the back of the binder and showing certain features of the adjusting and locking means carried thereby. Fig. 5 is a detached detail view showing one of the metal hinge-strips employed in the con-

struction of the improved binder. Fig. 6 is a fragmentary view of the improved binder from the rear, with its detachable back removed. Fig. 7 is an inside view showing the back of the binder detached, and—Fig. 8 is an edge view of the same with one end portion in central section. Fig. 9 is an enlarged partial inside view of the back part of the improved binder at one end thereof and illustrating the construction and arrangement of the adjusting means for holding the sides or covers in relation, certain portions of the device being broken out and shown in section for purposes of illustration. Fig. 10 is a fragmentary end elevation, also partly in section and illustrating the parts shown in Fig. 9.

As seen in these views, the back of the binder is made in sectional form and comprises a central body portion 1 herein shown as produced from a metal plate 2 covered over with leather or other suitable material and bent or curved in transverse cross-section so that its rear surface shall present the convexity commonly present in the backs of bound volumes. The back of the improved binder also comprises lateral members formed from metal plates adjustably held upon opposite edges of the main or body portion 1 and extended longitudinally along the same and provided with hinging-strips with which the sides or covers of the binder have hinge-connection as will be hereinafter explained. The metal plates of which said lateral members of the back of the binder are formed are centrally bent to produce portions at right-angles so that each lateral member has an angular or L-shape in cross-section, and one of the angular wings of each of said lateral members is extended upon the inner surface of the main or body portion 1 of the binder-back as shown at 3 on the drawings and has means for guiding it and adjusting it upon said main or body portion, while the other angular wing or portion 4 of each of said lateral members is extended forwardly from the plane of said main or body portion and is provided with means for detachably holding the loose leaves or sheets of the binder and also for connection of the sides or covers of the binder thereto.

At opposite ends of the binder-back, the lateral members thereof are provided with telescoping members of rectangular cross-section forming guides or gages for position-

ing the loose leaves or sheets held between the sides or covers, one of the telescoping parts as shown at 6 being carried upon one of the lateral members of the back and playing endwise within the other part which, as shown at 7 is carried upon the other lateral member of the back, and the rear walls of said telescoping members or parts 6 and 7 at the opposite ends of the binder-back are provided with longitudinally-extended slots or channels 8 which, when the parts are assembled, are caused to extend transversely of the binder-back and are adapted to receive guide pins or studs 9 carried upon guide-plates 10, 10, at opposite ends of the main or body portion of the back. The pins or projecting studs 9 are headed at their forward ends to prevent them from being disengaged from the slots or channels 8 of the parts 6 and 7.

At the opposite ends of the main or body portion 1 of the binder-back are erected bracket-supports 2^a upon the forward surface of said body portion and these brackets 2^a have supporting-surfaces 12 extended along their outer edge portions on which the outer ends of the guide-plates 10 are rested flush, screws 11 being provided for the secure attachment of said guide-plates to said bracket-supports, as shown in Figs. 2 and 9. Adjacent to the supporting-surfaces 12 of the brackets 2^a, the forward sides of said brackets are provided with side bearings 14, extended transversely of the binder-back and separated from said surfaces 12 by offsets or shoulders 13. The plane in which each bearing-surface 14 is extended is at the rear of the plane in which the adjacent surface 12 is produced so that in this way there are produced in the rear of the respective guide-plates 10, 10, slide-bearings between the same and said bearing-surfaces 14 and in these slide-bearings are adapted to be received the end edge portions 15 of the rear angular wings or portions 3, 3 of the lateral members of the binder-back, which edge portions 15 abut on the offsets or shoulders 13 and are thereby guided for lateral movement toward and from each other and relatively to the main or body portion on which the guide-plates 10, 10 are held.

16, 16 represent bearing-plates located at opposite ends of the main or body portion 1 of the binder-back and having upon their rear surfaces perforated lugs 17, 17, co-incident with lugs 19, 19 on the front face of said back portion 1, screws 18 being passed through lugs 17 and engaged with the lugs 19 for holding said plates 16 securely in position upon said body portion of the back. The opposite sides of the plates 16 are also provided with rearwardly directed lugs or projections 20, 20 engaged outside the lugs 19, 19 on the body portion 1 for preventing damage of the screw-connections in case of rough handling of the

binder. The arrangement of said lugs or projections 19 and 20 is clearly shown in Fig. 3 and in dotted lines in Fig. 10. The bearing-plates 16 are also provided, upon their front surfaces, with perforated lugs 22 in which screws 21, passed through the guide-plates 10, have screw-engagement for the secure attachment of each plate 16 to the inner edge portion of the adjacent guide-plate 10. The edges of the wings 3, 3 of the lateral members of the binder-back are cut or notched out as seen at 23 to receive the lug 22.

Upon the bearing-plates 16 are produced shaft-bearings 24 alined with each other and located at the opposite ends of the binder-back and in said bearings is held to turn a shaft 25 extended longitudinally of the binder-back in the space between the main portion and the wings 3, 3, of the lateral members of said back. One end of said shaft 25 is provided with a square 28' to receive a key (as shown in dotted lines in Fig. 4) whereby the shaft may be turned in reverse directions for adjusting the lateral members toward and from each other and, adjacent to its opposite ends, the shaft 25 is provided with reverse screw-threads 26, 26, which have engagement with nuts 27 located at opposite ends of the binder-back and adapted, when the shaft is turned, to be adjusted lengthwise of said back, toward and from each other being provided with oppositely-directed wings 28, 28, which are adapted, by engagement with the part 2 of the back to prevent turning or twisting movement of said nuts when the shaft is turned. To the opposite wings or extensions 28, 28, of each nut 27 are pivotally adapted the inner ends of links 30, 30, the outer ends of which have pivotal-connection as shown at 31 with the outer ends of other links 32, the inner ends of which are pivotally-connected with the adjacent bearing-plate 16 as clearly shown in Figs. 6 and 9. At the points of pivotal-connection 31, of the oppositely arranged links 30 and 32 at each end of the binder-back are pivotally connected the inner ends of other auxiliary links 33, the outer ends of which have pivotal-connection as shown at 34 with the adjacent portions of the flanges or wings 3 of the respective lateral members of the binder-back. By this arrangement, it will be understood that when the key is applied to the squared end 28' of shaft 25 and manipulated to turn said shaft in one direction, whereby the nuts 27 are moved toward each other from the position shown in Fig. 6, the links 30 and 32 at the opposite sides of each end portion of the shaft will be moved from the angular position shown in said figure to a position in which they are more nearly alined with the shaft whereby draft will be exerted upon the auxiliary links 33 and,

through said auxiliary links, movement will be imparted to the lateral members of the binder-back to cause them to be approached toward one another. When the shaft 25 is reversely turned by reverse manipulation of the key, it is evident that a reverse movement of the parts is effected. The engagement of the end edge portions 15 of the flanges or wings 3, 3, of the lateral members in the guide-ways intervening the plates 10 and bearings 14 serves to effectively guide the lateral members in their movement so that uniform movement is imparted to the opposite ends of the members. The engagement of the headed pins or studs 9 with the slots 8 of the telescoping parts 6 and 7 at opposite ends of the lateral members also serves to guide said members in their movement toward and from each other.

Upon the forwardly-extended wings or portions 4, 4, of the lateral members of the binder-back are carried the sheet-holding devices which as shown in Figs. 2, 3, 4 and 9 are produced from lengths or sections 35 and 36 of metal tubing, the sections 35 being carried on one lateral member and being arranged to slide telescopically within the bores of the sections 36 which are carried on the other lateral member of the binder-back. The leaves or sheets *x* as seen in Fig. 4 in dotted lines have rounded openings *x'* in which the telescoping sections 35 and 36 are engaged and at the ends of the binding-edges of said leaves or sheets *x* are produced angular cut out or notched portions *x''* which fit against the inner and front faces of the parts or members 6 and 7. For the attachment of the sections 35 and 36 to the respective lateral members of the binder-back, the means shown in Fig. 9 is preferably employed, said means comprising lugs 37 having heads bearing on the outer faces of the flanges or wings of said lateral members and provided with reduced portions which are passed through perforations in said wings or flanges 4 and are engaged in the bores of the sections 35 and 36, being traversed by pins or rivets 38, the ends of which are passed through the walls of sections 35 and 36 whereby secure attachment of said sections to the flanges or wings 4 is effected.

39 indicates hinge-strips which are extended lengthwise upon the outer surface of the flanges 4 of the lateral members of the binder-back, being pressed or otherwise formed up from sheet-metal or the like with transverse braces or reinforces 40 at their end portions and also at suitable intermediate points, the reinforces 40 at the extremities of these hinge-strips being provided with threaded openings 41 for the reception of screws 42 by means of which the hinge-strips are attached to the ends of the flanges 4. The screws 42 are also passed

through flanges on the ends of casings or parts 6 and 7 for the attachment of said parts or casings to the flanges 4 of the lateral members as clearly shown in Fig. 9. The hinge-strips 39 are also provided with central screw sockets or lugs 43 in which are engaged short screws 44 passed through the central portions of the respective flanges 4 for further attachment of the hinge-strips thereto. The screws 44 are indicated in dotted lines in Fig. 2. The hinge-strips 39 are covered over with leather or other material as herein shown although, of course, this is in no way essential to the present invention, and the metal from which said strips are produced have openings punched or otherwise formed in them as indicated at 45, the portions of metal removed in the production of said openings being pressed outwardly as shown at 46 to produce hinge-lugs which are perforated for the passage of pins or wires 47 which form pintles whereon the sides or covers are adapted for pivotal-movement in opening and closing of the binder. The hinge-lugs 46 are suitably spaced apart as shown in Fig. 2 and in the hinged edge portion of each cover or side 50 of the improved binder is embedded a steel or other metal plate 49, the edge portion of which is bent to produce eyes 48 engaged on the wire or pin 47 between the hinge-lugs 46 for the secure attachment of the sides or covers 50 to the hinge-strips 39. The leather or other binding-material of the sides or covers 50 is, of course, extended over the plates 49 and around the eyes 48 so as to cover and obscure the hinge-connection without interference with a full extent of movement of said sides or covers upon their hinged-connection.

From the above description it will be evident that the improved device is of an extremely simple and inexpensive nature and of a very compact, strong and durable construction and by reason of its ready adjustability is especially well adapted for use particularly in ledgers and similar loose-leaf books, the arrangement of the screw shaft and the link-connections of its nuts with the lateral members of the binder-back serving for convenient removal of the leaves or sheets when desired. It will also be obvious from the above description of my invention that the improved binder is capable of considerable modification without material departure from the principles and spirit of the invention and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the several parts of the device as herein set forth in carrying out my invention in practice.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A loose-leaf binder having a back com-

prising a body portion, lateral members adjustable thereon for movement toward and from each other and provided with transverse slotted sheet-engaging devices and
5 guiding means connected with the body portion and engaged in the slots of the guiding devices of said lateral members.

2. A loose-leaf binder having a back comprising a body portion having bearings at
10 its ends, a shaft held to turn in the bearings and provided with screw-threads at opposite ends, nuts engaged on the screw-threaded ends of the shaft, links pivotally connected in pairs, one link of each pair being connected with one of said nuts and the other
15 link of each pair having connection with the body portion, and lateral members movable transversely on the body portion and having connection with said links.

3. A loose-leaf binder having a back comprising a body portion having bearings at its
20 ends, a shaft held to turn in the bearings and provided with screw-threads at opposite ends, nuts engaged on the screw-threaded ends of the shaft, links pivotally connected in pairs, one link of each pair being pivotally connected with one of said nuts and the other
25 link of each pair having connection with the body portion, lateral members movable transversely on the body portion and auxiliary links connecting said lateral members with the links of said pairs.

4. A loose-leaf binder having a back comprising a body portion having bearings at
35 its ends, guide-plates at opposite ends of said body portion and spaced apart therefrom to produce guide-ways transversely extended across the same, a shaft held to turn in the bearings and provided with screw-threads at
40 opposite ends, nuts engaged on the screw-threaded ends of the shaft, links in pivotally-connected pairs, one link of each pair having connection with one of said nuts and the other link of each pair having connection with the body portion, and lateral members
45 the ends of which are engaged in the transverse guide-ways of the body portion, said members having connection with the links of said pairs for movement toward and from
50 each other when the shaft is turned.

5. A loose leaf book back comprising an outside casing, a sectional casing provided with telescopic tubes or attaching rods, toggle joints intermediate of said outside casing
55 and sectional casing, a rotative rod, a threaded collar or sleeve through which said rod is adapted to pass, a rigid member having controlling connection with said rod, the toggle joints being pivotally connected with the
60 threaded collar or sleeve and the rigid member and having controlling connection with the sectional casing.

6. A loose leaf book back comprising an outside casing, a sectional casing provided
65 with telescopic tubes or attaching rods and

ends, said telescopic ends provided with slots, toggle joints intermediate of said outside casing and sectional casing and having connection therewith, a rotative rod having
70 controllable connection with said toggle joints, reinforcing plates provided with studs or pins adapted to take into the slots in the telescopic ends, substantially as shown and for the purpose described.

7. A loose leaf book back comprising an
75 outside casing, a sectional casing provided with attaching rods, telescopic ends secured to said sectional casing and provided with slots in their under side, toggle joints intermediate of said outside casing and the sectional casing and having pivotal connection with said sectional casing, threaded sleeves
80 secured to said toggle joints, a threaded rod taking through said sleeves, reinforcing plates provided with studs or pins adapted to take into the slots in the telescopic ends, cover members having hinged connection with both parts of said sectional casing.

8. A loose leaf book back comprising an
90 outside casing whose ends are bent at right angles thereto, a sectional casing adapted to rest upon the bent ends of the outside casing, attaching rods secured within said sectional casing, telescopic ends secured within said sectional casing and provided with slots in
95 their under sides, reinforcing plates secured to the right angular ends of the outside casing and provided with pins or studs adapted to take into the slots in the telescopic ends, toggle joints intermediate of said outside casing and the sectional casing and having
100 pivotal connection with the latter, a threaded rod having operative connection with said toggle joints whereby upon the turning of said rod the sectional casing is expanded or
105 contracted.

9. A loose leaf book back comprising an outside casing whose ends are bent at right angles thereto and upon itself, one of said
110 ends provided with an opening there-through, a sectional casing adapted to rest upon the right angular ends of the outside casing, telescopic tubes secured within and to both parts of said sectional casing, telescopic ends secured to the sectional casing
115 and provided with a slot in the under side, reinforcing plates secured on the right angular ends of the outside casing and adapted to extend within the sectional casing and beneath the telescopic ends, pins or studs on
120 said reinforcing plates adapted to take into the slot in the under side of said telescopic ends, toggle joints secured intermediate of the outside casing and the sectional casing and having operative connection with the
125 latter, a rotative rod in operative connection with said toggle joints and extending into the opening in one of said ends of the outside casing and cover members having hinged connection with said sectional casing.
130

10. A loose leaf book back comprising an outside casing, a sectional casing provided with telescopic tubes or attaching rods, telescopic ends secured within said sectional casing and provided with a slot in the under side, reinforcing plates secured to the outside casing and provided with studs or pins adapted to take into the slot in the telescopic ends, toggle joints intermediate of the outside casing and said sectional casing and having operative connection with the latter, a rotative rod having controllable connection with said toggle joints whereby upon its rotation the toggle joints and sectional casing are expanded or contracted, back members secured to the sides of the sectional casing and having right angular extensions provided with openings therethrough, cover members having their one side bent upon themselves and provided with slots in said sides to receive the right angular extensions of the back members, and pins taking through the bent side of the cover members and the openings in the right angular extensions of the back members to form a hinge.

Signed at Cincinnati, Ohio, this 3rd day of February, 1905.

CHARLES C. MALTBY.

Witnesses:

JOHN ELIAS JONES,
ARTHUR KLINE.